

Expert Group on 
Future Skills Needs

**Submission
to the
Minister for Education and Science
on the
YES Review**

August 2004

1. Introduction

1.1 The Expert Group on Future Skills Needs

The *Expert Group on Future Skills Needs* (EGFSN) is a body appointed by the Irish Government to advise it on aspects of education and training related to the future skills requirements of the enterprise sector of the Irish economy. The Group was established in 1997 and is composed of representatives from business, employees, education, Government departments and State agencies. As such, the EGFSN has a keen interest in the future of the education system.

The EGFSN commends the Minister for Education and Science for initiating the *YES review* and welcomes the opportunity to provide an input to this process. This submission contains some comments on the aspects of the education system that fall within the remit of EGFSN.

1.2 The Importance of the Enterprise Sector

The health of the enterprise sector is of great importance for the overall quality of life in Ireland. Firstly, the sector currently provides employment for over 1.3 million individuals, and the quality of employment opportunities available in the sector has a direct bearing on the quality of life for the individuals concerned. Secondly, the enterprise sector contributes in excess of €5.5B in corporation tax¹ to the exchequer annually and hence directly supports a significant proportion of the state expenditure on health, education and infrastructure.

The importance of educational services as a driver of long-term economic growth for Ireland was recently re-emphasised by the Nobel prize-winning economist, Prof. Joseph Stiglitz².

1.3 The Broader Role of Education

The emphasis on the economic role of the educational system in this document should not be construed as a denigration of the cultural and social importance of the educational system. Clearly, the education system fulfils a vital role in society that extends well beyond the utilitarian one of satisfying enterprise's needs for skills. However, the goals of satisfying the needs of enterprise and developing well-rounded, culturally literate individuals are not mutually exclusive; they are in fact complementary. On the one hand, in the context of an innovation-driven, knowledge economy, future enterprise will place a premium on well-rounded and creative individuals, and, on the other hand, equipping individuals with the skills that industry requires will maximise their prospects of having fulfilling and rewarding careers, and this will be a major determinant of their quality of life.

2. Establishing the Context

2.1 Economic

A consequence of Ireland's rapid economic progress over the past decade has been an elevation of Ireland's cost base to the point where Ireland no longer constitutes a competitive location for conducting many lower value-added activities. As a result, Ireland is experiencing the erosion of its traditional industrial base while simultaneously facing increasing competition for FDI³ for low added-value manufacturing-oriented activities from Eastern Europe and Asia.

Against this backdrop, the best way forward for Ireland is to make the transition to an innovation-driven, knowledge economy by undertaking higher value activities. Economic success over the coming years will depend on our ability to respond more quickly and more efficiently than our

¹ 2003 Annual Report, *Revenue Commissioners*, 2004.

² *Irish Times*, 2nd July, 2004.

³ Foreign Direct Investment.

competitors. The knowledge base required to enable this approach must flow from our educational system.

A tangible manifestation of this strategy is the unprecedented investment of €2.5B in Research, Technological Development and Innovation under the National Development Plan, over the period 2000-6. This strategy is also in accordance with that of the EU, as set out in the Lisbon Declaration of the European Council in 2000⁴, and re-enforced at the Barcelona summit in 2002 when the Council set the target of spending 3% of GDP on Research and Development by 2010⁵.

In summary, key enterprise opportunities for Ireland in the future will lie in activities such as internationally-traded services; high-tech production; product development and research.

2.2 Demographics

The number of births in Ireland reached a peak of 74,388 in 1980 and subsequently fell to a low of 48,255 in 1994, a decrease of 35%⁶. This decline in fertility has now percolated through to the school-leaving population and will result in a commensurate decline in the size of this cohort over the period 1998 to *circa* 2012.

There are approximately 570,000 people in the labour force currently who have not completed senior cycle education⁷. Ireland is ranked 9th among the EU-25 for the proportion 20-24 year-olds with upper second-level qualifications, namely 83.5%^{8,9}. The failure of 16.5% of young people to complete the Leaving Certificate constitutes a serious problem, both for the individuals concerned as well as for the economy as a whole, in the light of demographic trends outlined above.

