

## **21<sup>st</sup> Century Skills: Realising our Potential**

### **A Response from the Engineering and Technology Board (ETB)**

August 2003

*The ETB is a national, not for profit organisation with a strategic mission to ensure the supply of science, engineering and technology skills better matches, and stimulates, market needs. Our focus is on establishing effective partnerships to promote skills development in Science, Engineering and Technology across the educational spectrum - from schools, through Further Education to Higher Education and vocational training.*

*We are committed to representing the interests of the science, engineering and technology sectors, which are pivotal to the promotion of innovation and enhancing the nation's capacity for wealth creation. The problems of skills shortages and gaps in these sectors go to the heart of this White Paper's agenda.*

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A partnership to promote science, engineering and technology

## **Executive Summary**

The Government's Skills Strategy has rightly brought into sharp focus the challenge of boosting skills in order to improve the UK's productivity and competitiveness.

Although there are many facets to the underperformance of our economy, the relative lack of skills - both the overall levels of skills of the population, and their distribution and range - is the single most important factor.

ETB welcomes the recognition of the need to make a step change in the skills development of those about to enter the workforce, as well as those already within it. The increased funding for training at technician and higher levels is especially welcome, as is the support for increased continuing professional development, notably in areas of management and leadership.

The drive to reform qualifications is especially timely, in order to create more flexible and accessible systems of accreditation for those in work; improved information services about training provision; and the encouragement of better and more training provision which integrates demand with supply.

Overall, the aspiration to create more coherent and integrated provision through the development of strong regional and local partnerships is a critical success factor in ensuring that the additional funding is put to maximum effect.

However, there are still areas of strong concern, particularly in some of the assumptions made about how effectively current policies and their implementation are working. The effectiveness of the LSCs, colleges and Business Links in engaging SMEs and creating adequate and relevant training provision is one major example. There is also a concern about the desire for an increase in the numbers of young people being recruited to technician and higher skills levels can be reconciled with the Government's target for 50% of school leavers to progress onto university higher education. The Skills Strategy also fails to give a clear direction to the persistently difficult task of engaging SMEs in training and development.

The Skills Strategy should be implemented as soon as possible, although many of the structural and cultural changes needed, will take years to come to fruition. ETB looks forward to working with all the key stakeholders who can be brought together to tackle the pressing problems of skills shortage and low productivity. From our perspective, as representatives of the science, engineering and technology sector, our business plans for the future will seek to reflect and also to complement the aspirations and activities encompassed by this White Paper.

## 1. Introduction

1.1 ETB supports the aspirations described in the White Paper to build a sustainable and competitive economy, to raise national productivity levels and to build a fairer, more inclusive society. We share the Government's belief that higher levels of skills are a significant factor in the future productivity and wealth of our economy, but also that skills development can enrich and enable the personal and professional development of all adults. We believe that the measures contained within the White Paper will make a significant contribution towards wealth creation through improved business performance and productivity, but we also recognise that more will have to be done in order to achieve these aspirations in full.

1.2 In the Executive Summary to the White Paper it is stated:

*'despite ..real improvements, our skills gaps remain stubbornly persistent...we have particular skills gaps in basic skills for employability, including literacy, numeracy and the use of IT; intermediate skills at apprenticeship, technician, higher craft and associate professional level; mathematics; and management and leadership. Employers have long been concerned that they are not getting recruits with the skills they want.'*

This list of skills deficits pose specific challenges for the science, engineering and technology (SET) sector. Research undertaken for ETB has suggested that although there has been a progressive decline in overall employment levels across SET sectors the demand for technician and higher level skills is actually increasing year on year by a significant amount. Specific sub-sectors face real problems with skills shortages and are advocating for changes in policy and delivery mechanisms to help relieve the pressure for human resources.

ETB has a mandate to develop the interest of the SET community by fostering and developing a wide range of initiatives to improve both the public image and the economic success of the sector. We are therefore committed to supporting the Government's stated objectives for skills development contained in the White Paper and will work closely with all stakeholders, the SSCs, the professional institutions who represent the individual engineer or technician, and those organisations which represent the employers in business, industry and academia.

