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Introduction

Education, like any other sector of the economy, uses resources which have other possible applications. The resources which education employs, principally people with knowledge, skills and initiative, are particularly scarce in South Africa, and so expansion of education is, in the first instance, bad for growth of the income-generating sectors of the economy, raising the supply price of educated labour.

Of course, the education system *reproduces* the human resources which it uses and which are needed in the rest of the economy, and so, in time, education has its part to play in promoting growth. Growth can, none the less, be driven and even sustained in other ways. Productive skills are largely learnt in ways other than formal schooling through learning on the job or ad-hoc training modules, for example, and employers can, in the absence of schooled labour, adapt their production techniques and management and training styles to minimise their demand for schooled workers. When schooling brings with it limited advances in skills and learning capacity, but substantially increased aspirations, employers may find no advantage in employing the schooled.

So it is not the case that education is always and everywhere good for growth. Ineffective and costly education systems can retard growth. Both in the quantitative and qualitative dimensions of schooling and training, system deficiencies can result in wasted time, money and skills. Conversely, *education contributes most to growth when it uses its resources efficiently and effectively.*

In this respect education is no different from any other economic activity. It deserves to be expanded when it uses its resources well, or perhaps when expansion can facilitate better resource utilisation. Spending money on schools is wasted, on the other hand, if more can be achieved through other activities — if more learning can be achieved through industry-managed adult education and training, or through home-based instruction and distance education, for example. 'Internal efficiency' is of course not the only aspect of the economic efficiency of the education system, but it is all too easily neglected. And in South Africa, improved educational opportunities must be afforded to some 10m children and workseekers although available financial resources are already stretched more or less to their limits. In these circumstances, improving the 'internal efficiency' of the education system is the only way forward, for we cannot afford to buy educational progress at the expense of economic growth.

I take the view that there is scope for improvements in the way schooling and training are organised and provided in South Africa, that this is an arena in which the post-apartheid state can meet substantially the rising expectations of the new electorate, and that reorganising the education industry will lay an important foundation for sustainable long-run economic growth.

Progress cannot, however, be brought about in one great leap forward. The challenge is to organise education in ways which promote *ongoing system change, or educational technical progress*, obtaining progressively better value for money — improved content, better quality and greater flexibility — as a process driven by the internal dynamics of the education system and the external

pressures to which it is subject. I will draw attention below to an important political and constitutional dimension to this challenge.

Economic Perspectives on Educational Reform in South Africa

Economists interested in education have attempted in recent years to examine the 'efficiency' of schooling through studying the respective contributions of particular education inputs to measured performance of students in cognitive and other tests and in the labour market. A number of interesting results have followed from this work, some of which have implications for education policy and state spending on schooling.¹

It has, for example, consistently been found that class size, or the pupil/teacher ratio, is not a particularly strong predictor of children's performance, up to class sizes of perhaps 35 to 50. It has also often been found that the number of years of formal pre-service teacher education is comparatively unimportant as a determinant of school quality. Conversely, school readiness of children, the availability and quality of books and teaching materials, the administrative skills of school principals, and effective in-service teacher education and support services, are important elements in effective schooling.

These are interesting results, because provision of books and other teaching materials and in-service training of teachers are comparatively inexpensive items in the 'input mix' of typical school systems. It is obviously reassuring to ministers of finance to know that it is not necessary to employ a teacher for every ten pupils, or to insist that all teachers go through four years of higher education in order to become 'qualified'. And it is useful to know that it makes sense to spend money on pre-school projects, on providing books and revising curricula, on improving school administration and on in-service support to teachers.

An economic and comparative perspective also sheds some light on priorities in education policy, both in respect of basic schooling, for which government has the major responsibility, and in vocational education and training, which is largely a responsibility of employers but needs government to play an important co-ordinating and regulating function.

It seems to me to be useful to think in terms of three broad challenges facing education renewal in South Africa, each with a distinct pattern of responsibilities of the state, of parents and communities, and of employers in association with organised labour.

Reducing state subsidisation of suburban schooling

Government subsidises schooling in white suburban areas far more generously than its support for black education. Things are changing, and parents of children in suburban schools are being asked to pay a greater share of the running costs of these schools. The state also spends a great deal of money administering suburban schools, and I take the view that reductions in the numbers of officials vetting decisions of school committees, setting constraints to what principals may do, inspecting teachers and

prescribing curricula, will strengthen rather than weaken the suburban school system. The state's administrative resources should be directed towards the management and renewal of the congested, demoralised and ineffectual township and rural school systems, serving poor rather than wealthy communities. These are important elements in the pursuit of a more just social order in South Africa, in which elites will pay for their privileges directly rather than through the tax system, and the state will see to it that the opportunities facing the least well-off are improved. A compelling case for this variety of liberalism is developed in the lectures presented by Charles Simkins to the South African Institute of Race Relations entitled *Reconstructing South African Liberalism*.²

This transfer of state subsidisation of services from the rich to the poor, which is already in progress, is one requirement of a more efficient and equitable education system in South Africa. In view of the drift of state policy at present, I should perhaps add that neither efficiency nor fairness are served by reductions in size of the good quality, formerly exclusively white, suburban school system. There is an element of racist opportunism in the cutbacks in posts and closures of schools in 'white' areas. The suburban school system needs to get larger — much larger, deracialising as it takes in more pupils, increasing average class sizes, and reorganising curricula to accommodate children whose school and home backgrounds differ from those of the typical white middle-class neighbourhood. But the shifts to greater autonomy of well-managed schools, and a greater share of costs borne by parents, are undoubtedly sound.

