

International perspectives on vocational education: What can we learn from each other?

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Introduction

The broad aim of Vocational Education and Training (VET) is to provide students with the technical skills and knowledge needed to enter the workforce. It exists for an extensive range of subject areas and may be delivered through many different kinds of training institutions and enterprises. Over the past four years, this huge area of education and assessment has received close scrutiny from the Government and others, as part of a broader review of education and skills among 14 to 19 year olds (Tomlinson, 2004; Department for Education and Skills, 2005; Fuller and Unwin, 2005; Hodgson and Spours, 2005). Given that this process has resulted in proposals for considerable reform of VET for this age group, we deemed it important to know more about the international context within which they are set. Who does VET affect globally, and what might we learn from the experiences of other countries? The aims of this project, therefore, were to identify and examine two main types of data: (i) on the extent of participation in VET and its associated assessment worldwide; and (ii) relating to key differences in the VET systems of different countries.

There were three stages to the project:

1. A review of the quantitative data available.
2. A review of other key literature.
3. A discussion group at an international conference.

In this report, we summarise some of the main findings from each stage.

1. Review of the quantitative data available

Questions

Pass rates, enrolment figures, and methods of assessment for *general* qualifications, such as GCSEs and A-levels, are frequent topics of debate in the media. Large quantities of data are collated each year and are made available for analysis. Vocational qualifications, however, have received less attention of this kind, both from the public and from professionals. We began this review by identifying the following key questions for consideration:

1. What proportions of upper secondary school students participate in vocational streams of education (compared with general streams) in the UK and in other countries?
2. By what means are these students assessed?

Definitions

It was important from the start to set out the definitions and boundaries to be used in the review when searching for data. Since in most countries, enrolling in VET is not possible before the end of compulsory education

(Cedefop, 2003), we chose to focus on participation at level 3 of UNESCO's International Standard Classification of Education (ISCED) 1997, which is termed *Upper Secondary Education*. The principal characteristics of ISCED level 3 are as follows:

'This level of education typically begins at the end of full-time compulsory education for those countries that have a system of compulsory education. More specialization may be observed at this level than at ISCED level 2 and often teachers need to be more qualified or specialized than for ISCED level 2. The entrance age to this level is typically 15 or 16 years.'

The educational programmes included at this level typically require the completion of some 9 years of full-time education (since the beginning of level 1) for admission or a combination of education and vocational or technical experience and with as minimum entrance requirements the completion of level 2 or demonstrable ability to handle programmes at this level' (ISCED, 1997, paragraphs 62–63).

Although the age range of children included in this UNESCO level begins slightly higher than that used in the UK (for example, in the Tomlinson review), we used it in order to ensure that international comparisons would be possible. Educational programmes at ISCED level 3 can be sub-classified along three dimensions:

- (i) whether the orientation of the programme is general or vocational;
- (ii) the destinations for which the programme has been designed to prepare students; and
- (iii) cumulative theoretical duration in full time equivalent since the beginning of ISCED level 3.

The typical duration of programmes ranges from two to five years.

A further boundary to the review was the recency of the data to be considered. We restricted our search to data collected from 1997 onwards, the date of UNESCO's most recent ISCED definitions. A final boundary was our decision to focus on the twenty-five countries in the European Union. However, although exploring VET in all countries was judged to be beyond the scope of this project, we also obtained some data from some other key 'developed' countries where it was readily available (Australia, Canada, China, Japan, New Zealand, and the USA).

Data sources

The following sources of information were investigated:

1. International organisations

Several international organisations provide core data on their websites, as well as downloadable reports of their own research and experiences of data collection. We explored the websites of UNESCO, OECD, Eurostat, and Cedefop (the European Centre for the Development of Vocational Education and Training, which is the EU's reference centre for VET).

Several relevant reports were obtained in this way, sometimes through direct contact with representatives of these organisations.

