WHAT ARE EFFECTIVE SCHOOLS? LESSONS FROM EAST AND WEST

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The Radford Memorial Lecture

The Radford Memorial Lecture has very properly become an institution at the Annual AARE Conference; it is the time when we honour the one person to whom educational researchers in Australia owe most, even today. Perhaps that is the greatest tribute: that it remains possible after nearly twenty years to be able to point to something genuinely fresh and of contemporary relevance in Radford's work. It is my very great privilege to be adding to that cumulative tribute this present year. Although I met Bill Radford only once, in 1962 during a visit to ACER (Australian Council of Educational Research), his influence on my professional life later turned out to be considerable; it was he who got AACRDE (Australian Advisory Committee on Research and Development in Education), later ERDC (Educational Research and Development Committee), off the ground. My career, like that of many current educational researchers, received a critical impetus from that source not only in funding but in moral support.

Radford's legacy was of course not only organisational but was felt in various substantive areas, including maths, science, reading, evaluation, and comparative studies in education, to which I shall be returning shortly. His effectiveness came in large part from the assumptions upon which he operated, at a time, as Millicent Poole (1992) pointed out in this same lecture two years ago, educators were positive, expansionist, and optimistic. Today, the fire has been dampened in the backwash from other assumptions, to do with politics and with survival. I take three Radfordian assumptions as a point of departure for this lecture:

* Schooling in general does matter.

More specifically:

* Educational research, properly conducted, tells us what in particular are good environments for learning and how we may enhance teaching and learning.

And more specifically still:

* Excessive public examining is inimical to learning quality.

This last assumption, incidentally, drove Radford to change the face of Australian education by recommending the abolition of the then ubiquitous system of public examinations in Years 10 and 12 in one State, Queensland (Radford 1970), which in turn profoundly affected assessment procedures in other states. It is ironic that external examinations are now being re-established, not because any relevant research has come to light, but because relentless examining fits well with the Theory X ideologies driving those with the current clout.

You might think that the first two assumptions would be commonsense to any serious researcher, as would the third to any progressive educator. I thought so too, once, but then I went to Hong Kong and found my faith to be somewhat shaken by my professional experiences over the next six years. I'm only now beginning to reconcile the evidence with my belief system.

Let me put the problem in a nutshell. There is a high degree of consensus currently amongst researchers into teaching and learning about the conditions for good learning. If they are right, then learners in Hong Kong schools would show as poor indeed, both in their processes of learning and in the quality of their learning outcomes. The empirical evidence is, however, quite the contrary; along with students from several East and South-East Asian countries, those in Hong Kong not only keep pace with, but in many aspects outshine, their Australasian and American peers in some crucial indices of quality learning.

The paradox of the Asian learner has important lessons for the conduct of research, for our beliefs concerning 'good' learning/teaching environments, and indeed for Western schooling itself. I hope in this lecture first to elaborate the nature of the paradox, begin to explain where I think a solution might lie, and finally try to say what it all might mean to us, as educational researchers in a Western country.

What are good learning/teaching environments?

First, you will be glad to know that Radford's first assumption is vindicated. Schools do matter. After the scepticism engendered by the deschoolers of the '60s and '70s, and the damning data reported by Coleman et al (1966) and by Jencks et al (1972), we are now, with more sophisticated methodologies than Coleman et al used, reaffirming the orthodoxy (Ceci 1991, Husen & Tuijnman 1991). As Ceci puts it:

> schooling emerges as an extremely important source of variance (in intellectual development), notwithstanding historical and contemporary claims to the contrary (1991, p. 719).

But what sort of schooling are we talking about? What does research pinpoint as the conditions for good learning? What do we mean by 'good learning' anyway?

To take the last question first, good learning involves the use of deep approaches to learning, by which I mean that students engage tasks appropriately; they use abstract frameworks for conceptualising the task and for illuminating the content to be learned, they are independent and reflective, metacognitive in planning ahead and in monitoring their own progress, they achieve well structured and integrated outcomes, and they actually enjoy the learning process (Biggs 1987, Candy 1991, Iran-Nejad 1990). But let us not get too carried away; correct answers, and scoring well in attainment tests, are to most people (educational researchers included) the bottom line of good learning. High attainment and deep approaches are however complementary bedfellows; one of the reliable outcomes of a deep approach is a correct answer (Marton & Saljo 1976, Biggs 1993a).