Schools which charge fees to parents should not only admit students whose parents are wealthy, of course, and so ways of subsidising access of the able poor to suburban schools must be sought. There are a number of indirect ways in which well-managed schools can raise funds while keeping basic fees modest: user charges for special options (music, horse-riding, driver education), for example; appeals to parents and ex-pupils; hiring out of facilities for after-hours events; making profits on a tuckshop. The Income Tax Act currently makes it possible for schools to receive tax-deductible donations for certain purposes, and there may be a case for other forms of state subsidisation or tax relief to be provided as support for affirmative action in school admissions. The links between the tax burden and the financing of social services warrant further attention: there is a case for tax relief to middle-income households who will feel severely the reductions in coming years in subsidisation of privileged social services.

Renewal of township and rural schooling

Comprehensive upgrading of township and rural schooling is the second broad challenge facing educational reorganisation in South Africa, and undoubtedly the most important. This is a theme on which much has been written in recent years,³ and even in the fragmented and disrupted arena of black schooling there have been numerous creative and effective initiatives which indicate promising directions for change. The central message which is implicit in the evidence cited above is simply that it is possible to get improved schooling available to the majority of people in South Africa — on

farms, in townships, in rural villages, in the extended denser settlements which surround our cities — through reorganisation.

It is also true that more money needs to be spent in upgrading black education. The backlogs in school infrastructure, teacher qualifications and learning resources are considerable and the financing of education renewal will remain a formidable challenge. But more spending does not translate automatically into better schooling. It is possible to spend more money buying the same tired old goods in education just as much as in any other trade: the hard challenge is to make the systemic or organisational changes which bring with them better results.

I think there is broad consensus on what needs to be done. Here are some important reforms, most of which are not particularly costly:

- School administration is vital. Projects which enhance the administrative skills of school principals and the effectiveness of school committees, along with general reforms which increase the administrative autonomy of schools, can greatly improve school quality.
- Improving the availability of books and other teaching materials is often the single most cost-effective reform measure in school upgrading.
- Curricular change can make a significant difference both to learning effectiveness and to morale in classrooms. The content and methods of basic language teaching and of the introduction of mathematics and science are particularly critical.
- The content of teacher training is important, as is sustained in-service training and support of teachers.
- Improving the relationships between school and community and strengthening the role of local school governing bodies can enhance both the flow of local resources to schooling and the incentives and accountability to which teachers and school administrators are subject.
- School-readiness or pre-school programmes contribute to the adjustment from home to school learning, and can ease the congestion in junior primary classes which often accommodate pre-school children in low-income areas.
- Nutritional support of infants and schoolchildren contributes to the effectiveness of schooling in impoverished communities.

Reforms along these lines, along with adequate provision of school buildings, training and employment of sufficient teachers, and general improvements in school financing, are needed throughout black education. But some areas, farms and informal urban settlements, for example, are considerably worse off than others. There are parts of KwaZulu where large proportions of children receive no schooling. There are homeland areas where junior primary classes accommodate 90 to 120 children. In some areas, on the other hand — Bophuthatswana, for example — the pupil/teacher ratio is now below 35:1 and almost all children complete primary school. Systematic school upgrading here in the 1970s and 1980s greatly improved circumstances, providing some evidence for the feasibility of the reform process suggested above.

Training, vocational education and adult basic education

There is, thirdly, the complex area of vocational education and training and adult education, which is a rather more multi-faceted challenge than that of reforming the school system. I take the view that the state's primary role here is to facilitate and support private financing and management of training and adult education — both by firms, acting in their own interests, and by non-profit service organisations. This means that policy is particularly difficult to get right, but it also means that the returns to sound policies, magnified in effect through private initiatives, are greatly in excess of direct costs to the fiscus.

The private sector does not provide enough training because, although profitability can be enhanced through training workers, profits are even greater if trained workers can be 'pirated' from somewhere else. Except in respect of very specific training needs, firms tend to 'free ride' on the training provided by other firms or the state. During periods of extended recession, such as the South African economy continues to experience, investments in training are greatly curtailed both because investment is held back and because new workers are coming into jobs in such limited numbers. As general adult education often complements work-related training, it suffers too, and men and women who see little prospect of enhancing their circumstances are unlikely to see advantages in improving their general education.

However, when government attempts to bolster training through direct initiatives, either work-related or institution-based, or to embark on major adult education programmes, the results are both excessively costly and qualitatively deficient. It is clear that it is extraordinarily hard to create adequate incentives to ensure cost-effectiveness if training is not organised for specific productive purposes, or if adult education is not aimed at specific career-related or other objectives. There is no virtue here in ambitions which lose touch with the demands of the market place.

