

**BUSINESS  
EDUCATION  
&  
TRAINING  
PARTNERSHIP**

**Report on the  
Second Forum  
Dublin  
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**Forfás** 

**HEA**

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Higher Education Authority  
An tÚdarás um ard-Oideachas



## Contents

	Page
Foreword by Mary Harney T.D., Tánaiste and Minister for Enterprise, Trade and Employment and Dr. Michael Woods T.D., Minister for Education and Science	4
Business Education and Training Partnership	5
Second Forum	6
Introduction by Co-Chairman John Travers, CEO Forfás	7
Opening address by Noel Treacy T.D., Minister for Science, Technology and Commerce	9
Presentation by Dr. Daniel O'Hare	12
- <i>Review of First Report of Expert Group on Future Skills Needs</i>	
- <i>Labour Market Outlook to 2008</i>	
Presentation by Mr. John McGrath	19
- <i>Skills Needs - Construction Industry</i>	
Open forum, first session, facilitated by Co-Chairman John Travers	22
Address by Micheál Martin T.D., Minister for Education and Science	30
Presentation by Dr. Daniel O'Hare	34
- <i>Life Sciences</i>	
- <i>Research Skills</i>	
Supply and Demand for Research Skills	39
Open forum, second session, facilitated by Co-Chairman Dr. Don Thornhill	
Appendix 1	47
Appendix 2	48
Appendix 3	49

## Foreword by Mary Harney T.D., Tanaiste and Minister for Enterprise, Trade and Employment and Dr. Michael Woods T.D. Minister for Education and Science.

The Forum is an invaluable component of the Business Education and Training Partnership, which was established by this Government in November 1997. It addresses an issue which is of the highest priority for Government and for the education and business sector, namely, how best to anticipate and cater for the future skills needs of the economy, in an increasingly tight labour market environment. It is widely recognised that ensuring our skills needs are being met is a critical competitiveness issue in developing the economy.

The first Forum took place in advance of the publication of the First Report on the Expert Group on Future Skills Needs, which focussed on the IT sector and was published in 1998. We would like to pay tribute to the then chairman of the Group, Dr. Chris Horn, who made such an important contribution to the content of that report. Since then, the recommendations of the First Report of the Expert Group on Future Skills Needs have been acted upon. In April 1999, for example, the Government approved allocation of £75 million (€95.2 million) in capital expenditure to the Department of Education and Science for the provision of 5,400 places in third level. FÁS has increased IT training provision for 700 additional places, for which the Government allocated an extra £3.2 million (€4.06 million) in the 1999 budget.

In this Forum Report, the progress in implementing the First Report is described by Dr. Daniel O'Hare, who became Chairman of the Expert Skills Group in July 1999. This report also records the discussion which took place in the second Forum, held on 2 December 1999, both on the outcome of the recommendations on the IT sector and on the thrust of the Expert Group's recommendations in its forthcoming Second Report.

The usefulness of the Forum is perhaps best reflected in the range of informed opinion included in the contributions to the discussion and in the attendance at the Forum by such a substantial number of those who have a direct interest in finding practical solutions to meeting future skills needs. As such, it provides a valuable input to the second report of the Expert Group on Future Skills Needs and ensures that Government policy-making is informed of the full range of stakeholder interests in this area.

## Business Education and Training Partnership

The Business Education and Training Partnership was established by Mary Harney, T.D., Tánaiste and Minister for Enterprise, Trade and Employment and Micheál Martin, T.D., Minister for Education and Science in November 1997, to develop national strategies to tackle the issues of skills needs, manpower forecasting and education and training for business.

There are three elements to the Partnership:

### **The Expert Group on Future Skills Needs**

### **The Skills Implementation Group**

### **The Business Education and Training Partnership Forum.**

The objectives of the Expert Group on Future Skills Needs are to:

- Identify, in a systematic way, the skills needs of different sectors and advise on the actions needed to address them;
- Develop forecasting techniques to assist in anticipating the future skills requirements of the economy, and the associated resource requirements;
- Advise on the promotion of education and continuous training and of business links, at national and local level;
- Advise on how to improve awareness among job-seekers and school leavers of sectors where there are demands for skills, the qualifications required and how they can be obtained; and
- Consider strategic issues in developing partnerships between business and the education and continuous training sectors towards meeting the skills needs of business.

Membership of the Expert Group includes business people, educationalists, policy makers, public servants and members of the industrial promotion agencies (Appendix 1).

The Skills Implementation Group is responsible for ensuring implementation of the recommendations proposed by the Expert Group (Appendix 2).

The Business Education and Training Partnership Forum allows all interested parties to have an input into the work of the Expert Group. It was created to promote dialogue between the Government, business and the education and training sectors. It also provides the Expert Group with a platform to report its perspective on skills opportunities and related issues within the economy to a wide audience.

## Second Forum

The second Forum of the Business Education and Training Partnership, held on 2 December 1999, was presented with

- a review of progress on the recommendations of the First Report of the Expert Group on Future Skills Needs in the IT sector and
- the main elements of the Group's recommendations in its forthcoming Second Report, relating to the life sciences and research skill needs; labour market shortages; and the construction industry.

The Forum was jointly chaired by Dr. Don Thornhill, Chairman of the Higher Education Authority and Mr. John Travers, Chief Executive Officer of Forfás.

The agenda was as follows:

- Introduction by John Travers
- Opening address by Noel Treacy T.D., Minister for Science, Technology & Commerce
- Presentation on the Implementation of the First Report Recommendations and Labour Market Shortage Issues by Dr. Daniel O'Hare, Chairman of the Expert Group on Future Skills Needs and Chairman of the Skills Implementation Group
- Presentation on Craft Skills in the Construction Industry by John McGrath, Manager, Skills Research Unit, FÁS
- Open forum facilitated by John Travers
- Address by Micheál Martin T. D., Minister for Education and Science
- Presentation on Life Science and Research Skills by Dr. Daniel O'Hare, Chairman of the Expert Group on Future Skills Needs and Chairman of the Skills Implementation Group
- Open forum facilitated by Dr. Don Thornhill

The Forum was attended by around 200 representatives from the business and education communities (Appendix 3). A verbatim record of the Ministers' speeches and presentations by Dr. O'Hare and Mr. McGrath is contained in this report, together with a summary of the contributions from participants during the open forum sessions.

## Introduction by Co-Chairman John Travers, CEO Forfás

I would like to welcome so many people here this morning to the Second Annual Forum of the Business, Education & Training Partnership. It gives me great pleasure to see such a wide range of representatives from the business, the education and the public sectors.

It is, perhaps, a truism to say that the process of learning and training in which the people of any society engage, together with the knowledge and skills they acquire in doing so, are the fundamentally important factors in determining the quality of life and living standards of that society. It follows that the quality of life and living standards that we experience in Ireland today are a function of the learning and training experiences of people, young and old, in all parts of the country. The historically high levels of employment found, at present, in Ireland arise, essentially, from the effective deployment, in the traded and non-traded sectors of the economy, of the skills and knowledge which people have absorbed from the training and learning they have received.

In many ways we live in extraordinary times in Ireland. The prospect of full employment and further significant improvements in living standards and in the quality of life are clearly in sight. To attain these desirable objectives requires that we manage our affairs in a way that allows these opportunities to be realised. The appropriate management of our affairs involves many things. But high in importance among them is anticipating the future skills needs of the economy and providing people with the learning and training opportunities they require to acquire these skills. The Business, Education & Training Partnership provides an important means of doing this.

Today's Forum is the second such Forum since the Partnership process was jointly initiated last year by the Tánaiste and Minister for Enterprise, Trade & Employment, Ms Mary Harney T.D. and by the Minister for Education & Science, Mr. Micheál Martin T.D. At last year's Forum the analysis and conclusions of the Expert Group on Future Skills Needs, which addressed the emerging widespread shortage in IT skills in the economy, were discussed and debated. The discussion and debate helped to strengthen the analysis and conclusions of the Expert Group. In doing so, it played a significant part in supporting the work of the Skills Implementation Group in convincing Government to allocate an additional £75m to provide over 6000 additional places in IT related courses in the Universities, Institute of Technology and FÁS. The provision of these places started in the autumn of 1998 and the process was considerably extended this year.

This year the subject matter of the Forum is equally important. It falls broadly into two areas. The first of these embraces:

- an overview of the skills needs of the economy presented by the Minister for Science, Technology & Commerce, Mr. Noel Treacy T.D.;

- A report by Dr. Danny O'Hare on the response to the recommendations contained in the First Report of the Expert Group on Future Skills Needs and the subsequent implementation process;
- An overview of the emerging Labour Market Shortage Issues, which Dr. Danny O'Hare will also present;
- An analysis of the Supply and Demand for Craft Skills in the Construction Industry by Mr John McGrath of FÁS.

These presentations will be covered at the first session of the Forum at which I will act as Chairman and facilitator of the discussion.

The second area which will be considered at the Forum embraces:

- Some of the work of the Department of Education and Science in addressing the skills needs of the economy which Minister Micheál Martin T.D. will outline;
- An overview of Supply and Demand for Skills in the Life Sciences and R&D sectors of the economy, which Dr. Danny O'Hare will present.

These presentations will be covered in the second session of the Forum at which Dr. Don Thornhill, Chairman of the HEA, will act as Chairman and discussion facilitator.

I want to emphasise that the most important aspect of this Forum is hearing the views of the people who are present on the issues raised by these short presentations. Your views are invited and canvassed so that they can shape and strengthen the report which will emerge from today's proceedings.

Accordingly, I am delighted to ask the Minister for Science, Technology & Commerce, Mr Noel Treacy T.D., to open the Forum here this morning. Minister Treacy has made a major contribution to raising awareness of the importance of Science & Technology to national economic and social development. In doing so he has convincingly argued the case for investment in R&D by both firms and Government so that the present generation and future generations reap the benefits of a highly-skilled, knowledge-driven form of social and economic development.

## Opening Address by Noel Treacy, T.D. Minister for Science, Technology and Commerce

I am delighted to be present today to formally open the Business Education & Training Partnership Forum.

It has been over 18 months since the Forum last convened and in the intervening period the very positive economic momentum of recent years continues apace. For example, figures from the Quarterly National Household Survey released in October last confirms these positive developments on all fronts. The numbers of people at work have increased by nearly 100,000, in the year to Spring 1999 - this builds on an increase in the numbers employed, of the same order, one year earlier. Unemployment has fallen to a new historical low of 5.7% of the labour force and is rapidly moving to the 5% target set in the Employment Action Plan.

In this context, this Government continues to review and, where appropriate, implement a wide range of policies to meet the demands of this new environment. Clearly skills and general labour shortages can pose a threat to our future sustained growth. While tackling unemployment will remain a fundamental policy concern, we must now address new labour market challenges.

As part of this agenda, we need to prime our responses at mobilising fully our potential labour supply. In the area of general labour shortages, we can respond by assisting the unemployed gain entry to jobs and by encouraging the re-entry of those who have left the labour force - women at home who wish to return to work.