What, then, are the conditions for such learning? One or more of the following appear in any study that I have read in which good learning has emerged. They are most recently elaborated and instantiated in classroom terms in Biggs and Moore (1993, pp. 460-475), and are based on the fundamental assumption that learning is a constructive, not a receptive, process. Such conditions include:

- a positive motivational context, hopefully intrinsic but at least one involving a felt need-to-know and a warm emotional climate.

- a high degree of learner activity, both task-related and self-related.

- interaction with others, both at the peer level with other students, and hierarchically, within scaffolding provided by an expert tutor.

- a well-structured knowledge base, that provides *depth* (for conceptual development); and *breadth* (for conceptual enrichment).

To which, following Milbrey McLaughlin's address yesterday (1993), I would now add:

- a sense of collegiality amongst teachers.

What these conditions do and do not mean in terms of common classroom parameters would be something like this:

Teaching methods are varied, emphasising student activity, self-regulation and student-centredness, with much cooperative and other group work. They don't mean reliance on teacher-centred expository methods.

Content is presented in a meaningful context using familiar examples, and does not consist exclusively of abstract declarative knowledge. Teaching in the mother tongue, using indigenous curricula, would seem to be far more likely to

encourage the construction of a meaningful framework than teaching in an exotic language.

Classes are small, a desirable but not sufficient condition for more and better teacher-student interactions (Bourke 1986).

Classroom climate is warm; firm and structured, but not authoritarian.

Assessment expects and addresses high cognitive level outcomes; and assessment is classroom-based and conducted in a nonthreatening atmosphere (Crooks 1988). Public examinations are thus contra-indicated, as they do not permit these conditions.

How do schools in Asia stack up against such criteria?

Learning/teaching conditions in Confucian-heritage cultures

Asia is hugely heterogeneous, educationally and otherwise. Let me first make clear that from henceforth, I am only referring to what Ho (1991) calls 'Confucian-heritage' cultures: China, Taiwan, Singapore, Hong Kong, Japan, and Korea. The abbreviation 'CHC' is used here to refer to these countries or educational systems, with my main focus being on Chinese CHC students.

CHC educational systems are themselves hugely diverse, but in terms of the above conditions it is possible to generalise; most classes would appear to be contrary to the above conditions for good learning on almost all counts. CHC classes are typically large, usually over 40, and appear to Western observers as highly authoritarian; teaching methods appear as mostly expository, sharply focused on preparation for external examinations. Examinations themselves address low level cognitive goals, are highly competitive, and exert excessive pressure on teachers and exam stress on students (Biggs 1991, Ho 1991, Morris 1985). Even in affluent CHC countries such as Hong Kong and Singapore, *per capita* expenditure on education is much less than in the West, and support services such as counselling are correspondingly lower.

What, then, of the quality of learning of CHC students?

The learning of CHC students

Low quality?
Western observers frequently complain that Asian students are prone to use rote-based, low level, cognitive strategies, both in their own culture (Hong Kong) (Murphy 1987), and overseas in Australian tertiary institutions (Ballard & Clanchy 1984, Bradley & Bradley 1984, Samuelowicz 1987). The following observations by Australian tertiary teachers of overseas students are typical:

> In my discipline they all want to rote learn material rather than think.
> (Animal Science and Production)

> Students from Malaysia, Singapore, Hong Kong appear to be much more
> inclined to rote learning. Such an approach does not help problem solving
> (Dentistry) (quoted in Samuelowicz 1987, p. 123).

These perceptions are reinforced by classroom behaviour, which is seen as
passive and compliant. Overseas Asian students typically take a very low profile,
rarely asking questions or volunteering answers, let alone making public
observations or criticisms of course content, as these quotations illustrate:

> (Asian students) tend to look on lecturers as close to gods. Often they are
> very reluctant to question statements or textbooks (Parasitology)

> ...it can be difficult to cope, in small (graduate) classes, with overseas
> students who are reluctant to discuss, criticize reading and express an
> opinion (Commerce) (quoted in Samuelowicz 1987, pp. 124-5).

