Extending Examination Board Activities: an International Review of Innovative Responses to Educational Need

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Abstract

Examination boards globally are increasingly engaged in a wide range of teaching and learning activities as a complement to their traditional role of setting examinations. This is certainly true of University of Cambridge International Examinations (CIE). In order to establish the extent to which this is indicative of a global trend CIE has conducted a survey of examination boards around the world to establish:

* ❖ *the types of teaching and learning support most commonly provided by boards,*
* ❖ *how much the use of technology is facilitating this process,*
* ❖ *the rationale underpinning developments in this area,*
* ❖ *key benefits which examination boards achieve via this diversification.*
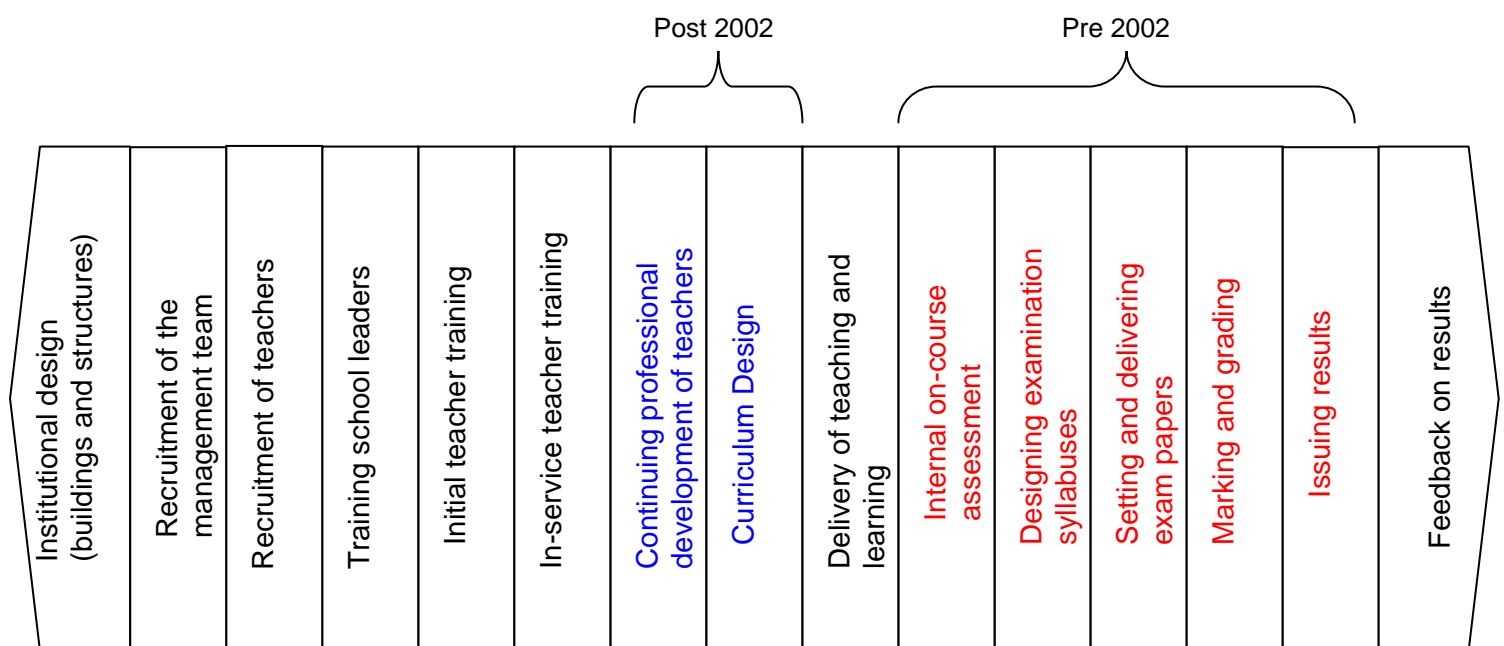
This paper describes the research findings, and then draws conclusions on the changing role of examination boards. It goes on to discuss the way examination boards make a positive impact on the standards of teaching and learning in schools, and on the development of education more widely.