1.3 This response therefore focuses on the impact that the White Paper will have on all those stakeholders in the SET community. As an objective arbiter, ETB stands at a critical axis between the SET professional, training organisations, the employer networks, academia and government agencies. ETB can offer an independent view of how the measures contained in the White Paper will affect the various interest groups. This response will cover the following areas:

- Positive aspects of the Skills Strategy for the SET sector;
- Aspects where there is a need for review or improvement;
- How ETB's planned activities fit with the proposed Strategy.

## 2. Taking the SET sector forward

There is much to support in the White Paper. ETB welcomes:

### 2.1 The reform of the qualifications framework to provide greater flexibility for adults to access a credit framework

The commitment to a unitised credit-based system is long overdue and we recognise that this will have major impact on both the National Qualifications Framework and the awarding bodies who will be charged with the quality assurance for such a system. The most important aspect of this development, however, will be the funding of part-qualifications which will liberate individuals within companies to continue their learning independently of company financial support. As yet, it is unclear as to how this will be implemented. With the LSCs currently reducing the levels of funding for any provision which falls outside the NVQ structure, there is an urgency for QCA and QAA to pursue this matter. ETB is concerned by indications in some quarters that this process may take several years to come to fruition.

ETB would like to see the integration of innovative solutions such as *Skills Passports*<sup>1</sup> – *e-skills Skills Passport* being an obvious example - into the design of the broader credit framework. Individuals could gain sectorally specific credits as an interim stage, set alongside an accreditation of prior learning model. This could then translate those accreditations of learning into a universally designed unit framework which has national recognition.

### 2.2 The support for the development of Continuing Professional Development (CPD) arrangements within organisations and the use of e-learning methods and products

Research commissioned by ETB, and others, clearly shows that there are poor levels of CPD activity in the SET sector. Although this is a general problem across all sectors, and reflects a cultural disposition to believe that one's education and learning ceases after formal education has finished, the problem is more serious in the SET sector than most. ETB welcomes the commitment to CPD implicit in these two separate proposals. Although, historically, there have been difficulties with introducing e-based training or 'blended learning solutions' into the workplace, the rapid improvements in IT and associated computer technologies mean that e-learning is much cheaper to set up and manage. It is also very attractive to companies who are reluctant to lose staff to expensive off-site training programmes. ETB is currently undertaking research to gather evidence on the use of e-learning in SET sector companies. Early indications suggest that adult learning styles will favour blended solutions to training, using a mix of e-based and more conventional face to face interaction models. The £200 million funding allocation to be released to the LSC to develop e-learning needs to recognize not only learning materials and assessment methodologies that might be available (through national and regional portals such as those provided by [ufi/learndirect](http://ufi/learndirect)), but also to increase uptake of various learner management systems and delivery models that will encompass these elements.

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<sup>1</sup> [www.e-skills.org.uk](http://www.e-skills.org.uk)

ETB welcomes the particular emphasis on differentiating the approaches used for companies, and the special needs that small and medium sized companies may have. However, as we have expanded on below, not enough recognition is given to the depth of this problem and the failure of current arrangements to improve the poor take up of CPD training programmes by SMEs.

### **2.3 Support for management and leadership training within companies**

ETB strongly supports the intention to increase levels of management and leadership as a key factor in the improvements of company productivity. The dilemma faced by SMEs is that whilst they have the greatest need for high quality management and leadership training, they are the least likely to take up training, which is readily available both as taught and distance learning programme, from universities, colleges and private trainers. The large majority of participants come from companies with over 200 employees. We therefore strongly urge that any support for further management and leadership training should take account of this, and that money is preferentially directed in favour of management training for SMEs.