Notwithstanding the decline in the numbers of school-leavers, several factors will result in a significant expansion of the numbers at third level over the next decade. Both the HEA¹⁰ and the Enterprise Strategy Group have proposed that Ireland should aim to be in the top decile of OECD states' graduation rates at third level. The implication of such a target is that the first time admission rate for school leavers would need to increase from the current level of 53% to over 70%. In addition, increases in mature and/or second-time students, broadened access across socio-economic groups and increased mean length of stay in third-level (due to increased rate of progression from certificate to diploma to degree to post-graduate courses) will further drive up the third-level population. Overall, the HEA have projected that the total third-level student population will rise from the current level of 125,000 to over 176,000 by 2015.

3. The Importance of the Education System

Ireland's education system as a whole has been a fundamental enabler of its economic transformation over recent decades. The introduction of free post-primary education for all in 1967 was a seminal moment in Ireland's socio-economic history. More recently the supply of high calibre graduates from Irish third-level institutions was instrumental in attracting the FDI that fuelled the boom period of the 1990s.

⁴ "The Union has today set itself a new strategic goal for the next decade: to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion" [http://europa.eu.int/comm/lisbon_strategy/index_en.html].

⁵ More Research for Europe: Towards 3% GDP, *European Commission*, COM(2002) 499, 2002.

⁶ Impact of Demographics on the Future Supply of Labour, *The Expert Group on Future Skills Needs*, (unpublished) 2003.

⁷ Census 2002 Vol. 7 Education and Qualifications, *CSO*, 2004.

⁸ Quarterly National Household Survey: Educational Attainment 1999-2003, *CSO*, 2004.

⁹ *2001/2002 Statistical Report*, Dept. of Education and Science, 2003.

¹⁰ Strategy Statement 2004-1006, *HEA*, 2004.

However, in order for Ireland to sustain and improve its quality of life in the years ahead, the education system must adapt in response to the accelerating rate of change in the business and economic environment. Ireland must modernise its education system to ensure that it is in a position to deliver higher added value jobs in the future.

3.1 For the Economy

The EGFSN believes that the education system must rise to the challenge of equipping Irish people to be the high-skilled workers of the future. The ESRI forecast¹¹ for the medium-term growth of the Irish economy is 5-6%. This growth rate is predicated on, *inter alia*, the ability of the economy to sustain an average annual expansion in the labour force of 2% over the period 2001-2010. This implies an absolute expansion in the labour force of 315,000. In addition, there will be a replacement demand of 106,000 due to retirements. Therefore the total demand for new workers will be 421,000 over the period 2001-2010. Furthermore, FÁS/ESRI¹² have estimated that 300,000 of these workers will require third-level qualifications. However, in the light of the demographic trends outlined above, Ireland cannot rely on sourcing these individuals exclusively from the output from second level education; they must also be sourced from within the existing labour force, through up-skilling.

The key determinant of the long-term prosperity of a nation is the growth in productivity of its workforce. Consequently one of the principal, on-going responsibilities of the state is to facilitate continual, incremental improvements in productivity in order to sustain and improve the overall quality of life of its citizens. Productivity is strongly correlated with the standards of education and training among workers.

3.2 For the Individual

Attainment of a high standard of education will become increasingly important for young people and workers alike. Individuals without good education will find themselves increasingly disadvantaged in the labour market of the future. Not only will they be excluded from quality employment, their opportunities for further education and training will be severely curtailed; they will find it difficult to access most mainstream opportunities for further and higher education and training.

3.3 Society and Democracy

The educational system is a key mechanism by which a society achieves cohesion and permanence. It plays a key role in the transmission of the culture, heritage and values of a society from one generation to the next. Providing access to education, on an equal basis for all, is the most effective way to promote social inclusion.

4. Guiding Principles for Reform

4.1 Quality

The Irish educational system enjoys an excellent reputation for quality worldwide and this factor has instrumental in attracting FDI into the country. However, it is imperative that the standards in teaching, curriculum and assessment must be maintained and improved, where necessary.

¹¹ Medium-Term Review 2003-2010, ESRI, 2003.

¹² Occupational Employment Forecasts by Region for 2010: FÁS/ESRI Manpower Forecasting Studies Report No. 11, FÁS/ESRI, 2004.