Clearly, yesterday's budget serves to underpin our efforts here, with fiscal initiatives aimed at increasing the incentive to work. The focus of tax changes in the Budget on the lower and middle income groups builds substantially on the major reform to the tax system introduced in last year's budget and implemented this year through the tax credit system.

Tackling skills shortages also remains fundamental to meeting our goals. Here we can point to the many positive aspects of our current situation: our human capital stock continues to rise significantly and is forecast to continue to do so. Recent research has shown significant improvements in the educational profile of the labour force over the last decade and, into the next. Thus whereas in the early 1990s over one-fifth of the labour force had reached only a primary level of education, this is forecast to fall to less than 10% of the workforce by the latter part of the next decade. By contrast, the numbers of persons with a third level education is expected to nearly double to 37% over the same period.

However, we cannot afford to be complacent.

We have built a strong competitive base. We must ensure that we sustain our competitive advantage and make further progress in areas where Ireland is lagging behind best international practice. We need to continue to build a knowledge-based economy with an increased proportion of high income, high value-added jobs if we are to successfully achieve growth in living standards in an increasingly competitive environment.

Our capacity to adapt to changing conditions will mean that we will stay at the forefront of technological development. We have shown an ability to cope with new activities, such as shared services, and are getting to grips with the phenomenon of e-commerce. The number of new opportunities for our population, young and not so young, continues to increase and the work of the Expert Group on Future Skills Needs is very important in highlighting the areas of greatest skills needs.

In the areas for which I have responsibility there have been significant developments.

Over the last ten years the level of business investment in research and development has been growing at a compound annual rate of 17%, well above the rates recorded in the 1970s and 1980s. This investment has raised the level of business sector R&D in Ireland to approximately the EU average level and has been instrumental in generating the innovation intensity behind the business growth figures.

Notwithstanding this achievement, the existing composition of Irish industry – with many of the world’s leading firms in the pharmaceuticals, electronics, telecommunications and healthcare sectors located here and with a dynamic and growing indigenous industry in software and other sectors - means that even greater R&D efforts are needed if existing rates of growth are to be maintained.

Research and development, like other knowledge-driven activities, is ultimately dependent on the capabilities and imagination of the people involved in it – the research personnel. Up to now the emphasis for industry in Ireland has been on the development side of research and development, with less emphasis on research. As industry moves away from manufacturing only, towards higher value activities such as R&D, then its demand for more and more highly trained research personnel will increase.

Furthermore, the experience in other countries has been that technology-based industries cannot meet all of their own research and knowledge requirements and look to universities and other research performing organisations to provide highly specialised support. On both counts, therefore – meeting their own internal needs and the necessity to staff research centres outside the business sector – industry will be looking for more and more highly skilled graduates, particularly those with doctoral degrees, to be produced by the education system. Failure to anticipate and meet this demand could have very serious implications for the future welfare of technology-based industry in Ireland.

I am pleased to note that later on in the proceedings of this Forum, there will be a discussion on the findings of the Expert Group regarding the current position on research skills availability.

The Government has invested in a very substantial programme of research in Third Level Institutions which will enable the Irish Third Level research system to play its part in our future economic growth.

Clearly, the National Development Plan with its significant future investment in the areas of employment and human resources development of just under £11 billion (€14 billion), and in Research, Technological Development and Innovation, of just under £2 billion (€2.5 billion) represents a fundamental framework for the period ahead. The challenge being met by this Plan is to build on investment needs in people, and the physical infrastructure, to meet the needs of a strongly growing economy while avoiding adding unduly to inflationary pressures which could undermine the achievement of sustainable growth.

The performance of the enterprise sector in the years ahead will continue to shape trends in Irish employment and living standards. Its future success will more than ever be determined by its broadly defined competitiveness. Meeting this challenge will require a continuous emphasis on innovation and productivity improvements. From a public policy standpoint, it is of paramount importance that the future international competitiveness of Irish enterprises is not compromised by an insufficiency of labour or by deficiencies in the quality of labour.

The Government, for its part, have responded quickly to the future needs as identified in the first Report of the Expert Group on Future Skills Needs. The next Report from the Expert Group will focus on further aspects of our skills needs into the future which will be discussed today at this Forum.

The Business, Education and Training Partnership Forum is an important mechanism which underpins, with its inputs from business and academia, the work of the Expert Group on the future development of our skills base.

We all have an important role to play in educating the general public of the opportunities presented to us today. The media also have an important role in getting the key messages across.

Successful enterprises of the future will be founded on effective human resource strategies. While public policy can influence the external labour market environment, the specific development of human resources will continue to devolve on enterprises themselves.

It is imperative that enterprises, given the new challenges which we face in our tightening labour market, pay due attention to recruitment and in-work training. Investment in education also remains fundamental. Industry, training and education providers can develop flexible courses to cater for the wider audiences. Increased attention to these issues by human resource development managers will pay rich dividends, particularly in attracting and retaining qualified staff.

Finally, I wish you well in your important deliberations today which I am confident will lead to a successful and stimulating exchange of views in an area of fundamental importance to our future well being on the island of Ireland.

## Presentation by Dr. Daniel O'Hare, Chairman of the Expert Group on Future Skills Needs, on a Review of the Group's First Report and on the Labour Market Outlook to 2008

For this first part of the morning, I would like to concentrate on updating you as to the very real progress that has been made in implementing the recommendations made by the Expert Group in its First Report, on the IT sector. We have also looked in some detail at how things currently stand in the Labour Market and the implications of this for both labour and skills supply generally. Finally, John McGrath will be outlining for you the position in regard to craft skills in the Construction Industry.

### Review of the First Report of the Expert Group on Future Skills Needs

Substantial progress has been made on the key recommendations in the First Report of the Expert Group, which focused on the needs of the IT sector.

In April 1999, the Government approved an allocation of £75 million (€95 million) in capital expenditure to the Department of Education and Science for the provision of 5,400 places in third level.

FÁS has increased IT training provision for 700 additional places, for which the Government allocated an extra £3.2 million (€4.06 million) in the 1999 budget. In addition, the following initiatives aim to increase the supply of skills in the IT sector, and decrease the shortage of technologists, as identified by the Expert Group in its First Report:

- As part of an on-going initiative, some 1,500 places on Postgraduate Skills Conversion courses are to be provided annually across third-level institutions. In June 1999, the Government made an additional IR£6 (€7.62) million available for this initiative.
- The Department of Education & Science has created new places on the accelerated National Certificate in Technology courses. These Accelerated Technician Programmes (ATP) commenced in January 1999 and 1,100 students are currently enrolled in the Institutes of Technology.

Of course, there were many other recommendations in that Report, such as the need for an opportunities awareness campaign and the closer involvement of business in identification of skills needs, on which progress has also been made. These will be reported on in the Second Report which we will be publishing in Spring 2000.

### Review of Total Supply and Demand in IT

Before the implementation of the recommendations of the First Report, an annual shortage of 2,200 technologists to year 2003 was projected. This was based on a high employment growth scenario which assumes that Ireland's economic growth remains strong and that implementation of the proposed policies will be effective in meeting the demand for skills arising from continued high investment in the IT industry.

Table 1: Effect on annual net balance in Total Supply Projected

	Average annual demand 1996-2003	Total Supply Projected 1998	Total Supply Projected 1999	Annual Net Balances (S-D)
Professionals	4,400	3,600	4500	100
Technicians	3,900	2,500	4000	100
<b>Total</b>	<b>8,300</b>	<b>6,100</b>	<b>8500</b>	<b>200</b>

Source: First Report of the Expert Group; ESRI

Table 1 shows how the supply position has been affected through implementing the recommendations, including the provision of 5,400 additional places at third-level. The main sources of immediate increase in supply are from the 1 year computer science graduate diploma and engineering Accelerated Technician Programme (ATP) courses. The supply projections now indicate that, by 2003, we should see the virtual elimination of the skills gap.

This seems to me to be a very concrete demonstration of the kind of progress that can be achieved with a planned, co-operative approach. The shortages will not be eliminated immediately, however, because average demand in the first few years of the projection period, from 1996 to 1999, does not equate with that of 2000-2003. This is because there is a continuously growing demand for labour in the IT sector.

## Update of Demand Projections

A review of the demand figures which were used in the First Report shows that overall employment growth will be more or less as projected in 1998.

However, the proportion of more highly skilled people employed in the electronics sector has increased, with graduate content up from 13% to 20% and technician content down from 25.5% to 22%.

It is worth noting here also I think that the fact that Ireland has been anticipating, rather than reacting to, skills shortages arising is something that is viewed positively in international competitive terms.

## Update on Third-Level Completion Rates

In addressing skills shortages, it must always be a priority to ensure that completion rates at third-level in the relevant courses are as high as possible. We all recognise that the causes of non-completion are complex, arising from such factors as suitability of courses, transfer to another course, course design, failure of students to meet standards, availability of guidance and support for students, and so on. Therefore specific and targeted policies and institutional responses are required. In the context of addressing the economy's skills needs, we must ensure

that we do not overlook any means available to us to rectify any institutional factors contributing to non-completion by students.

I'm glad to say that several parallel developments are currently taking place to address this issue in respect of the IT sector:

- The HEA has commissioned a study on non-completion in the University sector, and a similar study has been commissioned by the Council of Directors of Institutes of Technology in relation to their institutions. The Department of Education and Science and the Dublin Institute of Technology are also in discussion regarding a similar and comparable study. These studies will provide the basis for appropriate policies and strategies to deal with non-completion. The Expert Group is to review the work when it is completed.
- A number of initiatives are also underway in the technological sector to assist the compilation of a database on attrition/drop-out rates and to develop the appropriate strategies to address the issues.
- The Department of Education and Science is providing £1.5million (€1.9 million) over the period 1999-2000 to address the issue of non-completion of courses in the technological sector. In addition, in the Institutes of Technology, £8 (€10) of the students service charges is to be dedicated to issues linked to attrition and access.
- Finally, a computerised Management Information Systems project is currently being developed as part of the ongoing work to establish modern financial and administrative systems for the Institutes of Technology.

## Review Conclusions

While the supply of technologists has increased substantially and the skill content of demand has increased towards professional graduates, the market will remain tight in the short term.

The shortage of engineering professionals cannot be addressed in a similar manner to technicians, due to the nature of the skills required. Therefore, a four year degree must be undertaken. These degrees, commencing in the year 2000, will not provide a supply of professionals for the electronic industry until 2003 and after. Hence, the shortage of engineering professionals will come into balance post 2003.

It appears that most of the allocated places for technicians were towards engineering. As a result there is still a potential deficit in respect of computer science technicians.

In monitoring the labour needs of the IT sector, we need to keep in mind also here that, while the review is concerned only with professionals and technicians in the sector, there are also labour shortages at operative level.

