Matura Examinations in Slovenia

Case Study of the Introduction of an External Examinations System for Schools

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Case Study of the Introduction of an External Examinations System for Schools

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Abstract

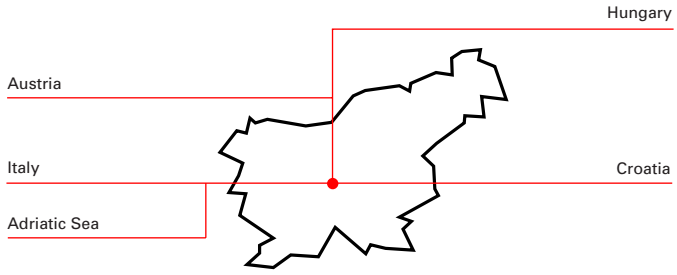
The place of assessment and certification of learner achievement continues to be of great interest throughout the world. However, in eastern and central Europe there is a particular urgency about the debate as newly independent states review and reform their education systems in the light of changing social and economic conditions.

Slovenia is currently in the middle of a development programme which will eventually affect all parts of its education system. In July 1995, a major feature of the programme became reality when the first Matura, or graduation examination, was successfully conducted on a national scale. The new Matura is based on examinations which are set and marked externally to the schools where the students study. This represents a radical departure from previous practice whereby school-based tests and a wide range of university faculty entrance examinations controlled access to higher education.

This paper describes the background to this key reform, and outlines the difficulties encountered and the steps taken to overcome them.

Background to Slovenia

Slovenia is a small country (20,251 sq km) with a population of just over two million. Formerly part of Yugoslavia, it became independent in 1991. It is bordered by Italy, Austria, Hungary, Croatia, and by a tiny (42 km) strip of the Adriatic Sea.



The national language is Slovene. There is an Italian-speaking minority concentrated on the coast and a Hungarian-speaking minority in the north-eastern part of the country. English is by far the most popular foreign language studied in schools.

In the past, Slovenia's economy, and hence job market, was largely based on heavy industry, particularly in the north-east of the country. However, with the loss of former markets and faced with competition from more efficient competitors, much of this has now gone. This contributes to an overall unemployment level of 14.4%[3], with higher figures in agriculture and in industrial towns such as Maribor. Steps are being taken to increase the contributions made by the service industries and, in particular, tourism but it is unlikely that these will make a significant impact on unemployment in the near future. Lack of job opportunities has caused an increase in demand for university places.

[3] As at August 1994 – up from 4.7% in 1990

History of the Development of Matura

In the 1980's, Slovenia operated what was known as 'career education' in its secondary schools. This was meant to provide both general, academic education for those aspiring to higher education, and vocational/occupational paths for the others. Towards the end of the decade there was a growing awareness that career education was not meeting the needs of society and so, in 1989, a decision was made to re-introduce a bifurcated secondary system. This comprises 'Gimnazija' or grammar schools, and technical/professional schools. New programmes of study (curricula) were prepared by the Ministry's Board of Education and were introduced in 1990-91.

Under the old career education model there had been no 'final examination' at the end of secondary schooling. All assessment was based on teacher-made tests. Grades 1–5 were awarded on the basis of the distribution of marks within a single classroom. As a consequence, students were often taught and assessed only on very limited portions of the approved curriculum leading to incomplete and fragmented understanding. In addition, no direct comparison of standards could be made among students coming from different schools... or even different classes!

Students wishing to enter university had to take the entrance tests of all the faculties to which they applied. Faculties used a variety of approaches including entrance examinations and aptitude tests. Notwithstanding any concerns about the quality of these selection instruments, students generally found the process stressful and a considerable burden.

Under normal circumstances such a system may prove tolerable. However, the universities of Slovenia were also suffering from extremely high drop-out rates. The average pass rate at the end of the first year of university was about 46%. At the end of the second year it was about 68% and even at the end of the third year it was only 62%. The overall rate of non-completion (allowing for repetition) was estimated to be about 55%.

It was therefore felt that systematising the school assessment process would help to improve the quality and uniformity of secondary education and allow universities to select more suitable applicants – both of these factors helping to reduce the drop-out rate and, hence, increase the efficiency of the university system.

In 1989, a Ministry working group recommended that a Matura, or graduation examination, be re-introduced[4] as part of the new education system.

[4] Forms of Matura had existed prior to the introduction of the career education model. However, these were based on internal assessment.

In 1991, an attempt was made to impose an internal 'final examination' in four subjects. This provoked student protests and strikes. Students argued, with some justification, that they had not been informed about this examination when they had started their courses. The conflict was resolved by restricting the final examination to two subjects in the first year, increasing to four in the following year. This experience led many to doubt whether Matura could ever be introduced, whilst others recognised that any major reform in the field of student assessment would take time and would need very careful planning.

In January 1992, regulations for the Matura were published. These confirmed the date for the first examination (1995) and set a deadline (1st September 1993) for the publication of 'catalogues[5]', or syllabuses for all Matura subjects. The regulations also provided for a committee structure to bear responsibility for the Matura.

[5] The term 'katalog' is used in Slovenia for the document which sets out for teachers details of the curriculum and the assessment process in each subject. In some countries this would be the 'examination syllabus', in others the 'curriculum document'. This paper uses 'catalogue' throughout.

In March 1992, the **National Matura Commission (Republiška maturitetna komisija)** was established. This has overall responsibility for the Matura and determines the rules and procedures for all stages of the examination process.

The Commission comprises representatives of:

- Universities of Ljubljana and Maribor
- Secondary Schools
- Ministry of Education and Sport
- National Committee for Education
- Slovene Academy of Science and Arts.

The Director of the National Examinations Centre (see below) also serves on the Commission.

Subject-specific work is carried out by the **National Subject Commissions (Republiške predmetne komisije)**. These are composed of representatives of universities, secondary schools, and, in some cases, the Board of Education.

Key responsibilities include:

- development of subject catalogues;
- preparation of question papers and marking schemes;
- marking of student scripts; and,
- recommending grade thresholds (cut-offs) to the National Matura Commission.

Responsibility for the conduct of examinations in schools is held by **School Matura Commissions (Šolske maturitetne komisije)**. These act under the leadership of the Principal of each school.

There are also **School Subject Commissions (Šolske predmetne komisije)**. These conduct the oral examinations and any other examination components which are organised internally (e.g. laboratory work in science subjects). They also discuss professional questions within their subject areas and submit proposals to the Matura Subject Commissions.

At the same time that the Matura committee structure was being established, four representatives were sent to the UK to study various aspects of the theory and practice of educational assessment.

Some Subject Commissions had already developed some expertise in the writing of test items. For example, the Mathematics Commission had made progress in introducing common final examination papers to a cluster of interested schools. However, the general level of expertise and experience was, not surprisingly, low. In order to assist the Commissions with the immediate task of writing catalogues, a two-week seminar was held in the town of Škofja Loka. The seminar and workshops were led by four trainers from the University of Cambridge Local Examinations Syndicate in the UK.

The focus was on the general subject areas of:

- Mother Tongue (Slovene, Italian, Hungarian)
- Foreign and Classical Languages (English, Italian, French, German, Spanish, Latin)
- Humanities (History, Geography, Economics, Philosophy, Sociology, Psychology)
- Natural Sciences (Biology, Physics, Chemistry)
- Mathematics.

