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THEMATIC REVIEW OF THE FIRST YEARS OF TERTIARY EDUCATION

COMMONWEALTH OF VIRGINIA, UNITED STATES

The views expressed are those of the reviewers. They do not commit the OECD or Member governments.

Foreword

As part of the OECD Thematic Review of First Years of Tertiary Education, in the latter part of 1996 a review team undertook an examination of tertiary education in Virginia. The primary aim of the review activity in Virginia was to draw out key developments, approaches and policy experience in this state for a comparative analysis of the first years of tertiary education in ten OECD Member countries. The other countries and systems participating in this stage of the review: Australia, Belgium (Flemish Community), Denmark, Germany, Japan, New Zealand, Norway, Sweden and the United Kingdom. The questions raised in the course of the visit of the review team relate to the comparative exercise, and it is against that framework and set of issues that the situation and experience in Virginia is being reviewed. A comparative report is to be published later in 1997.

The State Council of Higher Education for Virginia (SCHEV) was our host and contact, and we express our appreciation to Ms. Elizabeth McClanahan and Mr. John D. Padgett, respectively Chair and Vice-Chair, and to all members of the Council for their interest, engagement and support. To provide a comprehensive response to the questions raised in the overall comparative review, Council staff, Dr. Gordon Davies and Dr. Michael Mullen in particular, developed a broad and comprehensive programme of visits with state legislators and officials, representatives from the business community, university and college administrators, staff and students and assembled a set of background materials. The graciousness and openness with which we were received at all meetings made our work enjoyable and stimulating as well as highly informative. Enthusiasm, commitment, depth of knowledge and professionalism were everywhere evident; all signal why tertiary education in Virginia is able to respond to the expectations of the citizens of the Commonwealth.

Introduction

The thematic review of the first years of tertiary education in Virginia is the third OECD review effort focussed on tertiary education in the United States, the first having taken place in 1963 and the second in 1989. The earlier examinations drew attention to a belief in the 'American dream' and the actions taken to ensure that everyone would have the opportunity to realise his or her aspirations for participation in higher education. In 1997, the commitment to ensure this opportunity remains strong and -- in ways distinctive to the U.S. society and setting -- every bit as impressive.

The earlier reviews focussed on higher education in California, then and now at a cutting edge of development in the country. It is more than fitting, however, that tertiary education in Virginia is the focus of the present review. While no individual state is 'representative' of the United States, developments in Virginia's society, economy and education are found to a greater or lesser extent throughout the country. The Commonwealth of Virginia has played a pivotal role in U.S. history, in the 18th century and then at the time of the Civil War. In many respects, it has been at the clash between competing, and sometimes warring views about America. Now, the changes in Virginia represent a leading edge in the transformation and growing economic weight of the South; in a new orientation toward technology-based firms and activity and toward global markets; in increases in the social and economic advancement of the African-American population; in the adoption of a strategic policy approach by government; and, by no means least, in the significance given to education at all levels as a fundamental factor in social and individual development. Neither among the largest nor the smallest of U.S. states, the Commonwealth of Virginia can be counted among the most dynamic.

Within the substantial information base of policy documents, statistical summaries and analyses made available to us, we were particularly impressed with two thoughtful, forward-looking and useful reports, 'The Case For Change' (prepared by Commonwealth of Virginia, Commission on the University of the 21st Century, 1993) and 'Making Connections: Matching Virginia Higher Education's Strengths with the Commonwealth's Needs' (a report of the Commission on the Future of Higher Education in Virginia, Senator Chichester, chair, 1996). Both reports place policy directions for Virginia's tertiary sector firmly in a vision of the Commonwealth as a state at the forefront of economic development and social progress.

For the purposes of the OECD thematic review, 'tertiary' is intended to cover a **level of study** beyond high school, or what in Virginia and the U.S. is usually described as post-secondary. 'Tertiary' thus conveys a range of programmes, teaching and learning, regardless of the institutional setting (e.g. university, college, school, 'open learning') or arrangement (e.g. full-time, part-time, at a distance, adult). 'First years' refers to the usually 2 to 5 years of study leading to the **first tertiary-level qualification recognised on the labour market**. In Virginia, a very wide range of qualifications technically meet this definition: associate and bachelor's degrees, but also diplomas and certificates awarded by community colleges and career schools (also called 'profit-making' or 'proprietary' schools).

The boundaries of the definition of 'first years of tertiary education' are perhaps more blurred in Virginia (and the U.S.) than in other countries examined in this thematic review. In Virginia, students participating in the 'first years of tertiary education' are found in universities and colleges, and in career schools that award associate or baccalaureate degrees as well as degrees on the completion of programmes less than two years. But, 'first years of tertiary education' embrace an even wider range of provision which implies not so much a hierarchy of qualifications as a diversity in the mix of the knowledge, skills and dispositions developed and acquired. Such diversity in

programmes, teaching and learning makes it more difficult to distinguish in any precise way between the secondary and tertiary levels or to apply the criterion of first qualification recognised on the labour market. In Virginia, tertiary-level knowledge and abilities apart from those assessed and/or certified through formally awarded degrees and diplomas are recognised by employers in recruitment and promotion (particularly in the fields of computer sciences and highly specialised occupational programmes). Importantly, a significant volume of tertiary-level learning takes place within enterprises, community programmes and through various other forms of adult and continuing education and training. As learning activity in these out-of-school settings has long been a feature of the U.S. landscape, we comment further on the implications of recent trends below.

As a rule of thumb, however, 'tertiary level' for the purposes of this thematic review refers to studies at or beyond the associate's and at bachelor's degree (or their equivalents) and to specialised vocational courses which presuppose the standard of high school graduation of its equivalent. Preparatory or remedial courses provided for students not having fulfilled prerequisite course requirements or with inadequate levels of achievement are also considered as they relate to tertiary level studies. An important principle in the U.S. is inclusiveness, and this is reflected in the wide spectrum of studies subsumed under the tertiary rubric.

Notwithstanding the interest in the full breadth of experience and options at the first years of tertiary education, the large volume of learning at this level of study takes place within formal education institutions and leads to associate degrees (or their equivalents) and more significantly to bachelor's degrees. We have directed most of our attention to programmes, teaching and learning in relation to these qualifications and institutional settings, although we refer to other forms of teaching and learning where these are of particular interest and relevance.

Context

Tertiary education in Virginia is well developed, and there are many impressive efforts to bring about adaptations to the changing economic and demographic environment.

Economic development in Virginia reflects a combination of **change** which is striking in its depth, reach and speed and of **tradition, continuity and gradual evolution**. The most visible, dramatic change emerges from a new economic dynamic evident in the 'new South' and more particularly in those states along the southeast Atlantic coast. This phenomenon has been less noticed especially by outside observers than the widely discussed developments in California and the New England states, but it is likely to have as far reaching consequences for the citizens of the region.

With relatively lower costs of living and production, relatively easy access to markets and population centres in the eastern half of the country, and substantially improved physical and technical infrastructure (transportation, communication), these states have attracted new or relocating manufacturing, assembly, distribution and other service activities. Owing to the changing nature of economic activity, even of production and distribution, location decisions are now more influenced by the advantages afforded by these states. For their part, political leadership in Virginia and its sister states in the 'new south' has been pro-active and responsive to the expectations and needs of these business interests, not least with regard to supporting the provision of high quality, responsive and often high level education and training. This latter thrust was apparent in our discussions with administrators and staff in tertiary institutions, particularly the large urban universities found in the

'crescent' extending from Northern Virginia through Richmond to Newport News and Norfolk; Virginia Tech; and a number of the community colleges.

At the same time, there is a gradual shift in the nature of government-related employment (including the military and defense industries in Northern Virginia and the Norfolk-Newport News area) and in primary industries, especially in the southwestern part of Virginia (see Tables 1 and 2). These trends underline different patterns of employment *within* the state: military-related employment is declining somewhat in the Hampton Roads/Norfolk area, but is stabilising or increasing slightly in Northern Virginia; employment of coal miners in the southwest has fallen by half, while the growing telecommunications and high tech firms in Northern Virginia report difficulties in recruiting at the needed skill levels. With regard to those regions experiencing a significant shift in the skill and qualification composition of demand for labour or relatively high levels of unemployment, state policy has been highly targeted and pro-active. Here, too, we heard of efforts and responses, both from public and private universities and colleges, as well as in community colleges.

An important cross-cutting concern is the achievement and success of young people of minority backgrounds in school and tertiary education. This concern partly derives from the continuing need to overcome the remaining effects of discriminatory practices which in the past severely limited historically precluded educational and economic advances for African-Americans. Young and older African-Americans are participating in greater numbers and at greater rates in all parts and corners of tertiary education in the Commonwealth. In this respect, the position of Virginia's historically black institutions (HBIs) has evolved into an important constituent and co-operating component of the tertiary sector -- rather than developing apart from the sector.

This not-so-new dynamic is now accompanied by a broader pattern of inward migration of a diverse mix of cultural and linguistic minority populations, particularly in Northern Virginia. Thus, counties and urban areas within the state now reflect even wider differences than in the past in cultural, social and linguistic backgrounds and in income distribution. Indicative of these changes, Virginia is expected to grow by 1.5 million residents by 2010, with minorities accounting for about 60 per cent of the growth. In several of the school districts in Northern Virginia, the majority of enrolled students as well as high school graduates are African-American, Hispanic or Asian. A growing number of first languages other than English are now represented in the student population. The adaptations needed in secondary and tertiary curricula and instructional practices have yet to be fully identified, but they are likely to be significant. Those adaptations will need to respond as well to tensions in social relations and urban problems which are partly related to local demographic profiles as well as economic circumstances.

These developments, in Virginia as in some other parts of the United States, pose new challenges for standards, failure and drop-out rates and diversity in schools and schooling as well as for access to appropriate programmes, teaching and learning in tertiary education. From our review of reports of commissions and our discussions in Richmond and in tertiary education institutions throughout the Commonwealth, these matters are the subject of research, analysis and open debate and policy development.