Initiatives to increase participation and address regional or gender-based imbalances in attainment must not compromise standards; the integrity and high esteem of the Irish second-level educational system must be protected.

4.2 Responsiveness

A conjunction of political, economic and technological factors¹³ means that the environment in which enterprise is now operating is changing at an unprecedented rate; the likelihood is that rapid change will become a permanent feature. The challenges posed by the emergence of new and more sophisticated business models, greater competitive pressures and the relentless advance of technology, means that firms must be extremely nimble if they are to survive, and indeed thrive, in such a highly dynamic environment.

As a consequence, there will be an increasing onus on the education system to be responsive to the changing requirements of the enterprise sector, in a timely manner.

While the importance of adopting a partnership approach to change and engaging in consultation with all stakeholders is acknowledged, the rate of change of the economic and business climate is such that there is a degree of urgency attached to these reforms and the EGFSN is anxious that implementation should proceed promptly. Furthermore, reform should be introduced in a holistic fashion and not in a piecemeal fashion.

4.3 Broad Curriculum

One of the most highly regarded aspects of the Irish educational system, particularly at second-level, has been its broad-based curriculum. Notwithstanding the requirement to align curricula with the changing needs of the enterprise sector, this key feature should be retained as a cornerstone of the educational philosophy.

4.4 Balanced Reform

While the renewed focus on educational disadvantage at the earlier stages of education is to be welcomed, this should not be allowed to detract from the need for reform in the latter stages. This is because of the long timeframe for the benefits of these early stage interventions to percolate through to the workforce, and also for the sake of the *individuals* who have progressed too far in the system to benefit from these initiatives. Currently, 16.5% of young people fail to obtain a Leaving Certificate and of those that do complete the LC, there are wide disparities in their performance by gender and socio-economic background. These individuals are entitled to a second chance to raise their levels of attainment.

In summary, Ireland's education strategy must be a joined up strategy, agreed, and supported, by all Government departments and agencies, which actively promotes the "One Step Up" initiative, as proposed in the "Ahead of the Curve" report by the Enterprise Strategy Group.

4.5 Abilities rather than Facts

The EGFSN strongly supports the move to an outcomes-based paradigm at Senior Cycle, as advocated by the NCCA¹⁴ and the recognition of the importance of skills, as distinct from rote learning.

¹³ These factors include globalisation, EU enlargement, the aftermath of the 2001 downturn, ubiquity of ICT *etc.*

¹⁴ Developing Senior Cycle Education – Directions for Development, NCCA, 2003.

5. Issues Emerging from EGFSN Research

The EGFSN has carried out a range of sectoral and horizontal studies in recent years¹⁵ and from these it has abstracted a number of key findings as to the type of skills that will be of greatest importance to the enterprise sector in the years ahead.

5.1 Overarching Key Requirements

- Perhaps the greatest of these requirements is that the educational system fosters flexibility, adaptability and a general openness to change among young people. Individuals with such an attitude will thrive in the highly dynamic business and technological environment of the future¹⁶.
- The education system must support and actively encourage up-skilling and the periodic renewal of skills *i.e.* life-long learning. This need stems in part from the ever-decreasing life-cycle of technology and the associated skills, and also from the fact that 88% of the current Irish labour force will still be in the labour force in 2015¹⁷.
- Greater interaction between third-level and enterprise; this is necessary in order to drive innovation in the enterprise sector, to maximise the commercialisation of the IP in the third-level institutions and in order to ensure that third-level curricula are aligned with the contemporary needs of industry. This latter point is particularly important as there is evidence¹⁸ that the third-level sector is not teaching the skills that industry requires in disciplines as diverse as Sales and Chemistry.

5.2 Generic Skills

The greater prominence of high-tech manufacturing, internationally traded services and R&D activities in Ireland's economy in the future means that young people must achieve high standards of generic skills, to complement their academic or vocational ones. These generic skills include communication and influencing skills, team working, critical thinking as well as self-management and self-directed learning.

Collaboration and engagement between individuals underpins successful innovation; modern high-productivity work practices hinge on greater individual autonomy in a team-centric work organisation. The globalisation of markets, the supply-chain and R&D means that effective multi-national and trans-cultural communication skills will be at a premium. The emphasis placed on being “*closer to the customer*” in the Enterprise Strategy report¹⁹ further underlines the importance of cultivating these generic skills.