Such behaviour is not, however, the understandable reaction of culture-shocked
overseas students with language difficulties. Ginsberg (1992), after a visit to
China and Japan, reports:

> In China, knowledge is not open to challenge and extension (by students
> arguing with their instructors) ... The teacher decides which knowledge is
> to be taught, and the students accept and learn that knowledge. The
> lecturer is the authority, the repository of knowledge, leading the student
> forward into this knowledge, a respected elder transmitting to a
> subordinate junior (Ginsberg 1992, p. 6).

And even in 'Westernised' Hong Kong:

> Hong Kong students display almost unquestioning acceptance of the
> knowledge of the teacher or lecturer. This may be explained in terms of an
> extension or transfer of the Confucian ethic of filial piety. Coupled with
> this is an emphasis on strictness of discipline and proper behaviour, rather
> than an expression of opinion, independence, self-mastery, creativity and
> all-round personal development (Murphy 1987, p. 43).

The perception of the student-as-tape-recorder could not be clearer.

Or high quality?

> Yet CHC students achieve at considerably higher levels than do Western
> students. This disparity is possibly most dramatic when we look at
> overseas CHC students, who in general perform at levels much higher
> than would be predictable from their IQ (Flynn 1991, Sue & Okazaki
> 1990).

More interestingly, and rather more difficult to explain, is that CHC students at
home, obediently receptive in their own fierce and crowded classrooms, have
over the years consistently outperformed Westerners. The various International
Association for the Evaluation of Educational Achievement (IEA) studies in
mathematics and science (Baker 1993, Garden 1987, IEA 1988, Medrich &
Griffith 1992)—in which, incidentally, Radford ensured Australia's participation
from the outset, regularly show Japan, Hong Kong, and Singapore amongst the
highest scoring countries by the end of schooling: usually higher than Australia,
and nearly always higher than the US. This outcome is not necessarily at the
expense of other attainment; Hong Kong students are above international norms
on both mother tongue and second language competence (English) (Johnson &
Cheung, 1991).

More fine-grained data come from Stevenson and Stigler (1992), who found
that while US students read better than Chinese, Taiwanese, and Japanese in
grade 1, by Grade 5 the means were similar, but the variance much greater in US
students. In mathematics, US students were significantly worse than CHC
students in Grade 1, a differential that grew progressively larger through to Grade
11. For example, in a computation test at Grade 5, only 1.4% of Beijing students
scored as low as the *mean* of corresponding American students.

Such outcomes could not be achieved through rote learning. The superior
maths performance of Chinese children seems on the contrary to be due to the
use of more sophisticated strategy use. Chinese Grade 1 students prefer a
decomposition strategy, requiring a 'solid conceptual understanding of addition
and number sets' (Geary, Liu & Bow-Thomas 1992, p. 183) rather than counting,
and in that they behave more like American Grade 5 rather than Grade 1 students.

The CHC preference for higher level conceptual strategies is not confined to
elementary arithmetic. Evidence for a meaning orientation comes from Volet and
Kee's (1993) study of Singaporean students studying in Australia, who thought
that the foremost characteristic of a 'good' student in both Singapore and in
Australia was to 'Be able to read and understand main ideas'. 'Always aim to get
the correct answer' and 'Learn lecture material by heart' were seen to be next in
importance in Singaporean, and by the same students of little importance in
Australian institutions, but that reflected the demands of and short-term
adjustment to the respective assessment systems rather than what might be called

a cross-cultural difference. Volet and Renshaw (1993) report that Singaporean students, as compared with local Australian students, had higher cognitive goals, were more realistically able to match higher level goals with compatible learning contexts, had more extensive help-seeking strategies and support systems, and contrary to stereotype did not participate any less in tutorial discussions.

The general approaches to learning of CHC secondary and tertiary students have been compared to those of comparable groups of Western students on the basis of self-report questionnaire in many studies, involving thousands of students. In almost every case, CHC students report a stronger preference for high level, meaning-based or deep learning strategies, and avoidance of rote learning, than do Western students, both in their own culture (Hong Kong and Singapore) (Biggs 1990, 1991, Kember & Gow 1991, Watkins, Regmi, & Astilla 1991), and overseas in Australian institutions (Biggs 1987).