Education in Virginia, as in the United States as a whole, is characterised by a very large, 'open' and complex set of systems. Broadly, education is a matter for state policy. In this respect, the U.S. is similar to other federally-structured countries, but there are distinctive differences among these countries in the federal and state roles. In Australia, Commonwealth policy and funding prevails for university (but not school or technical) education. In Germany, responsibilities are shared between federal and state authorities and, for vocational education, between industry and the public

sector. In the U.S., state governments play the leading role, with more limited involvement and influence of the federal government. By contrast with Australia and Germany, there is a large and strong sector of private universities and colleges. All levels of education are available in public, private 'not-for-profit' and private 'for profit' institutions which operate under the regulatory framework set out by the government in each state. Publicly-provided education is the choice of the majority of students at all levels, but in some localities and at some levels, privately-provided education serves an important share of the demand and is influential. Private schools and colleges may cater more specifically for advantaged or disadvantaged populations, for education aimed at specialised interests or needs or for education provided in a setting supportive of certain religious or philosophical beliefs.

Decision-making in publicly-provided education through the secondary level is devolved in most states to school districts of various geographic and population dimensions. Consolidation in Virginia over several decades, as in most other U.S. states, has resulted in a great reduction in the number of districts but has not reduced their overall role in distributing power and authority. The state authorities hold the responsibility for establishing curriculum and regulatory frameworks, within which each school district board is free to take more specific decisions on detailed curricula, selection of textbooks, recruitment and pay of personnel. Funding is provided from local as well as state levels (and, from the federal level in limited amounts through targeted programmes); capital projects are funded at the district level. Parents in Virginia have considerable influence and scope for choice among schooling options for their children, in the first instance in terms of where they choose to live, but also between publicly-provided and various types of private education and, more recently, in 'home schooling' (parents educate their own children). Parents are responsible for the costs of private education and 'home school' alternatives. The scope for local initiative and parental choice in primary and secondary education implies a wide range in what is offered and what is taught to pupils at each stage.

Moreover, in Virginia, students may choose to pursue different middle and secondary school programmes of study leading to two different types of diploma: the 'advanced' diploma and the 'standard' diploma. The requirements for completion of these diplomas differ, with respect to both the number and level of difficulty of the required courses in different disciplines. Those with 'advanced' diplomas are better prepared for pursuing the full range of tertiary education options. About 50 per cent of Virginia's high school graduates meet the requirements for the 'advanced' or academic diploma, while more than 70 per cent of graduates plan to attend a four-year or two-year college immediately after graduation. For African-American high school seniors, about two-thirds plan to attend a tertiary education institution; about a third receive an 'advanced' diploma.

One consequence of local differences in the taught curriculum and individual choice of programmes and schools is variation in learning outcomes at all stages. This pattern, common in a number of U.S. states, has prompted some states to tighten up frameworks, partly through more detailed prescription of curricula and standards and of textbooks and the introduction of state-wide assessments and examinations. This trend can be seen in Virginia, motivated in part by concerns about the numbers of young people who demonstrate very low levels of achievement, and indeed, a widening distribution of achievement of young people at the usual age of high school completion. Given the high aspirations for participation in tertiary education noted above, the state authorities are especially alert to several issues and problems. Virginia shares with many states a persistent problem of drop-out before completion of secondary schooling, disproportionately affecting young people of African-American and some other minority group backgrounds. In addition, there

is a perception that the economic and social costs of low achievement and school failure are growing in weight and importance, particularly for a U.S. state which aspires to strengthen its position as a dynamic, knowledge-based society and economy. Also, the rate of improvement realised under earlier reform and support approaches appears to be slow, or at least uneven.

With these concerns in view, Virginia's Superintendent of Public Instruction has recommended the strengthening of and support for the new 'Standards of Learning' in primary and secondary education, and proposed an intensive regime of assessment in grades 3, 5, 8 and 11 in order to monitor progress and inform policy-makers, parents, school boards and school staff. As in other states, these exams are not intended to be used as individual assessments of students (in contrast, for example, with New York's Regents Exam for secondary school completers). However, we heard of one Virginia school district which uses a literacy assessment at the end of sixth grade as a 'barrier' exam, intended to identify those students to be provided with additional instruction to acquire the needed skills before they continue on to subsequent years of schooling.

We have already drawn attention to the complex mix that is tertiary education: public and private, formal and non-formal, with institutions and providers embracing varying combinations of research, scholarship, community outreach and employment links. In all of the countries participating in the thematic review, institutions exist in some level of determinate relationship with the state apparatus, but that relationship varies considerably. The American tradition has been one of substantial but not unrestrained autonomy. In Virginia, each public institution offering bachelor's or advanced degrees has its own charter approved by the legislature; institutional funding for each institution is also specifically set down in legislation which is voted by the legislature each year. Although private institutions must meet certain requirements to offer degree programmes, they do not receive direct funding from the state. However, Virginia provides a grant to each Virginia resident attending a private institution; it also provides need-based financial aid to students in private institutions; for private institutions with building and equipment investment needs, it also allows access to borrowing at favourable terms through state bond issues. These formal arrangements underline the autonomy afforded to the institutions, although the Council of Higher Education and other state agencies have specific responsibilities to monitor processes and outcomes and to establish with individual institutions and in co-operation with other state agencies the funding amounts considered and eventually approved by the legislature and agreed by the Governor. The Council monitors and co-ordinates "higher education" as conventionally defined, i.e. the public and private universities, colleges and career (profit-making) schools offering associate, bachelor's and advanced degrees. Career schools awarding less than two year degrees are the responsibility of the Board of Education and other agencies responsible for licensure or certification of professions. The sharp academic and institutional definitions once seen as the distinct boundaries of 'higher education' programmes, teaching and learning are blurring, and the State Council no less than the institutions and programmes it monitors has had to grapple with implications for policy, practices and procedures.

The influence of the Council goes further than the monitoring and advisory arrangements described here. Policy initiatives may come from many different quarters, but a review of the role of the State Council shows it and its senior officers to have had a considerable impact on setting directions and establishing a climate of opinion. One example is the effort to revitalize general education; another is the stimulus given to institutional self-evaluation. On the other hand, the political environment provides opportunities for institutions and their local supporters to achieve backing for their own institution through the legislature, thus demonstrating that influence on policy comes from many different quarters.

These relationships, structures and processes are not found, in the same form or measure, in other U.S. states. In comparison, tertiary education in Virginia is more decentralised. The public institutions themselves seek, as one analyst has put it, to 'cultivate distinctiveness and consciously attempt to project a "private" rather than a "public" image', not least by their names: of the fourteen institutions offering bachelor's or advanced degrees, ten have names which do not include 'Virginia' or 'State'; the College of William and Mary, the second oldest higher education institution in the U.S., is a public, state-supported university. Virginia is one of the 20 or so states with a 'co-ordinating board' structure of a type similar to the State Council of Higher Education described above. Other states mostly rely on consolidated governing boards for systems of institutions. We return to the structures and arrangements for decision-making in Virginia's tertiary education sector under 'Governance, Planning and Coordination of the System'.

The federal levers in all forms of education are regulations (covering such matters as civil rights, health and safety, inter-state telecommunications and trade) and financing (at the tertiary level, for students and research). The federal role in tertiary education, while not predominant, has nonetheless been highly influential: the Morrill Land-Grant Act, the post-war science initiatives (National Science Foundation), the National Defense Education Act of 1963, the Higher Education Act of 1965 and the Education Amendments of 1972 have provided significant stimuli to the development of tertiary education across the country.

Federal regulations have a significant impact on the conduct of research in tertiary education institutions, extending to such matters as copyright and intellectual property. The federal research establishment and funding are still overwhelmingly important for U.S. research universities, and in some respects of equal or greater influence than state policy: although a large share of its expenditure for instruction is provided from state appropriations, the public University of Virginia receives only 16 per cent of its income from this source (the balance from a variety of private and public sources, including federal grants and contracts). Changing priorities for federally-funded research particularly in military-related fields are having a significant impact on research universities, including those in Virginia.

New developments in such areas as technology-assisted and other forms of distance learning may increase the role played by such agencies as the Federal Communications Commission and the Federal Trade Commission.

By some estimates, the volume of federally-generated student financial aid as a share of student costs of attendance (tuition, fees, room and board) exceeds 30 per cent, although the average masks wide variation among tertiary education institutions and programmes depending both on the levels of tuition fees and charges (reflecting ever more complex differential pricing arrangements) and the profiles of student intake, in terms of 'financial need' (see Anthony Carnevale and Arthur Hauptman, 'The Economic, Financial and Demographic Context of American Higher Education', August 1996, p. 20). Federal student financial aid policy shapes how states and institutions define the 'ability to benefit' from tertiary education (we return to this matter under 'Demand, Access and Diversity' below) and 'full-time' or 'part-time' student. Federal policy also requires each institution to submit to accreditation, to put in the public domain a range of information on campus conditions and outcomes and to have federal student loan default rates for its former students which fall below a fixed threshold; if an institution fails to meet these requirements, its students, although otherwise eligible, are prevented from receiving federal student aid. The federal institutional eligibility or "gate-keeping" policies serve to link to the roles of both voluntary accreditation and state licensure and authorization across the country. It is through these informal, voluntary, private mechanisms and networks that "standards" have been set. Efforts to put

in place more direct national means for specific standards and quality assurance -- even in co-operation with states or groups of states or groups of institutions -- have been controversial and, for the most part, have either failed or made only quite modest progress.

In the early 1990s, continuing and projected growth in enrolment and an economic recession which forced significant reductions in state funding for tertiary education provided the context for reform efforts under a process called 'restructuring'. 'Restructuring' as a formal term and process began in Virginia when the 1994 General Assembly and the Governor asked Virginia's public colleges and universities to submit plans "to effect long-term changes in the deployment of faculty, to ensure the effectiveness of academic offerings, to minimize administrative and instructional costs, to prepare for the demands of enrolment increases, and to address funding priorities as approved by the General Assembly." Various policy papers developed in the five-year period to 1994 by the Council of Higher Education and institutional heads paved the way for legislative action, most notably 'The Case for Change', the 1989 report of Virginia's Commission on the University of the 21st Century. Although that document was written at a time when the state budget was less constrained, it provided much of the vision and many of the objectives for the institutional restructuring plans. A key feature of the approach adopted was that the state government challenged each institution to come up with its own restructuring plan within broad state guidelines. Details were left to each institution to develop. The plans were linked to funding, such that institutions which did not submit an acceptable plan were at risk of cuts in funding. In this respect, Virginia appears to have followed a path similar to that taken by such OECD Member countries as Finland and to some extent Denmark, in choosing to advance under policies which work on both sides of the efficiency equation, i.e. improve outcomes in qualitative terms under constant or somewhat lower levels of public spending per student.