In respect of vocational education and training, lack of flexibility is a further weakness of government projects, as training needs are linked to the shifting and uncertain occupational requirements of industrial expansion and innovation. So economic growth must be the engine which drives technical and vocational education, training and most forms of adult education. But it remains true that private initiative yields insufficient training and adult education, and so these things cannot be left entirely to the market. The following are some of the more important functions of government in support of adult education and training:

- Whereas parents cannot generally be expected to meet the full costs of educating their children, as they will enjoy only a fraction of the benefits of that schooling, adults are the direct beneficiaries of their own further education, and so state subsidisation of adult education should be comparatively modest. However, the state should ensure that adult education curricula, examinations and certification are maintained in parallel with the school system.
- Technical colleges exist in most towns and cities, but have been badly neglected in recent decades. These

should be greatly strengthened, expanded, deracialised, and encouraged to diversify into 'community colleges' with a wide range of vocational and cultural study options. Although state financing of these institutions should be sustained, there are undoubtedly opportunities in technical colleges, as in universities and technikons, for generating funds through contractual education and training for industry, commerce and public sector employers.

- Certification of skills needs to be co-ordinated and regulated, and firms coerced into doing more training than they would if left to themselves, because there are external benefits from training and mobility is enhanced through certification of skills.
- There is considerable merit in the organisation of training through 'industry training boards', on which employers, organised labour and government are represented, and which have the power to set levies and co-ordinate training within industry groups. If state financing of training is channelled through such bodies, it is far more likely to be used effectively than if government undertakes training directly.
- There are particular kinds of training — for rural development, or small business entrepreneurship, for example — which are important for job creation and growth, but are likely to be underprovided for by the market. The state should support institutions involved in such training.

Government has abolished tax incentives for training in South Africa in favour of direct expenditure or cash grants for training, as was recommended by the Margo commission on taxation and by the Industry Training Board in a series of reports on reorganising training. There is, however, no budgetary provision for training to replace the former tax breaks. It would not be appropriate to return to the old system, because it is unlikely to be the case that firms with profits who can benefit from tax concessions are those most needing assistance with financing training. Support for training is, none the less, a more useful way of avoiding tax than many others, and consideration might be given to extending tax deductibility under section 18A of the Income Tax Act to grants to a wider variety of education and training institutions, in addition to more direct budgetary provision.

Incentives, System Change and the Organisation of the Education Industry

As I have suggested, there are good reasons for thinking that considerable improvements in the quality and availability to the majority of children of basic education are possible within realistic resource constraints, particularly if parents take over the management and part of the financing of the privileged suburban school system. There are also good reasons for thinking that rapid developments in vocational education and training, stagnant during the depressed conditions of the last 15 years, are possible.

But it must be admitted that the hard evidence on which we are relying at present in shaping educational renewal

strategies does not yet include good empirical research on South African schooling. We are drawing on the experience and insights of South African educationists — I have in mind here the invaluable contributions of Ken Hartshorne, Franz Auerbach, and others, many with strong associations with the Institute. We are learning what we can from research in the rest of the world. And there has been an explosion of writing on the politics, sociology, semiotics, philosophy and history of education in this country. Economists have studied the overall costs of and returns to education, or the evidence from the labour market of how our schools are performing. But nobody, to my knowledge, has yet undertaken a study of what we might call the microeconomics of schooling and training in this country. This is a research area of immense importance. I do not think it is adequate to rely on world bank studies of education production functions and determinants of school quality in other countries. We need good hard-headed local work in this field, and I think we have a rich and promising research terrain here, because there are such marked variations between kinds of schools and school administration in our unhappy fragmented education system.

What I am appealing for might be thought of as an increased focus on education as an industry — as an industry using inputs in order to produce goods, the 'goods' in question being cognitive and other skills and abilities which yield their fruit over the lifetimes of the individuals who pass through the enterprises of our industry. Education policy is, in this view, about improving the efficiency of educational enterprises.

This language may sound unappealing — in the jargon of recent times, this may sound dangerously technocratic and dehumanising. I want to defend this 'industrial' view, because it seems to me that education is important enough to warrant attention to its efficiency — important both as a means to greater productivity and 'for its own sake', or its cultural, intellectual and aesthetic content. Of course, for empirical purposes, we have to take recourse to imperfect measures of educational outputs, such as examination results and earnings in labour markets. And we run the risk of regarding these as measures of educational success, whereas they are at best proxies for the intrinsic 'goods' which are the underlying objectives or purposes of building schools and hiring teachers or sending workers and managers on training excursions. We must recognise the limits of our empirical techniques. But we do need to take the economic view: to explore the unavoidable logic of social choice as it applies to the education sector, as the goals we pursue require effort and material inputs.

I think the critics are right, however, in suggesting that the usual approach to the conceptualisation of the 'education industry' is unsatisfactory. And so I want to propose that South African researchers who choose to take the challenge of thinking economically about education seriously may have something new and exciting to contribute to the international literature in this field.