Introduction

University of Cambridge International Examinations (CIE) is part of the Cambridge Assessment Group. CIE works in over 150 countries offering qualifications for students aged from 5 to the end of traditional schooling, and for adult learners in vocational subjects. Over the last ten years, and increasingly over the last five years, CIE has been under pressure from the users of its qualifications to provide greater support for the teaching and learning that takes place in schools. Prior to 2002 CIE produced syllabuses for its qualifications, and offered a limited amount of face to face training on examination standards. Specimen papers and standards booklets were produced to exemplify the mode of assessment and the expected performance. In 2002 CIE established a Curriculum and Teacher Support Group to develop new materials to meet the needs of teachers. The group develop materials and resources for teachers that demonstrate a clear move away from specifically examination related support to support that has a much greater impact on the teaching and learning that takes place in schools. The move towards provision of 'added value' services is a global and industry-wide phenomenon. McKinsey Consultancy has estimated that in the USA the growth of 'embedded services' (i.e. services related to products within the durable goods sector) has grown from $220 billion to $500 billion in 10 years.

Such developments may be described in terms of an extension of the 'value chain', to use the language of industry. Diagram 1, shows an educational 'value chain', against which the extension activities of CIE services have been drawn.

Diagram 1, The Educational Value Chain

Post 2002   Pre 2002

| Institutional design (buildings and structures) | Recruitment of the management team | Recruitment of teachers | Training school leaders | Initial teacher training | In-service teacher training | Continuing professional development of teachers | Curriculum Design | Delivery of teaching and learning | Internal on-course assessment | Designing examination syllabuses | Setting and delivering exam papers | Marking and grading | Issuing results | Feedback on results |

Recent developments have led to an extension of the CIE offer up the chain. CIE works in an international context, and an interest was the extent to which this phenomenon is replicated in the examination and assessment bodies of other countries.

Methodology

CIE has undertaken a survey of examination boards around the world to investigate the changes to the provision of materials in support of examinations, to determine

whether CIE's experience is replicated in other organisations or if there are other developments in process in other contexts. The aims of the survey were to:

- review the function of qualification providers, and how this has changed in recent years;
- look at future developments and how the role of qualification providers might evolve in the near future;
- inform discussions on the way in which qualification providers make a positive impact on the standards of teaching and learning, and on the development of education more widely.

The research took the form of a survey of 16 providers of national or international qualifications. Interviews were either conducted over the telephone or questionnaires were emailed to participants. The survey was supplemented by internet-based desk research, which included a further 12 organisations.

The survey focused on four areas. The first was examination related support, including the resources that boards provide to define the content and nature of assessment and the materials that are provided to exemplify the mode and nature of the assessment and to exemplify the expected level of performance. The second area was support materials for teaching and learning and what form these took. The two remaining categories for investigation were advisory services for schools and other qualification providers, and the use of technology to deliver support.

Findings
The final sample contained 16 boards from 11 countries. Three of the largest organisations surveyed each covered all nine geographical regions listed below. Of the 16 boards who completed the questionnaire, nine are National Examinations Boards and seven are Independent Providers.