While restructuring provides the broad framework in which responsiveness and reform are being promoted, the key policy thrusts affecting provision in the first years of tertiary education described above can be summarised as follows:

- improve student learning at the primary and especially secondary levels, backed up by assessments;
- in relation to the above, reduce the volume of remedial courses outside of community colleges;
- stimulate institutions to undertake critical assessments and reform of 'general education' in associate's and bachelor's degree programmes;
- reinforce responsiveness to demand, especially linked to state and regional economic development;
- improve and report more transparent and more sector-wide assessments of quality and effectiveness;
- extend more widely effective means for the assessment and improvement of teaching, through such means as 'post-tenure' review for existing staff;
- maintain and improve, with targeted state support, the building, laboratory and technological infrastructure for tertiary education.

One outstanding challenge for policy has been to sustain the momentum for reform beyond the initial impetus, indeed to put in place a dynamic that overcomes reluctance on the part of all of the actors -- within as well as

outside of the institutions -- to address the variety of learning needs, interests and aspirations of individuals while serving the broader needs of the Virginia economy and society. The experience in Virginia reveals the range of possible response: retain traditional approaches and strengths but also (or alternatively) undertake steps to bring about wide adaptations in contexts, content and methods of teaching and learning.

Demand, Access and Diversity

In Virginia, an estimated 70 per cent of the relevant age cohort participate in some form of tertiary education within 12 to 24 months of completion of high school. Virginia lies near the U.S. average (Tom Mortenson, Postsecondary Education Opportunity, July 1996). While a relatively high rate of participation in tertiary education remains a distinctive feature of the United States, the distinctiveness of the U.S. (and Virginia) in this regard, by comparison with several other countries participating in this review, is diminishing (Table 3). Currently, some 350 000 learners enrol in Virginia's programmes of tertiary education. The Council of Higher Education estimates an FTE enrolment increase of 40 000 by 2005. Growth has been somewhat slower than anticipated, with most of the shortfall accounted for by more modest increases in adult part-time enrolments.

Provision in Virginia is demand-led, and all concerned parties agree that a place should be available for any Virginia citizen who is qualified and able to benefit from participation in tertiary education (as mentioned above, the wording 'able to benefit' appears in federal and state legislation). The commitment to ensuring access is of long-standing, and it is made operational through a wide range of activities and structures including virtually open access to community colleges and the establishment of and support for institutions which have as part of their mission serving target groups which may have been under-represented (African-American) or under-served (women and a range of private, non-profit colleges with specific religious or philosophical orientations). In short, demand is well recognised; there is no effort to deflect it. On the contrary, the long-standing American belief in education as an instrument of social and individual progress together with a constant concern over structural inequality means that the net is cast ever wider in an endeavour to be inclusive. The structure of the 'system' reflects this, and there is an impression that Virginia's tertiary education institutions, individually and collectively, convey to all potential students that they are wanted and welcomed.

The ways in which tertiary education copes with the range of backgrounds and interests is impressive. Norfolk State has put in place a programme to attract minority young people into the sciences, and to encourage retention and success through more and more varied forms of teaching and learning (e.g. summer programmes, internships). Virginia Commonwealth University supports a number of experiential and work-based learning opportunities within its programmes of study, available to both full- and part-time students and, indeed, blurring the distinction between the two. Virginia's community colleges cope with an ever widening range of needs -- from high school seniors seeking to get a head start on tertiary-level study, to high school graduates requiring additional preparation in math or English in order to succeed in tertiary education, to young people and adults seeking occupational-technical qualifications or following an academic programme with the expectation of transferring to complete a bachelor's degree programme at a college or university.

A distinctive feature is the care and thoughtfulness for the student, evident in policy and practice. This level of concern acknowledges that for many students, particularly first generation and returning adults, tertiary education is difficult to cope with. Examples of student academic support

efforts can be found in almost every institution, from community colleges to the flagship University of Virginia (Transition Program, Academic Support Program). Beyond this is the general view of education as an achievement to be won with effort, encouragement and support, not as a barrier producing failure from which there can be no recovery.

Although an underlying strand in policy and part of the inferred belief system about what education is for, in practice this open policy is subject to a number of constraints. Stringent selection, for example, and competitive entry distinguish the more prestigious institutions. There need be no inconsistency in this if there is, somewhere, a suitable place for everyone. However, currently under debate in Virginia is whether, under present policies and practices, some students are being poorly served in programmes and institutions which are organised on the basis of a narrower range of abilities, dispositions and preparation for tertiary-level learning. It is estimated that as much as \$30 million is being spent annually to provide remedial education for these students, and many are not succeeding. The issue broadly relates to the meaning of 'standards' at secondary and tertiary levels of education. The challenge is to address the problem in ways which do not dampen the aspirations or limit the opportunities for advanced learning of young people and adults of many different talents and abilities. Two complementary strategies have emerged, and vigorous action is evident in both.

The **first strategy** is to boost the learning of weaker students into and through secondary education. This is presently part of a larger policy discussion of standards and assessment of the core curriculum, mentioned above, by the Superintendent of Public Instruction and supported by the Secretary of Education. In addition to this initiative, there are a number of programmes at middle and high school level which are designed to influence the decisions of young minority pupils with regard to course selection and to encourage and support improved academic performance. A set of programmes known collectively as the 'Better Information Programs' provide minority parents and students with information on the advantages and requirements for participation in tertiary education, exposure to learning experiences, information on financial aid opportunities and educational programmes that are available from Virginia's colleges and universities. Other, community-based efforts combine the resources of local organisations and the public schools with state resources. Project Discovery is a model programme operated in several regions of the state that has been shown to increase retention in secondary school and participation in tertiary education. Limited amounts of state funding are provided for these programmes.

Tertiary education is also playing a role, in various ways, in this strategy: mentoring and tutoring in secondary schools by students Norfolk State University and Virginia Commonwealth University; science education enrichment programmes for 'average' school students at the Jefferson Labs; the use of school-level staff to interview applicants for first degree programmes at George Mason University; new requirements for initial teacher preparation, school development and in-service teacher training (the latter, key elements of the strategic plan of the State Board of Education). These efforts notwithstanding, a question to be addressed is whether these are effective and appropriate means to realise improvements in learning and achievement for those young people not now succeeding in school. Two reports touch on these matters ('The Continuum of Education', House Document No. 11, 1993; and 'High School Graduation Requirements and Admission Standards at the Commonwealth's Colleges and Universities', House Document No. 21, 1996); as reflected in these reports, a feature of any strategy is to consider the problem as a challenge to both levels of education and to be addressed jointly by them. For tertiary education institutions, this would mean not only entering into a dialogue and providing advice and expertise with the aim of improving student learning in secondary schools but also adapting teaching and learning in their own,

tertiary-level study programmes to accommodate more fully the wide range of backgrounds, interests and learning styles of those with aspirations for tertiary education.

Thus, the **second strategy** is to make further adaptations in tertiary education, to include the curriculum (as discussed below under 'Curriculum, Articulation and Transfer'). An example of such an adaptation is the programme of 'enhanced education' implemented at Norfolk State University. The programme uses tests to identify students who are at risk of failure and provides them with intensive academic advising and support. Such an approach should be fully integrated within a broad concept of general education, so that provision does not undermine the valuable general education now provided. That is, the rationale behind the adaptation should be one of diversifying the forms and means of learning so that all students can acquire and build on tertiary-level knowledge, abilities and dispositions. This approach could be at risk, however, if accountability measures now being discussed or implemented at primary, secondary and tertiary levels of education fail to take into account a wider qualitative range of learning styles and desired outcomes (e.g. high level problem-solving, team work on advanced tasks). In short, standardisation of curriculum framework is one thing; individual programmes and assessment of student learning, however, should be responsive to diverse needs and flexible.

Adaptation is found in structures and structural arrangements, particularly those which establish and reinforce the status and role for community colleges. A strength on which to build is the framework for cross-sector linkages (see the report 'Continuum of Education', House Document No. 11, 1993); we return to articulation arrangements in the next section.

In considering the full range of learning opportunities available at the tertiary level, we were struck by the evident success in meeting very specific needs of career schools, i.e. profit-making educational establishments which focus narrowly on workforce preparation in advanced technical and service fields (e.g. computing technology, health services and administration, cosmetology). Students pay full-cost fees, some with support provided through public grants and subsidised loans. These institutions enrol large proportions of students who have not experienced academic success in school, many from disadvantaged, low income and minority backgrounds. For these students, the attractiveness of the programmes derives from their hands-on practical orientation, the intensity and relatively short length of the study programme and the very high likelihood of employment on completion. The programmes aim at those who are neither reached nor attracted by other education offerings. They allow for a quick re-positioning in often very dynamic fields. There are a wide variety of such schools: widely publicised problems in some, with regard to poor quality programmes, weak job placement and fraudulent practices; highly effective programmes in many others. Yet, in spite of these acknowledged benefits, there are important questions to be addressed. How can such training prepare the learner for further, advanced education? To what extent do learners contextualise the vocational specialisation, or do the programmes work against just such contextualisation?

All of these efforts and opportunities raise a wider issue. Once participation rates reach 70 to 80 per cent of a generation, is there not a case for inducing the remaining 20 to 30 per cent to undertake some form of tertiary education? We think the question should be addressed as the state continues to develop its educational policies of inclusiveness, equal opportunity and social and economic efficiency. The reasons for further expansion and adaptation are more evident in Virginia than in most other systems examined in the course of this thematic review, because tertiary education already is part of the experience of a large plurality of the age cohort. We heard no one claim that the labour market could not make use of a larger number of those holding first tertiary-level qualifications. On this, we would align ourselves with the view

of T.W. Schultz, Nobel Laureate in Economics, who has argued that the scarce human capital resource is the stock of **acquired** abilities.

In our view, the reasons for further expansion are broader yet. At the national level, President Clinton has proposed tax credit/tax deduction arrangements which would ensure that **everyone** with aspirations for tertiary education has access to the financial support needed to meet the tuition fees of two years study at a community college. This proposal is but one indication of a view that, in a democracy, it is not possible to impose limits on participation in at least some form of tertiary education. To fail to pursue the adaptations needed to extend tertiary education to 90 per cent or more of a generation is to ignore deeply held democratic values, to accept the social bias which presently remains, to risk further marginalisation and social exclusion and to reject the possibility that the additional monetary and non-monetary returns on investment for even higher levels of participation in tertiary education will outweigh the costs.