There are two 'moves' that I think need to be made in thinking about the economics of education. The first is that we need to stop thinking of children as the raw materials to which educational inputs are applied, and start thinking about students as learners who respond to incentives and

opportunities as imperfect agents of their own destiny. The second is that we need to stop thinking about the education system as shaped by the independent actions of policy makers, and begin to think about the dynamics which drive education system change. Policy analysis now becomes a discussion of the incentives and constraints which influence the actions and behaviour of learners, instructors and education managers, whose combined work efforts constitute 'education' and who together with the owners and financiers of educational enterprises are the agents of education system change.

I proceed now by exploring the consequences for education system change, or *educational development*, of the way education is organised. The focus is on township and rural schooling in South Africa, and I consider both the failure of the black education system we have inherited from the past to deliver adequate schooling, and the challenge of reorganising township and rural school governance. Some remarks will be made in passing concerning the reorganisation of suburban schooling and revitalisation of vocational education, training and adult education, but these themes are not explored here systematically.

The discussion is in two sections, beginning with the incentives and constraints which influence the efforts of learners, educators and managers in schools, followed by consideration of the dynamics of education system change.

Improving Productivity in Schools

Encouraging the work effort of students

It seems trivial to state that effective schooling is largely about getting pupils and students to study. Productivity, in this industry, is largely about what learners do *for themselves*, but students, left to themselves, do not do enough. Even though I know that it is in my interests to work hard as a student, I require external discipline and artificial incentives, for I am 'imperfectly rational': I have to bind myself to my desk, or to an angry schoolmaster, lest transient pleasures tempt me from my arduous, but ultimately fulfilling, mission.

So parents and school teachers have command of children, and teachers, who understand these things far better than economists, spend much of their time not learning or teaching, but encouraging and rewarding, threatening and punishing, and monitoring the learning activities of students: setting assignments, marking essays and tests, passing and failing their charges.

But parents, teachers or school administrators are not perfect masters of the destinies of students either. They have imperfect control or knowledge of learners' study activities, either within or out of the classroom.

In addition to this, it is wrong to think that students are *entirely* irrational in their approach to studying. Self-motivation does have a role to play in 'creating a culture of learning' in schools and colleges, and in homes. And the 'organisation' of education is one determinant of learners' motives and self-discipline. The case for a *competitive* education system, with differentiation in secondary schooling and access to higher or specialised education based on performance in examinations, is both that this

fosters complementarity between abilities and access to advanced education *and* that it encourages children to work harder. Notice that the beneficiaries of a highly competitive school system are *all* who work harder, and not just those who 'succeed' in getting to college or university.

If labour markets reward school attainment through differentiated remuneration and training opportunities, furthermore, this too is a signal that schoolwork is worth the trouble. Economists have grown accustomed to the idea that earnings patterns are measures of the productivity of schooling: we need to think about the consequences of earnings and training opportunities for the efficiency of schools.

Finally, I think we need to consider the role of choice in schooling. Work effort is a response to incentives subject to constraints. The more limited the choices students face, the less scope they have for exploring their own interests and cultivating for themselves an identity and associated learning goals. Creating options in the school curriculum raises costs, but also yields rewards.

Application of these ideas to township and rural schooling in South Africa is clearly fruitful. It is easy to list aspects of black education, township living conditions and of South Africa's discriminatory labour markets which have had debilitating consequences for students' motivation and discipline. One obvious negative is the ideological and cultural bent of the curriculum: a recent issue of a South African education journal contains a fascinating account of how even mathematics textbooks can be shot through with cultural bias.

I want to draw particular attention to the absence of competition in black education and the weakness of signals from the labour market, and to the presence of powerful constraints on choices facing students.

Competition does not simply come from the existence of examinations and entry screens to jobs or higher education. Effective competition exists when the prospects of educational progress or job and training opportunities are strongly associated with performance in examinations, and when students' work effort is strongly associated with examination performance. Neither of these conditions appears to characterise township and rural schooling. The majority of township and rural children leave school without any externally validated certificate. Internally conducted examinations are weak sources of competitive pressure, because so little hinges on internal examination results. For the marginal student, there is the threat of failing, but there is no advantage in passing well. Little differentiation within schools means that there are few critical choices facing students which depend on work effort. Those who reach standard 10 do face an examination on which important prospects hinge, but for most, once more, it is just a question of passing or failing. There are a small number of black schools which have consistently achieved a satisfactory distribution of senior certificate results, but in most schools the probability of a student getting above a D or E aggregate is virtually zero. And the opportunity to take advantage of good school results has of course also been heavily constrained in South Africa both by discrimination and more recently by a stagnant economy.

What kinds of reorganisation will change these things? Economic growth and the removal of discriminatory

labour market practices will have favourable effects on incentives to take advantage of school opportunities. But there are also aspects of the organisation of schooling which are important. Examinations which are externally validated (although not necessarily externally conducted) at the end of primary schooling and at the end of standard 7 or standard 8 are needed. The senior certificate examination as presently conducted is too blunt an instrument, given the distribution of abilities of students who reach standard 10 these days. Its functions as a university entrance screen and as a school-leaving certificate are probably no longer compatible. It is also desirable that scholastic performance should be restored as a critical determinant of access to specialised secondary and higher education, and that differentiation in secondary schooling associated with school performance should be put in place.