The principal aim of the seminar was to assist the Subject Commissions in the preparation of draft catalogues. This involved identifying aims and assessment objectives for subjects, defining examination content, and designing appropriate assessment instruments. However, the seminar had an equally important side effect – it allowed Subject Commissions which hitherto had worked in isolation to come together and discuss common concerns and views on the best format for Matura. Towards the end of the seminar, an open and frank discussion took place between the representatives of Subject Commissions, the National Matura Commission, and the Ministry. It was this meeting which confirmed that Matura would be based on examinations set and administered **externally** to schools.

The Škofja Loka seminar catalysed the Matura development programme. Firstly, it allowed the Subject Commissions involved to produce draft catalogues[6]. Secondly, it highlighted the professional expertise and the administrative capacity which would have to be developed for Matura to succeed.

[6] A second workshop for technical subjects was carried out in May 1993.

One direct consequence was a decision to establish the **National Examinations Centre (Dr`avni izpitni center)** as an independent body. (It had originally been envisaged as a part of the Board of Education.) The necessary legislation was enacted in June 1993.

The National Examinations Centre's first responsibilities included:

preparing and maintaining the Matura[7] information system;

matters relating to Subject Working parties and examiners;

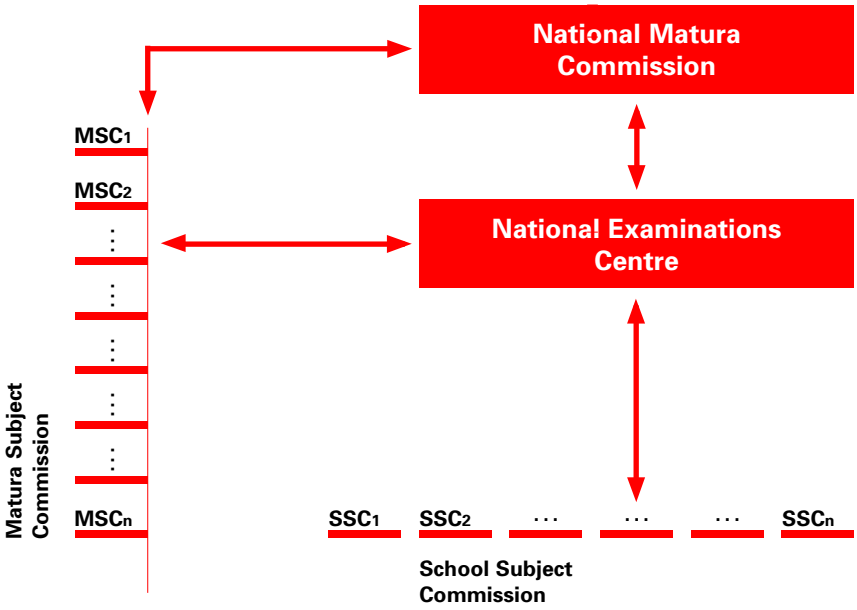
printing and distributing examination material;

preparing and analysing results data.

[7] In fact the National Examinations Centre will be responsible for all external examinations taken in schools in Slovenia. These will include a series of 'National Assessment Tests' to be introduced at key stages of primary and secondary education.

Whilst the responsibilities of the National Examinations Centre may appear to be largely administrative, it has, in practice, come to play a pivotal role in all aspects of the examination process. It provides support to the Subject Commissions and exerts an additional level of control over the quality of question papers. It also provides information and technical advice to the National Matura Commission in matters of policy.

The relationships and flow of information among the key partners in the delivery of Matura are shown diagramatically below.



Key partners in the delivery of Matura

In July 1993, all 32 subject catalogues were approved by the National Council for Education. These were printed and distributed to schools in September, two years in advance of the first examinations as required by the Matura Regulations.

Following the publication of catalogues, the Matura development programme had four main objectives:

a to train teachers so that they would be better able to prepare students;

b to raise public awareness of the new system;

c to develop and test the necessary administrative systems; and,

d to prepare the 'live' examination papers for 1995.

a) Teacher preparedness was achieved through a series of in-service teacher training seminars organised by the Board of Education and delivered by members of the Subject Commissions. These were designed to clarify the requirements of the catalogues and to give greater information as to what the examination would be looking for. This was particularly important where the catalogue had placed emphasis on new skills. For example, in English Literature, complete works were to be read and studied rather than the abstracts which had been used in the past. In addition, teachers were made aware of the format and levels of Matura papers through a series of 'trial Matura'.

The trial and pilot examinations were conducted during 1994 and early 1995. The preparation of these placed additional pressures on the Subject Commissions and on the National Examinations Centre. However, the role of the trials in showing teachers and students exactly what was required, in providing the National Matura Commission and the Subject Commissions with information on appropriate standards, and in allowing the National Examination Centre to test and review its procedures, proved crucial in the implementation of Matura. Further details are given in the section 'Preparing for Matura: Trial Examinations'.

b) Wider public awareness of the impending changes was brought about by a publicity programme of newspaper articles and television broadcasts, and a poster campaign. A new cartoon character was even developed to get the message across.

Candidate Rick, new Matura cartoon character

c) The administrative systems for the examination were prepared at the National Examinations Centre but Subject Commissions were also active in planning marking procedures for their papers. All these systems were tried and tested in the trial Matura examinations. Where necessary, new procedures and technologies were introduced in readiness for the larger volumes expected for the live examination.

d) Throughout all this, the Subject Commissions met on a regular basis in order to prepare the question papers, not only for the June 1995 examination but also for the September examination[8]. A further set was also required to be used in the event of leakage. To support the Commissions in their work, item-writing and moderation workshops were held in December 1994. Once again these were led by trainers from the UK.

[8] The September examination is a full Matura examination. However, many of the candidates will be retaking one or more subjects in order to pass or improve their grades. Some candidates, for example the handicapped, have the right to take their Matura over two examination periods.

Finally, in June 1995, about 7600 students in Slovenia (and one in the United States!) took the Matura examination.

Marking and data processing were completed by 20 July and results approved by the National Matura Commission on 21 July according to the agreed schedule.

The key events in the Matura development programme are given in the table below.

58	**abolition of the traditional Matura, introduction of final examinations**
84/85	**last year in which candidates took final examination**
89	**Ministry working group proposes introduction of an external Matura**
89	**legal basis for Matura as admission condition for University**
91	**re-introduction of final examinations**
91/92	**introduction of renewed programs for Matura in secondary schools**
Jan. 92	**publication of Regulations for Matura, nomination of Commissions**
Sep. 92	**seminar for National Subject Commissions**
June 93	**establishment of the National Examinations Centre**
Aug. 93	**publication of examinations catalogues**
Dec. 93	**Act on Higher Education**
93/94	**first generation starts preparation for the Matura examination**
Jan. 94	**first pre-testing for selected schools (years 3 and 4)**
Apr. 94	**second pre-testing for selected schools (years 3 and 4)**
June 94	**trial Matura for selected schools**
Jan. 95	**pre-testing for the whole 4 year population**
Apr. 95	**pre-testing for selected 3 year population**
June 95	**first external Matura examination – spring term**
Sep. 95	**Matura examination – autumn term**

Description of Matura and Comparison with the School-Based 'Final Examination'

The Matura examination system is now the only route to university for students studying at school. It is a 'group certificate' which requires students to surpass minimum levels in a prescribed combination of subjects.