From this perspective, therefore, while participation and provision in Virginia is impressive, there is still further potential for future growth. Improvements envisaged at the secondary level will get even more people 'to the gate' of tertiary education. But, is there an intention in Virginia to continue the present open access policy and even extend it? The question is not one of capacity or experience with ways to do it, but rather one of policy for the Commonwealth. Could or should there be limits? By formulating a clear policy on this issue, Virginia would make a major contribution not only to meeting the needs of its own citizens, economy and society but also to the international debate which at present is marked by uncertainty or equivocation.

Curriculum, Articulation and Transfer

A key element in the bachelor's degree programmes common to Virginia and the United States is the emphasis given to general education. The concept has been regarded by some as suspect, in part because a consistent approach to general education has not been extended 'system-wide' but also because of mixed views over the quality and relevance of studies. Nonetheless, the concept has particular appeal at a time when the development of high-level 'generic' skills and abilities are seen as essential to success in the number and variety of transitions most people will experience in their work and adult lives.

In Virginia, it is evident that universities and colleges are trying to resuscitate and give focus to the concept of general education, partly influenced by the 'restructuring' process currently underway. At James Madison University, for example, general education is being re-organised under five clusters (replacing eleven distribution areas) with limited numbers of interdisciplinary paths through each cluster. The clusters are: skills for the 21st century; ideas and expressive forms in the human community; the natural world; social and cultural process; individuals in the human community. JMU administrators and academic staff are looking into questions of how to organise and deliver the new general education and how it should be linked to study in the later years of bachelor's degree programmes.

The re-construction of general education appears to be stimulated, at least in part, by students. We were impressed at an evening meeting at the College of William and Mary by a dialogue involving students and staff over the value and uses of general education. Similarly, at Virginia Commonwealth University and at Old Dominion University, we were able to discuss the very considerable investment faculty at these institutions are making in the redesign of general education. At Virginia Tech, we were struck by the large number of freshman and sophomore students with 'undeclared' majors, all the more remarkable given the science, agriculture, technology and professional emphasis in study

programmes at this land-grant university. However, 'undeclared' majors may be found throughout the system. There may be several reasons for this, including confusion and uncertainty of students about their own interests and abilities, and the fields and careers which will provide the best match for them. Even those with more certainty about their interests and abilities may prefer the 'undeclared' option on the basis of a 'rational calculus' which reflects perceptions about likely career patterns within and among firms. Such perceptions may mean that greater weight is given to broader problem solving and communications skills and to the ability to work across specialisations. This point, of course, applies equally to those who have declared or undeclared majors. Other considerations also arise, for example, some students have need to broaden and deepen what may have been uneven or weak preparation in high school. In the attention being given to strengthening general education for all students, relationships between the 'general' components and concurrent and subsequent specialisations including career links is an important topic, made all the more complex by changing needs and opportunities in employment.

A characteristic feature of tertiary education in Virginia, as in the United States, is the use of course modules, through which students earn credits which can be applied toward degrees or diplomas. The credits can be accumulated at different rates and, to some extent, from a range of providers. The modular system offers considerable flexibility for learners and wide scope for the adaptation of modules to serve and support a lifelong approach to learning. Such a structure is broadly consistent with the directions identified by OECD Education Ministers at their 1996 meeting (OECD, Lifelong Learning for All, 1996). We note the risk, referred to by some observers, that students will choose a very loosely-connected set of modules which represents neither a well-integrated base of knowledge (the criticism which has been driving, in part, the reform of general education, described above) nor a progression and deepening of learning seen by many to constitute the value of a degree programme.

The problem of wide options for 'cafeteria-style' collections of credits may be compounded when students stretch out the time to degree completion through part-time study. Thus, the connection with what is learned in the initial period of study may be weakened with the lapse of time to subsequent periods of study, and the acquired knowledge base may be diluted. One consequence may be limited rates of success, at least in terms of degree completion, for those following tertiary-level studies on a part-time or delayed entrant basis. A re-analysis of national data from the U.S. Current Population Survey, provided in Tables 4-6, imply such differences, and similar patterns can be found in Virginia: in the four-year colleges, 40 per cent of students attending less than half-time continue their studies in the subsequent year; for full-time students, the persistence rate is 80 per cent. In the two-year institutions, one-quarter of students attending on a less than half time basis continue into the next year; the proportion for full-time students is 55 per cent. The patterns need to be interpreted with care, partly due to assumptions used to construct the CPS cohort analysis and to changes over time in the definitions used in the that survey. But, there are other considerations to take into account: not all students seek degrees, and those that do not complete full degree programmes may still benefit in terms of improved employment and earnings (the evidence is mixed); some of those who do not persist to degree completion may be from groups which, in prior years, did not aspire to participate in tertiary education.

The issue here is not so much 'full-time' vs. 'part-time' study, but rather whether curricula are sufficiently adapted to ensure that **every** learner is supported in ways which permits continuous building on knowledge however it is acquired, whether via short, intensive development of a firm foundation or more diffuse acquisition over time. Is there scope for further development in

programmes to improve learning for all students, whether they enrol full or part time?

An evident strength in tertiary education is the emphasis given to **active learning, work-based learning, and co-curricular activity** (the latter, available to students outside of regular coursework). Much of this is very valuable, and certainly contributes both to the student experience and to overall development. For students at Mary Washington College, where we were told there is a high degree of support for self-discovery, participation in a wide range of co-curricular activities is seen as an extension of what takes place in the classroom. A point meriting further development at some institutions may be the extent to which such activities are organised for or adapted to the circumstances and needs of part-time adult students. Nonetheless, the pattern at the large urban universities appears to be a greater blurring of the distinction among students with respect to attendance status. At Virginia Commonwealth University, as already mentioned, we had the impression that part-time and full-time students are almost indistinguishable in terms of their characteristics, aspirations, participation in various activities and the likelihood of working while pursuing their studies.

We were impressed by the extent and range of development of instructional uses of information technology. However, our general view is that steps have not been taken to fully adapt curricula and course design so that wider use of information technology can truly improve or extend learning. The most ambitious state-wide effort is TELETECHNET. This consists of a system through which lectures can be delivered to remote sites; the system allows for one-way visual link but two-way audio connections so that those in the remote sites can pose and respond to questions. The technology application is relatively 'low tech': teachers lecture as before, although arguably the lecture presentations and visual aids (charts, outline notes) are improved owing to the need to prepare to meet broadcast requirements. Nonetheless, we heard of an instance when students turned off the volume during the course of a transmitted lecture at a remote site. We do not know the circumstances; such an action would be an understandable response to poor technical quality or conditions at the site, weak content and presentation or an interest on the part of the students to engage in discussion on the topic. However, the single anecdote reminded us that there is more to information technology-based learning than IT delivery.

We were informed that strong, comprehensive initiatives to introduce and support effective and responsive technology-based instruction are underway (if not yet fully in place). The Community College system office is giving attention to the improvement of instructional design, not simply the increased use of technology. Based on what we saw, Virginia Tech has taken this even farther, with varied and well-designed use of information technologies in a range of first-year courses. Technology use in courses is backed up by training and design assistance which are tied directly to course objectives and styles of teachers. There is a significant investment in instructional design and staff development and training as well as in hardware, and the involvement of all staff is being induced through incentives such as the installation of 'state-of-the-art' IT equipment with access to information and communication networks in the offices of those staff participating in the training. At least at this institution, technology awareness, technical facilities, opportunity and use are nearing 'critical mass' in the staff, and certainly among students. An outstanding issue is the possible tendency of technology-enhanced methods and contexts to reinforce isolation in student work, at a time when team work is being seen as key for work at advanced levels. Such isolation is not an inevitable consequence of technology use, and measures to overcome the tendency can be addressed through course design.

We have already mentioned difficulties at the interface between secondary and tertiary education, under 'Demand, Access and Diversity'. A particular area of

concern is 'system-wide' articulation between the community colleges and high schools. Teachers tend not to have sufficient interaction across this divide, and they remain poorly informed about their counterparts' programmes and expectations of students. The Tech-Prep initiative, which focusses on this gap by blending secondary and tertiary education provision, is an interesting and successful innovation. Tech-Prep incorporates general and vocational aspects, and there is a need to strengthen this (it is limited at present). One beneficial consequence is the reinforcement of and stimulus applied by tertiary-level programmes to weaker high schools' programmes and their staffs. Dual-enrolment and advanced placement options, through which high school students may receive either credit or advanced standing in tertiary education while also satisfying high school graduation requirements, also strengthen the linkages. Still, it must be recognised that these options are not solutions for all articulation problems and difficulties.

At the tertiary level, there is an impressive, 'system-wide' approach to articulation and transfer. Development in such countries as Australia, the United Kingdom and Japan remains, for the most part, at institutional level (although Scotland's Credit Accumulation and Transfer Scheme provides a good, system-wide framework). In Virginia, the structures and procedures are mature and transparent; it is a sophisticated and fluid set of arrangements which continue to be constructed through consensus-building. The State Policy on Transfer calls for the development of a 'transfer module' which, if successfully followed and completed at a community college, guarantees admission into a bachelor's degree programme in a public institution. The success of this type of linkage may be seen at George Mason University, where the volume of junior (third-year) enrolment is greater than freshman enrolments; the difference is accounted for by the number of transfers mostly from community colleges. But, fixed transfer arrangements are barriers as well as growth points, and new issues are raised by the choices of students. A pattern seen in several countries taking part in this thematic review can also be found in Virginia, namely students who move from technical qualifications into regular degree programmes. There is also evidence of transfer after one year rather than following the full two-year associate degree programme. These 'unconventional' pathways may serve student needs and interests, but they raise questions of efficiency, cost and programme coherence. Our view is that the scope for such choices should not be limited, but rather that programmes should be sufficiently adapted to accommodate such patterns. We note that, with respect to early transfer from community colleges, the State Policy on Transfer anticipates that the tertiary institutions receiving such transfers will recognise those parts of the 'transfer module' successfully completed.

In summary, programmes, teaching and learning in Virginia's tertiary education institutions are being revitalised to encourage and enable students to acquire the advanced knowledge, skills and dispositions they will need in the course of their adult lives. In a number of programmes, students are being encouraged to become self-directed and independent while also working with others; these dispositions situate them to be continuous, lifelong learners. However, the links between schools and tertiary education institutions -- and especially between the teaching staff at the two levels -- are uneven, and care needs to be taken to ensure that impressive articulation arrangements remain supple and responsive to student choices and needs. Further, a continuing need is to provide a curriculum which challenges all students, whether 'average' or high ability. Academic staff already seem disposed to ensure that all students feel welcomed and accepted; there is evidence of this inclusive and responsive orientation in the ways the teaching is delivered and learning is supported. This provides an excellent basis on which to build and extend ways to accommodate diverse learning interests and styles of students.