### **2.4 The commitment to remove the age cap on Modern Apprenticeships and their modification to accommodate adult participants**

The commitment to remove the age cap from the Modern Apprenticeship and to design the programmes according to adult learner needs is strongly welcomed. There are now many young people in the workplace who make career decisions very late and may be re-directed into SET sector jobs. This measure will enable companies to recruit new staff from a wider pool of talent and hopefully strengthen their skills base, as well helping to meet government targets for adult participation in skills attainment and workforce development in general.

### **2.5 The improvement in the quality of information and guidance available to employers and individuals about training**

ETB welcomes the commitment to improve the levels of careers guidance for school leavers and information services for companies about training services and products available locally. However, there are some concerns, as about how this service will be delivered. There is undoubtedly a need for improved marketing and communications at national, regional and local levels around the types of training available and what other qualifications or occupations they can lead the trainee on to. In the past, the situation has been hampered by the complexities of the vocational qualifications system and the plethora of awards and awarding bodies.

The desire of previous governments to create an educational marketplace and extend choice has transformed the training environment into one where many employers are confused about the relative merits of different awards and have either withdrawn their support entirely or developed their own tailored programmes in isolation. We therefore, welcome the reforms being undertaken under the auspices of the Tomlinson Committee, and the further reforms of training provision identified in the White Paper *'Success for All'*, as positive steps to providing employers with a much clearer and accessible map of information and provision.

## 2.6 Reform of fees and funding arrangements

ETB supports the injection of funding into the Skills Strategy but has some concerns about how the funding will be allocated:

- The levels of funding earmarked to support basic and level 2 qualifications should be distributed equitably between the participants who need that level of skills updating i.e. trainee technicians and higher skills applicants. We have concerns about the requirement for individual contributions for those with qualifications at level 3 and above, which is precisely the cohort needed in greater numbers by the SET sector companies to address skills deficiencies. We advocate that any hurdles which could discourage their participation should be removed.
- ETB welcomes locally determined income targets for providers, and the devolvement of greater planning freedom and responsibility through the 3 year planning cycle. This will hopefully enable more strategic planning and systemic approaches to creating provision to meet local labour market needs
- A system that seeks to differentiate between learners on the basis of prior learning runs the risk of additional bureaucracy. ETB supports the notion of self-certification in this respect and sees greater opportunities for employees to access to training on an individual basis, quite distinct from any company agenda or industry based initiatives. This will also, hopefully, be reinforced by the provision of some subsidy for part time training, although it remains unclear in the references to funding arrangements
- The granting of funding to adults to study full time at levels 2 and 3 is welcomed, although we would welcome further clarification on how the government intends to fund adults wishing to study for vocational qualifications part-time
- ETB recognises the benefit of more direct employer involvement in decisions over the allocation of funds for training by the local LSCs.

## 2.7 The greater recognition of partnership and the role of the regions in implementing the Skills Strategy

ETB welcomes the prominent role given to the concept of partnership and to the formation of the Skills Alliance. We recognise the need to rationalise the plethora of Training Organisations and look forward to the development of a dynamic and creative relationship between the SSCs and the other stakeholders. ETB has already started to forge strong partnerships with the SSCs most relevant to the SET sector and we hope to continue forging more links in the future.

At regional and local levels we are also encouraged by the greater commitment to partnership and welcome the collaborative roles of the RDAs and the LSCs in creating Skills for Business Networks and Local Strategic Partnerships. This will help to ensure that the planning process takes into account the local employment patterns and business needs which promote our dynamic workforce.

However, demand led provision must take account of what can realistically be offered by training providers. ETB welcomes the injection of funding to provide integrated solutions to training needs, using the strengths and capabilities of both companies and training providers.

This is a particular issue for the SET sector where colleges and private providers find it difficult, if not impossible, to maintain equipment and resources which match new technological developments. On a cautionary note, such aspirations for this type of collaboration are not new and there are real difficulties to overcome at local level, if the objective is to create consistent quality in these networks and practices.