## Recommendations for IT Sector

The most effective way of responding to skills shortages, assuming a potential supply of candidates, is to have in place a flexible response approach within the education and training systems. This will involve actions such as

- continuous monitoring of ATP and conversion courses to ensure uptake of places
- changing the balance of technician courses from Year 2000 onwards - increase the number going into computer science courses
- improving completion rates and
- extending the Skills Awareness Campaign to first year students.

We also need to be increasingly conscious that employee upskilling will have to provide a greater contribution to meeting skills shortages than has been the case up to now.

Finally, we will need much higher levels of immigration of skilled workers for the foreseeable future if we are to ensure an adequate labour supply.

## Labour Market Outlook

I will now move on to look at the labour market going forward, a topic which will be covered in the Second Report of the Expert Group.

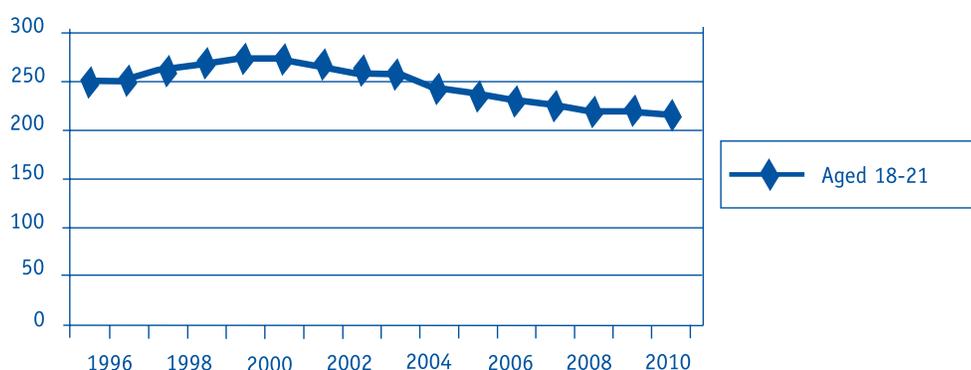
During the 1990's, Ireland has achieved unprecedented rates of economic growth, which have transformed the labour market. Employment expansion has continued at a rapid pace throughout 1998 and into 1999. The effect on unemployment has been dramatic - unemployment fell below 100,000 in the 1st quarter of 1999 and the unemployment rate decreased to 5.7% in the 2nd quarter of the year<sup>1</sup>.

<sup>1</sup> Note: The unemployment numbers are taken from the Quarterly National Household Survey (QNHS), and is the latest published rate. The unemployment % rate is 5.7% based on the QNHS October 1999. This is the figure quoted for the second quarter of 1999. However, the monthly rate for October is 5.2%.

Table 2 - Labour Demand and Supply 1998-2008 ('000)

	1998	2003	2008
Demand: At work	1,495	1,756	1,918
Supply: Labour Force	1,621	1,841	2,003
Unemployment	126	85	85
Unemployment %	7.8	4.6	4.2

Figure 1 - Projection of Supply of Potential Third level Entrants 1996-2011



The most immediately striking thing about the projections in Table 2 is the fact that already, in the second quarter of 1999, unemployment was down to 5.7%. In terms of skills supply, this otherwise welcome development means a further diminution in potential sources of supply to meet increasing demand. Furthermore, as Figure 1 illustrates, the population of 18-21 year olds will decrease from 271,000 in the year 2000 to 240,000 in 2005. This will result in a correspondingly significant decrease in the number of traditional third level entrants.

For this reason, it is essential that we concentrate more closely than ever before on additional, non-traditional ways of increasing the skill levels in the economy. Immigration and upskilling within companies are going to be increasingly important sources of supply of skilled labour over the coming years.

### Factors affecting Labour and Skills Supply

While the distinction between labour shortages and skills shortages may seem self evident, I believe that it is important to avoid confusion by clearly distinguishing between them. Essentially, skills shortages arise where there is an insufficiency of particular types of specialised workers, even when the aggregate supply and

demand for labour are in balance. Labour shortages occur where there is a generalised insufficiency of workers at prevailing rates of pay.

There are also a correspondingly distinct range of factors contributing to these shortages and the types of responses they require. Labour shortages arise from factors such as lack of recruits, a reduced pool of unemployed young people, other opportunities offering better wages or other conditions, and disincentives in the tax/welfare system. Skills shortages arise where there is a lack of suitable skills among potential recruits. To address this shortage requires identification of the skills needs and planning to meet them, primarily through a long-term education and training response.

The Expert Group has also looked at some of the labour intensive sectors, such as retailing and the clothing/textiles sectors, and will be commenting on these in its Second Report. Labour shortages in some sectors - such as clothing, retail and cleaning - arise from a number of factors such as

- a perception that working conditions are poor, with few promotional opportunities
- much greater range of opportunities, especially for young, well-educated people
- disincentives in the tax/social welfare system and
- the comparatively low rates of pay offered by some sectors.

The Group has concluded that labour shortages in these sectors require a range of responses to promote recruitment interest. These include measures such as

- the introduction of innovative and flexible working arrangements to attract new and older entrants
- ensuring that entrants understand the full financial benefits of working e.g. the net income gain
- developing basic vocational training units and work experience opportunities at second-level education and
- providing further formal, accredited training to (i) improve productivity and move up the value chain (ii) enhance wages and status of employees and (iii) link education/training with company needs.

While improved training measures such as we are recommending here, to promote career structures within some sectors, will help make them more attractive to potential employees, in general the appropriate response to these shortages are measures to boost the labour supply.

## Recommendations to increase Labour Supply

The Expert Group considers that the following measures should, in combination, contribute to increasing the labour supply.

- We believe that it is essential that the tax/social welfare system should be employment friendly for those wishing to re-enter the workforce.
- We also share the general recognition that addressing the disincentive effects of childcare costs and availability is a high priority.
- Industry must itself become much more actively and more widely involved in a partnership with the education sector to address education and skill needs for the future.
- I have already mentioned the fact that immigration will increasingly become a significant contributor of labour supply.
- We believe that employers must begin to seek to actively recruit those over the age of 55 and would encourage increasing the representation of over 55's on job-seeking registers.
- We must take seriously the need to adopt new approaches to work, such as flexible working time and location options.

## Presentation by John McGrath, Manager, Skills Research Unit, FÁS, on Skill Needs in the Construction Industry

The purpose of my presentation this morning is to provide a forecast of the number of craftpersons required by the construction industry to the year 2003; to identify areas where shortages may occur, and to propose ways in which these shortages may be alleviated.

There are seven main construction craft skills. These are electrician, carpenter, bricklayer, plumber, plasterer, painter and decorator and construction plant fitter.

The forecasts of the skill needs in these seven craft areas are based on a model developed by FÁS in 1995 in response to a request from the Construction Industry Training Committee. This is a statutory committee which is representative of both Government and the Social Partners, and it uses this model to assist it to estimate the skill requirements of the sector.

Let me say a few words about how the model works and then we shall look at the forecasts.

### The Model

In the model, the total employment forecast is derived from the projected output forecast through an econometric equation, which has been successfully tested retrospectively for 'goodness of fit'.

The forecast of employment in each of the seven craft occupations is derived from forecasts of growth in the different sub-sectors within the industry, such as, for example, roads and housing. Some 39 sub-sectors are distinguished in the model and the appropriate skills-mix is assigned to each, based on research undertaken by the Department of the Environment. This is critical because, for example 100 million pounds spent on roads will have virtually no impact on (say) the demand for bricklayers, whereas the same level of expenditure on (say) residential housing will have a major impact.

The main sources of data used by the model to forecast output growth are the Department of the Environment's Review and Outlook and the National Development Plan 2000-2006. It is assumed that all the targets in the National Plan are realised.

The model assumes that apprenticeship is the only current source of supply of these craft skills into the industry. For obvious reasons, it is assumed that there are no unemployed construction craftpersons in the domestic labour force, and it is also assumed that inward migration is zero. Of course, the latter assumption is perhaps unrealistic, but this approach allows us to measure the extent of the inward migration required over the next four years, if the labour market in the construction sector is to reach equilibrium.

Now let us review the overall results of the model and then we shall consider the specific results.

## Overall Results

Total output is assumed to rise in volume terms from the Department of the Environment's estimate of almost £11.8 billion (€15 billion) in 1999 to £15 billion (€19 billion) in the year 2003.

Most of this growth is projected to occur in the early years of the forecast period. The model assumes volume growth of 10% in the year 2000 compared to an estimated 13% this year, and 9% growth in the year 2001.

However, the model assumes lower growth of 4% for the years 2002 and 2003. The reason for this lower growth is that the growth levels of the two previous years will have increased annual house completions to above 50,000 – it is considered that this level of annual house completion will be sufficient to meet demand.

On the basis of these growth forecasts, the model is projecting employment increases of 44,000 from 142,000 in April 1999 to 186,000 in April 2003. Employment in the seven craft skills, in the next four years, will increase by 16,000 and the number of apprentices completing in these seven crafts will reach 11,000 – not all of whom, however, will work in the construction sector. Furthermore, additional craftspersons will be required to replace those who have retired from the sector or who have died prematurely.

## Specific Results

The model takes all these factors into account in estimating the gap between the projected demand for these craft skills and the projected supply of these craft skills. It concludes that there will be shortages in each of these craft skills throughout the forecast period. These shortages will be particularly severe in the next two years, and they will total 5,000 and 4,500 respectively.

Thereafter, the situation improves significantly in the last two years of the forecast period, with total projected shortages declining to 2,000 in the year 2003.

This is partly due to the lower annual growth forecast for these years. However, it is mainly due to the good work being done by FÁS, the CIF and the Trade Unions in encouraging employers to increase the sponsorship of apprentices. New apprentice intake in these seven trades has increased from just over 2,000 in the 95/96 academic year to over 4,600 in the academic year 98/99 - a 120% increase in just 3 years.

## Recommendations

So what can we do to alleviate these projected skill shortages? In view of the fact that the most difficult period in terms of skill shortages will be the next two years, our response must include short-term measures. Over the last three years, FÁS and the CIF have carried out a promotion campaign in the UK and in Europe generally, aimed at attracting construction craftspersons to Ireland. This campaign has been quite successful, and it is estimated that between 3,000 and 5,000 construction workers came into the sector from abroad in

each of the last two years. Undoubtedly, this influx from abroad has been a major factor in allowing construction firms to complete projects – albeit in a very tight labour market.

If we could repeat this performance in the next two years, it would make a significant contribution to reducing skill shortages. Thus, it is recommended that this campaign should continue and that sufficient resources are allocated to this task.

However, one of the reasons why it has been necessary to source these skills abroad is because in Ireland it takes approximately 4 years for a young person to acquire a national craft qualification. The next two recommendations in this report are designed to explore the extent to which this system should be the only means of acquiring such qualifications in all circumstances. Could some apprenticeships be of shorter duration, and could some construction workers – who are already quite highly skilled – not be allowed to achieve craft qualification in a shorter period? In view of the current skills situation in the sector, it is appropriate to ask these types of questions, and, indeed, these issues are currently being explored by the Construction Industry Training Committee.