Improved incentives have their part to play in encouraging students' work efforts, but certainly need to be accompanied by restored discipline and order in black schools. Some of these reforms will be perceived as antagonistic to the interests of student organisations, and it will take a minister of education of steel will and considerable cunning to bring about the appropriate changes. It is time to challenge the popular but simplistic notion that democracy is served by bringing student organisations into the governance of schools. It is unlikely that this notion, which served a political purpose in an educationally bankrupt era, will have currency in a well-managed disciplined competitive school system.

Rewarding teachers for teaching well

Teachers have a central role to play, of course, in motivating and disciplining the work efforts of students. This is a lonely and depressing task if students have no reason to be self-motivated, and so it is no surprise that teachers in township and rural schools have been diverted from this by more rewarding pursuits.

Teachers, like the rest of us, are driven by the goal of self-advancement in their careers. Teachers take their teaching seriously when it pays them to do so — when competence, initiative and effort are rewarded. Salary increases and promotion are not the only forms of reward which count: respect of peers and of pupils, acknowledgement of contributions beyond the call of duty, and simply the pride which comes of one's students' successes, are also important.

There is abundant evidence that in recent decades the fragile fabric which holds together teachers' work efforts, sense of duty, self-esteem and self-motivation, has been badly torn in black education. There are, of course, capable and energetic teachers who take their work seriously, but there is also widespread apathy, incompetence and work avoidance in township and rural schools.

It is not hard to explain this malaise. Teachers have been employed by a department perceived as ineffective and corrupt, required to teach a rejected curriculum, and expected to maintain order in increasingly turbulent classrooms. They have been part of an upwardly mobile middle class, but part also of an awkward alliance with angry students' organisations and frustrated civic structures.

The upward mobility of teachers has been rapid and almost entirely divorced from any indicators of productivity in the classroom. Teachers' salaries have been raised as part of the racial equalisation of public service salary scales, and promotion opportunities have mushroomed because of the expansion of secondary schooling. The state has, of course, fuelled the process, perhaps because it liked the idea of a black middle class, perhaps also for educational reasons, by creating powerful financial inducements for teachers to study further, by raising teacher qualification norms, and by establishing new colleges and a peculiar new university for the purpose of more widely distributing teaching certificates.

Teachers have, in other words, been presented with strong incentives to neglect their teaching and advance themselves, under circumstances in which there were strong disincentives to teach energetically in the first place. Competition for promotion posts is almost entirely a chase after paper qualifications, at the cost of serious teaching.

It should not be thought that this problem will disappear when the Department of Education and Training is finally sunk. Restoring productivity in a demoralised and cynical professional body will be extraordinarily difficult, particularly as there is no prospect for the foreseeable future, even with improved economic growth, of further advances in average teacher salaries. However, improvements in the working conditions of educators — the circumstances which make for self-esteem, pride in one's work and enthusiasm — which must hinge in considerable degree on restoring discipline and administrative order to schools, will serve to some extent to compensate for stagnant real remuneration levels and more demanding work expectations.

What kinds of reorganisation of schooling will restore positive incentives to teach well in township and rural schools? There is a strong case to be made for greater decentralisation of appointment, remuneration and evaluation of teachers, right down to the principal and school committee, subject perhaps to review on appeal by a local or regional school board. The principle here is that teachers must be under contract to a body which has a direct interest in the wellbeing of the school.

The South African tradition is that teachers are employed by provinces (in the case of white schools) or the state — that is by education departments rather than schools or local school authorities. Apart from the possibility that greater job security might lower the supply price of teachers, it is hard to think of any good reasons for this arrangement. There is some sense in the state setting national guidelines, regarding salary scales, and prescribing procedures governing appointments and the rights of teachers to appeal in the case of dismissal. Teachers must know, however, that their promotion prospects and ultimately their jobs depend on convincing those who have a direct interest in the school that they are doing the job well. Departmental officials or inspectors all too easily concern themselves not with this, but with whether teachers are doing the job 'properly', which is a very different thing.

If teachers are, directly or indirectly, to be employed by schools rather than government departments, schools

need reliable governing bodies and a degree of management and financial autonomy which is presently missing in typical township and rural school contexts. Such a capacity cannot be reproduced overnight, and so close attention to development of school administration is needed, which is the concern of the next section.

Lest it be thought that weaknesses in the contracts between employers and educators characterise only departmental schools, I venture a brief remark on higher education. As terms of employment in South African universities are typically both secure and fairly loose, academics and the organisations or enterprises with which they get themselves involved, voluntarily or contractually, are currently enjoying a free ride at the expense of higher education. There is every reason to encourage academics to engage in outside research or professional work, but these activities need to be brought on to the books of university departments or institutes, and the terms of employment of academics should reflect their allocation of time between teaching and other activities for which the university pays, and further remunerative activities. Universities in the United States have developed a variety of appropriate responses to the diversity of work patterns of academics, usually structured around 'part-salary' employment contracts, resulting in departments and individuals actively seeking contractual teaching and research arrangements with other institutions or enterprises to make up the balance of salary costs. South African universities should move in this direction.