## **2.8 The focus on mathematics and science**

The recognition by Government that there needs to be a strong push to raise the standards in maths and science is most welcome. ETB already supports many other initiatives that are already working in this area, such as the Specialist schools programme, vocational GCSE's and the recent reviews of teaching in SET in order to invigorate the curriculum and provide better learning environments,

The strength of maths and science capability in young people through KS 3 and 4 is critical for their employability in the SET sector, but also in relation to other career choices. We are aware of the Government's concern about the decline in numbers entering SET jobs and professions and would seek to endorse and promulgate any measures designed to reverse the trend.

## **3. Areas for improvement**

ETB would also like to highlight some areas where improvements are needed and where the skills strategy could strengthen its support.

### **3.1 The dislocation between further and higher education aims**

The Skills Strategy is weak in matching the intentions of this White Paper with the proposal for Higher Education reform in two main respects.

Firstly, it is difficult to understand how the pool of new recruits at technician and higher skills levels can be encouraged to develop, whilst simultaneously trying to increase the numbers of school leavers entering university from approx 35% to 50% within the next four years. ETB is concerned that the 50% target for HE entry is too high and will therefore limit the possibility of achieving real and meaningful growth of technician recruits into the SET sector. Further analysis is needed to establish more realistic targets for these two sectors.

Secondly, ETB has reservations about the Foundation Degree and where it fits as a bridge between technician and professional engineer or technologist. There are already concerns about the lack of progression routes from explicitly vocational programmes to Foundation Degrees. The Skills Strategy fails to articulate the way the Foundation Degree, or any other Level 4 qualification, will fit into a credit accumulation framework, and how the funding arrangements identified in the White Paper to support adults could be used at these higher levels. ETB would caution that these higher skills levels must not be neglected in the face of the pull to fund basic and lower level skills development.

### **3.2 Communicating the message**

The White Paper appears to place too heavy a reliance on two specific agencies, Business Link and Connexions as organs of delivery. The expectation appears to be that Business Links will provide this function for businesses and that Connexions will provide appropriate careers advice to young people about their many options for further study or opportunities in the workplace. In both cases there is evidence to suggest that they will need to be a significant improvement in the strategic direction and overall performance of both agencies in order for them to do the job required.

Business Links have been frequently criticised for prioritising other areas of activities and therefore failing to provide up-to-date information about training available to its target audience. Similarly, Connexions have been criticised for abdicating their responsibility for general careers advice in favour of focussing on young people who are not currently in employment, education or training. At the present time the evidence strongly suggests that the assumption that schools will pick up the shortfall in careers provision has not been realised and this area is in danger of permanent neglect, as teachers feel ill-equipped to offer such advice without further training. We would hope that these gaps are rapidly recognised and changes implemented as a matter of urgency, the opportunities to give timely advice to young people about career choices occur within a very critical timeframe and the effectiveness of the communications need to be carefully monitored, to ensure that corrective action can be taken if these failings persist.

### **3.3 Engaging the SMEs in training and development**

The SME agenda is one of the most challenging in the whole Skills Strategy. Over 70% of businesses in the UK fall within this category. But the White Paper fails to give sufficient attention to the challenge of engaging the SMEs in this step change in training and development. The difficulties for SMEs in supporting training are well understood, but they are such a significant part of the SET community, both in terms of the proportion of SME employees in the labour market and also their contribution to the wealth supply chain, that they need special support.

The White paper contains many positive ideas about the methods that can be used to increase the take up of training. Increased funding, wider access to information about what is available, and flexible opportunities to train and get the training recognised all figure prominently. The Strategy also recognises that a differential response will be required depending on the size of the company. All these initiatives are to be encouraged.

However, there is no recognition of the relative failure of previous initiatives, often quite similar in their presentation and methods of dissemination, to attract SMEs to training. In our opinion there has to be a radical re-think of how we deal with SMEs, which will involve more tailored and accessible opportunities which probably have a significant e-learning component. The issue here is not so much the cost of the training programme per se but the perceived or actual cost of being away from the job. ETB welcomes the notion of 'learning communities' and would point to existing research which shows that networks, either through supply chain links to larger employers, or business interest groups within a locality, have often been successful - although the common ingredients to that success are more difficult to ascertain.