One case where this pattern did not obtain was in a medical sample, where the Westerners were lower on rote, and higher on meaningful, learning approaches. However, the Western students were exposed to problem-based learning, which is high on all five conditions of good learning, while the CHC students were in a highly traditional medical school in which rote learning of technical terms was emphasised (Biggs 1991).

This last finding, supporting as it does the conventional association between environment and approach to learning, as it were validates the remaining studies, which collectively point to a low propensity for rote learning and a strong meaning orientation in the general run of CHC classrooms, throughout the primary, secondary, and tertiary sectors.

The paradox of the Asian learner: A challenge to Western research

Herein lies the paradox of the Asian learner. The nature of teaching and assessing in CHC classrooms is such that rote learning and low level outcomes would be expected, and Western observers duly perceive a preponderance of rote-based strategies and reproductive outputs. Yet CHC students themselves report a preference for high level, meaning-based learning strategies, and achieve significantly higher than Western students.

Some well supported propositions about the nature of teaching and learning are at risk. And apart from the face lost by researchers, what of the political implications if large classes, outdated teaching methods, poor equipment, inadequate public expenditure per student, and relentless low level examining can produce students who outperform Western students in many subject areas?

Possibly people in CHC countries are more highly evolved than Caucasians. Both Lynn (1987) and Rushton (1989) argue that because Asians were trapped throughout the whole of the Ice Age between the Himalayas and the Arctic in a bitterly cold environment, they had to be unusually smart in order to survive. But genetic arguments are currently very incorrect politically, and the problems with

Lynn's and Rushton's particular proposals are extensively discussed by Flynn (1991).

The central paradox is that highly adaptive modes of learning emerge from CHC classrooms, and this does need explaining. Large classes, exam pressure, expository teaching, not to mention teaching in an exotic language, as happens in Hong Kong, do not sound like good news in any system. But these features exist, and they are reliably associated with high level outcomes.

The role of repetition in learning

Perhaps things are not quite what they seem to be to outside observers. Let me now examine how Westerners might misperceive: first, the approaches to learning of CHC students; and second, the nature of their learning environments and the cultural context of which they are part.

The terms 'deep' and 'surface' when referring to approaches to learning are generic; what they specifically mean in any instance depends on the context, the task, and the individual's encoding of both (Biggs 1993a). The surface approach, being based on an intention that is extrinsic to the real purpose of the task, aims to satisfice, not satisfy, task demands by investing minimal time and effort consistent with appearing to meet requirements. Rote learning is a common way of doing this. But rote learning is also commonly used to ensure accurate recall of already understood information, say for a high stress situation such as an examination. In the first case, rote learning is part of a surface approach, but it is not in the second; indeed, the latter could be part of a deep or an achieving approach as it certainly appears to be in 'deep-memorising', a strategy used by deep oriented students for coping with examination requirements, as noted by Tang (1991) in Hong Kong students but also by Thomas and Bain (1984) in Australian tertiary students.

A useful distinction to introduce at this stage is the difference between *rote* learning, which as the Macquarie Dictionary, says, is learning in 'a mechanical way *without thought of meaning'* (my emphasis), and *repetitive* learning, which uses repetition as a means of ensuring accurate recall. Both rely on a rehearsal strategy, and it could well be that rehearsing precludes conscious thought of meaning in both cases. The difference lies in the learner's *intentions* with respect to meaning. In rote learning, meaning has no place in the learner's intentions; in repetitive learning it may have, at some point in the deployment of the learned material. That is, a student who uses repetition to optimise retrieval in an exam is not using a surface approach but making a wise strategic choice.

The choice to use repetitive learning strategically certainly appears to be more common in Confucian-heritage cultures. Why is this? One reason has to do with the nature of common learning tasks; for example, learning the thousands of characters in common use obviously requires a good deal of repetitive learning,

rather more than learning an alphabet system. However, this is not intended as mindless rote learning. Characters are traditionally learned by the Two Principles. The First Principle involves much intertwined activity using the Five Organs: the eyes to see the shape, the ears to hear the sound, the hand to write the shape, the mouth to speak the sound, the mind to think about the meaning. The Second Principle is to contextualise; each character as it is learned is formed with another into a word, and each word is formed into a sentence. Repetitive certainly, rigid maybe, but embedded in meaning always (at least that is the intention), with much use of learner activity in widely different modes. And of course, meaning and activity are key ingredients in quality learning anywhere.