Regions Covered by Qualification Provider

(based on completed questionnaires)
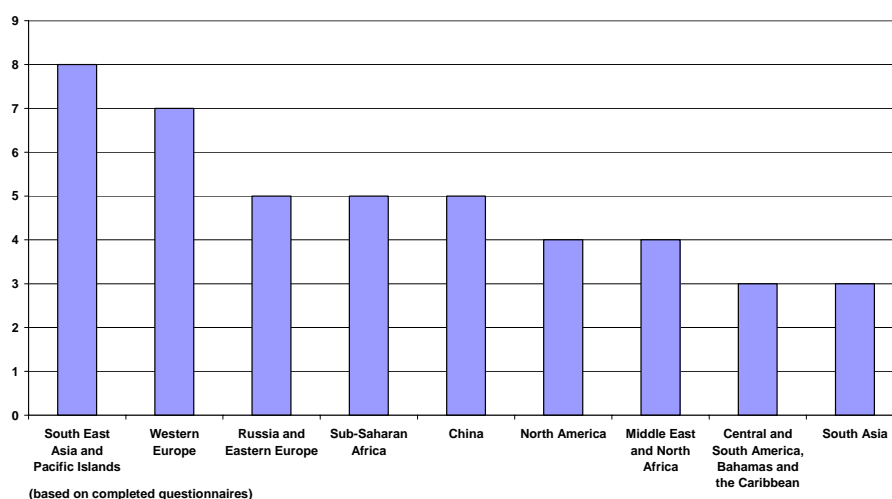
Within the boards surveyed there was also a wide range of provision, with some of the newer boards focusing on establishing a high quality examination system before they start to think about providing a wider range of services. In some cases, particularly where the board is linked to a Ministry of Education, there is a curriculum body that works alongside the board providing a number of the services mentioned in the survey. A number of the organisations surveyed, in contrast, are independent organisations or act in competition with other local providers, and these organisations are more likely to provide a wider range of services and support.

Examination Related Support
Defining the content and nature of assessment
Current Provision
Definition of the content and nature of assessment is the traditional 'core competency' of examination boards. All the boards surveyed provide some forms of examination related support.

- All boards surveyed offered a clear definition of mode of assessment. For example, defining whether the students would be presented with examined papers or coursework, what kind of item types would be included and the duration of the assessments;
- All except one board offered a definition of the aims and objectives of the assessment and the weightings of each of these;
- Over 80% offered a definition of the material to be assessed such as a list of subject areas or topics, and the skills.

76% of those surveyed provide sample question papers and make past papers available to teachers and students. Fewer boards (59%) provide sample items in isolation. Any board that did not offer sample question papers offered items as an alternative. Definitions of expected learning outcomes and competencies in the specification of the test content are provided by 69% of examination boards.

Recent Developments
Recent developments in the area of examination related support have included a greater emphasis on measuring competence and skills rather than the acquisition of knowledge. This has led to a greater reliance on alternative forms of assessment such as portfolios and continuous assessment. The move to these methods of assessment has placed new demands on the examination boards in the form of a requirement to validate continuous assessment, more than merely administering external exams, and a requirement to support learning and assessment over a longer period of time: even as far as 'lifelong learning'.

Planned Developments
When asked about the developments in direct examination related support that are planned for the short to medium term those surveyed mentioned:
- the likelihood of introducing a larger number of computer-based tests, or computer-enabled tests;
- a move away from multiple choice testing;
- an increase in the amount of formative assessment or assessment for learning that would be offered;
- a definition of student self study hours as a component of any course;
- a trend towards criterion referencing and comparing performance against an agreed standard.

These developments in turn are expected to place new demands on the boards to ensure the quality of the assessments. It is felt that a wider application of statistical techniques or even new statistical techniques will be required to ensure that the continuous assessment marks are in line with the marks on the external components. It is felt that more research will be required into weightings and moderation models, and the use of reporting scales for feeding back to teachers and students. Finally, there is a trend towards a greater reliance on statistical evidence in the production of examination results, especially in the maintenance of an agreed standard using item response theory (IRT).

The boards surveyed stated that the drivers for the developments in examination related support are both demand-led and product-led.

Materials to exemplify the expected level of performance
Current Provision
Again this area of examination related support is something that CIE has traditionally supplied and this finding was replicated in the other exam boards surveyed.

- A number of boards provide 'illustrative' materials, that is those that illustrate the performance standards of the assessments such as annotated work samples.
- The provision of 'model answers' is not the norm, with less than half of those surveyed providing this service.
- Return of marked scripts, where offered, tends to be a service provided on request, rather than something that is actively promoted.