2. Government departments

Departmental and related websites were searched for data on VET. In one case (the Republic of Ireland) direct contact was made with civil servants to confirm unusual information obtained from international organisations.

3. Research literature and related publications

Published and 'grey' research literature were searched using the on-line facilities of the Cedefop library (based in Thessaloniki), and also with the assistance of its librarians. This is Europe's largest specialist VET library, housing multilingual collections, research reports, EU legislation, and comparative studies. To supplement this search, a number of internationally respected peer-reviewed journals were hand-searched for data and potential leads to other data sources. The Educational Resources Information Center (ERIC) on-line database was also searched.

Findings

The most striking finding of the review was the paucity of quantitative data on the topics of interest. The reasons for this are considered subsequently, in the second stage of the project (the review of other key literature). Nevertheless, it was still possible to obtain data in several interesting areas.

Enrolment of ISCED 3 students in general and vocational streams

As shown in Figure 1, the proportion of upper secondary students enrolled in a vocational rather than a general stream of education varies considerably from country to country, within the EU and also worldwide. Among the countries with the lowest proportions of VET enrolments are Canada, Hungary and Cyprus, where fewer than 15% of upper secondary students are enrolled. At the other end of the spectrum are the Czech Republic, Slovakia, Austria, Belgium, Slovenia and the UK, where over two thirds of enrolments are in vocational streams. In Ireland and the USA, all students are enrolled in general streams of education because there

are no formal upper secondary vocational streams at ISCED level 3. (According to statisticians at the Department of Education and Science in Ireland (O'Rourke and Dunne, personal communication), the lowest coding for Irish vocational students, for example apprenticeships, is at ISCED level 4.)

There are some striking differences in the enrolment figures of some countries that neighbour each other and might therefore have been presumed to have similar educational systems. For example, Australia's VET enrolment rate of 63% contrasts starkly with New Zealand's rate of just 24%. Poland has a VET enrolment rate of 54%, which is somewhat lower than those of neighbouring Slovakia (75%) and the Czech Republic (79%).

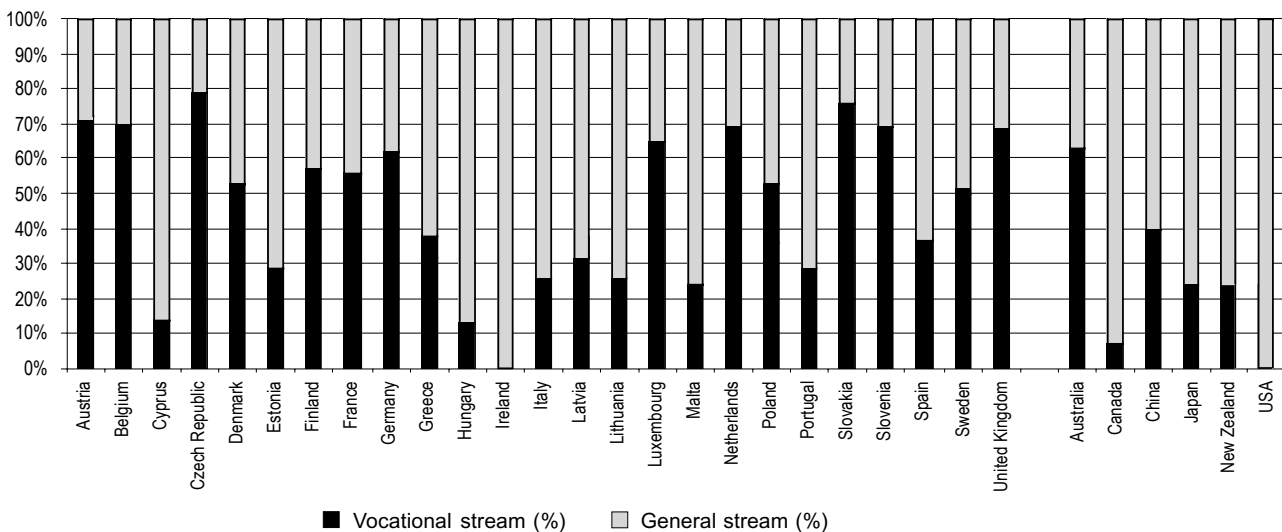
As Figure 2 reveals, in all EU countries except the UK, there are more males than females enrolled in the vocational stream of upper secondary education; on average, the difference in VET enrolment rates is 10.5%. However, these differences vary considerably in their magnitude from country to country. In Italy, the male and female enrolment rates differ by just 3.5%, in Belgium the difference is 3.7%, and in the Netherlands it is 4.0%. In Estonia on the other hand, the difference in enrolment rates is as great as 20.9%, and there are also large differences in Poland (19.2%), Malta (18.9%) and Cyprus (17.6%).