Finally, it is recommended that FÁS and the CIF should continue to encourage employers to increase sponsorship of apprentices in some trades. The extent to which apprenticeship intake should be increased further varies from craft to craft. For example, the current apprenticeship intake level of carpenters of over 1,300, if maintained, is quite close to meeting the construction sector's recruitment requirement at a continuation of 4% growth. In view of the fact that employment in the Wood and Timber Processing industry is predicted to decline over the next few years, further increases in the current intake level of carpenters may not be necessary.

Similarly, the current intake of apprentice plumbers, at 685, will approximate the level of demand in the year 2004 and beyond.

There will, however, continue to be significant shortages of both plasterers and painters although, in the case of the latter, it may be that qualified craftspersons are not considered necessary for all types of painting work. Nevertheless, there should be some increase in the intake levels of painters, while that of plasterers must be increased significantly.

There will continue to be some outstanding shortages of both bricklayers and construction plant fitters in 2004 and beyond and further increases in apprenticeship intake are also recommended in these crafts.

Finally, in the case of apprentice electricians, current first year registrations at 1,893, will, if maintained, approximate to the needs of the construction sector for 2004 and beyond, but will not be sufficient to meet the needs of the economy as a whole. However, with 85% of all electrical apprentices being sponsored by employers in the construction industry, that particular problem is likely to surface elsewhere in the economy and that, as the man says, is another days work.

## The Open Forum, first session, facilitated by Co-Chairman John Travers

The Forum is now open for discussion. I would like to invite your comments, specifically on the issues that have been raised by the two presentations, but not necessarily confined to them. There may be other areas that you think are important in the context of the work that is being undertaken by the Expert Group at the present time. I would also like to invite you to interact with each other, not just to direct your comments to the people on the platform or to some of the other Expert Group members.

### **Peter McCabe, Director of Education and Manpower Planning, the Construction Industry Federation, Member of the Construction Industry Training Committee**

We are seeking a government-level task force on construction manpower, education and training. It is the largest employment sector and is going to grow rapidly. We are not a twenty-six county sector and we think the model of working across the manpower on the two islands is significant, not only for our industry but for others. The demands in construction are very broad and very much in engineering, design, construction, refurbishment, and maintenance. Heritage work is one third of the value of construction work and probably is the future growth area, when other areas begin to level out.

The new significant training fund, evolving from employer's contribution in PRSI, is important. The construction sector, which will be a major contributor to that fund, will have a significant say in how that fund is allocated and applied to the construction sector and we will be making presentations on that. On recruitment, we have got to recruit craftworkers, managers, operatives and engineers from abroad via EURASE, FÁS and other agencies. We are now seeking those people not only from Europe, so we need a mechanism to deal with the delivery gap developing. FÁS and EURASE need a new type of resource to deal with the fact that next year we will need 10,000 people from abroad. We can work out, with the computer model, what the composition of that 10,000 roughly is.

### **Brian Kearney, Executive Chairman, Project Management Group**

The construction industry is not totally a self-generating industry in this country. It has been and continues to be quite dependant. We are very likely to end up in another cycle as we did in the 80s where, once the volumes drop off locally, confidence in training declines and we are back in the same old cycle that we were in before. There are severe skills shortages at the moment. People are coming in from the UK and only staying a week, because of the sterling exchange rate and the different tax rates. A development that probably will become a feature of life more and more in the next few years, is the designing out of certain unavailable skills, such as bricklaying, from buildings.

Public sector projects are way too slow, for two reasons - from the regulatory point of view, which is currently being looked at, and from the execution point of view. We will need foreign companies, with their employees, coming in. Countries like Poland and the Czech Republic have very skilled people who would be delighted to come here. Finally - three schools in Clondalkin have brought their third level uptake up from 7% to 27% in a couple of years with an expenditure of £60,000 (€76,000). Pupils were paid £40 (€50) a week pocket money instead of having them working part-time and losing study time in the process. We need to look at the micro as well as the macro at times.

### **Peter Rigney, Irish Congress of Trade Unions**

There seems to be an underlying assumption that the education and training institutions will produce all of the general supply of skilled labour. That is ceasing to be the case. More and more, we will have to look at our existing labour force as a source of being potentially upskilled. There is a number of ways we can approach this, such as looking at deprived schools and trying to up their access to third level or at the intake of mature students into third level, where the Irish record is extremely low by European standards. A particular duty will fall upon the engineering and the science faculties, because of the small cohort that we have going on to third level as mature students in these fields. Debates between protagonists of three and four year degrees reminds me of the debates between the various players in the apprenticeship sector about the duration of apprenticeships - both quite frequently have the same outcomes.

### **Eamon Tuffy, Head of External Services and Development, Institute of Technology, Tallaght**

There is now more emphasis by the Expert Group on looking to mature people to improve the skills supply. The participation rate of mature students is very low. One of the potential delivery mechanisms to achieve this is through part-time courses. We need to look at the obstacles arising for mature students in regard to part-time courses. First of all, institutions will have to be prepared to facilitate the participation of mature students, people in employment during the day. There is also the question of inequities in regard to fees. Why should two people from the same background be treated differently - one paying no fees, the other paying £700 (€890) plus - because, for various reasons, one of them went on to third-level straight from school and the other one didn't.

The Higher Education Equality Unit has recently recommended that asylum-seekers should be allowed to participate in full time education after being in the country for six months. Some improvements have been made in regard to the access of asylum seekers to employment but none with regard to their access to full-time education, although they can attend part-time education. In Tallaght, there are an increased number of emigrants attending part-time. They have to pay fees etc. but they cannot attend full-time.

### **Professor Noel Mulcahy, University of Limerick and Construction Industry Training Committee**

The forecasting model for the construction industry was introduced in order to be systematic about the way in which we would think about skills requirements. I have some concern about the structures and systems involved. I find a tremendous slowness in the public sector system in responding to the recommendations that we make, due to agency restructuring problems – the resultant restrictions need to be looked at. Our CITC report queries how FÁS is itself delivering the training requirements as advised by the CITC itself, in the context of the new set-up in Enterprise Ireland.

Third-level institutions could change the skills mix, if they weren't so taken up with making sure that the points positions they had in the various courses was maintained in their institutions.

All the skill areas are built into the model, not just craft but architectural and other professional requirements and so on. If you want to improve the productivity of the team, you want to make sure that the top team which comes together from about ten or eleven different organisations for the period of the project, must work effectively together. Training for that is just as important as the training, say, for the apprentices. It is also important for employees below apprentice level. Apprenticeships, the Construction Certification Scheme and traineeships should be properly integrated in the context of the skill requirements of the industry. This restructuring must be hastened - hopefully the new levy scheme is going to provide a source of funds to enable that to be delivered.

### **Eddie Lavery, Distance Learning Unit, Dublin Institute of Technology**

Our work is mainly in the area of industrial training - at the present we have approximately 12-15 clients as companies, on approximately a two and a half year programme. There are many mature people in industry with skills gained in the workplace which, in many cases, can be brought to bear when they go back into education. Courses need to be responsive to industry needs, where employees are working two-cycle shifts, four-cycle shifts and overtime. We devised a system to provide this upskilling in both education and training by providing a distance-learning, computer-based approach. This is a very successful, cost-effective mechanism of delivery. We certify it because we think this is very important - people acquire higher skills and higher remuneration, while providing for a need within industry. We are doing it in the technical management area, where there is a huge demand out there in the industry.

### **Professor R.N. Butler, Head of Chemistry Department, National University of Ireland (NUI), Galway**

The programme of research for third level institutions will be investing £165 million (€210 million) in phase 1 and £65 million (€83 million) in phase 2. Those with responsibility for allocating funds should be considering how this investment will affect the undergraduate and training areas in all the third level institutions. People working on these research programmes are going to be trained in the undergraduate

areas, but the funding involved may not necessarily produce the appropriate equipment and facilities for undergraduate level use. A programme concerned with teaching facilities and teaching in third level institutions may be needed. There are major problems for people keeping these programmes going, keeping the standards up to international standards. Facilities are very expensive and become obsolete very quickly.

**Professor Kevin Ryan, Vice-President (Academic) University of Limerick**

It is difficult to turn and redirect universities, although most have made every effort to respond to the changing demands. On the issue of completion rates, the causes are likely to prove to be considerably more complex than people might imagine. The rates are reasonably good by European standards and raising them any further may prove very difficult. We have study findings that many among a first year cohort, which we identified as having a particularly high failure rate, had part-time jobs in order to fund their social lives. You are not going to address that very easily. When programmes expand very rapidly, student commitment to those programmes may be more marginal. That is a problem that you have to address at an earlier stage. In regard to the research programme, the output of Ph.D. students is going to be a key driver for the economy in the future. The first class honours graduate is offered a salary at the moment in excess of what we can pay the person who is supposed to supervise the Ph.D. student. The universities must address this problem in innovative ways, including part-time study and so on. It also requires resourcing. These are complex problems and we are going to require multifaceted answers to them.

**Willie Cunningham, Cork Electronics Industry Association**

We have very close links with our third level institutions in the area and have confidence in their ability to deliver in the overall graduate-skills area. I believe industry and business should be liaising with second level schools, to counteract the trend away from science and technology and towards softer options. The image of technological industry, particularly IT, amongst students and teachers remains very bad. The IT industry is not going to close down next week. With the pool of 18-year olds dropping from approximately 70,000 per year to less than 50,000 per year, this is going to become a serious issue which everybody must be aware of. Many of the parent companies of our big subsidiaries, particularly those from across the Atlantic, invest heavily and not just financially in education - second level and primary education - in their own countries. This does not happen to the same extent in Ireland - we should be conscious of this as well. CEIA is totally committed to the work of the Expert Group.

**Dr. Columb Collins, Director, Institute of Technology, Tallaght**

The Institutes are preparing a response on open and distance learning, which we hope to report on in the very near future. The new challenges in education mean that the system has to become much more open, to deal with students who are coming in from non-traditional areas and in non-traditional modes rather than school-leavers. In particular, the system must become much more flexible to be able to attract in students, not only in the evening, but also part-time day students. Most of the people who have been out of the

workforce for some time will wish to make sure that they have the appropriate skills to re-enter the workforce - we have to look at a new type of system for them. Instead of having the binary system of full or part-time students, we need now to look at students and measure and support them in whatever way they are studying, rather than just as full-time students.

**Dr. Gay Corr, Director, Galway/Mayo Institute of Technology**

We need to take into account that output of graduates doesn't always necessarily reflect the numbers going into the workforce. More and more, students that complete courses don't necessarily go into the workforce directly -they want to go abroad and so on.

In regard to mature, non-standard students, in addition to being more flexible we are going to have to develop more and more foundation programmes to help people translate into higher education and come back again. These foundation courses must be targeted if they are to bring people into the relevant areas – otherwise the majority will end up going into the “soft” as opposed to the “hard” areas.

