

E-learning Green Paper -

A Response from the Engineering and Technology Board (ETB)

October 2003

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

We are committed to representing the interests of the SET 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 Green Paper's agenda.

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Introduction

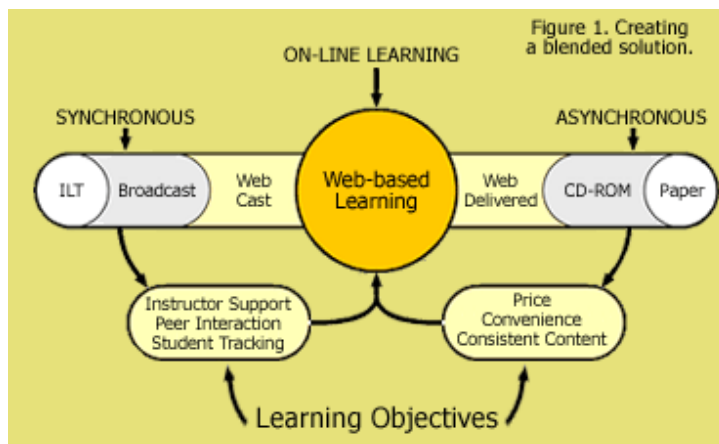
Over the last decade numerous initiatives and large amounts of government money have failed to fulfil the potential of e-learning. In spite of the development of a wide range of e-learning products, and major investment, the numbers of individual learners participating in e-learning have been disappointing.

On the other hand, e-learning is fast becoming a major learning and skills delivery strand within larger companies as a staff development tool. It can hasten the attainment of competency in new skills and aid knowledge management - thereby boosting productivity, innovation and the spread of best practice. And while the range of courses and materials generally available has been primarily limited to generic and 'soft' skills, there is a body of more product specific e-learning development which can be drawn upon.

This raises the question of when e-learning will become an established and integrated part of the total educational process, rather than a fashionable accessory to work-related training in well-resourced businesses. The government's Green Paper clearly believes that e-learning has come of age and ETB welcomes this enthusiasm and support. We share the belief that it has the potential to create a richer and more cost effective curriculum at virtually all levels and ages.

However there are significant challenges to the successful inculcation of the practice and process of e-learning into the fabric of the educational system. These challenges manifest themselves in many ways – cultural, organisational, financial and curricular – and ETB is concerned that the government recognises this so that the impressive level of resourcing identified in the Green Paper will be used to the best effect.

ETB's planning priorities for 2004 and beyond include a focus on the improvement and expansion in levels of continuing skills and professional development for staff within science, engineering and technology (SET) companies. An essential ingredient in this has been identified as the 'blended' solution which incorporates the traditional approaches to personal development with e-learning (Figure 1).



So ETB is viewing the government's initiative with great interest and will seek to add value to the campaign, as well as leveraging support to assist in development work.

The cultural, organisational, financial and curricular barriers to the expansion of e-learning are daunting but by no means insurmountable. But at present, we perceive that a number of critical issues have been left unresolved.

Summary of Main Concerns

- Awarding bodies need to support e-learning more effectively
- E-learning's potential depends on the culture of the organisation applying it and the learning styles of individuals receiving it.
- Staff intransigence has the potential to create huge difficulties.
- E-learning's introduction is a complex process requiring the understanding and 'buy-in' of personnel in organisations from schools to multi-national companies.
- Institutions must adopt a change management strategy during the implementation of e-learning programmes.
- The Green Paper is too focused on the young at the expense of developing a wider human resource: working adults.
- There is also too great an emphasis on the public sector despite excellent developments in the private sector (both providers and end-users) in e-learning.
- Government should begin by more fully engaging employers and the demand side of the equation on the questions of content, delivery and access.
- Also required is better coordination with other activity (such as the HEFCE initiative for e-learning) to ensure transference and promotion of best practice.
- As the representative of the whole SET sector, ETB should be part of the consultation group.

The ETB Response

Q 1 What are your views on our description of e-learning and its benefits?

Culture and style

We agree with the range of potential benefits but these are dependent on the culture of the organisation applying it (be it school, college, university or training provider) and the learning styles of individuals, particularly adults, receiving it.

Differences must be mirrored in the design of courses. Adaptable technology can help strike that crucial balance between active and reflective, sensing and intuitive, visual and verbal, sequential and global.

Role of teachers

We would also caution against the view that e-learning can reduce the costs of the teaching and learning process as it would be a poor substitute for the role of the teacher. But it can enrich the curriculum, support learner-instructor interface and boost participation for those excluded for reasons of cost, time or geography.

Demand side engagement

We would like to see more engagement with employers and the demand side of the training equation. Although the Skills Strategy is referred to, the focus of the Green Paper is on schools and colleges and the delivery of full time educational programmes.

Q 2 Do you think we have identified the main weaknesses and barriers to the use of e-learning?