### **3.4 Managing the growth of e-learning and blended solutions**

While ETB welcomes the additional commitment to e-learning as a tool for improving access to training and the 'upskilling' of the workforce, we need to point out the potential pitfalls of this development.

The production of e-learning materials is very expensive, and if the content becomes out of date, the costs will soon swallow up the budget allocation. ETB will work with others to investigate the current effectiveness of e-learning content and methods in the SET sector, clearly differentiating generic skills and knowledge from more sector specific content.

It is well documented that the UFI/Learn Direct initiative has had a troubled history, and that asking the questions of what materials, who for, what level, etc will be extremely important. The organisation and distribution of the funding available for the development of the materials will need to be approached with utmost care to ensure that it is spent appropriately.

## 4. Conclusion

- 4.1 ETB are aware that this White paper is out for consultation and that most of the milestones identified in the Delivery Plan do not commence until December 2003, with the bulk of the roll out occurring in 2004. With the policy plans contained in *Success for All* and *The Future of Higher Education* we recognise that there is a huge agenda for change to be managed and implemented. Nevertheless, we would urge the Government to keep to target, to provide the necessary support to the key change agents, and ensure that the Plan generates a dynamic force to achieve real and lasting improvement in our skills base.
- 4.2 ETB's own Business Plan for 2004 will reflect the priorities contained within the White Paper. In the context of the SET sector we will be focussing on developing more strategic alliances between agencies, employers and providers to address key aspects of the priorities outlined in the plan. Our main targets in education and skills development will be to:
- Add value to the development of increased and improved levels of continuing professional development with particular emphasis on elearning;
  - Facilitate increased engagement of SMEs within the SET sector;
  - Assist the development of Education and Skills networks in the emergent technological sectors where currently the infrastructure is weak;
  - Stimulate policy through targeted research into best practice models for delivery and accreditation of CPD.
- 4.3 Further information about our response to the various Government White Papers and our current and future activities can be found on our website at [www.eteachb.co.uk](http://www.eteachb.co.uk) ; email: [epi@eteachb.co.uk](mailto:epi@eteachb.co.uk).

## **Annex: The ETB agenda**

Part funded by the registration fees of professional engineers, by business and industry and also by Government, the ETB's strategic objective is to ensure the supply of Science, Engineering and Technology skills better matches, and stimulates, market needs. Therefore, a critical aspect of the ETB's mission is to promote initiatives that enhance education and professional development.

ETB works closely with the UK's engineering institutions via EC(UK). These institutions, many of which were established in the 18<sup>th</sup> and 19<sup>th</sup> centuries to provide engineering education and training before engineering was on the universities' curriculum, also recognise the importance of education and professional development. This has led to three important strands of activity for the ETB which address the problems of UK businesses absorptive capacity and hopefully in turn their capacity to engage productively with the universities:

- raising the profile of SET;
- developing professional qualifications for SET employees; and,
- developing Continuing Professional Development schemes for SET employees.

### **Raising the profile of SET**

The ETB is bringing together a wide-range of organisations from the sector to enhance public perceptions of SET. Specifically in this area, ETB have conducted extensive research looking at critical stages in young people's careers and attempted to find out why – at key decision points in the educational system – talented individuals are not realising their full potential in a SET career. The ETB also supports the Science and Engineering Ambassadors (SEA) scheme which supports and trains scientists and engineers to go into schools to promote science and engineering.

### **Supporting the development of professional qualifications**

Engineering Council (UK) is the body with sole responsibility for the regulation and registration of the profession. ETB is supporting their review and development of new professional qualifications that meet with the contemporary requirements of education, business and industry for the SET community. Part of this review also involves a detailed look at the role, status and training of technicians. Another aspect is the development and market testing of a new Chartered Technologist qualification.

### **Development of CPD**

Linked to the proposed new professional qualifications which have a renewed emphasis on Continuing Professional Development the ETB is examining CPD and how this relates to competency and occupational frameworks.