**Pat O'Connor, IBM, Irish Software Association**

Up until recently, no Accelerated Technician programmes, either in manufacturing or in IT, have been provided by an Institute of Technology in the Dublin Area. The Blanchardstown Institute of Technology will be starting one of the courses in IT in January, with 20 places. They had 120 applicants for these places and the quality of the applicants was extremely good. I am hoping that the other institutes and colleges would consider running these courses, as soon as the building programmes are complete.

**Paul Lyons, IBM**

I want to speak in my capacity as a member of the management committee of FIT, Fast Track to IT. This is an IDA-sponsored initiative, bringing together senior managers from a number of the IT companies to try and take up some good work which had been done in the Local Employment Service centres, particularly in Ballymun, working with the long-term unemployed to get them into the IT industry with special support and special training. A large number of IT companies sponsored and became affiliates with the programme - the intention was to establish or to deliver 5,000 people over 3 years from the long-term unemployed - in fact, already 700 places have been identified and are being filled. It is a great example of how industry, government institutions and the education and training sector can all work together to satisfy a need and where we can input as industry and say this is what we want and these are the kind of people we want.

This won't be successful unless it really satisfies our needs but, if it does, it will be self-sustaining. We need to make a special effort to bring these people in and to help it get off the ground and deliver these 5,000 people.

In the future, programmes like FIT, where industry co-operates with training institutions, will be important for upskilling other people such as people returning to the workforce or immigrants. Getting a model like this going for the unemployed is very important and deserves our support.

### **Colm Regan, Executive Director, Forfás**

I would like to stress the importance of skills to competitiveness - in the end it is competitiveness that will drive growth and our standards of living. Forfás are working closely with the National Competitiveness Council and have ongoing discussions with companies on behalf of the Council. I will make a few points which have arisen from that work. One is that immigration is going to be critical in terms of pressing forward in the future. Available data indicate that there is going to be shortages of labour. Other countries have been successful in helping to drive growth through effective immigration policies. There is a real need to promote immigration, but in a regulated way and in the skills areas that are required.

Another point that has become important to competitiveness relates to training in companies. Companies in Ireland spend a lower proportion of their payroll on training than in other EU countries. Technology is changing dramatically for all companies. Unless the people they already employ are able to embrace the new technology, the very survival of these companies will be at threat. There is a need for the employers, the employer organisations, ICTU, and the development agencies to agree on what needs to be done to increase investment in company training.

My final point relates to the education sector itself. If we are to tie skills to competitiveness, there is a need for the education sector to listen closely to what companies need in terms of skills. They need a variety of things. Obviously, they need science and technology graduates. They also need the education system to promote the importance of science and technology and the benefit of the careers that are available in that area, right back at primary and secondary level. They need to promote entrance to the places that are becoming available as there is a real concern that those places will not be adequately taken up. At a wider level, the education sector needs to push the soft skills issue - the skills of teamworking, flexibility, and creativity - and, as a number of speakers have mentioned, there is a critical need for the education sector to focus strongly on mature people. We have a very small number of people of mature ages on courses compared to the UK and other countries. This will be critical because future skills requirements will change more rapidly as people age over the coming years.

### **John Travers, Chairman**

The contributions, comments and statements, made over the past hour or so, are extremely useful. Before leaving the last words to Dr. Danny O'Hare and John McGrath, whom I also want to thank for the excellence of their presentations, there are a number of points that have been raised that deserve, I think, to be particularly noted. Among these I would mention:

- in the construction sector the need for a task force including Government, industry and trade union representatives to develop specific proposals to address the skills shortages in both the short and long term and to follow through on their implementation;

- the emerging “designing out” of certain skills in the construction sector as a response to skill shortages;
- the need for new approaches to addressing skills needs generally through greater recruitment of mature students at third level and the greater use of distance learning techniques;
- the need for a systematic and planned approach to promoting immigration of people with the required skills profile into the Irish labour force;
- the need to distinguish between the equipment needs of the Universities for research purposes and for teaching purposes;
- the scope for a more aggressive use of ATP courses by firms and the third-level educational bodies to train IT technicians, particularly in the Dublin area;
- the potential of using the pool of unemployed people as a source of IT skilled people through special training courses involving industry and the educational and training facilities of the State;
- the utter importance of upgrading the skills of the labour force to meet the competitiveness needs of the economy, in order to sustain increased economic growth and higher standards of living.

These are but some of the very good points that have been raised. I thank you all for your contributions and invite John McGrath and Dr Danny O’Hare to make a brief response to some of the issues raised.

**John McGrath, Manager, Skills Research Unit FÁS**

I’d like to endorse the comment on the difficulty industry is experiencing with regard to craft skills. The very high bricklayers wages being paid is proof positive of just how difficult this situation is for employers. Most companies are managing because we have a large number of people now working in the construction craft industry from Northern Ireland and the United Kingdom, not because there are sufficient numbers from within the Irish labour market. This is understandable. As recently as 1997, we were looking at about 27,000 house completions per year. This year we have gone over the 40,000 mark. Nevertheless, it does mean that we have to bring in at least 10,000 craft people over the next two years into this economy, before the very high apprenticeship intake numbers can be processed through the system. The figure of 10,000 refers specifically to craft workers. They represent only about 38% of total employment in the industry. I am not including, for example, the semiskilled workers, scaffolders, production plant fitters, roofers and so on. From the employer’s point of view, the situation is more serious than I have painted today. The CITC are about to commission research into the detail of the problem regarding semiskilled workers and I endorse that.

## **Daniel O'Hare, Chairman, Expert Group on Future Skills Needs**

I would like to refer to a few contributions that I thought were worthy of further attention by the Expert Skills Group. The effect of distance learning in reaching out to particular client groups is an important point. The level of participation by mature students is an issue that a number of people referred to and I think the system has to really look at that issue. About 4% of higher education students in Ireland are classified as mature students. The average for other EU countries is something like 20-25%, so we could make a huge impact on access to third level qualifications if we did focus on mature students. Likewise, we should focus more on giving disadvantaged people access to higher education. I also think that the image of engineering is imbalanced at second level. There is an emphasis at second level on craft skills, and rightly so, but it seems to me that the modern engineering industry is not represented in the second-level programme. There should be a curriculum focusing on electronics, with a modern syllabus in electronic engineering introduced.

There is very little reason why ATP shouldn't be very active in Dublin - the argument about additional physical facilities is not convincing. Completion rates are subject to all sorts of complex factors. A reality that Institutes of Technology and universities don't face up to is that the students who complete the first year of a degree programme, or indeed of a certificate programme, and who fail second and subsequent years, leave the college without any qualification. People who complete a year or two years of study on a degree should end up with an academic qualification which they can use subsequently in life. That is an issue for the Institutes of Technology and the universities equally. I found the inputs very interesting - the success of the Expert Group will be in the inputs made to it from all sources. My colleagues and I on the Group do not regard ourselves as a repository for all knowledge and information so we would like to encourage inputs from contributors such as yourselves.

## **Dr. Don Thornhill, Chairman, Higher Education Authority and Forum Co-Chairman**

Our next speaker is Mr. Micheál Martin, T.D., Minister for Education & Science. He has been Minister for Education & Science since 1997. His term of office as Minister for Education & Science has been characterised so far by a remarkable knowledge and understanding of the role of education and science, both in terms of its social role and its central role in national development. He is also characterised by his commitment and enthusiasm and his bias for action. He has been a crucial advocate in securing and delivering the finance structures for making possible the measures which have been put in place to date to deal with the skills shortages.

## **Address by Micheál Martin, T.D., Minister for Education and Science**

I am delighted to be here today at the proceedings of this, the second Business Education and Training Partnership Forum. At the outset, I would like to thank Forfás and the Higher Education Authority for organising this Forum. Furthermore, I would like to acknowledge the work of the Expert Group on Skills Needs under the chairmanship of Dr. Danny O'Hare and his predecessor, Dr. Chris Horn.

Since the Forum was first convened in 1997, our economy has continued to grow significantly, with dramatic increases in employment levels and decreases in the numbers out of work. In an increasingly competitive global economy, we need to continue to develop as a knowledge based economy to ensure sustainable, high quality, well paid employment growth. The Government is addressing the skills demands of the economy and we are committed to putting in place the resources and to developing appropriate policies to meet the skills demands. Much of the success achieved in social and economic development in recent years has come from the quality of our human resource base.

The National Development Plan that was published last month outlines the Government's continuing commitment to the development of our human resources. The Plan recognises the link between the development of our human resources and the future development of society and the economy and provides for the necessary financial investment in the education and training sectors. It is timely for this Forum to be taking place now when the implementation of the National Development Plan is being considered.

Today's Forum is intended to inform decision making and is being held prior to the final decisions being made. The Forum represents a dynamic opportunity for the business and education and training partners to influence future policy initiatives in the context of the unprecedented investment programme set out in the National Development Plan. I would urge you all to take the opportunity to input to the debate.

The partnership developed between the Higher Education Authority and Forfás in examining the skills demands of the future and in devising strategic responses to these demands, in consultation with Government Departments and social partners, has been an important development. These two bodies have complementary functions at a national level in identifying where skills issues of major national importance are emerging and in looking at how these issues should be addressed.

The meeting of the Forum today is to consider the recent work undertaken by the Expert Group on Future Skills Needs. You have already heard Dr. O'Hare outline the progress made implementing the recommendations of the first report and you have heard Mr. Mc Grath speak about the construction industry. Later you will hear Dr. O'Hare talking about Chemical and Biological Sciences and Research Skills.

The Government's commitment to addressing skills demands has been evidenced by my announcement last April of a major £75 million (€95 million) investment initiative for third-level education in response to the First Report of the Expert Group on Skills. The initiative is targeted at skills areas where there is a high level of employment growth, predominantly in the engineering and computer hardware and software areas. An additional 5,400 student places are being made available under this initiative.

This Government is committed to the development of a knowledge-based economy. Our competitive advantage in recent times and projected into the future is firmly based on the strategic development of the economy as a knowledge based, technologically advanced one. This demands the development of our knowledge capital, that is our people. A strong culture of research in our higher education system is necessary for the development of a knowledge base. The importance of Research and Development (R&D) for the country's continued development has been well documented.

The Government has acknowledged the importance of developing the research capability of our third level education system. In July of this year, I announced the allocation of funds under the £220 million (€279.3 million) joint public/private Programme for Research in Third-Level Institutions. The programme ensures that institutions have the means and incentives to formulate and implement research strategies to develop critical mass in areas of existing and emerging excellence within the institutions.

This investment is being followed by the unprecedented allocation of £1.9 billion (€24 billion) in the National Development Plan to research, technology and innovation over the next seven years.

This area of research is one of the key areas in which the Expert Group has been working and I look forward to the input from the Forum today on this. Clearly, we are at an exciting time and there is a need for people to be attracted to careers in research. The latest figures compiled by the HEA show that in 1998, 37% of those who attained doctorate degrees entered employment and did so outside of Ireland. We need to ensure that there are real opportunities for our researchers to stay at home and for Ireland to benefit from their knowledge and skills. This will require developments to existing strategies for funding research and development on the basis of excellence alone.