¹⁵ The complete set of reports by the EGFSN is available from www.skillsireland.ie

¹⁶ These findings have been supported by a recent PUII (Programme for University Industry Interface, funded by Dept. Enterprise, Trade and Employment under the NDP) study which identified the core competencies that will be required among workers of the future: The Competencies for Next Generation Employability, PUII, University Limerick, 2004.

¹⁷ Estimate based on age profile of current labour force in “Quarterly National Household Survey – Fourth Quarter 2003”, CSO, 2004.

¹⁸ Forthcoming Forfás/EGFSN/Enterprise Ireland/Bord Bia study on Sales and Marketing capability of Irish SMEs (2004).

Pharma/Biotech and Engineering sectoral studies as appendices to the “Ahead of the Curve”, Forfás, 2004.

¹⁹ Ahead of the Curve: Ireland's Place in the Global Economy, Forfás, 2004.

5.3 ICT Skills For All

The ubiquity of Information and Communications Technology (ICT) in the future will elevate ICT literacy to the status of a core skill, on a par with reading and mathematics; ICT literacy will become a life-skill as much as a career skill. This inevitability must be reflected in the priority that is afforded both to ICT as a subject and to the use of ICT in the educational curriculum.

ICT skills will also be a key facilitator of life-long learning through e-learning and distance learning. A recent US study²⁰ has identified the use of leading-edge technologies as one of the six key elements of 21st century learning.

The challenges facing the Irish education system in this regard are further underlined by a recent OECD study²¹ which ranked Ireland in the bottom three out of fourteen countries surveyed in relation to the use of computers in schools.

In the light of the foregoing, the EGFSN believes that embedding ICT in the educational system, at all levels, should be designated as a priority for investment. A modern education system needs to look to the ICT world for solutions in delivery and administration. Ireland needs innovative IT Solutions and should, as a matter of urgency look to, and implement, global models of “Best Practice”. The recent invitation to tender for the provision of broadband to all schools in the country is a welcome development. However, investment will be also required to provide adequate PC networks within the schools, as well as on-going technical support and maintenance of the infrastructure, the training of teachers, and the development and implementation of computer-based pedagogic models for individual subjects.

Students at all levels, from primary to tertiary, should have ready access to computers; the ratio of students to PCs in schools should be minimised within the limitations of resources.

5.4 Science, Engineering and Technology Skills

An innovation-driven, knowledge economy is one in which science and technology form a key component of enterprise activity. Therefore Ireland’s success in developing such an economy will be contingent on, *inter alia*, its ability to provide an adequate supply of science and technology skills in the years ahead.

The OECD has ranked Ireland 5th in terms of the reading literacy skills of 15 year olds²². However, attainments for mathematical and scientific literacy, are considerably more modest and Ireland is ranked 9th and 16th respectively; this is a cause for concern in view of the paramount importance of both skills for a knowledge economy.

5.5 Entrepreneurial Skills

A further aspect of the enterprise development in the years ahead will be the need for greater reliance on indigenous entrepreneurs to drive economic growth and create employment. A recent EC report²³ has identified the important role that secondary education can play in promoting entrepreneurship:

“the objectives of education will include nurturing in young people those personal qualities that form the basis of entrepreneurship, such as creativity, spirit of initiative, responsibility, capacity of confronting risks, independence.”

²⁰ Learning for the 21st Century, *Partnership for 21st Century Skills*, Washington DC, 2003.

²¹ *Completing the Foundation for Lifelong Learning: An OECD survey of Upper Secondary Schools*, OECD, 2004.

²² *PISA: Programme for International Student Assessment*, OECD, 2000.

²³ Education and Training for Entrepreneurship - Final report of the Expert Group, *European Commission*, 2004.

The extent to which entrepreneurship can be taught as a conventional skill is often questioned. Clearly, the innate abilities of an individual, coupled with the overall socio-economic environment (ease of establishing a new business, access to finance and advice as well as the prevailing cultural attitudes to entrepreneurship) are extremely important factors in determining whether they pursue an entrepreneurial path. However, the innate ability can be greatly enhanced by education and training.