Intransigence of teaching staff

The Green Paper does not recognise that the resistance of teaching staff (as separate from educational leaders) will create huge difficulties in implementing the changes anticipated.

Institutions must adopt a change management strategy during the implementation of e-learning programmes, including the promotion of benefits – especially as regards the substantial re-alignment of resources which the introduction of e-learning systems implies.

Faculty, especially at lecturer levels, should be trained and encouraged to design and write content for e-learning products as an extension of their authoring/publishing roles.

The teacher and lecturer contract may well be affected as contact hours will not be subject to conventional measurement and the calculation of commitment by staff members may need to be made by other means, i.e. tutorial load.

Flexible and accessible accreditation

ETB supports government and Qualifications and Curriculum Authority (QCA) policies designed to create more flexible and accessible systems of accreditation and map a structure between e-learning and the qualifications framework.

However, better quality e-courses and improved information to integrate demand with supply is urgently needed in order to create confidence in the learner base.

Awarding bodies need to support e-learning more effectively than so far, through the development of comprehensive diagnostic assessment tools and results/awards distribution.

Q 3 Is a unified strategy appropriate?

If unified means across the whole spectrum of the stakeholders from SME employers at one end to colleges and universities at the other, then this is an ambitious but laudable aim.

The RDAs and the regional skills networks may have great potential in such development.

Q 4 Do you agree with our vision for elearning?

Q 5 Will the proposed action areas enable the vision to be realised?

Yes – although the vision as identified makes big assumptions about the potential attitudinal changes amongst the key players and there are significant unanswered questions:

- there needs to be some discussion about the overall design of an e-learning or 'blended' learning models for all the school and college based provision
- there will be a need for harmonisation between the awarding bodies over assessment and performance recording
- parents need to be engaged over the role of e-learning and their possible involvement.

Adult learners

On a more general point, we note that there is a lack of referencing to adult learners. The e-learning strategy is intended to be inclusive of all e-learners, and we would argue strongly that the adult worker is a prime target for this approach to learning as a stimulus to their continuing professional development.

Private sector

The Green Paper's emphasis appears to be almost exclusively on the public sector. It appears to take little or no account of the private training sector and, indeed, in-company training provision, where a lot of good work is taking place in the development and refinement of techniques for effective elearning delivery.

Q 6 Are the proposed actions for leading sustainable development feasible and appropriate?

ETB would endorse the appropriateness of these proposals but has some reservations about the feasibility. Internet accessibility and content development needed to keep pace with the other changes in the learning environment and learner management systems and tools for rapid content development.

Again we would point to the omission of potential strategic partners in the compilation of the lists of providers/ deliverers and NGOs who are active involved in this area.

Q7 Are the proposed action areas for supporting innovation in teaching and learning feasible and appropriate?

ETB strongly supports the intention to direct funding towards the further development of resources and learning hubs which will in turn support a range of specialist areas.

We are heartened by the identification of the science, engineering and technology (SET) sector as an area in need of specialist teachers - but the Paper fails to say how the extra investment will be used, beyond the creation of some pathfinder projects to test the issue of collaboration.

ETB's own activity will be at the centre of this particular aspect of development (see "Introduction") The ETB's research programme is intended to move the debate forward about best practice in e-learning and blended solutions – including boosting continuing professional development for SET teachers.

ETB will be undertaking a range of research in this area and will be engaging with the key stakeholders to ensure that there are no overlaps of work in progress.

Q8 Are the proposed action areas for developing the education workforce feasible and appropriate?

ETB is particularly impressed with the intentions and the approach taken here. This is where the hard work has to be done. The e-learning environment will only be dynamic with the full co-operation and commitment of the teachers/lecturers.

Again, it will be useful to evaluate the experiences of trainers within the private sector and in companies where e-learning is better established and good practice has perhaps been more adequately benchmarked.

Q9 Are the proposed action areas for unifying learner support feasible and appropriate?

ETB supports, in principle, the notion of a unique learner number as a way of improving the monitoring and recording of performance data. Beyond the technology the system would appear to replicate the existing paper-based records of achievement. One needs to guard against too bureaucratic a system but the principles are sound.

We also support the ideas expressed about an online advice and guidance service, and ETB would see itself as having a contribution to make through its own website, scenta (www.scenta.co.uk) in providing information and connection to our SET partners.

Q10 Are the proposed action areas for aligning assessment feasible and appropriate?

While the aspirations here are sound and the methodology broadly appropriate for the purpose, there will be problems over implementation and the feasibility is therefore called into question. ETB would like to draw attention to the following issues:

Centralised assessment system

There is a need to take account of the intention in the Skills Strategy White Paper to create a unitised credit system for the non-advanced sector. Further, there should be greater standardisation in the procedures between the awarding bodies. These two drivers demand a more centralised assessment system which allows for a high degree of latitude in the process by which an individual moves through the accreditation from one stage to the next

We would again encourage the government to look closely at the assessment and delivery systems currently used within the private sector to act as a benchmark against any developmental model that might be presented

The technology: confidence and familiarity

We have concerns about the notion of 'e-learning skills for life' and what this means.

