READING PASSAGE 1

HOW TO RAISE A BRIGHT CHILD

Teachers and other specialists in early childhood education recognise that children develop at different rates Given anything that resembles a well-rounded life — with adults and other children to listen to, talk to, to do things with — their minds will acquire naturally all the skills required for further learning

Take, for example, reading The two strongest predictors of whether children will leam to read easily and well at school are whether they have learned the names and the sounds of the letters of the alphabet before they start school That may seem to imply that letter names and sounds should be deliberately taught to young children, because these skills will not happen 'naturally'

But in all the research programs where they have done just that — instructed children, rehearsed the names and sounds over and over — the results are disappointing The widely accepted explanation is that knowledge of the alphabet, for it to work in helping one to read, has to be deeply embedded in the child's mind That comes from years of exposure and familiarity with letters, from being read to, from playing with magnetic letters, drawing and fiddling with computers

So parents can do some things lo help. although many do these things spontaneously Instead of reading a story straight through, the reader should pause every so often and ask questions — but not questions which can be answered by a yes or no Extend their answers, suggest alternative possibilities and pose Progressively more challenging questions

And with arithmetic, do not explicitly sit down and teach children about numbers, but all through those early years count when walking up steps Recite nursery rhymes Talk to children Say this is a *red* apple, that is a *green* one Please get *three* eggs out of the fridge for me

The technical term in vogue for this subtle structuring of children's early learning is 'scaffolding' Based on recent extensions of the work of the Russian psychologist Lev Vygotsky, the idea is that there are things a child may be almost ready to do Anna, for example, cannot tie a shoelace by herself, but if an adult or a competent child forms one of the loops for her, she will soon leam to do the rest Applying this concept to older children, one wonderful teacher has her children keep lists of 'Words I Can Almost Spell'

While this has all the hallmarks of common sense, it represents a significant change of emphasis from the ideas of Piaget, which have dominated the theory of early childhood learning The child in Piaget's theory looks, more than anything, like a little scientist — exploring the environment, observing, experimenting, thinking and slowly coming to his or her conclusions about how the world works The image is of *a* rather solitary pursuit with all the real action in the child's head

The Vygotsky model re-introduces all the people who also inhabit the child's world — parents, care-givers, relatives, siblings and all those other children at play or school They are not simply noise, clattering in the background while the child's developing mind struggles on its own The cognitive development of the child, that is, the learning of colours or numbers or letters — depends on learning how to interact socially, how to leam from the people (as well as the things) in the environment

What is important is that the child develops the range of social skills — being able to express a

preference, knowing how to take turns, being able to stand up for themselves, being able to get into a group, being able to make decisions, being able to share, having confidence to go off on their own. These all require careful nurturing. No one is telling parents to not think about their children's development.

It is just that it is more important to think about a child's desire to chat and the importance of social behaviour and play activity, than the actually more trivial markers of intellectual achievement such as being the first kid in the group to cut out a circle that looks like a circle.

READING PASSAGE 2

THE VALUE OF DRIVER TRAINING

1. Most fatal accidents involve a disproportionately high number of men under the age of 25. A report on young driver research prepared last year by Monash University's accident research centre found that in 1990 and 1991, almost a third of the people killed in road crashes were drivers under 25, yet this age group represents only 14 per cent of the population. The report, which also updated a review of international literature about, among other things, driver training, also reached what many would consider a startling conclusion: training and education where they occur — principally in the US — do not appear to reduce younger drivers' risk of crashing.

2. The Monash University researchers looked at crash information from New South Wales for 1986 to 1990, from Victoria for 1984 to 1990 from South Australia for 1986 to 1990. The Australian evidence which possibly indicates that counter-measures targeted specifically at young/novice drivers have been effective comes from evaluations of zero blood alcohol concentration legislation. (In 1989, all Australian governments agreed from 1991 on, to ban provisional drivers from drink-driving at any-level, and to extend the provisional licence to three years).