Assessment and other completion requirements for VET

In most of the countries considered, the variety of VET available is quite substantial. There are many different types of programme, which are organised by a range of training institutions and organisations, and which combine tuition with work-based experience to varying degrees. With such variety comes a range of systems of summative assessment and other requirements for programme completion. Although data are sparse, the OECD has categorised the educational programmes of some countries according to whether they require students to attend a specified number of course hours, and whether students are examined on their achievements (for full details, see www.oecd.org/edu/eag2005).

According to this (partial) data, the completion only of a specified number of course hours is a rare requirement, occurring in Korea alone

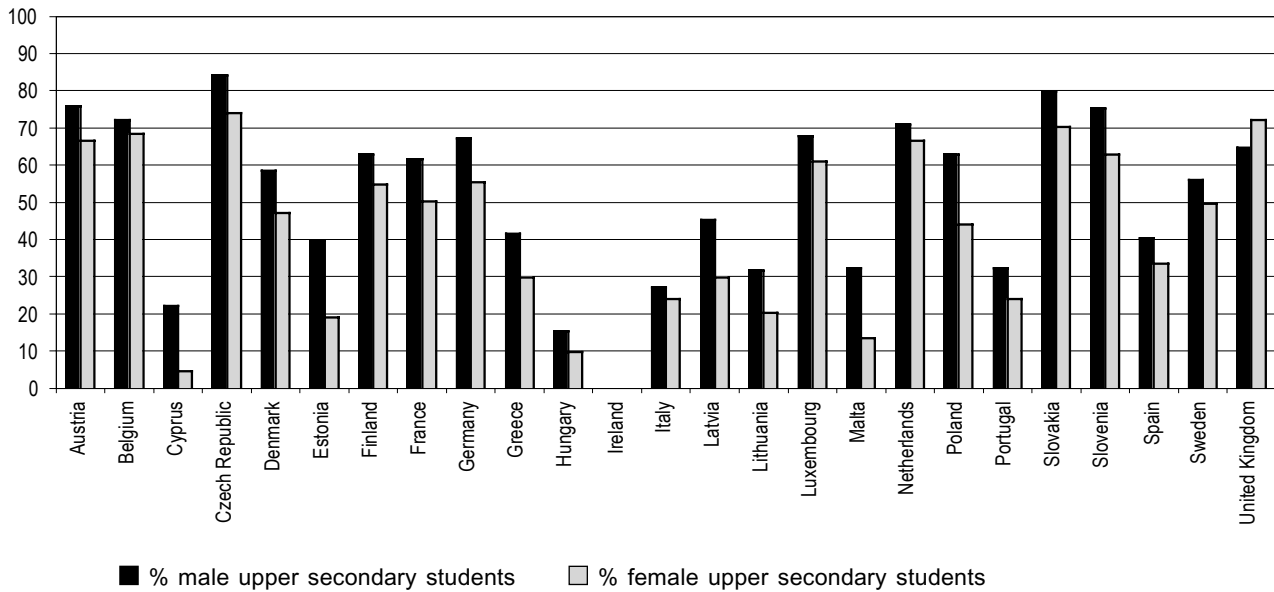
Figure 1: Enrolments of upper secondary (ISCED 3) students in general and vocational streams in the EU and in six other major countries



Note: According to statisticians at the Department of Education and Science in Ireland, there are no Irish vocational students at ISCED level 3. The lowest coding for Irish vocational students, for example apprentices, is at ISCED level 4.