Materials to Exemplify Expected Performance Level

(based on completed questionnaires and internet research)
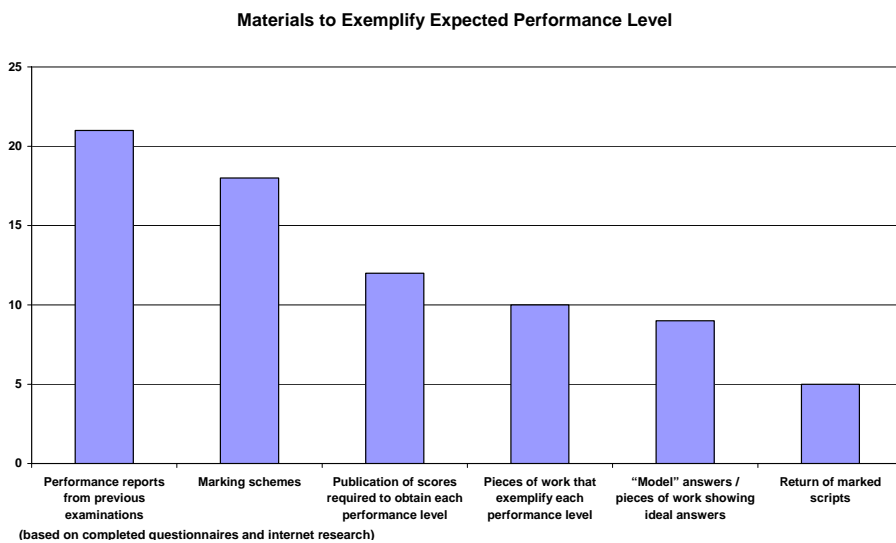
Recent Developments
Recent developments demonstrate a trend towards providing more information for teachers. Some of those items mentioned in the current provision above are increasingly being offered more widely. Recent key developments in this area include:

- model answers and work that exemplifies performance standards, especially in the area of teacher-marked work. Annotated samples of work are also being provided more widely;
- more guidance on how to conduct an assignment including how to create a portfolio;
- the production of manuals on good quality marking for teachers;
- feedback statistics of student performance in examinations are also being provided more, including information such as class or school cohort compared to national cohort, gender performance information, or 'like-school' information;
- the provision of online teacher forums, with the aim of encouraging discussion about assessment, was also mentioned.

Future Developments
The future developments described frequently mirror those in the sections above, with a number of boards considering the introduction of the types of materials that some other boards have introduced recently. Resources for teachers such as those to exemplify standards were cited. In addition, some general trends were highlighted

in response to this question, including the increasing use of technology to deliver resources and the need to be more transparent across the assessment processes.

Teaching and Learning Support
Supporting the teaching and learning of the courses and qualifications
Some of the resources and services discussed in this section are further along the value chain from the examinations than the resources discussed in the sections above. This was clearly reflected in the fact that some of these services are less commonly offered than the materials mentioned in the previous section. However, there is a clear trend towards providing more support in this area and the use of different modes of delivery to achieve this.

Type of Support Provided

(based on completed questionnaires and internet)
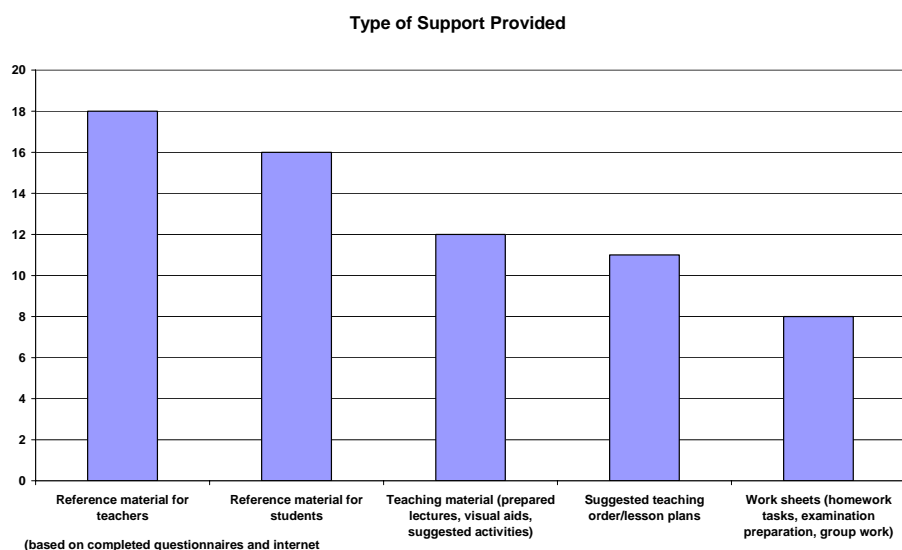
Reference material for teachers was offered by nearly two thirds of those surveyed. A number also offer other support materials, including:

- teaching materials such as visual aids or suggested activities;
- suggested teaching order and/ or lesson plans;
- work sheets, such as for use in classroom group work, homework or examination preparation;
- reference materials for students, such as text books.

Recent Developments
There is a greater focus on the provision of quality teaching and learning support by the boards surveyed. These services are being afforded greater resource and the developments are being better organised internally. There is also a tendency to build strategic relationships with publishers to ensure that a greater range of support is available for schools.
There is an emphasis on providing resources to support coursework, such as through the provision of teacher guides. One board has taken this a step further by allocating a 'contact moderator' to each teacher who provides support in a variety of ways including validating standards, as well as providing support regarding teaching programmes and application of standards.
There is a greater emphasis on the integration of the assessment materials with teaching and learning and a knock on emphasis on the role of the exam board to ensure that the materials are fully utilised during the teaching and the information provided is used to its full advantage.

Further Developments
Further developments are expected to include more online developments, more emphasis on lesson planning information, and a greater emphasis on the partnerships with publishers to produce support materials.

Professional Development
Provision of training for teachers, administrators and students
Current Provision
CIE has traditionally provided face to face training in topics directly related to the examination itself, such as the expected standards and the assessment of coursework. Over recent years this training has become more varied in terms of the modes of delivery, as well as the content, which now includes more in the area of teaching practice.

Type of Training Provided

(based on completed questionnaires and internet research)
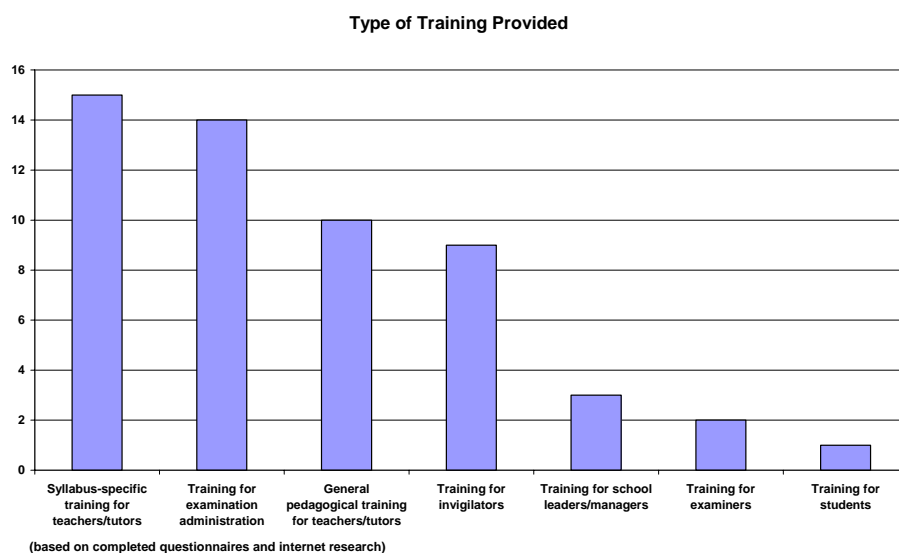
It was found in the survey that:
- the majority of the boards surveyed provide syllabus specific training and training in exam administration, either directly, or through a third party;
- general pedagogical training is less prevalent and only offered by approximately one-third of respondents;
- training for school managers and training for examiners is offered by very few providers;
- and training of students is virtually non-existent.

Recent Developments
Important recent developments have included training on school-based assessment, more targeted training, such as differentiating training for new or experienced teachers, and a greater emphasis on the whole curriculum, including in one case holding conferences for curriculum managers.