Employment and Relations with Employers

Information from a variety of sources -- both national and state -- permit a monitoring of labour market developments of relevance to tertiary education in Virginia. These include ongoing employment surveys, but also more specialised efforts carried out or supported by the State Council of Higher Education focussed on employment aspirations ('College Bound Seniors', a profile of the backgrounds and interests of high school seniors who sit a widely-used college entrance examination, the Scholastic Aptitude Test/SAT) or employment destinations (a new 'alumni survey' to canvas the initial employment experiences of Virginia's public tertiary education graduates).

There is no apparent indication that the Virginia economy is suffering through any substantial mis-match of skills and abilities. Virginia has the advantage of being able to attract qualified and easily adapted labour from other states (but, equally, employers in other states can recruit out of the labour force in Virginia).

Not all, however, would agree with this positive assessment. A dismal academic job market has frustrated the professional ambitions of large numbers of those with Ph.D.s. Yet, even here the picture is mixed: those with scientific and technical specialisations have been in demand by private sector firms, while those with doctorates in the humanities have had less success in locating jobs outside of the public, principally education, sector. More broadly, the Centre for Innovative Technology and the Chamber of Commerce told us of shortages of 'mid-level' skills in the labour force. That assessment reflects short-term conditions, but also a certain reluctance on the part of employers to adapt to the relatively higher skill distribution available in the labour force (including shouldering the cost for some re-training and the higher salaries which may be required) and a focus on enterprise-specific needs. There are wider benefits to the state economy from having a more highly qualified, adaptable labour force and to individuals from being better prepared for more varied transitions among jobs and through adult life.

With respect to employability, we believe that the student-centred approach in high school and tertiary education has proven to be highly beneficial, notwithstanding the concerns over standards. For a large number of students, the approach leads to the development of a sense of purpose and confidence, a collaborative disposition and a creative inclination. This is developed not only through the high school curriculum and the standards that are set but notably through the culture of the institution including student-teacher relations.

We were impressed by the range of ways that study and working life have been brought together. The proportion of students working while enrolled varies among Virginia's institutions. At urban institutions and community colleges, it is common for the majority of students to be working full- or part-time. Most institutions offer opportunities for part-time employment, paid by the institution and, in part, through the federal 'College Work-Study' programme. Graduate programmes, especially in professional fields at the urban universities, are designed to attract and accommodate those who are employed. Such work experience helps to secure the link between study and work and eases the transition between the two. Work is seen as attractive: a recruitment film for Virginia State University features a young student saying 'I work at school, and this helps me to develop a sense of responsibility'.

As elsewhere in the United States, the links between vocational education and employers are generally good; this applies to the programmes of community colleges where there is strong evidence of effective partnership through involvement in course design and engagement of practicing professionals as part-time teachers.

From a comparative perspective, what is particularly impressive is the evident high levels of co-operation and contact between universities and employers in provision itself. Co-operative education and internships are longstanding components of degree programmes in a number of professional fields; for example, students following study programmes in engineering and business commonly participate in summer and term internship assignments with companies and governmental agencies. This work-based component now is being expanded into other fields. Old Dominion University's 'Career Advantage Program' guarantees such a programme-related internship for any student who wants one. At Virginia Commonwealth University, there is no lack of interest on the part of students, staff or employers in the co-op programme. Some employers are seeing their involvement in such initiatives as a form of pre-recruitment, as evidenced by a 60 per cent rate of retention of the co-op student as employee on graduation. Apparently, most students participating in the co-op programmes are new to the firms in which they are placed.

The attentiveness to the world of work is evident in the development of new programmes. A programme of study linking engineering with information sciences at George Mason University was introduced in response to and designed with the help of high tech industry in Northern Virginia. At James Madison University, a new College of Integrated Science and Technology was established to attract students into the sciences and to produce graduates with knowledge, skills and dispositions in demand in applied scientific and technical fields. The curriculum provides what is termed a 'unique' preparation: graduates will be "prepared with a broad base in understanding science, technology and business principles; comfortable in a collaborative approach to problem solving; sensitive to political, social and ethical issues; highly skilled in the use of the computer as a problem-solving tool; and oriented more towards the problem-solving process than toward in depth scientific knowledge." Such an integrated, interdisciplinary approach has been particularly effective in attracting highly qualified women into the sciences, in which they have been under-represented. It also has been welcomed by a wide range of firms and agencies which have engaged upper division students as interns to undertake analyses in the Colleges fields of specialisation.

There is some indication that young people or adults are turning to community colleges for short-cycle, skill-based preparation on completion of a bachelor's degree or at the time of career change. The development may be explained by changes in career paths as well as by new expectations on the labour market, but also by an apparent reduction in the scale and nature of the involvement of employers in providing their own training. As observed nationally and comparatively, employers are reducing their own training programmes and now work in co-operation and partnership with tertiary education providers. Thus, in Virginia, about half of the enrolment growth in short-course and non-credit programmes in the community college system derives from contractual agreements with firms and agencies in the local community. Whatever the causes, the choices by students and responses by community colleges are understandable and would appear to serve individual aspirations and economic needs. Nonetheless, such developments could pose questions for the content and structure of the bachelor's degree.

Tertiary education in Virginia appears to be effectively contributing to meeting the evolving employment demands in the state economy. There is little evidence of substantial mis-matches and, when the volume and composition of new graduates are considered alongside options for re-training and upgrading at the tertiary level and the 'safety valve' of in- or out-migration of qualified labour, tertiary education can be seen to assume several functions in response to overall labour market developments. Within Virginia's tertiary education institutions, the openness to varied combinations of work and study is a notable strength, helping to situate learning in a wider setting and easing the transition into work on the completion of studies. The conditions now may be

right to build on this strength, so that work experience of all students, not just those involved in organised co-op, internship and community project work, can be used as part of a coherent education strategy.

Quality Assurance, Standards and Quality Enhancement

We have already referred to the influence of federal institutional eligibility requirements and of the role of voluntary accreditation bodies which provide oversight of programmes and institutions. The approaches used by these bodies have been criticised as insufficient, in part because of the very wide diversity of providers and of student choices and pathways. Criteria, particularly for outcomes, are believed to be weak.

There is growing attention at the state level to quality improvement, quality assurance, appraisal and accountability. Through the State Council of Higher Education, Virginia's approach places emphasis on assessment for institutional improvement. The target is actions 'on the ground' with a relatively light oversight and response from a knowledgeable, highly expert staff at the system level. From the information we received, the process seems to be effective, reasonable and mature. Nevertheless, while information on actions taken is provided in strategic plans developed by each institution, what is not known is the extent to which the process actually is leading to changes in teaching and learning.

Further, such an approach does not lend itself to full accountability. It is not clear what constitute the standard or standards against which performance is to be judged, nor is it clear how students are assessed and the extent to which they meet requirements. Pressures in Virginia for more transparent, system- or sector-wide assessments or standards, not least from the Governor who is seeking performance indicators for **all** agencies of government, have set the stage for the development and implementation of such indicators in the tertiary education sector. In this area, the Council's approach is to compare like with like, by measuring institutions against themselves over time and also against comparable institutions (peers) nationally. Such an approach, it is argued, will minimise the pressure toward homogeneity.

Whatever the approach taken, we hold strongly to the view that the wide range of provision and diversity of interests and needs of students imply not a single standard, but many standards. We support the requirements on institutions to set objectives for learning, apply means to assess whether these objectives are met, describe what will be expected of students during their study programmes and provide information on likely outcomes on graduation (employment destinations, unemployment rates, continuation to advanced studies). These objectives could be met by the further development of the existing framework including, perhaps, more detailed guidance for reporting and follow through. It is important, however, to maintain the emphasis on institutional self-review, since that provides the best assurance of action to remedy such weaknesses as may be identified.

In this connection, there are important initiatives to strengthen the training and evaluation of those who teach at the first years of tertiary education. Initiatives at the institutional level for staff development aim to improve performance. Almost all institutions have established resource centres charged with the responsibility to provide support to academic staff, part-time adjunct teachers and/or graduate teaching assistants who need help in teaching. Particularly interesting examples may be found in the implementation of technology-enhanced teaching, e.g. TELETECHNET and the Faculty Development Institute at Virginia Tech. Experience with different forms of teaching and learning via IT are revealing weaknesses in existing methods and content of courses and calling into question conventional methods of assessment. The

Community College System's Professional Development Initiative consists of a comprehensive set of programmes aimed at stimulating improvement in teaching quality and effectiveness. Thus far, the large share of the funds set aside for the initiative have been used to support staff meetings and individual research within subject fields or disciplines, with an emphasis on instructional development. The initiative also invites each community college staff member to prepare and regularly update an individual professional development plan.

Concerns about the quality and effectiveness of teaching by graduate students and part-time adjunct staff have been addressed, on the one hand, through more stringent requirements for fluency in English, for specialised training in teaching methods and evaluation of student performance and for close supervision by administrators and academic staff in the programme concerned. On the other hand, staffing for first-year course modules has been strengthened through increased teaching responsibilities for academic and research staff, both individually and in collaboration with part-time adjunct staff and with enterprises.

Attention to these matters has been stimulated by a recognition on all sides that simply to continue prior practices at a time when the student population is becoming more diverse in terms of backgrounds and interests and resources are limited would put at risk the quality and effectiveness of the student experience and potentially undermines learning. Moreover, new approaches to general education which cross disciplinary boundaries are themselves de-stabilising for academic staff. It was not clear to us that this latter problem has been addressed.

It is more difficult to assess the results of these efforts by tertiary education institutions, but steps are being taken to focus attention precisely on those results. At the state level, the legislature set down a framework in which the evaluation of staff will take place: "faculty salary increases shall be allotted only to those institutions of higher education which have faculty evaluation plans to include regular, rigorous pre- and post-tenure performance reviews acceptable to the Secretary of Education and the State Council of Higher Education" (1996 Virginia Acts of Assembly, chapter 912, '1-127.F.2). This new emphasis on performance evaluations has led many institutions to clarify their expectations of staff both prior to and after the awarding of tenure. In almost all cases, the evaluation includes an assessment of teaching. Evidence for teaching effectiveness usually includes student evaluations of classes; other evidence may be derived from peer visits to classes, peer review of course materials, statements of teaching philosophy and teaching portfolios. In evaluations of teaching, institutions also consider evidence of participation in training in and implementation of new pedagogical approaches, new course or programme development, advising and various forms of collaboration with students on research projects.