Matura in Slovenia consists of five subjects. The three compulsory subjects are: Mother Tongue, Mathematics, Foreign Language. Two optional subjects (electives) must be chosen from a wide range of natural sciences, foreign and classical languages, humanities, social sciences, technical and vocational subjects. (A complete list is given in the Appendix I.) Mathematics and Foreign Languages (including Latin) are available at two separate levels; higher and basic. Success at the higher level gains extra points (see Table 2.). Mother Tongue subjects are only available at one level but the grading system allows for the award of bonus points. All other subjects are available at one level only.

All subjects are externally assessed. The written part of the examination accounts for between 80–100% of the final mark[9]. In addition to the written papers the natural sciences include experimental work; Psychology, Sociology, Philosophy and some technical subjects include project work; and other subjects include oral examinations conducted within schools (Appendix II.)

In common with school-based tests and the internal final examination, each Matura subject is graded on a five-point scale: 1 is considered a negative or failing grade with 2, 3, 4, and 5 as positive grades.

In order to pass Matura, a student must achieve a positive grade in all five subjects[10].

[9] Music is likely to break this pattern by placing 70% of the marks on "performance".

[10] In fact a compensatory system operates for students who fall short of the pass mark in just one subject but who have achieved a minimum proportion (80%) of the passing mark in that subject and at least two grade 3s in other subjects. These 'near pass' students are awarded a positive grade (2) in the failed subject.

Successful students also receive a point score derived from the sum of their subject grades[11]. If a subject has been passed at the higher level, then up to three points are added to the student's score. This gives a maximum possible Matura points score of 34.

[11] This system mirrors that of the internal final examination which awards an 'overall grade' in addition to subject grades. The difference is that the internal overall grade is on the ubiquitous five-grade scale whereas the Matura points total ranges from 5-34.

For example:

A

Student		**Total Points Score**
	Maths 5 (Higher level)	**5+3**
	Slovene 5+	**5+3**
	English 5 (Higher level)	**5+3**
	History 5	**5**
	Chemistry 5	**5**
		Total = 34

B

Student		
	Maths 4 (Basic level)	**4**
	Slovene 4–	**4+1**
	French 2 (Higher level)	**2+1**
	Geography 4	**4**
	Philosophy 2	**2**
		Total = 18

C

Student		
	Maths 3 (Basic level)	**3**
	Slovene 3–	**3**
	German 3	**3**
	Biology 3	**3**
	Chemistry 3	**3**
		Total = 15

University entrance will depend upon total points score and, for certain faculties, the scores gained in individual subjects.

Whilst the Matura is now the only 'ticket' to a university place, there are alternative opportunities in, for example, professional schools, where Matura is not a prerequisite. In these cases, the internal 'final examination' mark may be used. This examination, which is the parallel alternative examination at the end of the secondary school, leads to employment or studies at professional higher education institutions where the access is offered to both categories of candidates, those with Matura and those with the final examination.

The final examination consists of compulsory and elective parts. The compulsory part consists of the following subjects:

- Mother Tongue;
- Mathematics **or** Foreign Language, selected by the student.

The elective part consists of:

- a basic (core) disciplinary subject (which can in exceptional cases be one of the general subjects if it is vital for the profession);
- a paper or product or project work and its presentation or another disciplinary subject.

The final examination is an internal examination, prepared by candidates' own teachers in schools so direct comparison among candidates coming from different schools or even from different classes in the same school is not possible.

Developing Subject Catalogues for Matura

Subject catalogues were developed during the period September 1992 to July 1993. They include the key elements of an examination syllabus: subject aims, assessment objectives, subject content, and a description of the assessment procedures. In addition, they include sample questions or even complete sample question papers. Many Subject Commissions also chose to include additional notes for teachers. (In a perhaps somewhat excessive case, the Italian catalogue runs to 300 pages!)

Since this was not a curriculum reform exercise, all subject catalogues **had** to be compatible with the existing national curriculum. This was adhered to as a general principle, but some subject groups took this opportunity to rationalise the curriculum and to redirect the emphasis within it. For example, at the first Škofja Loka seminar the Foreign Languages groups agreed to develop their catalogues within a uniform framework in order to promote a common approach towards teaching and testing based on the use of language in context. The emphasis on discrete points of grammar was reduced and the skill of writing elevated to play a more important part.

The natural science groups also took the opportunity to influence classroom practice by developing an 'experimental science' component to be conducted by teachers but moderated externally. This component effectively forces teachers to pay due attention to the experimental work which was included in the national curriculum but ignored in many schools.

Each draft catalogue was reviewed by at least two reviewers – one from a university and the other from a secondary school. In addition, the Board of Education had to check each catalogue and confirm that it was compatible with the national curriculum.

Even though the content of the Matura catalogues was taken from the existing curriculum, their publication caused something of a stir since they revealed 'holes' in what was being taught in many schools. It appears that in the absence of any external checking mechanisms, teachers had, over the years, allowed some topics to drop out of their teaching programmes. For example, the Mathematics catalogue included assessment of statistics – a topic which many teachers had chosen to ignore in the past. This confirmed earlier assumptions about the unevenness of preparation of university applicants.

Development of Question Papers

Question Paper Preparation

Subject Commissions are responsible for the preparation of question papers and marking schemes. Some have tried to engage teachers in submitting questions for item banks but it remains true that nearly all the expertise in item-writing and test development resides within the Subject Commissions. The National Examinations Centre has recently appointed some professional 'Subject Coordinators' to support the Subject Commissions and to increase the Centre's control over question paper quality. This will become more effective as they are trained and as they gain experience.

The general procedure is:

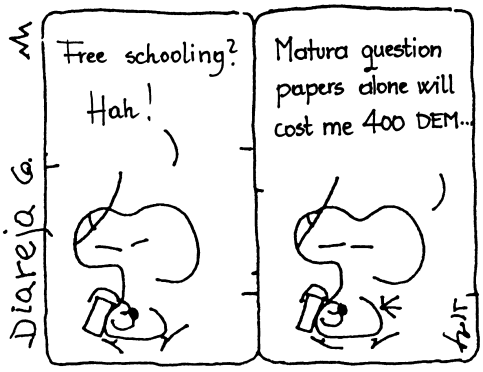
- National Examinations Centre nominates Chief Examiner
- The Chief Examiner organises the preparation of draft question papers and marking schemes from materials submitted by Commission members
- Subject Commission 'moderates' (checks) all aspects of the question papers and marking schemes
- Subject Commission passes the draft question paper, on diskette, to the National Examinations Centre
- National Examinations Centre produces desktop published master version
- Chief Examiner and the Chairman of the Commission check the master version at the National Examinations Centre
- Revisions made and master version re-checked
- Final version held at the National Examinations Centre prior to printing.

Whilst this procedure has worked well so far, it places tremendous pressures on the limited human resources of the Subject Commissions. It also leaves all aspects of checking to those who have been intimately involved with the paper's development and so cannot look at it with fresh eyes. This is widely recognised and one of the next steps will be to identify and develop additional expertise so that the Subject Commissions and the National Examinations Centre can delegate responsibilities without losing professional control.

Printing, Storage and Despatch

Printing of question papers and other examination materials is the responsibility of the National Examinations Centre.