Data sources: Eurostat, UNESCO Institute for Statistics. All data relate to 2003.

Figure 2: Percentages of male and female upper secondary (ISCED 3) students enrolled in vocational streams in the EU



Note: According to statisticians at the Department of Education and Science in Ireland, there are no Irish vocational students at ISCED level 3. The lowest coding for Irish vocational students, for example apprentices, is at ISCED level 4.

Data sources: Eurostat, UNESCO Institute for Statistics. All data relate to 2003.

for programmes most likely to have a vocational orientation. Several countries, including Austria, the Czech Republic, Hungary, Japan, and Luxembourg, have ISCED 3 programmes of all types for which students are required both to attend a specified number of course hours and to pass some form of examination(s). In Iceland, the completion of a specified number of course hours is not a requirement for any ISCED 3 students; the implication is that passing examinations is the sole requirement. Italy, on the other hand, relies solely on examinations for some ISCED 3 programmes but not others.

The OECD has also collated data on whether ISCED 3 students are given final examinations and/or a series of examinations during their programmes. For both ISCED 3B and ISCED 3C programmes (i.e. those programmes most likely to have a vocational orientation), over two thirds of countries (for which there are data) have a series of examinations during at least some programmes, and approximately one third of countries have some programmes that do not make use of such examinations. Roughly two thirds of the countries have some ISCED 3B and ISCED 3C programmes entailing final examinations, and well over one third of countries have some programmes that do not. For ISCED 3A (i.e. largely theoretically based) programmes, the proportions of countries making use of final examinations and series of examinations during their programmes are broadly similar.

For programmes with a vocational orientation, no internationally comparable data could be found on the characteristics of the examinations that take place. For example, to date, there have been no major international quantitative comparisons of the usage of internal and external examiners and the training that they receive, or of the extent to which examinations are based upon practical performance. Similarly, statistics enabling the reliability and validity of assessments in vocationally orientated programmes to be compared internationally were unobtainable. This may well be because the diversity of programmes, even within each country, makes such tasks extremely difficult.

2. Review of other key literature

The first stage of this project exposed a lack of internationally comparable quantitative data relating to VET. However, it also revealed some interesting and relevant publications in some related areas, two of which are worth summarising:

- (i) a major systematic literature review entitled *What determines the impact of vocational qualifications?* conducted for the DfES (Unwin, Fuller, Turbin and Young, 2004); and
- (ii) research on competency-based assessment in Australian VET.

What determines the impact of vocational qualifications?

During 2003, Unwin and her colleagues conducted an extensive literature review, identifying and scrutinising 'primary' (empirical research) studies, 'secondary' studies (analyses of major data sets), conceptual studies, academic critiques, and policy documents. The review had multiple aims, but its authors were forced to conclude:

'The research-based literature on VQs is thin, reflecting the invisibility of vocational education and the work-based pathways more generally. Where they do exist, studies of vocational education and vocational learning often do not include any focus on VQs, and hence, the UK lacks a substantive evidence base on VQs' (Unwin et al., 2004, p. 4).

This conclusion is in line with a recent internal review of the literature (Johnson, 2005). Nevertheless, the report contains a useful section (4) in which Unwin and her colleagues offer an international perspective on the development of vocational qualifications in England. The authors argue that the huge variety in what is regarded as VET internationally can explain why it can be so difficult to collect quantitative data and make direct international comparisons, or to make judgements and generalisations about the effectiveness of particular systems and models of VET assessment. Consequently, it is proposed that the best way to use different

national VET models may be as 'mirrors' for examining the assumptions on which our own vocational qualifications are based. A qualitative analysis of national differences may provide a way of making explicit the context within which vocational qualifications have developed.