In relation to the chemical and biological sciences, a very interesting picture is emerging, which Dr. O'Hare will outline in more detail. It is particularly relevant as the Expert Skills Group is signalling that there will be a significant increase in the demand for such science graduates, although the need is not immediately apparent at present.

Arising from the continuing work of the Expert Group, it has become apparent that there will be a shortfall in the numbers of science technician students. I would like to acknowledge the innovative work of the Institutes of Technology in this regard. Working with business and the National Council for Educational Awards, the Institutes of Technology have developed a new accelerated programme for science technicians, based on the innovative model of the National Certificate in Manufacturing Technology which commenced two years ago. Two new courses in Biomedical Engineering and Industrial Science are due to come on stream in January, 2000.

The Accelerated Programmes are the type of innovative response that is required to meet the emerging skills needs and I would like to congratulate all those involved with this initiative, and in particular, Dr. Seán Mac Donagh for his continuing commitment and innovation in this regard.

These programmes are important, being based on a partnership between business and education with business involvement in course design, selection and most importantly in work placement. Today's Forum can help in developing and strengthening relationships between the various sectors.

The work in the chemical and biological sciences is also related to the work of the Higher Education Authority on Assessing Supply in Relation to Prospective Demand for Pharmacists in Ireland. I launched the publication of the report by Peter Bacon and Associates, Economic Consultants for the Higher Education Authority last month. It is clear that the pharmaceutical industry has been a key area in relation to our current recent economic development. Indeed, there is much potential for further economic developments to be built upon investment in this area, particularly in the pharmaceutical industry. The report has identified the need to move ahead and meet the skills needs of the sector and the HEA is currently consulting with the relevant parties in relation to the report.

A clear issue that is arising here is the need to continue to boost an interest in the sciences in schools. One of the most significant educational developments, planned to take place over the next five years, will be the implementation of a new science programme in all primary schools. In the revised curriculum, Science holds equal standing with History and Geography for all classes and is to be given an appropriate weekly time-allocation. The implementation of the revised curriculum will be on a phased basis over four to five years, and will be supported by a comprehensive programme of in-career professional development for teachers and a new grants' scheme for the teaching of Science in primary schools.

At second level, concerns have been expressed on the uptake of Physics and Chemistry at Leaving Certificate. I have initiated a number of measures in response to these concerns, which involve the modernisation of school laboratories, the revision of different science syllabi and the provision of extensive training for teachers. In addition, a permanent per-student payment for schools is being introduced to provide materials

for the teaching of physics and chemistry at Leaving Certificate level. The clear aim is that these initiatives will help students to develop an interest in the sciences and to be aware of the future opportunities that will be available for them through the use of science.

A third area that is being addressed today is the skills needs of the construction industry, as we have already seen. So much of the Government's plans for the development of the economy depend on the availability of workers with the necessary skills. Some 46,000 more people with craft construction skills are needed over the next four years and today's discussions will be very important in that regard. This is an area of important co-operation between the construction industry, FÁS and the Institutes of Technology.

The links between business and education and training are important in the development of a national framework of qualifications. The Qualifications (Education and Training) Act was passed in the summer and preparations are underway for its implementation. One of the most crucial tasks facing the National Qualifications Authority of Ireland and the two new awarding councils – the Higher Education and Training Awards Council and the Further Education and Training Awards Council – will be the need not alone to inform themselves of the educational and training needs of business but also to promote best practices in education and training to meet those needs.

I would hope that as the national framework is developing, a new diversity of awards, and programmes leading to these awards, can be developed. In the context of lifelong learning, our education system needs to become more aware of the needs of business and industry, especially in terms of upskilling people already in work. Business and industry need to work to make the education and training sectors aware of their future needs. The work of IBEC with the Conference of Heads of Irish Universities and with the Council of Directors on Institutes of Technology is vital in this regard.

Traditional ways of interaction between higher education institutions and business and industry need to be built on. Business and industry are now recognised as partners and are involved on the governing authorities of third-level institutions. They are increasingly involved in course development. They need to have a continuing involvement in course revision and further development, and an appropriate involvement in the quality assurance and the evaluation procedures that the institutions operate, as do representatives of other stakeholders in society. Business and industry need to be involved as meaningfully as possible in these developments, so that the input is not seen as one discrete part of the educational process, but rather an integral and continuing part of the process.

We all have a responsibility to ensure that the opportunities that are opening up for the development of our society and our economy in the coming years are fully exploited. We must plan for the changing demographic trends and ensure that our educational system diversifies to educate all of our people to help the development of our society. We need to develop a real lifelong learning society, where the options for learning, both formal and informal, can be taken up at all stages of an individual's life.

I look forward to everyone here today working together to meet these challenges. As I have said, today is an opportunity to feed into the real decision-making process and I hope that you take the opportunity to do so.

## Presentation by Dr. Daniel O'Hare, Chairman of the Expert Group on Future Skill Needs, on the recommendations of the Expert Group on Future Skills Needs on Life Sciences and Research Skills

For the rest of the morning, we will be looking at what will be important considerations for the future success of the Irish economy – securing an adequate supply of people with graduate and post-graduate qualifications, where there is currently a shortage or a threat of shortage in areas other than the IT sector.

The remit of the Expert Group is to address future skills needs, and in the case of the Life Sciences, we have concluded that, while there is not the immediate visible shortage which obtained for the IT sector, there are clear indications that problems will arise in the near future if remedial action is not undertaken now.

As we move ever further to becoming a knowledge economy, increasingly also we need to have the necessary research and development capability in place, to underpin that advancement.

I propose now to outline the conclusions of the Expert Group in regard to Chemical and Biological Sciences and then move on to look at the current position in regard to Research Skills.

### Chemical and Biological Sciences sectors 1999-2005

Before looking at the Expert Groups findings in this area, the following clarifications should be made.

Industrial sectors which employ substantial numbers of Chemistry and Biological Sciences graduates encompass the following industries:

- Chemicals
- Pharmaceuticals
- Plastics and Rubber
- Medical Devices
- Biotech
- Food
- Beverages and Tobacco.

There are currently 100,000 people employed in these sectors – this figure is projected to rise to 132,500 by the year 2005.

The scope of the analysis undertaken on behalf of the Expert Group relates only to those third-level disciplines which are specific to these sectors. In other words, it does not address the requirements of the sectors for, say, business management graduates or for electricians.

These sectors have several features which are similar to those of the IT sector, such as:

- The substantial opportunities they provide for growth of Irish firms and for inward investment
- The fact that there are indications of third-level skills shortages emerging, in the short to medium-term
- The length of the lead-time required for developing relevant skills.

Another significant factor, in looking at skill needs for these sectors, is the need to be aware that both Computing and the Natural Sciences are attractive to numerate people with an interest in Science and Technology.

## Demand for Chemical and Biological Science graduates and technicians 1999-2005

As was used in the case of the IT sector, three demand projections for future employment were derived for each of the industry sectors – high, medium and low growth. The exception to this was the Indigenous Biotech industry, for which a single growth scenario was envisaged. The Indigenous Biotech industry is exceptional in that it is currently relatively small in employment terms – about 400 people at end 1998 – but with the potential for considerable and rapid growth, in line with the international development pattern of the industry. Here in Ireland, a number of State-sponsored interventions are under way to enable the industry to take full advantage of the vast range of opportunities available. The scenario developed for future employment for this sector was based on assumptions about increases in the numbers of start-ups, their success rate and the rate of growth of those companies that are successful. It is not a forecast as such, but it does provide a reasonable view of how a successful Indigenous Biotech industry might develop.

The projections for each sector indicated either medium to high growth over the projection period. Consequently, an overall middle to high growth scenario is anticipated. The resultant annual demand for scientific and technical graduates up to 2005 is 1,220 scientific and technical graduates, composed of:

- 870 graduate professionals
- 350 technicians.

These projections were informed by a number of considerations.

Scientific and technical qualifications are commonly held by employees who are not actually in scientific and technical occupations, so it is important to plan to supply the demand for people with scientific and technical qualifications for all occupations.

The industrial sectors examined by the Group are increasing the levels of qualifications required for recruits, so it is appropriate to assume that the percentage of new recruits into each occupation, with scientific and technical qualifications, would be higher than in the existing population.

The model used takes into account an employee turnover factor, the occupational mix for each sector and the percentage of those recruited into the sector assumed to require scientific and technical qualifications.

Of the graduate professionals requirement, about one third is for people with higher degrees.

## Supply of Chemical and Biological Science graduates and technicians 1999-2005

There are a number of factors which affect the supply of graduates, as compared with the actual number of graduates in any given year. For instance, graduates opt to undertake further study, move abroad for further study or employment, or go into other employment sectors. Taking these factors into account, the Expert Group estimates that there will be a projected annual supply of 1,080 scientific graduates and technicians available to the sector, comprised of

- 750 graduate professionals and
- 330 technicians.

## Factors affecting supply

The real concern for this sector is that of actually maintaining current graduate levels, given the decline in interest in the relevant subjects. College applications for science programmes, excluding computing, have fallen significantly since 1995. The impact of this fall-off has been limited so far, and is unlikely to change significantly up to 2002 – the year when most 1998/9 students would expect to graduate – but the position after that is uncertain. College entry points requirements have already decreased for most of the relevant degree courses; if the fall off in interest continues, this will have an impact on the quality of students admitted. Indeed, even if the current share of graduates is held, the absolute number of school-leavers will fall for demographic reasons.

At technician level, the impact of the fall-off in applications is already being felt. A number of key subdegree programmes have experienced steep decreases in points between 1998 and 1999, reflecting this. It is plausible to suggest that the rate of decrease at technician level might even accelerate as demographic factors, reducing demand for full-time college places, are likely to make it much easier for college entrants to gain entry to degree programmes.

## Projected additional requirements in third-level graduates 1999-2005

The projected additional graduate requirements for the sector for the projection period is 410 per annum, comprised of

- 290 graduate professionals.
- 120 technicians.

To meet the additional demand for the 290 graduate professionals, the creation of 1,150 third-level places will be required as follows:

- Biological Sciences                      700
- Chemistry                                      400
- Chemical Engineering                      50

While the primary concern in the immediate future in regard to Chemical and Biological Sciences graduates must be to maintain current output levels without compromising graduate quality, we need also to consider the creation of additional places on a phased basis.

The shortages under the supply projections arise from:

- The fact that it takes 4-5 years for a decision to produce more graduates to have any effect on graduate numbers
- The projection for the Indigenous Biotech sector, which is one of the main factors driving the projected shortage of graduates
- The likely loss of graduates to other destinations, especially to the IT sector and, in the initial years, to the Technology Foresight programme, although the latter will also, in time, be producing new higher degree graduates. The effects of the Technology Foresight programme on Biological Sciences graduate supply will be considered by the Group when the programme is under way. Any consequent adjustments to

the current projections will be taken into account in the Group's review of Chemical and Biological Sciences in Autumn 2000.