For the first Matura examination, all this work was carried out in-house. This included desktop publishing, printing, and packing. The security that this brings proved a great asset when an unfounded rumour circulated just before the first examination that copies of Matura question papers had been thrown in waste bins by the printers and subsequently found and leaked!



Newspaper cartoon

After printing, question papers are packed in tamper-proof security bags and stored ready for packing according to the requirements of each school and, eventually, despatch.

Boxes of question papers and other examination materials are delivered by a commercial courier according to a strict schedule.

Preparing for Matura: Trial Examinations

As has been mentioned above, preparation for the introduction of Matura was given much attention.

There was a need:

to avoid student protest (memories of the student strikes of 1991 were still fresh in people's minds);

to gain teacher support (reports of teachers' boycotts of national assessments in the UK reached Slovenian newspapers); and,

to ensure that the National Examinations Centre could cope with the workload (the introduction of a new examination (GCSE) in the UK in 1988 encountered potentially catastrophic problems as Examination Boards buckled under the pressure of work).

Perhaps the most important element in this preparatory phase was the decision to run a series of trial and pilot tests.

The trial Matura took place between 21 May and 13 June 1994. A total of 26 schools and 960 students volunteered to take part. In the event, 618 students took the examination in five subjects. 76% of these passed and it was generally agreed that the results had met the expectations of schools and students. However, the trials had revealed several important issues which had to be addressed prior to the live examination.

Grading Procedures for Matura

In the absence of any objective or empirical evidence on 'standards', the grading of the trial Matura was clearly of vital importance. It was impossible to apply earlier systems because these had been based on arbitrary and ill-defined criteria. For example, in internal examinations, 50% was considered the pass mark regardless of the level of difficulty of the questions or the distribution of student scores[12]. So, for the trial Matura, Subject Commissions set their minimum acceptable standard for passing (threshold for Grade 2) and for 'excellent' (threshold for Grade 5) by analysing their question papers and the scripts produced by students against their own 'expert judgement' of standards to be expected in Slovenian secondary schools. Where possible, statistical evidence (e.g. from school oral grades and 'year grades') was also taken into account. This procedure reflects that used by examining agencies in the UK and by the International Baccalaureate Organisation.

Once these key grade thresholds had been set, the intermediate mark range was divided to give equal (approximately) bands for Grades 2, 3, and 4.

All Subject Commissions recognised the importance of this work and acted professionally in considering all the evidence available to them before presenting their recommendations. However, when the aggregated results were prepared for the National Matura Commission the consequences of correlation effects between subjects became clear: firstly, the combined failure rate was much higher than for any individual subject and secondly; the proportion of students failing in just one subject was relatively high (about 66% of all failures).

Acting on the statistical evidence available, the National Matura Commission made some adjustment of the Grade 2 threshold in key subjects such as Mathematics and Slovene and, in doing so, set approximate statistical norms[13] for the guidance of Subject Commissions for the live examination.

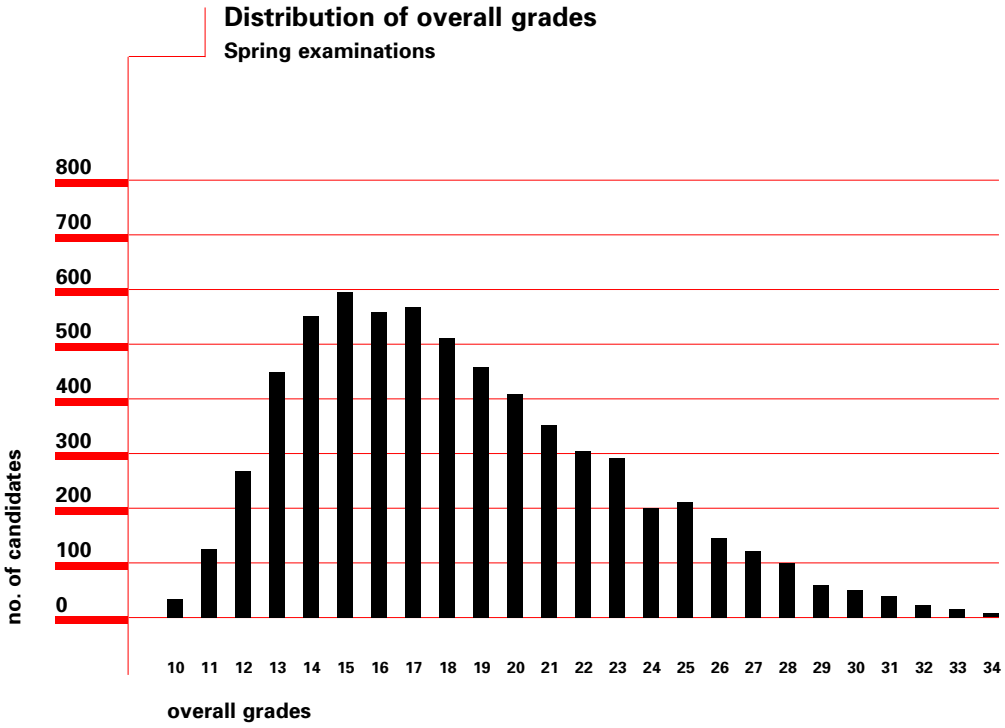
[12] Interestingly, some Subject Commissions have tried, with some success, to transfer this concept to their Matura examinations by building papers where the minimum acceptable level of achievement gains approximately 50% of the marks available. This leads to negatively skewed mark distributions and some restriction of the inter-quartile mark range but it does produce papers which reflect fairly closely the perceptions of teachers and students.

[13] It should be noted that these 'norms' are for guidance in large, stable subjects only and were not imposed on the Subject Commissions. The grading process remains grounded in criteria-related standards rather than being norm-referenced.

In addition, the regulations for passing Matura were formally amended to allow compensation for the 'nearly passing' (i.e. those who fail in just one subject). Under the new regulations, such students are awarded a passing grade (2) in the subject they have failed provided that they have achieved at least 80% of the pass mark in that subject and have achieved at least two grades 3's in the other subjects.

The quantitative and qualitative evidence gained during the trialling was made available to the Subject Commissions when they considered student achievement at the first full Matura grading meetings. The result was that the National Matura Commission was able to confirm, without adjustment, all the grade threshold recommendations made by the Subject Commissions for the 1995 Matura.

After adjusting results for near-passing candidates, an overall pass rate of approximately 85% was achieved. The distribution of Matura points is shown below.



Distribution of overall grade in Matura 1995 spring examinations

Resources Required for Marking Scripts and Processing Results

The National Examinations Centre's data processing system worked well for the trial Matura but it was quite clear that the much larger numbers expected for the live Matura and the very short period available for marking and processing would put the whole system under pressure. A particular cause for concern was the marking of English Language essays where the work of approximately 7000 candidates would have to be marked over a three-week period and where the number of trained markers was likely to be limited[14].

[14] In the event, five full days of training and standardisation seminars were organised by the English Subject Commission in the build up to the examination period giving a total of 101 markers (100 women and one man!).