Unwin and her colleagues focussed on the experiences of several groups of countries: those in continental Europe, North America, South East Asia, Australia and New Zealand, and Scotland. They identified six broad contextual features that affect how vocational qualifications have developed in different countries:

1. The role of the state and other stakeholders
2. The use of vocational qualifications
3. The role for private [independent] Awarding Bodies
4. The relationship between vocational and professional qualifications
5. The role of employers and social partners
6. The extent of license to practice.

Four key ways in which the design and function of vocational qualifications differ among countries were also described:

1. The relationship of qualifications to provision
2. The role of outcomes
3. The development of a national qualifications framework
4. The relationship between vocational and general (academic) qualifications.

All of these different ways in which VET varies internationally are discussed in full by Unwin *et al.* (2004).

Competency-based assessment in Australian VET

Another body of international literature was identified as potentially having particular relevance for VET reforms in England. Over the past few years, competency-based assessment has become very popular in Australia (Williams and Bateman, 2003). There (and elsewhere), an interesting debate has arisen over whether it is meaningful and useful to grade competency-based assessments or whether it is best just to class students as 'competent' or 'not competent'. In their review of the literature, Williams and Bateman (2003) have identified the following main arguments for graded assessment:

- We need to provide more comprehensive information on performance for students themselves, but also for higher education institutions and potential employers. This could lead to fairer and more meritocratic selection processes.
- The possibility of obtaining higher grades may have a motivational impact on students and also their trainers.
- There may be positive effects on teaching and learning, for example, through providing more detailed feedback.
- Similarly, grading gives better feedback to employers about their employees' progress.
- Through grading, aptitudes for specialisation can be recognised.
- Grading enables better validity and reliability estimates to be made.
- Grading generates competition, which is essential for business but also in other work places.

Arguments against graded assessment include the following:

- Grading is not compatible or commensurate with competency-based training:

'As any particular national competency standard defines only one level of performance, it can be argued that only one standard applies to the assessment and reporting of performance. In other words, competency standards do not allow for levels, one is either 'competent' or 'not competent'.' (Thomson, Mathers and Quick, 1996, p. 10).

- A single cut-off point in competency-based assessment may support access and equal opportunity.
- Grading can lead to a sense of failure among struggling learners. Mature learners should not have to repeat their earlier experiences of failure. Single cut-off points might encourage and boost the confidence of candidates with no chance of getting a high grade.
- Grading can stress and pressurise the candidates, preventing them from performing at their best.

Williams & Bateman (2003) also report on their own major empirical study (conducted in 2000) in which 120 Australian VET stakeholders, including students, were interviewed about grading practices. The authors concluded that there exists a huge diversity of grading practices (and views on grading), and that it is not possible to identify general trends, themes or patterns in practice. However, graded assessment in VET should be:

- (i) criterion-referenced,
- (ii) applied once competence is determined,
- (iii) transparent, and
- (iv) discretionary.

3. Discussion group at an international conference

To take forward the approach of Unwin *et al.* (2004), that the best way to use different national VET models may be as 'mirrors' for examining the assumptions upon which our own vocational qualifications are based, an international discussion group was convened. It was held at the Annual Conference of the Association for Educational Assessment in Europe and, lasting one and a half hours overall, it comprised four presentations:

1. Irenka Suto set the scene for debate by discussing the variation in definitions of Vocational Education and Training. She then presented a broad international overview of participation figures for VET. Finally, she outlined some of the issues and major areas for discussion that surround the development of vocational qualifications, as had been identified in the research literature.
2. Sylvia Green presented an overview of the VET situation in England. She discussed the main conclusions and recommendations of the Tomlinson report and the recent White Paper (Tomlinson *et al.*, 2004; Department for Education and Skills, 2005). These included the Government's proposals for improved vocational routes, with greater flexibility to combine academic and vocational qualifications, specialised diplomas, more participation among employers, and also increased opportunities for work-based training through Apprenticeships, which would be brought into the diploma framework. An explanation of the National Qualifications Framework was then given, together with an outline of some of OCR's vocational qualifications, which illustrate a range of assessment methods.