The main concern in regard to science technicians is the shortage of entrants, rather than any shortage of third-level places. The absolute priority therefore is to address the projected shortfall in graduate technicians in the first instance. We have not, therefore, included provision for additional places at this stage, although we are indicating that an additional annual output of 120 graduates, to meet increased demand, is required.

## The Policy Response

The recommendations that we will be making in our Second Report to the Minister can be summarised as follows:

- As I have already indicated, the most immediate concern in maintaining graduate output is at technician level. The Group has concluded that one of the most effective short-term mechanisms for addressing this deficit is to extend the successful accelerated Manufacturing Technicians Programme to cater, in the first instance, for an additional 250 Science Technician students.
- We in the Expert Group believe also that we have to become much more proactive in boosting an interest in the sciences in an imaginative manner, whether it be through a simple rebranding of courses at technician level, by establishing an Interactive Science Centre or through promoting the very real and positive achievements in Irish biotech research in areas such as diagnostics.
- There is a need to ensure that completion rates in all the relevant courses are as high as is feasible and that consideration and appropriate action is taken on information emerging on the factors which cause students to drop out of courses.
- Increasingly, skills needs will have to be met through upskilling of the existing workforce. We believe that the means by which this should be pursued should be flexible and variable, to meet the varying training needs required. To achieve this on a planned basis, we recommend that a career progression path be developed, in a combined industry/education/training partnership, for employee training and competency building within the sector. Such a framework would provide benefits to both employers and employees and reflect the adaptability that is now required to ensure that we do not lose our economic advances through circumstances within our own control.
- Finally, the Expert Group is recommending that provision should be made, on a phased basis, for the extra places in the educational system that will be required to cater for a projected additional annual requirement of 410 third-level graduates and that the requisite resources be allocated to the third-level sector to facilitate this.

## Supply and Demand for Research Skills

In the recently published National Development Plan, the Government accepts that there is a strong link between investment in the research base of the economy and sustained economic growth. The basis of this link is the 'knowledge-based' economy, where intellect and innovation will determine competitive advantage.

In the context of significant new proposals for public funding of research in the National Development Plan, and of the anticipated demand for highly skilled people from knowledge-intensive industries in Ireland, it is timely to examine the existing and forecast balance between the supply and demand for research personnel. Both the Higher Education Authority's Programme of Research in Third Level Institutes and the Department of Enterprise, Trade and Employment's proposals to implement the Technology Foresight recommendation to establish Ireland as a leading centre for research in key technologies, are likely to increase substantially the demand for research students and post-doctoral researchers. This is happening at a time when the latest HEA figures show a decline in the overall numbers studying for a PhD degree. There is, therefore, an urgent need to take action to avoid potential shortfalls in the supply of the relevant skills.

A greater effort is needed to generate awareness of the growing opportunities for a career in research in Ireland. These arise from the expansion of the research activities of higher education institutions, the implementation of Technology Foresight and the growing demand for researchers in industry. At the same time, it is essential that a research career is seen as an attractive option for those doing their primary degrees. This is a complex area and the HEA should ensure that complementary mechanisms for support of researchers, and for the development of research as a career, are in place.

More detailed study is also needed on the supply of researchers in key areas and the Expert Group proposes to look at that over the next year.

Finally, in the past Ireland has contributed significantly to the research efforts of other countries by the emigration of some of our best young brains. There is an opportunity now both to attract back some of those established researchers and to entice some of the best and the brightest students from abroad to pursue their research careers in the rapidly changing research environment in Ireland.

## The Open Forum, second session, introduced by Co-Chairman Dr. Don Thornhill

### **Chairman, Dr. Don Thornhill**

We are now back again into the discussion and exchange of views part of the meeting - which is, in effect, the most important part of the meeting - with a particular emphasis on Dr. O'Hare's presentation, but not to the exclusion of the points that people wished to raise in the earlier session but didn't get an opportunity to do. It becomes very clear, both in the presentations and from the floor, that we are at an extraordinarily fast transition point in terms of what change is happening in the Irish economy and Irish society. Essentially, there were two major features in the type of society that most of us in this room grew up in. One was that it was characterised by a labour surplus. The second was that there was an education surplus - certainly at third level. There was a burgeoning demand for third level places and the perception that, in many instances, the number of places available didn't meet the potential demand. Now, both of those are changing and changing quite dramatically and fundamentally. There is a third shift taking place, which is that we are moving, and need to move very quickly, to a high value-added economy. All of this means - and any era of change requires flexibility and creativity - that 'more of the same' won't apply and I think that was very evident in the discussion and comments this morning.

### **Professor Aidan Moran, Registrar and Vice-President (Academic), University College Cork**

In relation to biological sciences, for women - who constitute a large proportion of the students in these areas - provision of crèche facilities is important. Many graduates and PhDs have great difficulties when they start a family in getting childminders and these people often hold responsible positions within industry. The financial incentives to students to undertake graduate work and also to attract PhD students back to Ireland to do post-doctoral work are also very important. The incentives at the moment are grossly inadequate. If you wish to produce more skilled graduates, you will require more skilled staff to train and teach those graduates. Universities also find themselves with skills shortages and there is a deficit in the third-level sector - particularly in infrastructure in terms of equipment and space. That has to be addressed if we are to be globally competitive. The recurrent budget of Queens University on this island is roughly twice what the recurrent budget of a university of comparable size is in the Republic. The deficit will take time to address but I think we have to acknowledge it is there.

### **Eamonn McQuade, University of Limerick**

I noticed an ad from a third-level institution last week which had two posts - one an assistant lecturer and the other, a technician. The assistant lecturer's salary topped out at about £20,000 and the technician's salary topped out at about £25,000. It looked really bad in terms of creating a career progression for people with PhDs moving into the third-level sector. Tomorrow, I am celebrating 20 years of running a computer

studies course for schools in the Limerick region as a pilot scheme. It just shows you the kind of commitment education has made toward those of us who have tried to innovate in introducing technology in the secondary schools.

#### **Professor Paul Engel, Head of Biochemistry Dept., UCD**

We have to look very carefully at the manpower problems, both in relation to post-doctorate researchers. and the training of PhDs. In biochemistry, the PhD product is really the career-grade scientist. An Enterprise Ireland studentship is £2,000 (€2,540) per annum, whereas in the UK a Wellcome trust studentship could be £12,000 (€15,237) per annum. This is a serious problem. In my own department we have dropped from 65 research students three years ago, to 45 research students now. PhD students supply the manpower we need out there. They are the foot-soldiers of university research. I would like also to sound a worry in relation to the response of the Technology Foresight exercise. We still don't know what is going to happen but there is a feeling of alarm that there might be separate institutions set up, competing for a scarce resource with the existing third-level institutions. That would be a huge mistake for Ireland to make at this time.

#### **Rea O'Neill, Industrial Liaison Officer, Dublin Institute of Technology**

There is a focus on completion rates in the life sciences. I would like to urge an increased pressure on the research in that area to see what is the cause. That is a huge inefficiency within the education system. If we look at the points system, a person on 450 points - which is quite a high level on the Leaving Certificate - fails to get the 455 they require to get into a particular course. They are regarded as a failure at a very important time in their life, become demotivated and can then be quite disruptive within the third-level system, sometimes causing problems and lowering the whole standard within the education system. That research should be accelerated, and the points system really examined.

Ireland's culture of young people emigrating, coming back and bringing back their skills from abroad is an enormous educational resource. We don't do that much to encourage them back. In the research area, a lot of our best scientists have been educated in America but there is very little support from the state for them going there, equally, there is very little support for them coming back. Enterprise Ireland gives 12 post-doctorate awards a year. That number could probably be brought up to 50 or 60 a year, with very little cost.

#### **Dr. Marian O'Sullivan, Registrar for Science and Computing, NCEA**

We have heard that 'women may be our market', about mature students, 'graduate output' and 'awareness' of science and technology and how it impacts upon life. When is somebody going to sit down and pull all the themes and strands together? A lot of what is being said here today has already been said. How are we going to promote people into the sciences, from the age of four? How do we make science and technology fun? Does industry allow people in to see what kind of jobs they can do? How many women plumbers are there? How many women are there working in other areas and how many men are working in the biological sciences?

### **Dr. Sean McBride, Director, Tralee Institute of Technology**

A great focus has been put on mechanical production engineering, electronics and the IT sector. But there were also three other areas of importance in my region - the craft and technician area in relation to construction studies; the area of biology and chemistry to support the food pharmaceutical industries; and the third one, which still is not receiving any recognition - the craft and middle-management area for the tourism industry. I would wish that to be taken on board.

Everyone greatly welcomes the publication of the National Plan and the concept of gateways to development. Within those gateways, centres of expertise must migrate very quickly to centres of excellence established in the regions, in those places that may be designated as gateways to development. The government gave very generous funding this year for research but this was very significantly skewed towards the more traditional universities and good research within those institutions. If the concepts in the National Plan are to be implemented, there should be a very significant corrective applied to the criteria for the disbursement of those funds before any further allocations are made. The role of the Institutes of Technology and their potential in producing Masters and PhD students must be accepted if we are to believe in the concept of regional development outside of Dublin.

### **Professor Dick Butler, Head of Chemistry Dept. NUI, Galway**

I am a member of the committee for the new Leaving Cert syllabus on the National Council for Curriculum Assessment. It took eight years for that committee to produce a new Leaving Cert syllabus - this is not unexceptional in other areas as well. It was twelve years before the previous syllabus was brought in. These syllabi need to be almost under continual review and up-dating - there needs to be a feeling of activity and liveliness in the whole area of second level science, which is not there. Unless we get our structures and our organisations right so that we can introduce at least minor modifications into the syllabus, within 6 months work and into the new cycle, the whole thing is going to go through and into the whole cycle again.

### **Professor Noel Mulcahy, University of Limerick, CITC**

20 PhDs in engineering per annum have been produced over the last twenty years. The output of economists at PhD level was less than one a year a couple of years ago. Science has delivered for a long time because of the different cultures going into it. We have to give a lot more attention to action learning as a means of producing doctorate output. Those who are working in industry, either in the research area or on interesting topics which would lead to research, should be encouraged more by the third level. The Institutes of Technology can deliver this through industries in the region. In that way, get the actual PhD output up - otherwise we are going to be recorded again in publications such as Michael Porter's index of innovation, where Ireland is shown as flat, as projected for the next five or six years. Within the educational institutions, there is not a culture of people doing their PhD research outside the university and coming in and working

with the professors before eventually delivering their thesis. Some kind of state structural or funding support is needed for that.