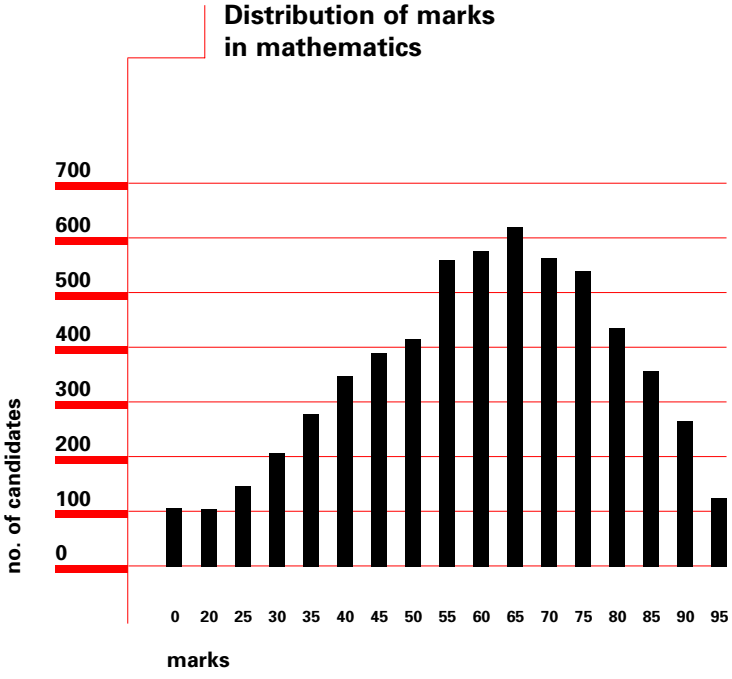
To increase its internal efficiency, the National Examinations Centre adapted many of its administrative systems to make use of automated technologies. For example, where possible, question papers were designed so that examiner marks could be directly scanned from candidate answer sheets even for non-objective questions. In addition, a bar-coding system effectively eliminated manual entry of candidate and examiner information. (More details are given in Section 9 below.)

Issues of Question Paper Quality

The trial Matura also brought home to Subject Commissions the importance of setting error-free question papers. It is true that the general level of accuracy was high but Commissions who allowed papers to be printed with typographical errors, a missing diagram, and an incorrect multiple-choice item quickly learnt that teachers have much higher expectations of external examination papers than they have of their own tests! Subject Commissions were more thorough in their checking of papers for the live examination, and the National Examinations Centre added another level of checking and proof-reading to its own quality control procedures. No significant errors were reported in the live examination.

The trial Matura and other pilot tests revealed another very important point to Subject Commissions: that whatever the actual level of difficulty of a question paper as determined by the marking scheme and the grade thresholds, the **perceived difficulty** of the question papers is extremely important. During the trials some of the major Subject Commissions were widely criticised for setting unrealistic tasks. Fortunately, they had the expertise to take this into account during the preparation of the live Matura papers. As is always the case, some subjects were still perceived as being 'tough' but the general level of criticism was low.

The hardest lesson was learnt by the Subject Commission for Mathematics which, having set a very reasonable set of papers for the trial Matura, set an extremely difficult pilot examination in January 1995 in a misguided attempt 'to show students what they should be striving for in Mathematics'. The outcry from teachers was angry and justified. Fortunately the Mathematics Commission immediately understood the consequences of their actions and re-worked their live Matura papers. The mark distribution achieved in the live examination (see below) shows that the papers were much more appropriate to the target population.



Distribution of marks in Mathematics (spring 1995 examination)

The organisation of the trial and pilot examinations leading up to the first full Matura examination were expensive both in terms of financial cost and human effort. However, it is clear that this was a very important phase in the development programme and one which should not be ignored by those wishing to implement similar reforms.

Preparing for Matura: Gaining Support

The introduction of any reform in education meets with resistance: the introduction of any reform in examinations meets with extremely strong resistance. Slovenia was no exception to this rule and those committed to the introduction of Matura had to work to overcome opposition and to gain support. The main groups to be convinced were universities, teachers, students, and the general public.

The universities were quick to recognise the advantages of the introduction of a more reliable system of assessment which they could use as a selection instrument. If they had voiced strong opposition or had not agreed to the use of Matura scores as the sole criterion for university entrance, then Matura would have been seriously undermined. The Universities of Ljubljana and Maribor were given representation on the National Matura Commission and, at least initially, played a dominant role in Subject Commissions[15]. The universities were also involved in identifying and approving subjects which they considered appropriate for Matura.

The teachers were, not surprisingly, much more wary of change. One of the main reasons appears to have been a reluctance to accept external measures of 'standards' into schools which hitherto had been used to internal regulation. Whilst it is **not** the intention in Slovenia to publish 'league tables' of school results or to link examination results to teacher appraisal, suspicion of such things is to be expected.

[15] The Chairperson of each Subject Commission is a university representative and initially, some appeared to dominate proceedings. However, as the development work proceeded a much more balanced dialogue developed and now in all Commissions school representatives play a decisive role in determining examination content.

A second objection stemmed from the belief of many teachers that they, and their students, would not be ready for the introduction of the new system. For many, Matura meant a reappraisal of their teaching programmes both in terms of content and of the standards expected of students. In addition, some of the assessment techniques specified in subject catalogues, whilst widely used in other parts of the world, were largely unfamiliar in Slovenia.

In order to familiarise teachers with the subject-specific demands of Matura, a programme of in-service teacher training was conducted for all secondary school teachers in all Matura subjects during the academic year 1993/94. The basic model was five-days of training delivered in two or three parts. Information was given about assessment for Matura and guidelines were given as to possible implementation strategies. The seminars were organised by the Board of Education with Subject Commission members leading the sessions. In all, about 130 seminars were conducted and about 3700 teachers were trained.

During the last two years of the preparation for the examination a lot of energy and time was used to discuss the new examination with students. Regional and individual meetings with students, their leaders and opinion leaders were organised where all questions were openly discussed. Some of the meetings were quite "lively". Many of the participants complained of a lack of information or ambiguous information given by their teachers. We were able to reassure them to a great extent. Such meetings were good opportunities to identify issues which were not clear enough. A leaflet "Matura – All you wanted to ask about it but never did?" was delivered to all students at the end of the primary school and all those at the end of the second year of secondary schools which were taking the decision to go to for Matura or the final examination.

Finally, a public awareness-raising campaign was conducted by the Ministry and by the National Examinations Centre in order to make sure that no-one in Slovenia remained unaware of the impending changes. Television, radio, and newspapers were all used to convey information about the development of Matura. For example, following the trial Matura a press report, including a brief analysis of the major results, and television interviews kept the public informed.

Of course, the press also carried stories criticising various aspects of the proposed changes and, closer to the examination, rumours of problems with examination security. However, in general, the Ministry was able to convey a positive image of Matura and to reassure the public that this was a well-prepared project with great emphasis placed on integrity and professionalism.

On a lighter note, the National Examinations Centre designed and conducted a public relations campaign using leaflets, posters, T-shirts, and even Matura postcards:

Matura postcard

The National Examinations Centre

Since the reintroduction of Matura was first suggested in 1989, its purposes and nature have evolved considerably. For example, what was originally envisaged as a university selection instrument only has developed into an examination where certification for school leavers is of considerable importance. In addition, whereas the relationship between school-based assessment and formal examination was at first unclear, the external controls are now well established.

As the nature of Matura became clearer, the role of a National Examinations Centre changed accordingly. The first step in this process was to remove the Centre from inside the Ministry's Board of Education where conflicts between curriculum and teaching issues on the one hand, and assessment issues on the other, were already starting to create tensions[16]. The establishment of an **independent** Centre was central to the success of the project.