### **Engaging Business & Industry**

The ETB is working to ensure that the business and industry community is fully engaged with its agenda. Working in partnership with a number of organisations, the ETB is building business and industry networks. Its membership programmes are designed to (i) engage Business & Industry in the skills agenda, (ii) act as a source for research and (iii) build a more coherent and credible voice on behalf of the sector. The ETB also has sponsorship programmes which seek to secure the support of business and industry for ETB's work to promote Science, Engineering & Technology to 7-16 year old pupils and their primary influencers.

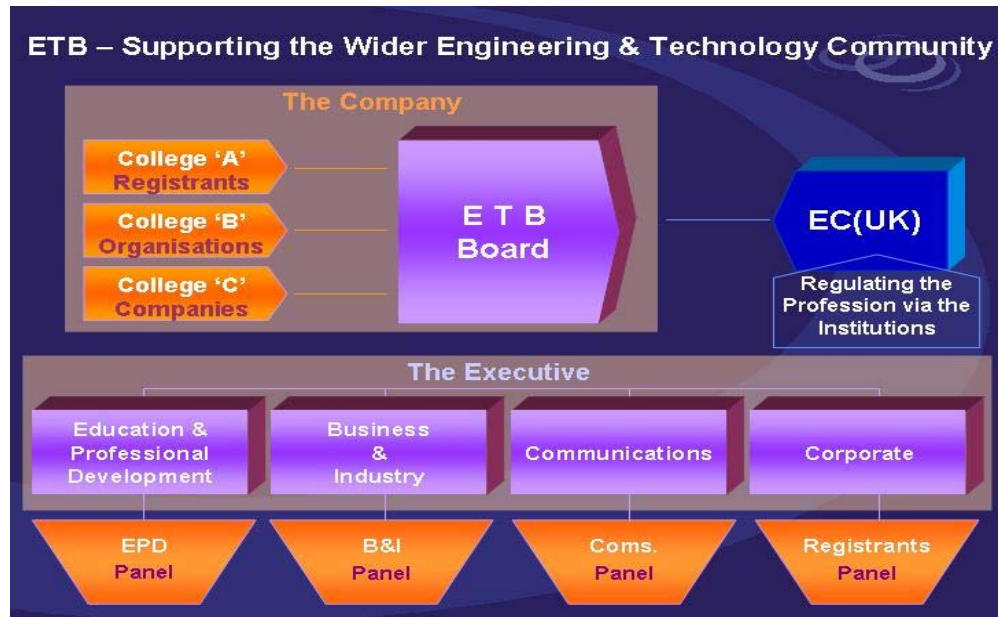
# ETB CORE OBJECTIVES

To ensure that the supply of science, engineering and technology skills better matches market needs

ETB works toward that objective by:

- > Matching supply to demand – developing new educational policies and networks to ensure that the current and future needs of the marketplace are met.
- > Engaging with business and industry by establishing dynamic physical and virtual networks.
- > Delivering integrated promotional campaigns to create a positive attitude towards, and an understanding of, science, engineering and technology in today's economy.

# ETB COMPANY STRUCTURE



ETB is a non-profit making company limited by guarantee. Our Board of 15 is representative of business, industry, academia and the engineering profession. Eight of the board members are elected by representative electoral colleges. Day to day management of the company is vested in an Operating Committee, and the Committee is able to seek advice from a number of specialist cross-sector panels. It is these panels that give ETB access to high-level professional expertise and facilitate the building of partnerships and coherence across the SET community.



## Key Abbreviations

CPD	Continuing Professional Development
e-learning	Electronic and online learning
IT	Information Technology
KS	Educational Key Stage
LSCs	Learning and Skills Councils
NVQ	National Vocational Qualification
QAA	Quality Assurance Agency
QCA	Qualifications Curriculum Authority
RDA	Regional Development Agency
SSCs	Sector Skills Councils
SMEs	Small to Medium Enterprises
UFI	University for Industry