3. The Monash researchers also looked at United States road-crash information for 1989 on 6.6 million police-reported crashes involving fatalities, injuries and motor vehicle damage. The researchers looked at a sample of 44,000 crashes. The conclusion was that the available literature gives a pessimistic view of the efficacy of driver training and education, reflected in the inability to produce drivers safer than those who have not been trained. One study on driver training in the US was conducted in DeKalb county, Georgia between 1977 and 1981. 16,000 school students were split into three groups: one group received 70 hours practical driver education training, another a brief, school based course and the third no school-based driver education. Those comprehensively trained were 16 per cent more likely to get their licences, but 11 per cent more likely to crash and eight per cent more likely to get traffic fines.

4. In 1985, the researchers who conducted that study then reviewed 14 studies of defensive-driver training courses and concluded that though people who attended such courses received fewer traffic fines, they did not have fewer crashes. Despite the intuitive conclusion that safe driving should be teachable (like many practical skills), there is insufficient evidence about the ability of practical driver-training to reduce crashes for the general driving population.

5. The Monash University report into young drivers concluded that younger drivers were more likely to take risks at night, younger men were more likely to take risks than younger women, but younger women appeared to have 'greater skills deficiency'. Overall, the researchers concluded that it appears that vehicle-control skills improve rapidly with increasing experience but that their development is still incomplete after one or two years and possibly after considerably longer periods.

READING PASSAGE 3

Human-powered Pumps for African Farmers

The plight of many African farmers and families in their search for water is well publicised in terms of disaster relief
Yet in many areas there are small dispersed sources of shallow ground water, which constitute a considerable resource
This is often not acknowledged by government agencies which think only in terms of large dams and perennial rivers

Traditional arrangement for vertical wells

African farmers are both ingenious and knowledgeable, and the work described here builds on these indigenous skills The provision of effective and affordable human powered pumps transforms the possibilities of water supply for both small scale irrigation and domestic use The field work was carried out predominantly in Zimbabwe, although more recently the pumps described here have been introduced in Kenya

The need for water
An adequate supply of domestic water is vital for human health and hygiene Despite the great progress made in the recent decade, the achievement of the goal of clean water for all is still a long way off An adequate water supply is also vital for the production of food In many parts of Africa, rainfall is a very unreliable provider of such water For example, in Zimbabwe, Mupawose (1984) states that unreliable rainfall and the incidence of mid-season drought represent the single most critical uncertainty facing the Zimbabwean farmer today

While staple foods such as maize and nee produced during the rainy season can be stored for consumption in the dry season, the same is not true of vegetables and fruit which are essential for good nutrition Since the early part of this century, the answer to the problem of inadequate rainfall has been through the provision of conventional irrigation schemes

The failure of such schemes in many parts of Africa is well documented (Morris and Thorn, 1990) and there is little hope of significant expansion in this sector

Most of these irrigation schemes depend on the utilization of surface water resources. principally through the construction of dams There is grave concern over the use of such dams because of their adverse impact on health, their displacement of successful farmers and the severe limitations on their useful life due to siltation (Wright, 1986, Arlosoroff *el al* 1984, Bell *el al,* 1987)

In order to develop groundwater resources a suitable water lifting technology must be employed While much work has been done on the development of power sources for water pumping (Hofkes and Visscher, 1986), for many people in rural Africa the use of human energy remains the only practical option (Lambert and Faulkner, 1991) In recent years there have been significant improvements in the design of handpumps for community use However, community water points still suffer breakdowns and attempts to remedy this, through community managed pump maintenance schemes, are still far from universally successful

The problems of community management could be avoided through the promotion of household supplies, where these are feasible

An example of such a strategy in Zimbabwe is (he program of upgrading family wells (Mtero and Chimbunde, 1991). However, most of the pumps developed for community use are either not available to individual households or are too expensive.

In recognition of the need for simple water-lifting technology, research was carried out to identify suitable water-lifting devices. Almost all existing human powered pumps tested could not supply water at more than about 0.3 litres per second, which is not sufficient for irrigation. Two designs were finally selected as the most promising for further development, the rope-washer and the treadle (Lambert and Faulkner, 1991).

n. *Modification for unlmed ponds or streams.*