[16] Curriculum, instruction, and assessment are inextricably linked but the prime functions of curriculum agencies and assessment authorities are not the same, nor are their methods. In a healthy system, there will, of course, be strong links between all key partners in education. For example, close cooperation between the Matura Subject Commissions and the Board of Education in the field of teacher in-service training has been important.

Whilst the Examinations Centre is independent, it does not have responsibility for Matura policy since this rests with the National Matura Commission. Nor does it, in theory, have responsibility for Matura question papers since these have to be produced by Subject Commissions. Indeed, the Centre was originally constituted to be a service centre, supporting Matura Commissions on administrative matters. However, such a demarcation of responsibility is unworkable and, in practice, the Examinations Centre has become the focal point of Matura. It offers evidence and advice to policy makers, develops all the administrative systems without which Matura would collapse, and provides professional support to Subject Commissions. This blurring of constitutional responsibilities has been allowed to occur **because it works**. Indeed the pressures of having to work together to produce Matura according to tight and inflexible deadlines has improved the relationships between the key partners!

An important factor in the development of the Examinations Centre has been the recognition of the need to establish:

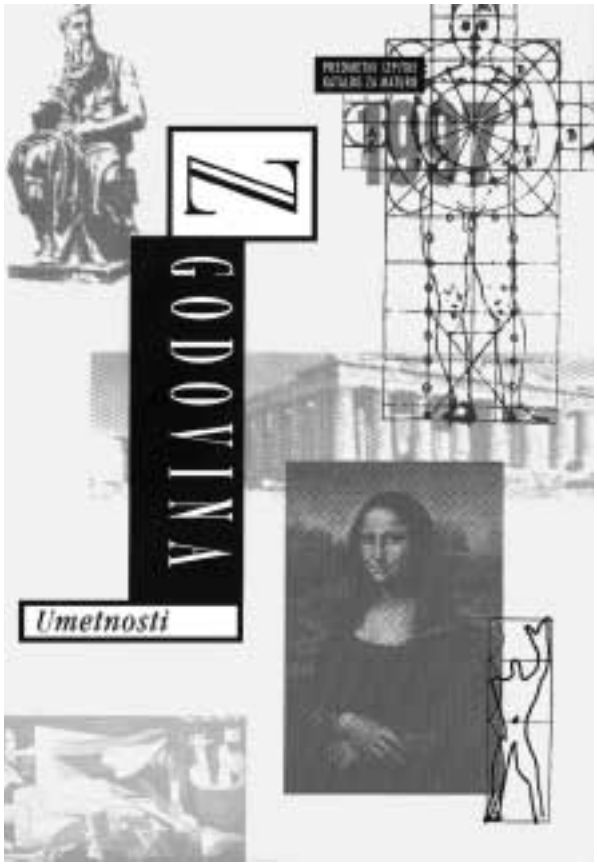
- a corporate identity;
- a reputation for professionalism and reliability; and,
- a philosophy based on providing the best possible service to education.

Good communication is a key success factor in all phases of delivering an examination. The National Examination Centre has carefully prepared and conducted a series of activities to ensure communication with “end users”: candidates, teachers, schools and public. Beside written communication, regular meetings were also organised with headteachers of schools and Matura coordinators in secondary schools who became partners in the whole process. The positive image of the Centre as the focal point of all activities for the examination has been created, based mainly on the constant work of keeping schools informed and giving them the feedback they needed.

The earliest evidence of some aspects of this can be found in the production of the Matura catalogues; the first task of the newly established independent Centre in 1993. Rather than just printing uninspiring documents, a designer was engaged to design each of the catalogues. The result was a series of colourful books which, notwithstanding any criticism of the contents, looked new and professional.[17]

A similar approach was adopted for the design of the Examination Centre's logo reproduced below. The image it tries to create is one of newness and youth as opposed to staid tradition. It also, albeit in a small way, puts some colour back into education.

[17] For some this may seem like an expensive extravagance but in Slovenia art and design are considered to be extremely important. Ljubljana is, for example, home to the largest biennial exhibition of graphic design in Europe. In addition, the cost of using a professional designer is low when calculated as a proportion of overall production costs.



Catalogue for History of Art (cover)

The Centre's motto, *Scientia Est Potentia* is also felt to convey a message about the Examination Centre's commitment to promoting knowledge rather than just measuring it.

National Examination Centre's logo

National Examinations Centre

The National Examinations Centre's philosophy is incorporated in a system of basic principles, values and rules, which has been accepted by the Centre's employees as the guideline for their work.

The Centre's values and principles are:

- Our basic value is knowledge.
- We serve candidates and society.
- We respect the highest standards of ethics.
- We are accountable to candidates, teachers, schools, employers and society.
- We welcome feedback on our work.
- We are committed to research that creates knowledge and conditions for development in the field of assessment.
- We co-operate with all who are willing to contribute their knowledge to developing this field.
- In the centre of our work is the individual.

Of course corporate image and mission statements mean nothing without the ability to fulfil one's responsibilities, and so the Centre has tried to develop a staffing structure, physical resources, and procedures which will enable it to meet its commitments. However, it must be stressed that the Examinations Centre is, and is likely to remain, a small organisation.

The structure of the National Examinations Centre reflects its activities and will change as the new legislation brings new exams to it, but the basic structure will remain the same. Activities are conducted in different sectors which cooperate closely with each other.

Information Technology Sector

This sector is responsible for the information and examination processing system which has been set up for the Matura examination and will be upgraded for other examinations as well. It provides a high level information technology service for all activities. It is responsible for maintaining the Centre's leading role in implementing new technologies in educational administration.

Logistic Support Sector

The logistics sector is responsible for delivering the examination: packing question papers, dispatching them to schools and other examination centres, delivery back to the Centre, organisation of marking, preparing and distributing certificates, as well as all other activities during the preparation of the examination. External examinations are logistically very demanding because they must be conducted on a very tight time schedule.

Subject Areas Sector

Subject Area Coordinators give support to the Subject Commissions which prepare examination materials. Together with other experts from the Centre they provide information and technical advice to the Subject Commissions in matters of examination policy. They are also intended to conduct research and propose new developments in areas they cover.

Publishing Sector

Publishing and public relations are important parts of the Centre's activities. The Publishing Sector prepares examinations catalogues for external assessment, sets of examinations question papers and other standard publications for this particular field of activity. An important part of its operations is the distribution of information on examinations administered by the Centre to candidates, teachers and to the public. The Publishing Sector offers expert publishing support to all subject areas.

Research and Development Sector

Research and development work is essential for a dynamic assessment agency. Analysis of examination data, comparative studies, research into education and studies of different and new forms of assessment are main aims for this Sector. Subject Area Coordinators are expected to contribute to this activities.

> From the beginning the National Examinations Centre tried to build up and develop expertise in the field that did not exist before. Training and development work are for this reason very important issues. A good balance of people with different professional backgrounds and experiences, not only from teaching or education, is proving to be very successful.

International cooperation

Assessment is a very broad and fluid field in which exchange of information and expertise is extremely important. The National Examinations Centre has developed an extensive network of contacts and cooperates with examinations centres around the world (UCLES from Cambridge, UK, SIEC from Paris, International Baccalaureate Organisation Examinations Centre in Wales, New Zealand Qualification Authority from Wellington) and with international organisations (OECD, the Council of Europe). Through this cooperation both sides learn from each other. The Slovenian examination system is of great interest for many countries which are changing or plan to change their education and assessment systems. The National Examinations Centre can offer the benefit of it experience and help in many areas, basing solutions on local needs and educational traditions.