In the end, our view is that weaknesses in teaching quality must be tackled by individual staff members and by institutions; they cannot be overcome by mandate, even though this can be useful in setting directions and a framework for action. Policies need to establish favourable conditions for teaching and encourage initiative at the individual and programme levels as well as higher levels. We have drawn attention to good examples; our impression is that the depth and effectiveness of the effort is uneven across the tertiary sector.

Governance, Planning and Coordination of the System

Keywords describing the Commonwealth's policy development apparatus are 'fitness for purpose'. The means for policy development function extremely well, with the agencies and actors having responsibilities in various domains

of higher/tertiary education operating within an established policy framework which encompasses the institutional structure and all other aspects relevant to the sector. There are no obvious gaps in the policy framework, and no evident unmet need: there is a place for everyone, somewhere. This appeared to the reviewers to be among the best overall frameworks of the countries taking part in this OECD thematic review. Moreover, there is a sense of common purpose and commitment, widely shared by all parties.

In Virginia, the Governor and legislature in a representative capacity establish the broad policy framework, the structure and broad role of individual institutions and the budget (including allocations to individual institutions). The chairs or co-chairs of the finance committees in the respective houses of the legislature play key roles, as do members of the State Council of Higher Education. Decision making is based on intensive interaction with institutions and a wide variety of interest groups. As already described, there is considerable autonomy for institutions: each public university or college granting bachelor's or advanced degrees is established as a separate legal entity; the twenty-three community colleges are constituted and financed as a single system. Private institutions operate independently, under a broad regulatory framework.

A feature of policy in Virginia is decentralisation, which has garnered wide-spread support. Decentralisation in tertiary education is to be seen in the context of the wider movement to decentralise State operations. The Secretary of Finance is supportive, and the problems and issues have been thought through. There are also, of course, 'centralising' pressures, seen not least in the interest to use the Commonwealth's tertiary education sector as an instrument for economic development. This is a legitimate public interest, which can best be served when the innovativeness and uniqueness of the sector's constituent institutions are encouraged and supported. Such an approach calls for indirect methods, rather more 'carrots' than 'sticks'. Virginia's experience with its Centre for Innovative Technology, through which funding and information networks are used to attract new businesses and to support their development via access to specialised expertise in the state's tertiary education institutions, is an effective example of such an indirect approach. In general there is evidence of a wide range of policy and strategic means to encourage development and responsiveness. In addition to quality and accountability measures and strategic funding, use is made of favourable tax and legal status of institutions and institutes, which give broad scope to raise funds outside of regulations set down for public agencies, and of regional development programmes in areas of low access.

The State Council plays a crucial role in bringing the actors together in their policy development roles and in overall co-ordination of policy/policy implementation. The Council's reports, of various types and in various forms, are highly targeted and aimed clearly at the level of policy formulation; we have cited them throughout this commentary. The Council has few direct powers, but it is obliged by statute to monitor and report on the performance and health of the tertiary education sector and to provide advice to both the Governor and the legislature. The Council's status and activity have had the effect of introducing substantial transparency into policy decision-making, as its advice can be rejected, but only publicly. This 'independent' and buffering role is extremely useful, because government policies can be advanced with less direct objection and the Council can find ways to ease and facilitate implementation. The Council, in other words, is helping the government succeed in bringing about change. At the same time, it is an important resource for the institutions by virtue of its knowledge base, analytic capacity, links with the state legislature and administration and its place in national communications networks. Such roles require a delicate balance. A shift toward a more central and active role in, e.g. detailed planning or quality assurance, could put at risk the 'independent' dialogue now being used to great

effect or the dynamic, diverse and responsive development now observed across the Commonwealth.

In this policy framework, the direction seems to be toward the development of a more structured 'system' perspective. On the whole -- given the growing variation in a diversity of tertiary learning experiences of students, including simultaneous multiple enrolments, credit transfer and various forms of distance learning -- attention to 'system-wide' patterns of pathways, linkages and outcomes will become more important even as the roles and responsibilities of institutions remain key to meeting the needs of the state's economy and the aspirations and interests of its citizens. In this connection, we wonder whether the Council of Higher Education might wish to deepen its monitoring with respect to all provision of and linkages with career schools and tertiary-level enterprise-based training. Given the wide range of provision in the state, the Council has a key role to play in ensuring that appropriate and useful information on the full range of tertiary education options is available to all parties, not least potential students.

A particularly interesting feature of the overall governance structure is the Southern Regional Education Board, a voluntary, co-operative body of education officials in southern U.S. states. SREB provides analyses of issues of interest to all states, and also serves as a vehicle for arranging multi-state co-operation at a practical level. Virginia has co-operated in arrangements which permit inter-state flows of students in specialised fields, thus allowing certain economies of scale to be realised, excess capacity in some programmes to be utilised and significant capital and human resource investment for the expansion of some specialised programmes to be more widely shared **among** states.

Institutional Leadership and Management

There is evidence everywhere of significant institution-level initiative and decision-making. Programmes have been closed and new ones have been opened, at a time of pressure on public resources. Resource constraint may have driven the changes and strengthened the hand of senior institutional officials, but these are institutions comfortable with entrepreneurial activity to apply their available capacity and expertise in ways which attract and secure needed resources. There appears to be emphasis on widely dispersed leadership and shared decision-making throughout the institutions, and they are highly structured with well-articulated decision points to ensure coherence of policy. These arrangements reflect both a tradition of participatory governance and recognition that, in increasingly very large, costly and complex organisations, such a management approach is essential. Senior executive leadership is of crucial importance and was in evidence. Difficult and at times controversial decisions are required, particularly on resource allocation and on actions required to manage what may be weak areas of activity. The task of the institutional president is an increasingly challenging, not to say onerous, one not made easier in recent years by financial constraints and, at times, waves of public scepticism e.g. about college education costs.

While we were impressed by the very high degree of professionalism shown in the management decision-making process, we were not able in the necessarily short time we could spend in institutions to judge the extent to which policy direction has been translated into action at the faculty or departmental levels. As we have noted, there is a continuing need for institutional self-evaluations to demonstrate effect as well as intention. We noted some reporting in strategic planning documents of actions taken.

Costs, Efficiency and Financing

The first years of tertiary education in Virginia are funded primarily through two sources: state appropriation directly to the institution (or system of community colleges) and tuition fees. For private (non-profit) institutions, fees account for 75-80 per cent of the current fund revenues for educational and general programmes.

Over several decades, there has been substantial public and private investment in tertiary education in Virginia. This is shown in the scale of provision, in the size and quality of its work force and in building plant and equipment. The physical plant itself constitutes an impressive and valuable asset, and stands as a tribute to the decisions taken by state and institutional leaders. During the initial stages of fiscal constraint, it appears that expenditures for new capital assets were deferred as resources were used only to maintain existing facilities. However, in recent years the state has been able to support a programme of investment to meet demands for new space and for the restoration and improvement of aged facilities. This was accomplished through a general obligation bond issue in 1992 and a combination of cash appropriations and additional debt authorizations in 1994. How future needs will be met is unclear, as there appears to be limited scope to fund capital projects from either additional state borrowing or current fund revenues. While the needs might be somewhat forestalled through wider use of new delivery approaches or be met in part through new forms of partnership -- and these should continue to be looked at carefully -- tertiary education represents a target for public investment which offers significant returns to the citizens of Virginia as well as to the individuals who participate in it.

Since restructuring began, the number of programmes has decreased significantly. Between programmes discontinued in 1996 as part of the restructuring effort by institutions of tertiary education and programmes closed through the State Council's productivity review process, 76 programmes have been terminated. Nineteen more programmes will be closed, when seven merged programmes are approved. These actions will result in a net reduction of 88 programmes from 1996.

Programme and institutional performance is also being judged in relation to elapsed time to degree completion. Most universities and colleges report to the State Council the percentage of the entering cohort receiving the bachelor's degree within six years. However, the great flexibility afforded for entry, transfer, stop-out and re-entry coupled with the suppleness of Virginia's labour market makes such a measure insufficient. Indeed, from the perspective of a lifelong approach to learning as advanced by OECD Education Ministers in 1996, variations in combinations of tertiary education -- both credit and non-credit -- and training and the timing of that learning are seen as valuable and appropriate not only in view of responses to developments in economies but also in response to and recognition of differences in the pace and age at which people are best able to benefit from participating in different learning opportunities. The provision of tertiary education in Virginia is well-suited for the implementation of a lifelong approach to learning; this could be furthered if outcome and efficiency measures are expanded beyond time to degree and there is some rethinking of financing options.

Tertiary education institutions in Virginia (and the United States) are, in many respects, more entrepreneurial than their counterparts in other OECD countries, although those in other countries are moving rapidly in this direction. Among the reasons: the autonomy afforded to institutions -- public and private, non-profit -- to recruit as many students as they believe they can efficiently and effectively enrol; the revenues derived directly from students (partly paid by parents and/or other third-party payers, including the federal government via student grants and other subsidies); and the scope for securing revenues in a range of education-related activities, from dormitories, food

service and student activities to contracts with enterprises and royalties from patents and publications. Such a blending of activities each of which introduces its own incentives inevitably will lead to unintended consequences, partly owing to the choices which institutions are forced to make, e.g. concentrate on full-time students because they pay fees **and** dormitory charges; concentrate on non-credit, contract teaching because the prices paid by private firms and public entities on behalf of their employees or individuals are higher than the revenues generated through degree- or diploma-credit courses of similar scope.

While we heard of such 'trade-offs', we heard many more instances of strategies to use a wider range of activities both to enrich the quality of teaching and the student experience and to secure and make available a stronger resource base for the benefit of the education function. In our view, the strategic planning undertaken by institutions and strengthened in the process of 're-structuring' has provided a framework in which institutional activities and efforts have been focussed and the extent of unintended consequences minimised.

Students and their families pay a significant share of the costs of tertiary education. Virginia is a low tax/high tuition fee state; more similar to Japan than to New York in this regard. The early 1990s recession, combined with enormous pressures on state budgets prompted substantial increases in tuition fees in public institutions in Virginia as elsewhere in the U.S. Such increases raise anew three issues of longstanding interest in the U.S.: the impact on access, on attendance patterns (choice) and on who pays the costs.