Future Developments
An area for future development that came up frequently was training in assessment 'literacy' for teachers. This training would be likely to include:
- setting good questions and understanding the parameters of questions;
- training in testing theory;
- training on examination systems and examination development;

- an increased emphasis on assessment workshops, such as marking exercises, use of criteria for judging performance, building assessment 'communities of learning'.

There is also an increasing emphasis on professional development for teachers leading to formal recognition and certification, increasing demand for training for school leaders, and training in online testing and online marking.

Method of Training
Current Provision
Face to face continues to be the most common mode of delivery for training, particularly if the provider covers a relatively small geographical area, however, self-taught materials are produced by one-third of the providers. Tutored distance training is available only from the minority (10% of those surveyed).

Recent Developments
There has been an increasing trend towards charging for training. This has helped contribute to increased innovation as a means of improving the value to the customers. Greater diversity in the mode of delivery is also a common trend with an increase in the number of self-delivery courses, in online courses or partnership approaches to face to face training, such as using experienced local teachers to train newer teachers.
Finally there is an increasing demand for bespoke training provision, with single schools or clusters of schools requesting training to meet particular needs.

Future developments
The survey found two areas of planned development: firstly, and as would be expected, an increased use of the internet to deliver training; and secondly, an increased use of a combination of modes of training delivery to provide blended learning programmes.

Developments in the areas of teacher training and support are more likely to have been proactively developed by the provider. In part this is due to the providers' knowledge of technical capabilities to deliver support through various means.

Advisory Services
As part of the survey we also investigated whether the boards provided advisory services to schools or other qualifications providers.

Advisory Services to Schools
Current Provision
Responses to this section were mixed and only approximately 50% of those questioned provide advisory services of any type to schools. The majority of those who responded positively offered curriculum advice to schools. This was evenly split between National Examination Boards and Independent Providers. Those that do offer curriculum advice are also more likely to offer general pedagogical training. Where other services were offered they were often as a by-product of inspectors or verifiers making examination related visits to schools. Advice on the design of buildings, labs or libraries was only given in isolated instances.

Trends in Developments
Where these advisory services have been, or are being, extended it tends to be in the area of assessment advice. One board went as far as suggesting that an assessment expert, not someone with a teaching role, could be placed in each school to advise on assessment issues such as the interpretation of test results. It

was felt that schools might well want advice on item setting, anchoring, equating, calibration and other technical aspects of testing.

Advisory Services to other Qualifications Providers
Current Provision
More of those surveyed provide advice to other boards than provide advice to schools, with more than half offering some form of advice in this area.
Where advice is given it tends to focus on examination developments (56% of those surveyed) and examination administration (43%). Advice on examination systems is provided by fewer than one in three. Several of those surveyed offer consultancy to professional bodies, such as Institutes of Finance or Architects, on examination development.

Trends in Developments
A number of those surveyed offer consultancy in psychometrics and have found that there is increasing demand for this. There is also an increasing demand for training in test development techniques such as item banking and adaptive testing, and school-based or performance assessment. This consultancy or provision of advice takes the form of working with neighbouring countries in most cases.

The Use of Technology in Delivering Support
This is an area where almost all services are recent developments, or in the process of being developed. The most prevalent type of resource that is being provided is websites for teachers or tutors specifically providing information on the qualifications being offered. Some similar resources are also being offered on CD or DVD. Less than 50% of those surveyed offer a website, or information on another website, specifically for students.
Some qualifications providers produce CDs containing resources such as: examination related guidelines; low stakes tests, including self-evaluation adaptive tests; core resources, such as syllabuses and standards materials including oral standards; and banks of questions for revision purposes. Other resources that have been developed include videos of training materials and secure areas on websites with resources such as recent past papers that teachers can access but students cannot.