If it is intended to describe the ability of an individual to utilise electronic means of study and communication, then we would argue that the challenge is not within the schools sector but amongst adults, where the huge potential of e-learning to contribute to the upskilling and development of the workforce will be stifled by the lack of confidence and familiarity of working in this medium.

Conversely, children who have grown up with the computer as part of the learning process will slip easily into using e-learning methodology.

Q11 Are the proposed action areas for building a better e-learning market feasible and appropriate?

Market dynamics will take over in a technology driven business environment.

However, most recently we have witnessed the emergence of a next wave of simple, intuitive and cost-effective tools that will enable educational establishments to acquire and use them with relative ease. The technology is getting better all the time. Web-based delivery methods are increasingly quick and reliable. Simulation and animation-rich media has seen huge improvements in effectiveness, cost and compatibility.

Therefore, there is a need to identify and promote e-learning tools that:

- have intuitive user-interface
- enable the creation of compelling content that could be made rapidly and cost effectively
- have built-in assessments and quizzes as smart objects
- systematic and modular development (scalable in the level and complexity) so that teachers can initially start building their elearning experience by using tools that can utilise, for example, their PowerPoint presentations, thus avoiding them the need for recreating and publishing their courses from zero again

There is also a need to encourage internal competition (peer-to-peer) in terms of best practice and case study scenarios amongst the educational providers. In this context,

there is a significant need to develop training courses for 'Instructional Design' for teachers and lecturers to enable them to achieve the level of confidence needed to embrace elearning in their teaching and learning.

Q 12 Are the proposed action areas for assuring technical and quality standards feasible and appropriate?

ETB is happy to endorse the model put forward for monitoring and regulating the quality of the e-learning materials courses and accreditation systems that emerge.

However, there is nothing specific here so it is difficult to comment further. We await with interest the outcomes of the medium-term strategy and the production of the managed learning platform.

Q 13 The correct partners for the actions

A wide and largely comprehensive set of partners has been selected and this group if used judiciously will produce good results.

However, ETB would like to stake a claim for also being part of the consultation group. As the representative for the whole SET sector and with unique links to all the key stakeholders in SET, it seems highly appropriate that we should be involved.

This argument is given further weight by the fact that we have put Continuing Professional Development, and the role of e-learning, at the centre of the EPI plan for 2004.

Q 14 Which actions do you see as priorities?

Our main concern is the focus of attention in the paper which appears to be predominantly on children and young people. Given the need to urgently address the problems of skills shortages and gaps within the industry, and the poor levels of productivity compared to our international competitors, there is an opportunity to develop an e-learning programme, aligned to a wider human resource development strategy, which targets the adult learner in the workplace.

Elearning is providing the springboard to build business strength: an accumulation of the core competencies that drive attainment of business goals. Business strength enables leadership, unique differentiation, synergy and competitiveness. In these days of personalisation and markets of one, customer knowledge is far more important than product knowledge.

Training on customer facing services and functions is imperative to build business strength. In the past, this was focused on role play and business simulation in the class-room. E-learning has brought a new model to customer service development training, enabling rapid speed to competency through synchronous and asynchronous learning delivery models.

Q 15 What are the most significant achievements of e-learning?

This paper has identified very clearly what the main benefits of e-learning are and ETB would endorse the comments made in Chapter 1, Para 14.

However, the place to look for best practice in terms of content, delivery and learner management systems is not in the public sector but in the private sector - in particular, large corporate businesses with a nationally and internationally dispersed workforce. These organisations have made great strides in the cost effectiveness, attractiveness (to the learner) and functionality of their training programmes to meet the needs of dynamic, change-oriented companies. This is the template for the future of e-learning for all learners.

Q 16 What do you think should be the respective roles of education leaders?

All agencies will be important in the development of an e-learning strategy.

The Government needs to provide incentives to change the curriculum and training staff.

The ICT providers, from hardware providers to content designers, need to work closely with the curriculum experts to create workable solutions for content delivery and assessment.

The private sector needs to advise on best practice and experience of learners in the workplace.

Above all, the heads of the educational institutions – schools, colleges and private training providers – are the most critical change agents in this process. To move a teaching organisation across to a delivery system where e-learning is at its centre will require considerable management and leadership skill involving a battle for the hearts and minds of many staff, as well as the logistical, financial and administrative demands of implementation. This is where a significant amount of resource needs to be directed.

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 18th and 19th 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
- developing Continuing Professional Development schemes for SET employees

Raising the profile of SET

ETB brings 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.

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