The limited number of characters means that new meanings are created according to which characters are juxtaposed with each other. Text thus becomes multi-layered, with shifts and shades of meaning being revealed on repeated readings. Repetition thus has an important role at the text level, as well as at the word and sentence levels. However, this does not mean that memorising is actually a means of *acquiring* understanding (Marton, Tse, & dall'Alba 1992), but simply that mastering certain complex tasks requires much repetitive preliminary work. Cognitive psychologists have for years referred to the need to automatise lower order task components in order to free working memory for the higher order ones (eg Case 1985, Kirby 1988). Thus, coming to understand a text written in characters is no different in this sense from coming to understand a complex piece of music, in that understanding grows with repetition. Hence possibly the origins of some traditional beliefs in CHCs concerning the roles of repetition and of effort, but then practice is said to make perfect in the West as well.

My point is simply that while Westerners may correctly see Asian students indulging in a high degree of repetitive work, they could be quite incorrect in seeing that activity as 'rote' learning and therefore as a surface strategy.

Good CHC learning environments

I would now like to turn to interpretations of CHC learning environments, for these are at the heart of the paradox. Gardner (1989), who visited China several times to study art and music teaching, was struck by the incredible skill that very young Chinese children displayed in their drawing, far in advance of American children of like age. On the other hand, they seemed only to draw from a few set models. He initially interpreted this in terms of 'mimetic' and 'transformational' teaching, the former highly directive and imitative, the latter student-directed and creative. Chinese teaching was, he then thought stereotypically, mimetic.

However, he soon came to see that matters were not that simple; for example, Chinese children were able to draw novel subjects, which they had not previously copied, very competently. The difference between Chinese and American

teaching, then, was not simply that the former only stressed imitation, but that beliefs about the appropriate order of various learning-related activities were different. Western art teachers believe in exploring first, then in the development of skill, while Chinese art teachers believe in skill development first, typically involving repetitive learning, then in being 'creative'. Chinese educators also believe that art should not only be beautiful but morally good; the idea of *one right way* pervades teaching.

Thus, skill is developed first, in service of the right way; teaching is 'by holding the hand', as Gardner puts it, in order to create the desired product. Chinese music and art teaching are performance-oriented, while Western teaching is more concerned with the process than with the product; exploring and creating are seen as more important than honing the particular skills needed to achieve a particular artistic product of an acceptable and specified standard.

Teacher-student relations

Gardner is not the only Western observer to realise that things were not what they at first seemed to be:

> A common Western stereotype is that the Asian teacher is an authoritarian purveyor of information, one who expects students to listen and memorize correct answers and procedures rather than to construct knowledge themselves. This does not describe the dozens of elementary school teachers that we have observed (Stigler & Stevenson 1991, p. 43).

The teachers that Stigler and Stevenson observed, in China, Taiwan, and Japan, saw their task as posing provocative questions, allowing reflective 'wait time', and varying techniques to suit individual students: Confucius' 'elicitation' mode in full swing. They use the term 'constructivist' to describe the commonest teaching approach they saw, an ideal espoused by progressive Western educators and realised in practice only by the expert few (Driver & Oldham 1986, Tobin & Fraser 1988).

'Constructivist' is also the term used by O'Connor (1991) in his study of CRC teachers, whom he found to be uniformly student-centred, frequently engaging all students collectively in problem-solving, both in the cognitive sense and in determining a course of action for a deviant student, and pushing for high cognitive level thought processes. The teachers were quite Rogerian in their concern for preserving an individual student's face.

This is not to say that teachers and schools are not authoritarian. There is after all only one 'right way', and students are led along that way by 'holding the hand', not by putting in the boot, which is what authoritarian Westerners are apt to do in the classroom.