3. We invited colleagues in The Netherlands to give the third presentation. Elisabeth van Elsen of Esloo Education Group, Peter Kelder of Northgo College, and Jan Wiegers of CITO presented a detailed account of the Dutch educational system, explaining the four 'learning pathways' of pre-vocational secondary education ('VMBO'), and also the various routes through senior secondary vocational education. New routes in Dutch pre-vocational education include programmes that combine different subjects and specialisations. Assessment comprises a mixture of central and school examinations; for vocational subjects, computer-based assessments of the theory supporting practice are used. A key message of this presentation was that a genuine parity of esteem for vocational and general qualifications exists in The Netherlands. VET and general education are nicknamed 'the two royal routes' and are regarded as distinct but equally valuable forms of study.
4. The final presentation was given by John Lewis of the Scottish Qualifications Authority. The key characteristics of Scottish Progression Awards (SPA) and National Progression Awards (NPA) were outlined, but the presentation focussed upon 'Skills for Work' (SfW) programmes. These new courses, which are aimed at pupils in the third and fourth years of secondary education, address both general employability skills as well as specific vocational skills. They involve varied learning environments, entail partnerships between schools, colleges, employers and training providers, and focus on the world of work. The question of what employability skills actually are was raised, and core skills within VET were also discussed.

Each presentation was followed by, or interspersed with, lively discussion, which included conference delegates from a range of countries across Europe. Debate centred around the following themes:

- Different explanations for the lack of quantitative data were considered. Several delegates concurred with the idea that difficulties in reporting data to international bodies may stem from different conceptions and definitions of VET. It was suggested that individuals responsible for reporting their countries' data may not always be aware of these differences, or have the resources to investigate them, which may compound problems. An Irish delegate argued that, despite information to the contrary from the Department of Education and Science in Ireland, Irish students *did* participate in VET at ISCED level 3, but that it was so well integrated into general educational programmes that it could not be quantified meaningfully.
- It became apparent that, in comparison with general education, relatively little research into aspects of VET and its assessment has been conducted. One explanation offered for this was that most researchers have received a general or 'academic' education themselves, rather than a vocational one, and few VET 'experts' are trained in research methods. Another suggested reason was a lack of pressure from stakeholders because, in many countries, they form disparate groups of professionals. Similarly, the diversity of workplaces can create practical difficulties for researchers. It was suggested that in some countries, satisfaction and contentment among stakeholders may have led to a general feeling that research is not needed.
- The issue of parity of esteem between general and vocational education and qualifications arose at several points during the discussion group. Such parity has been achieved in different ways in

different countries. In Ireland, for example, a single integrated educational system is highly regarded, whereas in The Netherlands, two distinct but equally prestigious educational routes have been developed through the application of considerable resources to each. The question arose of why, generally speaking, research into VET has been relatively neglected in the UK, and this led on to a discussion of how vocational options can be made more attractive and relevant to potential students. The increasing popularity of particular routes (for example, information technology in the Netherlands and Sweden) was considered.

- Reasons for gender differences in participation rates for vocational and general education were discussed, and various speculations were made. Again, differences in definitions may affect the reporting of data: some professions in which there are notable gender differences, such as nursing and engineering, may be entered through vocational routes in some countries, but through general routes in others.