Financing

In Slovenia, school examinations are free from fees. The National Examinations Centre does not charge schools or candidates. Its main source of financing is from government allocation from the Ministry of Education and Sports budget. (Research funds make a small, additional contribution.)

Under the new Education Act, the National Examinations Centre will assume responsibility for some examinations in the field of adult education. This will allow funds to be raised from other sources including, perhaps, candidate fees.

Future Activities

The presentation to students of the first Matura certificates was a landmark in the Slovenian education development programme. However, the lessons learnt during the past three years mean that there is still much to do. Key objectives for the National Examination Centre include:

- publication of reports on the performance of candidates;
- further analysis of the performance of the examination;
- further research and analysis on the performance of the education system;
- evaluation of the impact of Matura;
- improvement of systems and procedures within the National Examinations Centre.

Reports for Teachers

One of the most immediate tasks facing Subject Commissions and the National Examinations Centre is the production of reports for teachers on the performance of students in each Matura subject. Some reports will include basic statistical data, for example, item statistics for objective questions, but the emphasis will be on providing helpful, qualitative information for teachers. Feedback of this sort will always be important but in the first few years of the young Matura it will be essential.

Research and Analysis

The rules for Matura have evolved over time, and 'standards' have been set for the first time. It is therefore essential that the National Examinations Centre conduct further analysis of the results to provide Subject Commissions and the National Matura Commission with empirical evidence on which to base policy decisions.

Topics for further study include:

- the consequences of applying the regulation concerning compensation for 'near-pass' candidates;
- the consequences of the various grading procedures for subjects offered at higher and basic levels;
- the relative level of difficulty of subjects; and,
- the relationship between school-based components and external papers.

Slovenia has two types of secondary school: gimnazija and technical schools. There appear to be significant differences in the performances of these schools but the pattern of differences is not clear. Analysis of Matura results may provide valuable information to educational planners and policy makers.

Evaluating the impact of Matura

There is already evidence to suggest that Matura is having an impact on the way teachers are delivering the curriculum in the classroom. The presence of the Matura catalogues has made subject teachers give due attention to all parts of the curriculum. In addition, the standards of Matura which have been conveyed through the trial examinations and teacher training sessions appear to be influencing the standards set in some schools during internal assessment. However, much of the evidence is anecdotal and there is a need to conduct a systematic study of impact, both on quality of teaching/learning and on the attitudes of teachers and students.

Similarly, there is some anecdotal evidence that since the introduction of the Matura students are doing better at university but there is no firm, empirical evidence. It will be important for the Examinations Centre, in collaboration with the universities, to track the progress of 'Matura' students and to monitor any impact on retention rates.

Setting new standards in administrative procedures

The National Examination Centre prides itself on having set new levels of professionalism in its work. However, it aims to do more and, in the process, meet international standards as defined by ISO 9000. Once achieved, the Centre plans to set up a formal recognition/accreditation system for schools wishing to act as examination centres.

The National Examinations Centre has already started to analyse all activities and procedures within the centre in order to set up an evaluation system and to obtain ISO 9000 certificate. All activities are carefully analysed and registered and detailed documentation is now being prepared. The system which is being set up allows the Examination Centre to control not only his but also activities of its partners and to ensure the highest quality in all its activities. This will help to build up confidence in the public examination system.

Conclusions and Analysis

The principal conclusion of this paper is that major reforms in educational assessment can be implemented without serious problems and that, in particular, external examinations can be introduced in countries where they have not existed in the past. However, all those involved in examinations and other forms of assessment know that such reforms are usually extremely difficult to bring about and in some countries prove almost impossible. The key question is therefore 'Why was such a reform successful in Slovenia?'

There are clearly many factors, but the most important are:

- local recognition of a significant need for change;
- sustained political commitment to change;
- willingness to allocate adequate financial resources;
- sufficient potential for the development of expertise
- willingness to draw on the experiences of other systems and to use external expertise;
- recognition of the need for good communications and strong relationships with the public and other partners in education.

Local recognition of a significant need for change

Reforms are more likely to be successful when they address a need which has been identified by the society concerned, rather than by outsiders, and when that need is felt to be important.

In the case of Slovenia, problems with the career education model and growing concerns over an alarmingly high attrition rate at the universities led Slovenian educationalists to a propose the reintroduction of Matura. It does not matter that the form of Matura was not clearly envisaged at that stage; the important thing is that this was a Slovenian proposal to solve a Slovenian problem[18].

[18] Projects where outsiders identify educational assessment as a problem but where the 'recipients' are not convinced that the existing system is flawed are likely to meet great resistance and make slow progress.

Since that time, there have been significant international inputs to the development of Matura. However, their influence has always been restricted to the areas where they met a Slovenian need. For example, it would have been tempting for foreign 'experts' to link the Matura reform with an overhaul of the curriculum but this was never seriously discussed. Quite simply, the existing curriculum was not seen as an immediate problem – assessment was.

Sustained political commitment to change

Educational reforms are complex and often meet with strong opposition. In order to be successful they need political support and this support has to be consistent; it has to be sustained throughout the implementation period. Practical support is required in a commitment to speedy legislative reform where necessary, and in a willingness to fight for sufficient and timely budgetary resources. Finally, success is much more likely when politicians are willing to show their commitment by speaking out in defence of reform – especially when the inevitable problems emerge.

Slovenia was extremely fortunate in this respect. The major part of the project took place following independence in 1991. Since the first nominations for the Subject Commissions, the same Minister has been in post and he has been a constant advocate of Matura. This took considerable courage since a disaster in the first examination would have damaged his reputation considerably.

Access to adequate financial resources

Sohisticated assessment systems, like the one chosen for Matura, are neither cheap to develop nor to maintain. Costs include: payment to Commission members: payment for assessment seminars; payment for international consultants; payment for overseas training and study tours; payment for teacher training; payment for Examination Centre staff; payment for printing; payment for distribution; payment for markers; payment for equipment; payment for office overheads ... and all before the first national examination takes place!

Not only is the overall budget requirement large, but examination projects need immediate access to contingency funds when unforeseen difficulties arise. For example, if a question paper is leaked, money must be available to print the backup paper immediately. There is no time to follow standard procurement procedures.

In Slovenia, these needs were recognised and, whilst money was not limitless, adequate funds were allocated, not just to provide the minimum but to ensure that quality could be maintained. For example, the Examinations Center has been able to invest in high-tech solutions to the problem of processing examination data in a very short time with limited human resources. This is already proving a wise investment, but initial capital costs were high.

Sufficient potential to develop the necessary expertise

Good question papers are at the heart of a good assessment system. It does not matter what theories and models of assessment are used, nor how sophisticated the technology employed: if the questions are bad, then the exam is bad!

All major projects in the field of assessment include elements of training for examination professionals and item-writers. In many, the general quality of output and the number of successful trainees fall below expectations.

In Slovenia, the general level of experience in the field of item writing and question paper construction was initially low. Some groups, for example Mathematics and the Natural Sciences, had started to develop their skills and had made progress, but their experience was still limited.