Have tuition fees cut into access? National data reveal little change over time in overall rates of access to tertiary education, and some evidence of a slight erosion in recent years. The reasons are complex and the data are not entirely clear on this, however, because young people and adults can and do pursue a wide range of post-compulsory education and training options other than those offered and/or recorded as such in tertiary education institutions. In Virginia, the data suggest different patterns of response to increases in the costs shouldered by students and their families. Some institutions, such as the University of Virginia and James Madison University, have experienced no decreases in the volume of applications or of new enrolments. Other institutions have experienced reductions in both, particularly from that part of the cohort residing outside of Virginia (the latter would be expected to pay higher, non-resident tuition fees).

A second issue is the extent to which higher tuition fees have altered enrolment/attendance patterns. There is evidence that community colleges are enrolling students who, in the past, would have enrolled directly in bachelor's degree granting institutions (away from home). These students have no intention of securing an Associate Degree; their main aim is to pursue a bachelor's degree programme after a year at the local community college. We heard of increased rates of transfer from community colleges to private bachelor's degree granting institutions. Students also have the opportunity to obtain advanced standing through successful completion of the Advanced Placement exam, credit given by community colleges for specific courses taken in high school, or dual-enrollment in high school and community college. About 8 000 high school students take advantage of these options each year. Dual-enrolment is attractive for both high schools and community colleges, since both receive funding for the student. However, there apparently is a reluctance by universities and colleges to accept credit earned through dual-enrolment arrangements.

A third issue is, in the face of rising costs for tertiary education, how are these costs to be met. The U.S. has gone the farthest -- and has the most experience -- in an approach in which students are expected to pay. For the past 30 years, a key principle in federal and state policy has been to ensure

that access to tertiary education is determined by ability to benefit, rather than ability to pay. For states, the principle was secured primarily through public funding for institutions which enabled no or substantially below-cost tuition fees. The federal government assumed a major responsibility for the realisation of the principle, through programmes of student financial aid. In the immediate post-war period, the 'G.I. Bill' provided stipends to returning military personnel that supported their participation in some form of tertiary education. With the passage of the National Defense Education Act in 1958, the federal government committed itself to provide financial assistance to any student, on the basis of an assessment of their financial means. The Higher Education Act of 1965 put in place the principal range of programmes -- grants, subsidised work and loans

-- that exist today. Some observers identify the growth in the volume of financial aid (particularly federal aid) as a key factor in the realisation of high rates of educational attainment, with the proportion of adults with tertiary level degrees rising from 5 per cent in 1940 to 20 per cent in 1985 to 32 per cent in 1994.

Federal policy developments into the 1990s, however, have led to a decline in real terms in the funds made available to students. This has challenged states and individual institutions of tertiary education to assume more of the responsibility for ensuring access. Virginia has increased student aid funding by 200 per cent since 1990, partly to help cushion the impact of increases in tuition fees. For this reason, the Commonwealth's student aid programmes were opened in 1992 to community college students. Projections indicate that additional student financial aid resources will be needed over the 1996-98 period and beyond.

Moreover, over the past twenty-five years, the form of federal student financial aid has shifted from grants to loans. This has led to rapid increases in the volume of student borrowing and in overall debt levels assumed by individual students. One consequence of rising tuition fees and high levels of student debt is a turn toward approaches which will increase the amounts provided by parents (or employers or grandparents) on behalf of the student. This may be the only non-government source left to be tapped, and signals a possible return to the balance in sources of funding (parent; student; state sources; federal sources; private, third-party sources) characteristic of the period prior to the 1980s when enrolments were fewer and students more similar in terms of backgrounds and pathways through tertiary education. Schemes to promote parent savings, such as the Virginia Higher Education Trust Fund, were given a boost in July 1996 when the U.S. Congress passed legislation granting certain federal tax exemptions for savings via a qualified pre-paid plan. The plan operates much like life insurance: for a contract price, the pre-paid plan guarantees to pay the posted tuition fee of the student beneficiary at the moment he or she enrolls in tertiary education. There are tax benefits for the parent and student beneficiary's family; if the student does not enrol, funds placed into the plan are paid back to the parents with a 'reasonable' return on the investment. Some argue that individuals can secure a higher return on the funds through private investment. A second concern is that most plans are not formally guaranteed by the state, although it seems unlikely that the state would not intercede in the event the income of the invested funds failed to meet the tuition charges for those with contracts.

Confronted with widespread concern about the affordability of college costs, President Clinton has proposed a tax break for families paying tuition fees. Families would be able to choose to deduct up to \$10 000 in tuition fee charges from their income subject to tax, or take a tax credit of \$ 1 500. Families could claim the tax break in a second year of study if the student has a 'B' average. The tax break would be extended to almost all families. The federal tax code already provides certain tax breaks for tertiary-level study, but these are narrow (eg. deduction for 18-22 year old dependents who study full

time; employer tuition-aid is not subject to tax). The proposed tax breaks directly attack the problem of apparently widespread perception of the reduced affordability of tertiary education by offering a simple, transparent 'guarantee' of some financial support. It also would increase the level of federally-generated support for tertiary education study. Analysts have noted several disadvantages. The sums provided through the tax credit or deduction would not go primarily to those in most financial need, as the amounts provided through federal need-based student grants are to be deducted from the tax break. Although the tax break could relieve the pressure on family budgets and perhaps reduce reliance on student debt, there is a question about whether the tax break will encourage additional tertiary education enrolment and, further, whether it will induce institutions (and states) to raise tuition charges. Finally, this proposal would imply more specific oversight by the Treasury of tertiary education and its programmes.

To summarise, we would draw attention to four concerns or observations. First, the Commonwealth has a pre-eminent role in the funding of tertiary education; the favourable recent overall funding notwithstanding, we are concerned that competition for funds in the state budget will put at risk the economic and social returns from a solid, sustained public investment in tertiary education. Second, we welcome the balanced approach of base funding to institutions with a measured use of targeted funding, such as investment in capital projects, expanded student aid and various direct and indirect incentives for partnerships with and within the tertiary education sector. Third, the autonomy afforded to institutions increases the importance of effective quality assurance mechanisms and information systems to broadly encourage attention to 'value for money' and overall public needs and interests. The further refinement of institutional restructuring plans provides a ready, and seemingly well-balanced, means to provide the needed oversight. Finally, while it appears difficult to draw firm conclusions about adverse impact of tertiary education costs on access and attendance patterns, we are of the view that care should be taken to ensure that strategies considered to help young people and adults meet the costs do not overly dampen their aspirations. In this connection, we applaud the openness of students and institutions to combinations of learning and work (and, as we have indicated, not only for the funds generated) and are intrigued by the evolution of 'pre-paid tuition plans' and the new tax credit proposal advanced by the federal authorities.

From a comparative perspective, Virginia, and the United States generally, continue to exhibit dynamic and uncertain development in the costs and financing of tertiary education. In this connection, Virginia provides an interesting example by virtue of the 'fluidity' of system and the readiness of individuals, institutions and third parties to 'play the market'; this is part of the openness of U.S. education.

Conclusions

The Commonwealth of Virginia has a mature, highly developed system of tertiary education, showing enormous strengths and many admirable qualities. Large volume participation is not new to the state, and its selective universities and colleges, its diverse range of private liberal arts colleges and its flexible, multi-faceted community colleges provide numerous examples for reference, if not comparison with experience in other OECD countries. There are good reasons to make those comparisons, especially in a period when other tertiary education systems are experiencing growth.

What Virginia has achieved is a high degree of inclusiveness and an impressive and diverse range of programmes and institutions. There is recognition of the right of all citizens to participate in tertiary education regardless of

preparation, age or background. The range of publicly-funded institutions available in the Commonwealth turns this right into a reality; the range of opportunities is being further expanded through distance learning, thus overcoming barriers of time and distance; the range of private, non-profit institutions and career schools ensures that diverse student interests, backgrounds and needs are catered for. And, the overwhelming impression is that institutions are making considerable efforts to provide appropriately for the range of abilities, attainments and interests of the students they enroll. There are, in short, many genuine invitations to participate. Nevertheless, not all who might benefit do in fact participate.

For Virginia, then, access could be seen not as approaching a natural limit but rather as a growth point which can offer considerable social and economic benefit. The challenge is to commit to the development of policies which encourage and support even higher levels of participation. In this respect, we identify a number of key policy areas where possibilities exist to build on strengths and reduce weaknesses in making the commitment a reality for all:

- Improvements in primary and secondary schooling are needed, and this must be seen as a priority. Comparative statistics indicate that other OECD countries now are approaching if not exceeding the U.S. with respect to secondary school completion. However, care should be taken particularly in the setting of standards and assessments to avoid approaches which fail to take into account a wide qualitative range of learning styles and desired outcomes, not least to ensure that curriculum, teaching and learning in schools support and reinforce the aspirations of **all** young people.
- Solutions to weak performance in primary and secondary education will require greater engagement from tertiary education institutions, programmes and staff and changes in programmes, teaching and learning at the tertiary level as well.
- Educational guidance and information as well as career advice are even more important with higher levels of participation and a widening range of backgrounds and interests.
- Further improvements in the already well-developed high school/tertiary articulation are desirable, not least through deep and ongoing interaction between study programmes and staff at the two levels. This is an ideal, not a reality in Virginia.
- Curricula -- contents, methods and contexts -- are highly varied, but there are targets for further development. The first target is to sustain the highly commendable re-thinking of 'general education', and specifically to do so in a way which blurs and blends with remedial education; 'general education' should be seen as adapting to the needs and learning styles of all students. The second target is to adapt provision and services to improve the student experience of part-time students.
- A more global view of quality of learning and standards of performance is needed, one which does not focus so much on the hierarchy and 'gold standard' as on the range of tertiary-level skills and qualifications of interest and value. It is time to accept that bachelor's degrees encompass a wide array of tertiary-level contents and competences, not a single norm.
- There has been much valuable work on quality assurance, but could steps be taken to strengthen the depth of its coverage and its impact at department/programme level? While we understand the legitimate

public interest in common measures of performance, there is a risk that such measures will undermine innovativeness, creativity and diversity in response to diverse and evolving demands, weaken the fluid, supportive oversight in existing arrangements and fail to capture the range of outcomes generated through tertiary-level study. In this rapidly developing field internationally, a range of approaches are being advanced on the basis of institutional self-evaluation and discipline reviews; exchanges of information and experience internationally among agencies and institutions would be of value.