Summary and conclusions

To summarise, the three stages of this project were: a review of the quantitative data available; a review of other key literature; and a discussion group convened at an international conference. Our aims were to identify and examine two main types of data: (i) on the extent of participation in VET and its associated assessment worldwide; and (ii) relating to key differences in the VET systems of different countries. We were able to obtain some basic information from international organisations government departments, and the research literature. However, we had to conclude that, in general, there is a paucity of internationally comparable quantitative data relating to VET. Reasons for this are likely to include the differences in definitions of VET among countries, and a lack of research in this field, which, in some countries (including the UK), may be due in part to a lack of parity of esteem with general education and assessment. Despite these difficulties, however, we were able to identify some useful information in the research literature: a major systematic literature review conducted for the DfES (Unwin, *et al.*, 2004); and research on competency-based assessment in Australian VET. Both provided us with useful insights into VET, and in particular, into the qualitative differences that exist among countries' educational systems, which were considered subsequently in our international discussion group.

Further reading

An additional 109-item bibliography of related literature, compiled as part of the literature review, is available from the authors on request. A full version of this article is available on *The Association for Educational Assessment in Europe* website: <http://www.aea-europe.net/page-180.html>

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A cognitive psychological exploration of the GCSE marking process

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Background

GCSEs play a crucial role in secondary education throughout England and Wales, and the process of marking them, which entails extensive human judgement, is a key determinant in the futures of many sixteen-year-olds. While marking practices in other kinds of examinations have received some serious consideration among researchers (for example, Cumming, 1990; Vaughan, 1992; Milanovic *et al.*, 1996; Laming, 1990, 2004; Webster *et al.*, 2000; Yorke *et al.*, 2000), the judgements made during GCSE examination marking remain surprisingly little explored. The aims of our study, therefore, were to investigate the cognitive strategies used when marking GCSEs and to interpret them within the context of psychological theories of human judgement.

Within the broad field of psychology, there exist multiple models of judgement and decision-making, which have yet to be applied to GCSE examination marking. One potentially useful theoretical approach is that of dual processing. Such models distinguish two qualitatively different but concurrently active systems of cognitive operations: *System 1* thought processes, which are quick and associative, and *System 2* thought processes, which are slow and rule-governed (Kahneman and Frederick, 2002; Stanovich and West, 2002).

The 'intuitive' judgements of System 1 are described as automatic, effortless, skilled actions, comprising opaque thought processes, which occur in parallel and so rapidly that they can be difficult to elucidate (Kahneman and Frederick, 2002). System 2 judgements, in contrast, have been termed 'reflective', and the thought processes they comprise are characterised as slow, serial, controlled, and effortful rule applications,

of which the thinker is self-aware (*ibid.* 2002). According to Kahneman and Frederick (2002), as an individual acquires proficiency and skill at a particular activity, complex cognitive operations may migrate from System 2 to System 1. For example, chess masters can develop sufficient expertise to perceive the strength of a chess position instantly, as pattern-matching replaces effortful serial processing.

GCSE examination marking is a diverse activity, encompassing a wide range of subjects with a variety of question styles and mark schemes. It is likely, therefore, that at least some aspects of it will have parallels with some of the activities already scrutinised by judgement researchers in other contexts. There may be question types, or stages of marking, that involve System 1 processing; at times, simple and repetitive matching of a candidate's single-word response with the model answer given in the mark scheme may be all that is required. At other times, examiners might be engaged in System 2 processing; for example, when carefully applying the complex guidelines of a mark scheme to a candidate's uniquely worded essay. As examiners become more familiar with a particular examination paper and mark scheme, or more experienced at marking in general, some sophisticated thought processes may be transferred from System 2 to System 1, while others remain exclusive to System 2.

In the present investigation, we sought to identify and explore some of the many judgements made by GCSE examiners. To do this, we conducted a small-scale empirical study of examiners marking two contrasting subjects, in which we used the 'think aloud' method (Ericsson and Simon, 1993; Leighton, 2004; Van Someren *et al.*, 1994) to obtain verbal protocol data for qualitative analysis.