Teacher-student relations in modern Chinese universities convey a puzzling ambiguity to Western observers. Social relations are well developed but hierarchical and, from the outside, formal. Students live on campus in dormitories, which facilitates a tremendous amount of collective activities, including academic discussions, study groups, and the like (Chan 1993). The teachers too live on campus, giving rise to much teacher-student interaction outside the classroom, and although teacher-student relations may be strongly hierarchical as compared to the West, they are also typically marked, if not by warmth, then by a high degree of respect and responsibility on both sides. This is perhaps another area where Western observers see only part of the picture. Ginsberg's (1992) observations that the lecturer is the authority, 'a respected elder transmitting to a subordinate junior' (p. 6), may in itself be true, but the model of teaching is not one of simple transmission as one based on interaction in a complex social context based on an interpersonal motivation that is certainly positive, but not necessarily characterised by warmth. The interpersonal space is at least two-dimensional: warm-cold, and hierarchical-egalitarian. Perceptions of authoritarianism do not necessarily mean cold classrooms: respect is to a hierarchical culture what warmth is to a democratic one.

Despite classes of 50 students or even more, Chinese and Japanese teachers find time to interact one-to-one in their classroom rounds more frequently than do Western teachers, spending rather more time with each student (Stevenson & Stigler 1992). Western teachers see interaction more in whole class terms, with 'quick and snappy' public questioning (Hess & Azuma 1991), which does nothing for higher order cognitive engagement (Tobin 1987). Japanese and especially Chinese teachers have much lighter teaching loads, precisely to enable them to prepare their work more carefully, and to interact with students out of class hours (Stevenson & Stigler 1992).

Teaching methods

Another example of the apparently curious mixture of authoritarianism and student-centredness is provided by Hess and Azuma (1991) who in Japan observed a teaching strategy they call 'sticky probing': a single problem is discussed by students, with teacher adjudicating, for hours until a consensus acceptable to the teacher and group is reached. The focus of the probing could be a maths error made by a particular student, which the teacher believes would be instructive to publicly unpack and reconstruct, with the student the focus of public correction. A Western student would be mortified to be in the corrective spotlight for such a long and public time, but Japanese students don't see it as a punishment for making a mistake, but as an opportunity for everyone to learn: a collectivist as opposed to an individualistic perception. Hess and Azuma also refer to 'repetition as a route to understanding', which appears as endless going

over and over a point. However, as I have pointed out, this is not rote learning but preliminary to gaining, not side-stepping, understanding.

If we now review CHC classrooms, we get quite a different picture from that originally presented. Checking against the characteristics of good teaching environments, we find, including informal as well as formal learning situations:

- an emphasis on student activity, with much cooperative and other group work
- a learning climate, both inside and outside the classroom, based as much or more on positive interpersonal motivation as in the West, but differently expressed.
- embedded teaching, involving teacher and student in a mentor/mentee-like relationship.
- high cognitive level outcomes are expected.
- a sense of professional community.

While this picture is phenotypically greatly different from that perceived by Westerners, it is genotypically quite in keeping with our conditions for good learning as established by Western research. Large class size, apparent authoritarianism, and exam orientation still exist, but the context of student expectations and perceptions transform their impact. To see how this may be, I need to shift focus now from the classroom to the social context of schooling.

The context of school in society

Predispositions to learn

An important difference between Japan and the West is that Japanese children are socialised to be obedient, to conform, and to persist; Western children are generally raised to be assertive, independent, curious, and to explore on their own terms (Hess & Azuma 1991). However, schools the world over require obedience, conformity to group norms, and persistence in the absence of feedback at boring tasks of which the students do not see the point. Thus, Hess and Azuma say, Japanese children are *predisposed* to accept formal teaching before they even arrive at school, having internalised characteristics that are required in institutionalised learning anywhere, not only in Japan. Such 'docility predispositions' appear to include:

- a willingness to persist in the face of boredom,
- a high degree of metacognition or awareness of their own cognitive processes,

- acceptance of rules governing group participation, and of the right way of doing things (Hess & Azuma 1991).

These predispositions create:

a sense of diligence and receptiveness (which) fit uncomfortably into the more familiar American concepts of intrinsic and extrinsic motivation (Hess & Azuma 1991, p. 7).

In other words, Japanese children are already predisposed to do those things that are required of them by their teachers; they fit early and readily into the regimen of the classroom. I think it possible to generalise on this point from Japan to CHC systems as a whole.

In the Western system, children are socialised one way out of school, another way in school, so they are not predisposed to do what they perceive to be pointless and boring tasks; if they are now to engage them in school, they need to be motivated to do so. Classroom activities need to be made attractive, and elaborate systems of positive and negative reinforcement employed. Western classrooms are therefore highly externally controlled, compared to Japanese classrooms (Hess & Azuma 1991).