Use of Technology in Delivering Support
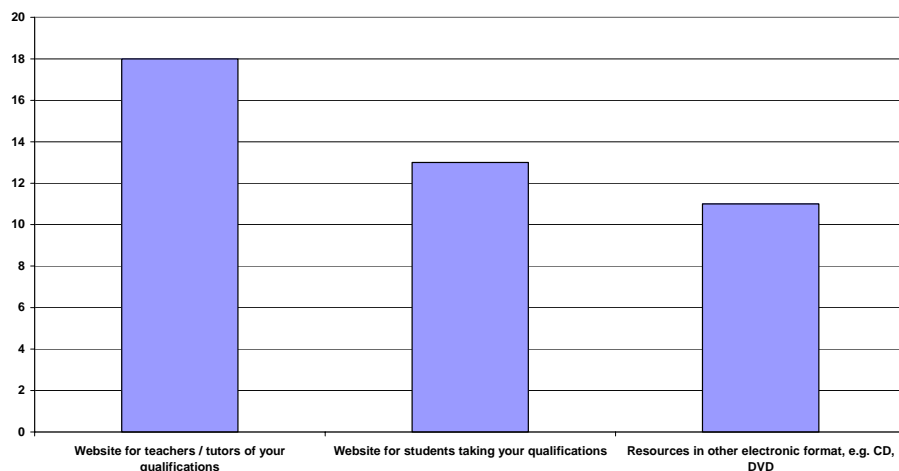
(based on completed questionnaires and internet research)

Other services

A number of those surveyed are investigating the potential for technology to enable them to improve the efficiency or the flexibility of the services they offer. Comments on provision in this area included:

- credential checking and examination entries online, for schools and in some cases students;
- examination results provided to schools, and in some cases to students, online;
- the development of portals that enable schools to exchange data electronically with the examination board;
- access to data about the school, the state, the whole cohort, or like-schools, in a secure environment;
- in some cases the technology has been applied to the assessments themselves, such as the collection of evidence in the form of Powerpoint, video or oral work.

Some boards are investigating the potential for the use of simulations as an alternative to the assessment of practical skills.

There was a sense in many of the discussions that online testing, whilst not prevalent now, is inevitable. A number of the boards are already taking steps in this direction and developments include:

- online practice tests for writing with automarking and diagnostic feedback;
- virtual reality testing such as a virtual home for a real estate examination;
- adaptive testing on PC or on the internet;
- internet developments of interactive video with intercut transparencies.

A number of the organisations surveyed are in the process of developing in-house computer-based testing systems, some, but not all, with the intention of selling this on to other providers.

Discussion

Analyses of the findings of the survey reveal that the organisations surveyed provide a diverse range of support and materials for their users. However, a number of trends in the recent and planned developments of examination boards around the world were apparent. As would be expected many of these trends reflect those taking place in University of Cambridge International Examinations. The overarching trend, which encapsulates the other findings, is the increasing integration of curriculum and assessment. A number of the boards offer curriculum advice to schools and there is an increasing trend towards defining competencies and learning outcomes. Schemes of work and lesson plans are increasingly being provided.

Technology is facilitating a process in which more information can be provided on assessment results, and this information is being used to shape the school curriculum. The technology and developments in assessment are also enabling a wider range of assessment methods to be used, many of which require assessment during the learning process, and a greater input by the teachers during the marking. In turn this development requires that teachers become more expert in the area of assessment themselves, or that they have access to assessment professionals to support the process. The increasing demand for the boards to be more transparent and the greater customisation within the system also demonstrate that the assessment is no longer viewed as separate from the teaching and learning, or something that is 'done' to schools at the end of a phase.

Five key trends that this research identified, and the implications of these, are highlighted below.

1   The most predictable occurrence and a very commonly cited development within the 16 examination boards that were interviewed is the widespread use of new technologies. These technologies are evident in recent developments and are planned to be used more widely in the future. Use of technology is apparent throughout the various roles of the examination boards. It is used for the provision of resources to schools, teachers and, in a limited way, students. In many cases training is delivered to teachers either on CD for self delivery, or via an online training platform. Technology is also being used increasingly in the administration and delivery of the examinations themselves. Entries are collected over the web, examination materials are passed between the boards and the schools using web portals, and students' results are increasingly made available online. Many of the organisations see the move to computer-based testing as inevitable and are developing systems to enable the large scale implementation of this. The increased use of technology by the boards is facilitating the provision of a wider range of services and materials, and a greater flexibility in the relationship between the board and the schools. These developments will continue to have implications for political policies and school budgets for the purchasing and maintenance of technology. These developments would also suggest that an on-going relationship with teacher training agencies is needed to ensure that staff in schools are confident to use the required technology.