There is considerable scope for the educational system to foster a culture that is conducive to innovation and entrepreneurship. The role it can play ranges from instilling a positive attitude to entrepreneurship among young people, via the promotion of positive role models and presenting failure as a prerequisite for success, to providing the enabling or prerequisite skills needed for success. These enabling skills range from an understanding of business, financial and legal issues, to generic or soft skills such as team-working, inter-personal, influencing etc.

Furthermore, entrepreneurship should not be considered to be synonymous with starting a new business. Entrepreneurship embodies a range of skills, including the ability to innovate and to provide leadership, which will pay dividends for the individual and the economy in any employment context.

5.6 Multi-disciplinary Skills

Traditional distinctions between business, humanities and physical sciences are becoming less appropriate. In the future, multi-disciplinary skills will become *de rigueur*. For example, many scientists and engineers will require business and entrepreneurial skills ranging from sales and marketing to managing IP. Even within the SET domain, the interface subjects such as bioinformatics, which spans biochemistry; computer science; physics and mathematics, are among the most dynamic and important.

Therefore, greater flexibility will be required in the structure of third level courses in order to increase the range of options open to students.

6. Broader Issues

6.1 Resource Allocation

While the current overall level of public funding for education in Ireland is slightly above the EU-15 average²⁴, and may therefore appear adequate, it must be acknowledged that Ireland has a legacy of under-investment in educational infrastructure over several decades. This must be redressed in a similar manner to that adopted in relation to other infrastructural deficits such as road and rail networks.

In addition, if Ireland is to achieve ambitious education-related targets (such as being in the top decile of OECD states in terms of participation at third level and achieving 15% of third level students to be adult learners *etc.*) as well as the overall objective of becoming a leading knowledge society whose economy is rooted in high skilled activities such as high-tech production, internationally-traded services and R&D, then the question of whether or not achieving close to the average expenditure is adequate, must be considered.

The anomalous imposition of fees on those enrolled on part-time and/or postgraduate courses, in contrast to the “free fees” entitlement of their counterparts on full-time, undergraduate courses, must be addressed; consistency across learning modes is a prerequisite for genuine life-long learning.

²⁴ Browsing Onwards: Irish Public Spending in Perspective, J. Lawlor and C. McCarthy, Irish Banking Review, Autumn 2003.

Should greater funding for education be deemed necessary, private sources, as well as public ones, should be considered.

Irrespective of the optimal level of investment in education however, there are questions to be addressed in relation to the manner in which the educational resources are being applied and the overall value for money of this expenditure. For example, there has been a proliferation in publicly funded education-related programmes and initiatives in recent years, many of which are supported by the NDP and the ESF. Their sheer number alone raises concerns about coordination, duplication and dis-economies of scale. While many of these initiatives are extremely worthwhile, these programmes must be objectively assessed as to their efficacy and value for money.

6.2 Life-long Learning

The educational system has primary responsibility for making Life-long Learning a reality. Education must become synonymous with life-long learning; a continuum that spans, primary to adult learning. The fact that in excess of 570,000 people currently in the labour force have not completed senior cycle education²⁵ is a cause of particular concern and underlines the need for effective life-long learning.

The EGFSN strongly endorses the work and recommendations of the Task Force on Life Long Learning²⁶. However, it is concerned at the slow rate of progress in implementing the recommendations of the Task Force and in particular the delay in making the National Adult Learning Council fully operational.

6.3 An Integrated System of Education

The education system has traditionally been viewed as comprising several distinct strata, namely primary, secondary and tertiary. More recently, the tertiary classification has been refined into *further* and *higher* education. Education has also been viewed as separate from (vocational) training. While each of these strata has distinct characteristics, close coordination between each segment is important in order to facilitate the movement of individuals across the system²⁷ and to maximise its overall efficacy. Furthermore, the distinction between education and training must be blurred.

To this end, close coordination between DES, the VECs and FÁS is imperative. Specifically, their strategic plans must be closely aligned and mutually supportive; the delivery of their respective programmes must be highly integrated “on the ground”.

The findings and recommendations of the Enterprise Strategy Group are strongly supported in relation to the importance of education and training for the future of the enterprise sector.