There are several other culturally-based factors that distinguish Confucian-heritage from Western learners in ways that would encourage more school task engagement and favourable learning outcomes in CHC classrooms.

Achievement goals
Not only are the dynamics of extrinsic and intrinsic motivation different, achievement motivation itself appears to be differently structured in at least Chinese students. In comparing the achievement orientations of British and Chinese high school students, Salili (in press) found that for the Chinese success in individualistic situations such as academic work and career was closely related to success in family and social life, whereas the British saw individualistic and social success as quite unrelated. This means that for Chinese students academic success and failure reflects on the family and close social group, which puts correspondingly greater pressure on students to succeed; it's not only the individual student's self-esteem at stake.

Attributions for success and failure
Numerous studies have drawn attention to the fact that people in CHCs attribute success to effort, and failure to lack of effort, whereas Westerners tend to attribute success and failure to ability and lack of ability, respectively (Hess & Azuma 1991, Holloway 1988). Effort attributions, and particularly directed

effort—that is, putting in the kind of effort that is related to skill, strategy, and know-how (Clifford 1986)—are in the event of failure clearly more adaptive than ability attributions, which simply lead to resignation and disengagement. Hong Kong secondary students attribute academic success to such directed effort, their attributions being in order: effort, interest in study, study skill, mood, and only fifth, ability (Hau & Salili 1991).

Thus, the attributions acquired by CHC students tend normally to help them see ways in which they can control and improve their performance, by putting in more effort, by learning how to study more appropriately, by trying to create the right mood, and so on. In attributing past performance, successful or not, to ability, Western students are relinquishing control over their learning, with failure a self-fulfilling prophecy. The downside to effort attributions is, however, sadly in evidence in Hong Kong in the form of student suicides; effort-attributing teachers and parents can create enormous stress, forcing students to tackle unrealistic goals.

Two other consequences of effort attributions include:

- *Time on task.* For the same period of formal time, Asian teachers and students are more task oriented, with more student time actually spent on task (Stevenson & Stigler 1992). Students also spend more time on task than Westerners outside the classroom, in both set homework and in voluntary studying. Teachers, for their part, are allowed much more out-of-class time than Western teachers for lesson preparation, conferencing with other teachers, and extra-curricular contact with students.

- *Cue seeking.* Attributions to effort and strategy would have quite a specific effect of encouraging cue-seeking in students (Miller & Parlett 1974). Cue-seeking is especially tuned to assessment preparation strategies, which is an area where Hong Kong students are highly adept; they play the game without necessarily being corrupted by it (Biggs & Tang in press). Similarly Volet and Kee (1993) found that Singaporean students in Australia rapidly adjusted their assessment preparation strategies from what worked in Singapore to what they perceived as most appropriate for Australian assessment methods.

Spontaneous collaboration

One reaction to the lack of perceived cues is for students to work collaboratively, to seek each others' cue-perceptions and views on how to handle particularly an unfamiliar situation (Tang 1993). Spontaneous collaboration is also a pronounced feature of mainland Chinese study behaviour (Chan 1993). Spontaneous collaboration seems a very CHC way of reacting in a system that is strongly expository and competitive.

These and other learning-related factors are founded in the culture and transmitted through socialisation. They all appear highly adaptive for learning.

Lessons for the West

The paradox I began with—how can such unpromising classrooms deliver such good results (and at such low resourcing)—is well on the way to solution. Not only are the classrooms not as bad as they seem, they embody in a culturally equivalent form many of the conditions for good learning outlined at the outset.

However, it is not simply a matter that this or that condition of learning may be discerned in translation in other systems. Where students are already predisposed to being taught, the exogenous factors that loom so large in determining poor outcomes in Western classrooms—low expenditure, large class size, expository teaching, emphasis on formal examinations, poor teacher preparation—become either less relevant as these endogenous predispositions take over, or their effect may actually be reversed.

I will now conclude with a brief review of some implications for educational research and for effective schooling in the West.