Strengthening school administration

It is sometimes argued that control of township and rural schools cannot be handed to communities because they lack the administrative competence to manage financial and other affairs properly. Widespread abuse of school funds and general administrative inefficiency at school level are cited as supporting evidence.

This is Victorian paternalism at its worst. 'Communities' in abstract cannot administer anything, but a duly elected body of parents or school trustees, however depressed the community, is capable of receiving a financial statement (audited by the local or regional office), deciding upon budgets drawn up by a principal (with assistance, if necessary, from a departmental official), appointing a selection committee for a vacant teaching post, and deciding upon key issues raised by the principal or particular sub-committees (subject to official guidelines, as appropriate). A school governing body, if it has real powers, will, in time, learn to exercise those powers responsibly; but it will not do so unless it receives real powers. The devolution of these powers can, however, be accompanied by as much or as little departmental prescription, advice and support services as needed. The key thing is creation of a local sense of ownership of the school, not only in its physical premises and its character, but also in the employment of teachers.

This is the key to the restoration of a 'learning culture' in schools: for *local parents are the only people who have a direct personal interest in the effectiveness of their local school*. The department, or the regional office, has an interest in all schools — that all schools are properly staffed and provided with books, that sufficient classrooms are built perhaps, that curricula are adhered

to and that teachers are properly trained. These are important responsibilities, but the efficient and energetic management of the school itself is rather a different matter. This must be driven by direct local interests.

The 'ownership' in this sense of the school by a local or school governing body is certainly strengthened if resources have, one way or another, been contributed locally to the school project. This should be encouraged. But in addition to greater local involvement, of course, the state must take its responsibility for the quality of township and rural schooling seriously. Government has the responsibility for providing schooling, and also has the bureaucratic resources and expertise necessary to provide an extensive range of support services to schools. Far the greater part of these services currently go to well-managed suburban schools, where they are largely redundant. Substantially increased departmental support should go to the township and rural school systems. In this respect these schools might continue to be thought of as 'departmental' or 'government' schools, receiving administrative and other support from the state. State support must be seen to complement, rather than substitute for, ownership and management of schools by local school-governing bodies.

In this model, all schools are financed by transfers or 'block grants' from the departmental vote, rather than through itemised departmental budgeting. This change in financial arrangements is the key to restoration of responsible management of township and rural schools, and it would, of course, be a critical step towards equal status of the governing bodies of all government schools. The principle of equal *per capita* subsidies should underpin departmental budgeting, and the simplest way to give effect to this principle is for schools to be financed according to a strict formula based on enrolment per school grade, perhaps with some adjustments reflecting school size and type of school at the secondary level. Responsibility for allocating the available budget, and for ensuring that further sources of funds are sufficient to cover shortfalls, must rest with the school principal and his committee or trustees.

This is how things work in well-run suburban schools, and it is how things should be managed in all government schools. But there is, within this model, still considerable scope for the services of the department to be used for support in the administration of schools where needed. There is no sense in being naive about school administration: many principals struggle to organise a school time-table, let alone an annual budget. Systematic upgrading of the administrative aspects of schooling is arguably the single most important element in renewal of township and rural schooling, and innovative programmes of administrative support and training are urgently needed.

The economist in me suspects that this is not enough: that school principals need more direct inducements to take the task of school administration seriously. There has been some experimentation in the United States with corporate-funded incentive schemes for schools in disadvantaged neighbourhoods, aimed at improving school productivity. This is clearly a highly problematic area, fraught with moral hazards. I think, none the less, that the time has come for private sector donors to explore

ways of rewarding well-managed schools in South African townships and rural areas. And it may also be necessary to explore ways of rewarding school principals who achieve heroic results in ways other than promotion to the tedium of the inspectorate.

Promoting research, design and system change in schooling

The question 'What drives education system change?' is like the question 'What drives technical change in industry?' The latter leads to the connections between technological progress, industrial research and innovation, and economic growth. I would like to take three simple ideas from this rich and complex field of economic enquiry. The first is that technical progress arises out of technical and organisational research and development. This may seem very obvious, but economists are slow to grasp things like this and we have grown accustomed to thinking in other terms: technical progress as either exogenous (simply a function of time), as a consequence of past education and training, or perhaps as associated with physical investment. Recent research has, however, returned to a focus on research and applications of research. The second idea is that research and development are driven by economic incentives just like other productive activities. Also a fairly obvious thought, this is the standard justification for protecting patents, allowing inventors to reap profits from their work. The third notion I want to use is that once technical research and design have led to new production processes, there is no (or very little) real cost involved in extending this progress to other firms or applications. As Paul Romer, the Chicago economist whose PhD thesis of a few years ago has provoked a resurgence of interest in growth economics, puts it, 'For General Electric, it may have taken millions of dollars of engineering work to produce the first mechanical drawing for its current generation turbine blade, but subsequent drawings can be made at virtually zero cost on a photocopy machine.'