- We saw no evidence to support the popular criticism (in U.S. generally and in several other countries) of the 'neglect' of undergraduate or graduate teaching. On the contrary, we encountered many impressive examples. But teaching **quality** does not seem to be adequately appraised.
- Overall leadership, institutional management and decision-making are very strong. There is an 'innovativeness' in provision and programmes, which leads to a certain responsiveness and 'fitness for purpose'.
- Partnership, especially with business, is strong and it should be seen as a strategic target for continuing development, ultimately drawing in students in all programmes and areas of study.
- In contrast with other countries, the employability of graduates appears not to be a problem; the evolution of economic activity, employment and careers is a major consideration, however, and graduates need to be prepared for future changes.
- There is rich physical provision of buildings, land and equipment, which stands as a valuable asset and an indication of effective, wise and forward-looking policy decisions at state and institution levels.
- There are good targets for additional funding, and the state could benefit greatly from allocating additional resources. Our recommendation is to put the additional resources into incentive funding, 'carrots' to encourage institutions to undertake work in particular areas (e.g. new co-operation in course delivery). Criteria should be sought which balance precise responsiveness (and accountability) with innovativeness, creativity and diversity.
- SCHEV plays a key role, and the system benefits in numerous ways. It should continue to stimulate development and to encourage institutions, programmes and staff to be pro-active in their efforts to respond to the aspirations of Virginians and the needs of the Commonwealth. There would be value in adopting a very wide scope in its **monitoring**, to include the full range of tertiary provision and learning (encompassing, e.g. all career schools, enterprise-provided learning activities and formal and informal learning partly provided through cross-border distance and technology-based means). Such an overview could lead to the development of information on all options and choices, and so better inform decisions of policy-makers, institutional and programme managers, employers and students and their families.

These policy targets should be seen as means to meet the challenge of sustaining the momentum of the reforms already underway and an invitation to build on existing strengths of Virginia's tertiary education sector. Those strengths are made evident in the subsequent successes of its students in

employment and adult life. The students we met, in the universities or career schools, small colleges or large institutions, impressed us with their openness, confidence, achievements and sense of direction. The conversations provided an indication of the abilities, knowledge and dispositions worth developing in even more of the Commonwealth's citizens.

A fine and impressive balance has been achieved in Virginia between a statewide policy and legislative framework and the institutions. The institutions themselves demonstrate a considerable diversity of history, mission and style of operation; collectively, they constitute a quite outstanding resource. The wise management and utilisation of this resource by the people of the Commonwealth, whether through the institutions, the legislature, the State Council of Higher Education and other bodies, is crucial to the continuing development of the state and its citizens. What is clear is that this development affects all Virginians, not only those directly involved. Tertiary education within the state, nationally and internationally, is intertwined with the society, the culture, the economy and the polity. Future policies will need to give ever greater attention to these linkages and interrelationships. There is a very substantial and solid base on which to build for these purposes.

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Table 1

Virginia Economy at a Glance

Population	6.5 million
Labour Force	3.5 million
Area	40 000 square miles
Manufacturing	Jobs: 405 000 Value: \$60 billion strong growth in high tech and related sectors
Tourism	Jobs: 160 000 Value: \$10 billion
Exports	Jobs: estimated 180 000 Value: \$10 billion (or more) tobacco and related products account for about one-third of exports
Services	Jobs: 836 000 Value: \$26.5 billion largest projected employment growth, 1990-2005
Federal Government	Jobs: 350 000 (170 000 in military) Value: \$44 billion expected to decline

Sources: The Virginia Chamber of Commerce, 'The Voice of Business in Virginia', 1995 and additional information; Virginia Employment Commission, 'Employment in Virginia Hits an All-Time High', 6 August 1996.

Table 2

Change in Shares of Employment on Non-Farm Payrolls,
by Major Industry, 1960-93

(not seasonally adjusted)

	U.S.	Virginia
Mining, Construction	-27.4	-40.0
Manufacturing	-47.5	-48.0
Transportation, Public Utilities, Government	- 3.8	- 6.1
Wholesale/Retail Trade, Service, Finance, Insurance, Real Estate	44.4	50.0

Source: Calculated from Southern Regional Education Board, 'Changing States: Higher Education and the Public Good -- State-by-State Background Data', 1995.

**Table 3 Net enrolment in public and private tertiary education by age group, 1985-94
(based on headcounts)**

	Ages 18-21			Ages 22-25			Ages 26-29		
	1985	1990	1994	1985	1990	1994	1985	1990	1994
North America									
Canada	25.5	28.9	40.3	9.5	11.4	22.8	3.0	3.4	9.6
Mexico			m			m			m
United States	33.0	36.2	34.9	14.5	17.1	20.9	8.2	8.5	10.4
Pacific Area									
Australia			29.3			13.6			8.5
Japan			m			m			m
New Zealand	14.9	20.8	30.9	9.6	13.8	13.9	m	m	7.2
European Union									
Austria			12.0			13.3			8.0
Belgium 1			37.4			14.7			3.8
Denmark	7.4	7.4	9.1	16.3	17.9	22.1	8.2	9.3	10.9
Finland	9.3	13.6	16.6	17.3	20.7	27.3	7.9	10.2	12.2
France	19.4	24.6	33.2	10.0	11.8	17.0	4.3	3.9	4.6
Germany	8.8	8.5	11.2	15.5	15.9	17.2	8.9	10.4	10.3
Greece			36.7			10.2			2.2
Ireland	15.2	20.3	30.5	2.8	4.3	7.9	m	m	2.4
Italy			m			m			m
Luxembourg			m			m			m
Netherlands	14.4	17.9	22.1	11.9	13.4	18.4	5.7	4.7	6.2
Portugal	5.8	m	19.3	5.4	m	13.4	2.3	m	4.8
Spain	14.9	21.2	25.4	10.6	13.5	17.5	4.0	4.5	6.2
Sweden	7.9	8.7	12.3	11.3	11.4	15.3	6.5	6.1	7.2
United Kingdom	m	16.1	23.6	m	4.7	8.4	m	m	4.4
Other OECD countries									
Czech Republic			14.8			7.6			1.5
Hungary			11.0			6.9			2.9
Iceland			7.9			18.8			6.8
Korea			30.8			16.3			2.7
Norway	8.8	14.4	17.1	13.2	18.9	23.6	5.7	8.2	10.4
Poland			14.6			10.8			x
Switzerland	5.7	6.4	7.6	10.6	12.1	14.2	5.2	6.4	7.1
Turkey	m	7.4	10.5	m	4.6	7.2	m	2.3	3.2

Note: Data refer to all enrolment, not just first years.

1. Flemish Community as follows (1994 only): Ages 18-21: 36.5; Ages 22-25: 11.4; Ages 26-29: 3.2
(data supplied by Education Department, Ministry of the Flemish Community)

Source: Education at a Glance, 1996, Tables P6.1, P6.2, P6.3, P6t.

Table 4

Tertiary education of the cohort, aged 20-24 years old in 1985

(percent of cohort)

	All	Males	Females
Some tertiary education in 1985	46.9	46.3	47.4
Some tertiary education in 1987	47.1	46.1	48.0
Some tertiary education in 1989	48.3	47.5	49.1
Some tertiary education in 1991	48.7	47.8	49.6
Some tertiary education in 1993	50.7	48.8	52.6

Tertiary education of the cohort, aged 30-34 years old in 1985

(percent of cohort)

	All	Males	Females
Some tertiary education in 1985	50.7	53.4	48.0
Some tertiary education in 1987	51.2	53.7	48.9
Some tertiary education in 1989	52.9	54.4	51.5
Some tertiary education in 1991	52.6	54.5	50.7
Some tertiary education in 1993	55.4	56.8	54.0

Notes:

For 1985-91, tertiary education is defined as 13 or more years of schooling completed. For 1993, tertiary education is defined as completion of some college or higher education (i.e., credits earned).

Over the 8-year period, the male cohort, initially aged 20 to 24, grows in size by 8.5 per cent and the respective female cohort by 5.9 per cent. The size of the 30-34 year old cohort grows by 2.1 per cent for males and .6 per cent for females. The net growth reflects differential effects of immigration and mortality.

Source: Marcus Rubin and Hilary Steedman, Centre for Economic Performance, London School of Economics. Analyses from the Current Population Surveys, U.S. Department of Commerce.

Table 5

**Entry into Tertiary Education,
by Timing of Entry, Type of Programme and Attendance Status**

(percent of cohort)

	Total	Two-year*		Four-year*	
		Early	Late	Early	Late
Total	52	18	5	26	3
Full-time	41	13	2	25	1
Part-time	10	4	3	1	1

* the percentages entering two-year and four-year institutions were 23% and 29% respectively. A quarter of the survey respondents entering two-year institutions later transferred to four-year institutions, and a handful changed in the opposite direction, with the consequence that the percentages when last enrolled were 18% and 34%, respectively.

**Entrants to Tertiary Education who Earn Degrees,
by Timing of Entry, Type of Programme and Attendance Status**

(percent of cohort)

	Total	Two-year		Four-year	
		Early	Late	Early	Late
Total	57	44*	18	76**	33
Full-time	66	51	37	79	33
Part-time	19	22	7	20	33

* 22% earned bachelor's degrees; 22% earned associate degrees

** 71% earned bachelor's degrees; 5 % earned associate degrees

A few respondents were still enrolled full-time at the 1992 interview, and so the percentages of respective groups with earned degrees could increase.

Timing of Entry: 'Early' is defined as within two years of leaving high school; 'Late' is defined as more than two years after leaving high school. Probit analysis reveals that late entry into tertiary education has a significant adverse effect on the probability of earning a bachelor's degree and a significant positive effect on earning an associate degree.

Source: Marcus Rubin and Hilary Steedman, Centre for Economic Performance, London School of Economics. Analyses from the Current Population Surveys, U.S. Department of Commerce.

Table 6

**Entry into Tertiary Education and Earned Degrees,
by Type of Degree and Region**

(per cent of cohort)

	Entered	Associate	Bachelor's
All	53	7	23
Northeast	59	9	33
Midwest	62	8	32
South	44	7	15
West	49	3	13

These differences cease to be significant when the ability or achievement of respondents, in this case, as measured by the Armed Forces Qualification Test (AFQT), is used as a control.

Source: Marcus Rubin and Hilary Steedman, Centre for Economic Performance, London School of Economics. Analyses from the Current Population Surveys, U.S. Department of Commerce.

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