However, there were three major factors in the considerable success achieved in developing item writing skills:

- the level of general competence of the trainees – there was an extremely high degree of subject knowledge and a ready ability to comprehend new techniques and approaches;
- the ability of the international trainers[19] employed not only to communicate and demonstrate the 'rules' of good assessment but also to enthuse the trainees; and,
- the fact that those involved in writing catalogues and question papers were central to, and constantly involved in, the development process rather than being 'tools' used occasionally.

[19] Teams of trainers from the UK visited on four occasions conducting workshops of up to two weeks duration. In addition, the English Language Subject Commission was, and continues to be, supported by a British Council sponsored expert.

The most significant indicator of success is the progress made by those Subject Commissions, such as History and Mother Tongue, which not only started from a very low base but were also trying to introduce new approaches in their question papers. In these subjects, whilst there is still far to go, the present question papers are agreed to be of much higher quality than those produced at the start of the project, and the members show a far greater understanding of the principles underlying their papers and the statistical evidence that they produce.

Willingness to draw on the experiences of other systems and to make use of external expertise

Matura was designed to meet the needs of Slovenia and is strongly defended as a Slovenian initiative. However, right from the start there was a willingness to learn from other systems and to transplant the most appropriate models and technologies.

After studying a range of European systems, it was decided that experiences and methodologies from the British[20] General Certificate of Education (GCSE) and Advanced levels (A-levels) could be used as part of the development process. To facilitate this a cooperative link was formed with the University of Cambridge Local Examinations Syndicate (UCLES).

[20] Strictly speaking, this refers to the GCSE and A-level systems of England, Wales, and Northern Ireland but not Scotland.

In addition, two prestigious schools in Slovenia had, since 1989, been successfully using the International Baccalaureate (IB). This had made a strong impression on those involved and, in many ways, helped to prepare the ground for Matura as an external examination. IB[21] ideas were therefore also included in the design of Matura.

[21] Whilst the structure of IB is very different to that used in the UK, the assessment techniques involved and the question paper production and marking procedures are remarkably similar.

Recognition of the need for good communications and strong relationships with public and partners in education

In Slovenia, the dangers of failing to 'sell' the concept of Matura to all interested parties was recognised from the start. The extensive (and expensive) teacher training exercises and the public relations campaign were important in gaining the cooperation of teachers and allaying some of the fears of parents and students.

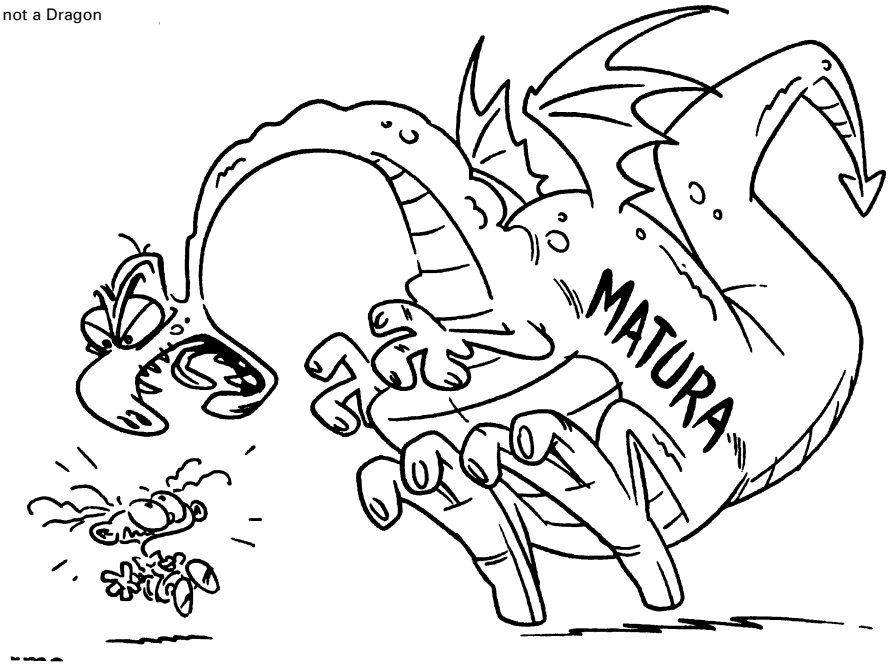
The trial and pilot examinations were also important in revealing exactly what Matura was going to look like and what was to be expected of students.

Finally, the involvement of Subject Commissions in the training of school teachers should not be underestimated.

Concluding remarks

A new system of external examinations has been introduced in Slovenian secondary schools with surprisingly few problems. The situation in a small, European country with relatively good resources may not be typical, but many of Slovenia's experiences will be of value to those planning similar reforms.

Matura is not a Dragon anymore



Appendix I:
Matura subjects – examination details

	levels	*No. of question papers*	*duration of examination (minutes)*	*% of marks from written part of exam*
Mother Tongues with Literature				
Slovenian	S	2	240	80
Italian	S	2	240	80
Hungarian	S	2	240	80
Mathematics	B, H	1+1	135 (+90)	80
Foreign Languages				
English	B, H	3+1	180 (+60)	80
French	B, H	3+1	180 (+60)	80
German	B, H	3+1	180 (+60)	80
Hungarian (for minorities)	B, H	3+1	185 (+45)	80
Italian	B, H	3+1	180 (+60)	80
Russian	B, H	3+1	180 (+60)	80
Slovenian (for minorities)	B, H	3+1	200 (+40)	80
Spanish	B, H	3+1	180 (+60)	80
Classical languages				
Latin	B, H	2+1	180 (+60)	80
Natural Sciences				
Biology and Ecology	B	2	180	80
Chemistry	B	2	180	80
Physics	B	2	180	80
Humanities/Social Sciences				
Geography	B	2	240	100
History	B	2	180	100
History of Art	B	1	120	60
Philosophy	B	2	240	80
Psychology	B	2	240	80
Sociology	B	2	240	80
Technical/Professional Subjects				
Art and Design Theory	B	1	240	70
Civil Engineering	B	1	180	100
Computing	B	1	180	70
Economics	B	2	180	100
Electrical Engineering	B	1	180	100
Geodesy	B	1	240	100
Law	B	1	120	100
Mechanics	B	2	180	80
Mining	B	3	240	80
Nautics	B	2	190	100
Woodworking	B	2	180	80

Appendix II:
Matura examination – subject structure

	written paper	*oral exams*	*experimental work*	*project work*
Mother Tongues with Literature				
Slovenian	■	■		
Italian	■	■		
Hungarian	■	■		
Mathematics	■	■		
Foreign Languages				
English	■	■		
French	■	■		
German	■	■		
Hungarian (for minorities)	■	■		
Italian	■	■		
Russian	■	■		
Slovenian (for minorities)	■	■		
Spanish	■	■		
Classical languages				
Latin	■	■		
Natural Sciences				
Biology and Ecology	■		■	
Chemistry	■		■	
Physics	■		■	
Humanities/Social Sciences				
Geography	■			
History	■			
History of Art	■	■		■
Philosophy	■			■
Psychology	■			■
Sociology	■			■
Technical/Professional Subjects				
Art and Design Theory	■	■		
Civil Engineering	■			
Computing	■			■
Economics	■			
Electrical Engineering	■			
Geodesy	■			
Law	■			
Mechanics	■			■
Mining	■			■
Nautics	■			
Woodworking	■			■

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