2   The second key trend in the findings from the survey is a move towards a wider variety of assessment models being used. A number of boards mentioned a move away from multiple choice testing. Information was collected about a greater use of performance assessment, more school-based assessment and more teacher-marked work. The current role of the teacher in the examination process is varied, with the teachers undertaking all the marking in some countries. The trend would suggest that teacher marking is likely to become the case, at least partly, in more countries. A number of boards are investigating the introduction of portfolios of work, often facilitated by the use of technology. There is an expected move towards evidence being collected in different forms, e.g. audio files, video or Powerpoint. This trend is linked to an increasing demand for professional development for teachers in assessment, as described below.

3   The third emerging trend that became apparent in the survey is the development of assessment expertise in schools. In a number of cases this was evident in an increased amount of training for teachers in setting, marking and standardising assessments, as well as statistical approaches that may be applied. In one case this trend was depicted by the plan to place assessment professionals, who may not be teachers, in the schools. The need for assessment expertise is linked to the trend towards school-based assessment as described in 2 above, but it is also linked to a greater amount of information being provided to schools by the boards. The boards hope that this extra information will be used to improve the teaching and learning that takes place in schools. Clearly for this to be the case the schools need to have access to staff who are able to interpret the information, and who are experienced in using it to have a positive impact on the curriculum. This is an area where the increasing integration of the curriculum and examinations is perhaps most apparent.

4   A fourth trend emerging from the survey is the requirement, in many contexts, for the boards to demonstrate the probity of their organisation through increasing transparency. Key stakeholders including schools, the media, parents and students are exerting pressure on the boards to

provide more detail about performance in exams, such as item level data or reports on students' strengths and weaknesses. As technology is used increasingly in the examination process then the opportunities to provide more information are increased. The additional information is likely to include item level data and statistical analysis of this, which becomes available through online marking or computer-based tests. Similarly, as teachers and other users of examination results become better informed about assessment methodologies and practices, as has been suggested by a number of contributors, then they are better able to use the information and more likely to understand the implications of their requests. As a greater role in the assessment process is handed over to teachers, perhaps through school-based work and portfolios, then the processes will have to be communicated to them more widely.

5   The final trend, not as evident as those described above but apparent in a small number of comments, is the move towards customisation of provision to meet the needs of particular schools, teachers or students. This was apparent in some comments on professional development of teachers where there was an emerging trend towards schools or groups of schools commissioning courses specifically to meet the needs of groups of teachers. In addition, the increased use of technology, and the greater emphasis on item banking and item response theory may suggest small steps in the move towards the customisation of assessments to meet the needs of different groups of students. This trend in assessment was not explicitly mentioned, but it is an area which may emerge in the coming years.

Conclusions

This survey was undertaken by CIE to investigate whether recent developments in its own provision were being replicated by other boards around the world. The survey found that the provision varied but demonstrated clearly that the majority of those who contributed are developing a wider range of materials and services and that technology is being used to facilitate this process. The key trend highlighted is the greater integration between the teaching and learning in schools and the external assessments. Boards are providing greater levels of curriculum advice and training on pedagogy. Teachers are becoming increasingly involved in the assessment process leading to a demand for the development of assessment expertise in schools.

Conversely assessments are becoming more flexible with results frequently being available more quickly so that they can be used during the teaching and learning, and ever greater amounts of information are being provided to inform curriculum developments.

The wider use of technology in the assessments, the introduction of a wider variety of methods of assessment, the greater emphasis on assessment as part of the learning, may indicate a number of small steps towards developing a system where the assessments can become customised to the needs of different schools, of different classes, or even of individual students. Through these developments it is clear that the boards surveyed are providing greater support and training to schools with an aim to improving the teaching and learning that is taking place.

References

McKinsey Quarterly, Edition 1 2006.