6.4 Enhanced Career Guidance

A key role for the education system is to equip young people with a sufficiently enlightened understanding of subject disciplines and job functions to enable them to make informed choices about courses of study and career options. There are indications that young people and their parents are somewhat fickle when it comes to making these choices²⁸. Furthermore, the high drop-out rates at third-level can be attributed, in part, to the poor, prior understanding many students have of many third-level disciplines and college life in general. Short-term outlooks and prevailing sentiment to

²⁵ Census 2002 Vol. 7 Education and Qualifications, CSO, 2004.

²⁶ Report of the Taskforce on Lifelong Learning, Dept. Enterprise, Trade and Employment, 2002.

²⁷ The development of a National Framework of Qualifications by the NQAI is a major step forward in this regard.

²⁸ Factors Influencing CAO Choices (*unpublished*) EGFSN, 2003.

particular disciplines and sectors are often the over-riding considerations, rather than any objective assessment of what is in the best interests of the individual over the longer-term.

The career guidance function in second-level education should be enhanced so as to equip students with a deeper understanding of the careers and the workplace. More than just advising students on courses, it should increase their understanding of the world of work; to empower them to make more informed decisions about career and study options. Direct engagement with enterprise must be central to this activity: the Junior Achievement Ireland²⁹ provides a successful model for this sort of interaction.

Similar considerations apply to the career guidance service in third-level institutions. Furthermore, support and guidance for adults considering, or actively engaged in, further/higher education must be an integral part of the delivery of life-long learning.

6.5 Maximising Participation and Performance

The significant disparities in education attainment at second level by gender and socio-economic background means that a large number of individuals are failing to achieve their full potential. This constitutes a problem for both the individuals as well as the economy.

The combination of the demographic trends outlined in Section 2.2 and the requirement for additional workers outlined in Section 3.1 means that there is now a strong economic imperative to address the manifest imbalances in educational attainment, in addition to the long-standing social and equality ones.

The work of the National Education Welfare Board is crucial in this regard and it should be allocated adequate resources in order to enable it to provide a comprehensive service on a nationwide basis.

6.6 The Relationship with the Enterprise Sector

The legitimate role of the enterprise sector in contributing to the education agenda must not only be formally acknowledged but also be practically realised through the establishment of appropriate mechanisms and fora. In particular, greater linkages between third-level institutions and the enterprise community are necessary in order to maximise the commercialisation of the IP generated in these institutions, and also to ensure that the skills cultivated in these institutions are aligned with the needs of industry. The appropriate fora for third-level institutions should be the governing authorities of the universities and institutes of technology.

6.7 Science in Society: Scientific Literacy and Risk Assessment

Technology is encroaching every more into every day lives. Mobile phones are as indispensable social tools as they are business ones. Biotechnology is already having a huge impact on medicine, agriculture and food production. Associated with these advances are concerns about possible negative consequences for human health and the environment. Even today, despite its use for over 100 years, electricity generates considerable anxiety. Other medium-term technologies such as nanotechnology may become equally pervasive and will, in turn, give rise to their own rash of concerns.

²⁹ Junior Achievement Ireland (<http://www.juniorachievement.ie>) is an initiative of Irish business (indigenous and foreign-owned) to promote enterprise skills and help bridge the gap between school and the workplace. It offers 18 distinct programmes to primary and second-level schools, tailored for specific age groups, from 5-6 year-olds right up to 15-18 year-olds. The programmes are delivered by volunteers from the participating companies (80+); a staff of 15, in 5 regional offices, coordinate the programmes. The scheme has been in operation in Ireland since 1995 and reached approximately 35,000 children in the last academic year.

As many of these concerns are unfounded and stem from a fear of the unknown, there is a risk that they could stall the adoption of new technologies and thus undermine the national strategy of becoming a knowledge society, driven by innovation.

In order for a rational and constructive debate to take place on the perceived risks associated with such technologies it is necessary that the overall level of scientific literacy be elevated nationally, not only among the media, policy makers and public representatives, but also among the general public as a whole. The education system must assume prime responsibility for achieving this objective by incorporating considerations of Science in Society into its programmes at all levels.