Research

A major implication for research is that the classroom should be seen as part of a total interactive system, which embraces not only the school and community but the whole culture as well. Thus, belief number two, that research can tell us about the conditions for effective teaching and learning, still stands, but specific beliefs about this or that practice, such as class size, need to be examined in context. As Bourke's (1986) work shows, size doesn't necessarily matter; rather, it depends on how the human topology is used, and that itself depends on perceptions of the teacher's role, the teacher's load and so forth.

In Salomon's words, we are in educational research more often dealing with 'clouds of correlated events ... (which) mutually define each other' (Salomon 1991, p. 13), a *system*, rather than with a linear sequence in which we may systematically vary and control variables to determine the specific cause(s) of a particular outcome, such as achievement. Systems theory has been around a long time (von Bertallanffy 1968), but the full implications as far as educational research is concerned have not really been taken on board (Biggs 1993b). The implications of systems theory for such seemingly simple questions as 'What is a good teaching environment?' are, as I have indicated here, quite complex, while the technology for analysing systems-driven data, is as Salomon points out, still limited. The issue is not qualitative models versus quantitative ones, but linear versus systemic and contextualised paradigms.

On the effectiveness of schools

Implications for Western education itself are likewise complex. On the one hand, there may be features in CHC schools that we might borrow: decreased teaching loads for teachers to allow more careful lesson preparation; teacher-teacher and out of class teacher-student interaction; less quick-and-snappy teaching methods and more 'wait-time'; more peer interaction; effort and strategy attribution training, particularly for failing students. Some of these features, such as cooperative and collaborative learning, are of course used widely in the West, but it would be contrary to my own thesis if I followed the additive model and said this practice or that practice was in itself of high significance.

Rather, the importance of any practice depends on the *context*, particularly the cultural context, in which it occurs; the perception of teacher and student roles is a very good example of a generic context that could make a practice such as 'sticky probing' highly positive, or equally negative. Confucian-heritage cultures seem to have struck a more harmonious balance between school and society than have most Western countries, where what schools demand, and what children and adolescents are prepared to give, are in tension so that artificial motivational systems are rather more necessary in Western schools, and the learning pathologies to which they give rise are the more in evidence.

Japan, for example, seems to have achieved this harmony between school and society in a way that may not be acceptable to Western values: that the child is the twig to be bent, not the school. Western attempts to adapt the school to the child have either not gone far enough, or perhaps more likely have gone in the wrong direction. The kind of schooling described by Hess and Azuma (1991)— heavy reliance on extrinsic reinforcers and externally controlled, quick-and-snappy, teaching—predictably leads to surface learning and to alienation.

Changing schools radically may be a nonstarter politically, but nevertheless let us look at the most successful programs for developing higher cognitive skills. We see that they have a content-specific focus, but the characteristics of *out-of-school* contexts; for example, collaborative and socially shared intellectual work (Resnick 1987), peers teaching each other (eg McKeachie, Pintrich, Lin, & Smith 1986), one-to-one interaction occurs between tutor and tutee, involving scaffolded instruction (Wood, Bruner, & Ross 1976), formal content learned in the context of solving actual professional problems, as in problem-based learning (Boud 1985), abstract learning being built on its lower level prototypes typical of an earlier developmental mode, with a variety of hands-on experiences (Biggs 1992, Bruner 1964, Dienes 1963, McKenzie & White 1982, Resnick, Bill, & Lesgold 1992).

The content taught by these apparently 'nonacademic' methods in the studies listed above includes most 'academic' subjects, at levels from elementary through university. The common element is: use techniques and situations that belong in everyday life, by plugging in to where we left off developmentally, or

by using familiar social and environmental resources. Such methods do precisely what is suggested by the Asian comparison, which is to smooth the transition between everyday life and school, but not as in Asia by socialising for docility; rather, by transforming the school so that it works running on the dispositions with which our children are socialised, breaking down institutional *methods* of learning (extrinsic reward systems, quick-and-snappy packaging, and depersonalisation), while retaining the institutional *targets* of learning.

Such a solution restores the harmony to the system that some Asian cultures appear to have achieved by other means, although that is not to say that the existing system would easily tolerate such radical restructuring. Poole (1992) characterised the present period of educational research as 'Recession', in which institutionalising is proceeding apace. Whether or not we return full circle after that to her happier times, when education was 'expansionist, interventionist and idealist', the period when educational researchers like Bill Radford were able to change the existing system for the better, remains to be seen.

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