Firms in competitive industries have powerful incentives to keep abreast of technological developments, and so technology transfer is often rapid, whether through purchase of patent rights, emulation of design changes or technology piracy. Organisations in uncompetitive industries are typically characterised by strong resistance to change, however, because the costs of learning new ways of doing things are non-negligible. Consideration needs to be given, accordingly, to the incentives which drive adoption of new ideas in schools and education departments. The promotion of research and design in education, the incentives which lie behind the kinds of research that are undertaken, and the determinants of the adoption of new technology in education, are briefly discussed below.

Technical progress in education, or educational research and design, are of course broader concepts than the usual meaning of 'educational technology'. How schools are organised and managed, how teachers are trained, the effectiveness of alternative teaching methods, the role of pre-school programmes, curriculum research and design, the links between classroom and out-of-school opportunities, labour market needs and vocational education and training: there is no end to the variety of

research questions which pertain to the organisation and design of schooling and training.

That education policy makers need good quality ongoing research is not a new idea in South Africa. Dr Ernst Malherbe, one of the most distinguished of South Africa's educationists and social reformers, founded in 1929 the National Bureau of Education Research, which was the forerunner of the present Human Sciences Research Council (HSRC), and his own two-volume study of education in South Africa remains an invaluable reference, encyclopaedic in its depth and insights. Research on education has continued at the HSRC over the years, culminating in the investigation chaired by Dr J P de Lange which published its findings in 1981. There is also a lively critical research tradition based predominantly on the English university campuses, which has recently turned its attention rather more systematically to policy questions. The *Education Renewal Strategy* of the Department of National Education has also called for policy-focused research.

How useful will this work prove to be in the restructuring of education in South Africa? In the first waves of reform which sweep through the post-apartheid state, there will certainly be systematic reorganisation of education: this is, indeed, already in progress. But we need also to give consideration to the *ongoing* links between educational research and practice.

It is easy to point to the smothering of applied educational research, proposals for system change and alternative curriculum design, during the apartheid years, by a ponderous pedagogical tradition and by political and bureaucratic imperatives. There have clearly been substantial political constraints inhibiting or frustrating policy-oriented educational research. The HSRC's ongoing educational research has focused on some interesting questions — differentiation in secondary schooling, the working conditions of educators, merits and demerits of distance education, special education needs, for example — but even this work appears to have had very limited impact on educational policy, curriculum design, teaching methods or school organisation.

Certainly by comparison with the health sector, in which an aggressive research industry drives up quality and costs at a frightening pace, education professionals are slow to innovate, school organisation is static and curriculum change seldom appears to be motivated by clear quality or effectiveness considerations. Industrial training often appears to be much more flexible and innovative, but here too evidence of good research and design is hard to find, and changes sometimes appear to be driven by fads or fast sales talk. So we must confront the critical question of *organising education in ways which improve the links between research, design of curricula and school or training systems, and implementation of system change.*

One of the difficulties in educational research and design is that the product under development is often comparatively 'fuzzy'. Pharmaceutical companies devote immense resources to research in pursuit of discoveries or improvements, backed up by statistical results published in eminent journals: products which can be thoroughly analysed, defined, patented, manufactured

and marketed. What do we have in education that compares with this? Perhaps the overhead projector. Not even the 'new maths' (whatever that is these days) is the kind of invention that can conveniently be patented and advertised on television. Changes in teaching methods, new approaches to school management, curricular reform and improved textbooks may be very important, but they are likely to be 'fuzzy' both in content and in their effectiveness. It is hard to be precise about the advantages of one textbook over another or about the merits of examination systems, and it is even harder to put a 'value' on a new way of arranging the timetable. Yet the choices on these things are crucial.

Is it possible to organise schooling in ways which encourage productivity-enhancing educational research, design and system change? The 'profit motive' does play some role. Today's overhead projectors are an improvement on the epidiascope, and computer applications in education are rapidly growing in number and sophistication and falling in cost. Textbook writers are propelled by pecuniary motives and publishing costs are severely disciplined by market competition. Industrial training is largely driven by the productivity enhancements associated with skills development.

But this does not take us very far. We need to examine the motives or incentives which lie behind the decisions to innovate of the *providers* of education: teachers, school administrators and educational governing bodies. A new textbook is no advantage if it is not prescribed, computing packages are unlikely to be put to use if they are not included in teacher training courses, science education kits need to be put in schools. And there are clearly a whole range of aspects of the education system — the length of the school day, class sizes, examination standards and procedures, and school governance — in which there are no product markets or competitive prices. Education system change is about changing patterns of *regulation* as well as about the purchase of a changing mix of educational inputs. Are we simply to rely on the educational authorities to run the system well, doing appropriate research and implementing system changes as designs become available, or can we put in place incentives which encourage good management, educational research and design and appropriate system change?

Malherbe points to a critical issue in his assessment of the effectiveness of educational research in South African education:⁵

'As a result of historical factors...the provincial school administration is professionally a highly centralised system. It developed a resistance to innovation unless it was centrally initiated and authorised for general application. This made it difficult for growth points to emerge throughout the system. It tended to rob the individual school principal of the thrill of experimenting in his own school with the new ideas that had been developed...

Teachers somehow find that it is generally much easier to conform than to innovate. Besides, conformity is one of the best guarantees for promotion...[and] teaching in South Africa has become largely dominated by the external examination system based on a prescribed syllabus...