**Dr. Sean Colley, Institute of Technology, Carlow**

Business should get involved with improving its PR in showing school kids what jobs are available in their particular industries. Some 3-7% of Carlow Institute of Technology graduates are employed in the Carlow area. We are training our youngsters and shipping them out to other parts of the country that have big problems trying to accommodate their housing. The admissions system needs to be changed or we are going to need a second points system that sucks in those people who are good and interested in some way. At primary and secondary level, we need to increase the interest in science, to develop more the natural excitement that children have. By what we are doing, we are actually destroying that natural excitement. As a result, science - particularly physics and chemistry - has a very bad press and it's getting worse.

**Marion Bryan, Technical Director, Irish Pharmaceutical and Chemical Manufacturer's Federation**

Maybe it is time now to stand back, review everything and look at the problems - a critical analysis right down along through primary, secondary and third level. We are thinking for students but very often can't think in their modes - so some research should be undertaken on what are the disincentives, the incentives, etc. If we are going to do a promotion on those programmes and incentives, market research should identify how to go about the PR programme on that. I would agree with greater industry involvement in terms of collaborative exercises between industries and those that are educating people in science. What do they, the educators, need from us in terms of promotion or in terms of needs and, likewise, what do we need from them, in terms of skills and perhaps the subjects or the areas that need to be identified. A student group could identify needs and come up with possible scenarios for improvement.

**Kevin Hurley, Director of Adult Education, UCD**

Quick-fix solutions for the problems of deficits in skills are not always possible. Ballyfermot is surrounded by industrial estates where there is a high incidence of chemically-based industry but the people actually working and residing in Ballyfermot are not likely to be enjoying the fruits of any kind of education opportunity. The rate of transfer into higher education from the area is in the region of 6% from the school-going cohort. One of the planks of strategy referred to by Danny O'Hare was the necessity to recruit people into the labour force from disadvantaged areas. That doesn't happen easily - we really weren't aware of the problem until about the mid 90s. It was predicated then, not in regard to labour shortages but on issues of equality and the necessity to correct the inequalities in the participation rate in higher education. It is very difficult to change the culture of generations. All the institutions are involved in this kind of work now. UCD has a very vigorous programme in place but it is not achieving the targets that we set for ourselves. They are not going to come overnight.

The education system is lacking in dynamism with regard to dealing with this particular area. We have about 5% - in reality it is less - participation by mature students in higher education in Ireland. In Britain it is in excess of 30%. There are demographic reasons for that but it is time to trigger the hunt for mature students, using different variations. I don't think we realise the enormity of the challenge to reach those constituencies. We have got to shed this kind of inertia that characterises us and begin to act far more dynamically. The long-term interests of the communities demand it but, equally, the short-term interests of the economy also require it.

**Seamus McEvoy, Head of Careers Service, University College Cork**

There are three parties involved - students, teachers and parents - in the profile of the sciences at primary, secondary and third-level. Many teachers come from an arts background, so they are not going to be familiar with science and engineering backgrounds. Maybe it is an area that needs to be addressed from the point of view of second-level teaching and career guidance. In regard to the parents, how do we get children interested in mechanical engineering and maths if we don't come from that background ourselves? Some help or support from the group in that area might be useful. Conversion courses are a very good way for students who are a bit more mature, who have the benefit of university experience under their belt, to make a focused career decision - maybe they chose a broader area in their first transition from second level to third level. There is scope to develop that as well. There is definitely opportunity there for partnership between university and business in the whole area of PhDs and research.

**Pat O'Connor, IBM**

Lap-top technology has now moved to a level where there is absolutely no reason, except for really high-definition screens, why any user shouldn't use a lap-top as opposed to a desk-top machine. This offers the flexibility that you don't necessarily have to have dedicated lab-space and that you could consider making available to the students, in some fashion or another, these lap-tops back in their own environments or wherever they might use them. There are a lot of constraints which exist to be able to do that which I am sure everybody in the room will tell you about - including the local telephone charges etc. I am sure there are answers to these like frequent caller charges etc. It might be worth the HEA considering if this is a possibility and by putting a small task-force together to look at it. I see it as a way forward, saving money on the one hand and giving the students a lot more flexibility.

**Roisin Kelleher, President, Institute of Guidance Counsellors**

The whole area of disadvantaged and mature students, flexibility courses, part-time courses, completion rates, retention rates - these are things we are constantly, on a day to day basis, battling against as we try to improve the system in guidance counselling. The students don't know at second level about the different courses. We have parents who are desperately trying to help their young people but do not know how. The whole issue of improving the situation with regard to guidance counsellors needs attention. We have a

situation where there may be one guidance counsellor dealing with up to 800 students. We are not pretending it is a good service. It is not. It is absolutely disgraceful. We have no guidance at all in some of our schools.

### **Dr. Daniel O'Hare, Chairman, Expert Group on Future Skills Needs**

Clearly in the research area, grants for research students have got to be attended to. We have been disgraceful in the way that we have not supported research students in the past and yet, we expect a strong research performance. The climate is right for that now and that should change. Also, costing research properly in our institutions has got to be done. Our state institutions don't pay overheads - that is a nonsense that has to be changed. Until we get more realistic about these things, we can't expect any greater things from the research community.

One of the great infrastructural deficits in Ireland, in my view, is the lack of an interactive science centre. When young people come to Dublin, they visit the National Gallery, the Zoo, the National Library and the National Museum and so on but nowhere are they introduced to science and technology. It is right to emphasise the importance of an interactive science centre in introducing people to science but wrong to suggest that there should be a network of science centres because they are expensive to run and you need to do the job well or not at all.

It is quite right to remind us that research exists in Institutes of Technology. I accept that point very fully.

I would like to make a general point, as a newcomer to the Expert Skills Group, on the lack of robust data about students in our institutions. I am saying it in this environment because it is not just a role for the HEA or for the Department of Education & Science but also for the institutions to provide that data. It is very difficult to plan in the absence of robust data.

The two areas we dealt with in this section are very important. We now have, in the area of the Chemical and Biological Sciences, an opportunity to be proactive because supply shortages are not going to present themselves for a few years yet. There is a real opportunity to plan properly to improve the facilities for the numbers of places required. It would be ungracious of myself and others here not to compliment Government on the great focus that there is now on research in the higher education sector and in industry, at a policy level and in very practical terms, cash terms. The real challenge now, in relation to research, is building the bridges between universities and industry. Whereas, a few years ago, I would have said that universities would be slow to build those bridges, the reverse seems now to be the case. I don't see that keenness for industries to interact with universities, now that there is more money coming from EU and the National Development Plan. There is potential damage if those networks of interaction between industry and universities aren't built - and strongly - using the significant financial resources that are going to be spent on research and development over the next seven years.

## **Chairman, Dr. Don Thornhill**

This has been a very useful session for those of us on the policy side. The number and diversity of the inputs are very valuable. I just want to reflect a little on what has been happening between now and the time that the last forum was held eighteen months ago. At that time, the focus and the discussion from the floor reflected a sense of preoccupation with the skills shortages there and a sense of panic in regard to the IT industry. There was a strong sense of scepticism that government and public agencies would do something about addressing the skills. In his first presentation, Danny showed what has been done in the interval and the message that both John Travers and myself, our respective agencies, and indeed our parent departments – Education and Science and Enterprise, Trade and Employment - would want to give you is that these discussions here today do matter.

There are a variety of measures that need to be taken, at national level certainly, but indeed also at the micro level. There are also things that can be done at an individual level - both individual business and individual educational institutions and indeed, between individuals in those two sectors. All of these things are very important. There was a management adage about 15 years ago in the management books which became almost a slogan but that doesn't debase its value in any sense and that was that 'elephants need to learn to dance'. I think that may be the motif for today's work.

## Appendix 1 - Current Membership of Expert Group on Future Skills Needs

Dr Danny O'Hare (Chairperson)

Mr Michael McKenna  
Dept. Enterprise, Trade & Employment

Dr Sean McDonagh  
Former Director  
Institute of Technology, Dundalk

Mr Michael McGrath  
Conference of Heads of Irish Universities

Mr Ned Costello  
(alternative to Seamus O'Moráin)  
Dept. of Enterprise Trade and Employment

Mr Paddy McDonagh  
Dept. of Education & Science

Mr Eugene O'Sullivan  
Dept. of Finance

Mr Seamus Gallen  
Enterprise Ireland  
(National Software Directorate)

Mr Roger Fox  
(Joint Secretary)  
FÁS

Mr Niall O'Donnellan  
Enterprise Ireland

Ms Una Halligan  
Hewlett Packard-IBEC

Prof. Frances Ruane  
Trinity College

### **In attendance**

Dr Noel Gillatt  
Forfás

Ms Brenda Gannon  
Forfás

Mr John Hayden  
Higher Education Authority

Mr Sean O'Foghlú  
(Alternative to John Hayden)

Ms Margo Monaghan  
(alternative to Michael McKenna)  
Dept. of Enterprise Trade & Employment

Mr Seamus O'Moráin  
Dept. of Enterprise Trade & Employment

Mr. Joe McCarthy  
Arkaon

Mr David Lowe  
Goodbody Stockbrokers

Mr Colm Regan  
Forfás

Mr Lorcan O'Raghallaigh  
(Joint Secretary)  
Forfás

Mr Gerry Pyke  
(alternative to Roger Fox)  
FÁS

Mr Pat Maher  
(alternative to Niall O'Donnellan)  
Representative  
Enterprise Ireland

Mr Peter Rigney  
Irish Congress of Trade Unions

Mr Dick Ryan  
IDA

Ms Kay Hallahan  
Forfás

## Appendix 2 - Current Membership of the Management Implementation Group

Dr Danny O'Hare  
(Chairperson)

Mr Paul Haran  
Dept. of Enterprise, Trade and Employment

Mr Michael McKenna  
(alternative to Mr Paul Haran)  
Dept. of Enterprise, Trade and Employment

Mr John Dennehy  
Dept. of Education & Science

Mr Paddy McDonagh  
(alternative to Mr John Dennehy)  
Dept. of Education & Science

Mr Jim McCaffrey  
Dept. of Finance

Dr Don Thornhill  
HEA

Mr John Travers  
Forfás

### **In Attendance**

Mr Colm Regan  
Forfás

Ms Triona Dooney  
HEA

## Appendix 3 - Attendees at Forum

Mr. William Arundel	Chief Executive Office	City of Dublin VEC
Mr. William Austin	Managing Director	DiverseyIreland Ltd.
Mr. Jerry Beads	Managing Director	Jerry Beads Construction
Mr. Jim Bourke	Manager	Enterprise & Trade Policy Division, Forfás
Mr. Robin Bower	Industrial Liaison Officer	NUI Maynooth
Mr. Proinnsias Breathnach	Senior Lecturer	National University of Ireland
Mr. Tony Breen	Education Officer	City of Dublin VEC
Mr. Liam Brennan	HR Director	Wyeth Medical Ireland
Ms. Marian Bryan	Technical Director	Irish Pharmaceutical and Chemical Manufacturers Federation
Ms. Claire Buckley	HR Manager	Sun Microsystems Irl. Ltd.
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