'If one studies how new ideas became embodied in South African classroom practice, one finds that there was nearly always some personality or group that was prepared to innovate and make a breakthrough... Even then it demanded a good deal of drive and it took quite a time before official approval could be obtained for implementing innovations...'

When the department is dominant in control of the activities of schools, in other words, ongoing adaptation and educational development are smothered. The stranglehold of the department on what schools are permitted to do needs to be broken. This is true of well-managed suburban schools, and it is as true of township and rural schools, where the dictates of officials are all too often arbitrary, ill-considered, inflexible and inappropriate.

A development economist, Albert Hirschman, in a book with the intriguing title *Exit, Voice and Loyalty*, gives us a further handle on this problem. As members of clubs or communities we have two options available to us when the quality of the services we collectively enjoy deteriorates, or is inadequate. We can exercise *voice*, seeking to influence affairs through complaint, organised pressure, lobbying or seeking office. Or we can exercise the right to *exit*, in search of alternative provision, another club or, in extreme circumstances, another society. When education is organised centrally as a service provided by government to citizens, and when parents cannot choose between alternative schools, then the opportunities for either 'voice' or 'exit' are weak. (The state can respond to public discontent through coercive measures or through appeals to *loyalty*, but neither of these responses addresses underlying concerns.)

This is an argument for decentralisation, so that the officials responsible for schools are accessible, and for relative autonomy of schools, so that schools are in some degree in competition with each other for students and for distinct identities. These are forces which encourage both good management and adoption by schools of new educational designs, or technical progress, and that underlie sustained improvements in quality of schooling and efficiency in educational resource use. Promoting 'voice' means establishing effective forums through which parents influence the character and quality of their children's schooling. Permitting 'exit' means letting people choose where to live and where to go to school.

Parents are not the only potential source of 'voice' or even active involvement in school improvements. There is a growing 'non-governmental' and 'quasi-governmental' sector engaged in educational design and implementation of educational projects. Many of these organisations have access to international funds and to international experience and expertise. This is an immensely rich and potentially influential source of education system change. Opening up of schools to curricular innovation, to reorganisation of the school day, and to new approaches to teacher training and support services, is essential if these change agents are to have their full effect.

The adaptation of new designs in schooling clearly requires effective networks of teacher support services and in-service education. Teacher education needs to be planned and co-ordinated, clearly, in close association with the planning and co-ordination of system change.

The arguments for decentralisation and greater school autonomy advanced above should not be read as rejection of all departmental planning and administration. Well-run departments can play a vital role in facilitating the spread of new educational designs through the system, for example. But with few exceptions, the adoption of curricular, organisational and administrative norms for schools should be 'supportive, advisory and non-prescriptive'. *Control* of matters which affect content, quality and flexibility, should rest with principals and school committees.

Finally, we need to give consideration to the incentives which influence departmental officials in formation and change of educational policy and administration. Can the overall system be organised in ways which encourage educational development? It is worth stating, as it is perhaps not obvious, that the effective control which a democratically elected government can exercise over the detail of administrative policy and practice is very limited. This is an instance of a classic principal/agent problem. The electorate votes for a good government and the best possible education system, but the voting public through its elected representatives has only imperfect knowledge of and control over the bureaucrats whom it engages to give effect to this purpose. Educational administrators may be well-intentioned and capable, but like managers of any activity they prefer stasis to change, and they like to be in charge. Bureaucrats are, however, sensitive to the comparative performance of their bureaus, and they are constrained by a strong commitment to fairness.

Two conclusions seem to me to follow from this. The first is that South Africa is more likely to sustain progressive educational system change or technical progress if education is the responsibility of regional governments in a federal or quasi-federal system than if education is provided by a single education department in a unitary state. In a federal system, ministers of education and their officials are subject to comparative scrutiny not just for performance of their schools over time, but also across regions. More important, of course, is that comparisons across regions provide educational researchers and concerned citizens with the information needed to keep a policy debate alive, and to keep policy makers responsive to that debate.

The second conclusion follows from the fairness constraint to which government departments, both national and regional, are subject. Because departments are constrained to provide to all schools (or to all schools of a particular type) what they provide to any school, they are not good at promoting innovation and experimentation. Departments do have responsibility, however, for managing those affairs which require national or regional co-ordination: the allocation of funds to schools, perhaps the design of core curricula, the validation of examinations or recognition of an official examining authority, the integration of schooling with other components of the education system. If departments are not caught up in the direct management and control of schooling, furthermore, there is another important function they can fulfil. Departments can act as *key agents* of change, managing the spread or extension of technical progress in education, once appropriate reforms have been designed and tested. This requires an

altogether new orientation in departments: from prescribing to advising, from inspecting to promoting, from management and control to research and design, from restricting to encouraging, and from providing schooling to driving educational progress.

Governments in mixed economies must continue to finance and support the provision of education, both become under provided in the market-place. But govern-

ments which respect and underwrite the administrative autonomy of schools within the state education system, can do more to promote progress in the content of schooling, sustained improvements in quality and productivity, and flexibility and system change in education, than governments which commit their resources to management and control from the centre.

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