



Towards Modern Assessment Policies and Practices in Croatia

Project MAT09/HR/8/7



Final Content Report January 2010

Cito, Institute for Educational Measurement
The Netherlands



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1 Introduction

Croatia has implemented an extensive Education Modernization Process in which the national curriculum has been completely revised, new final examinations have been announced and new systems of monitoring educational progress have been put into place, among many other things. Both in the case of low-stakes monitoring systems and in the case of high-stakes implications of examinations, stakeholders - students and their parents, teachers and principals, and the universities - are much concerned about these new developments.

Cito, the Dutch Institute for Educational Measurement has been invited by the EVD, the agency responsible for international business and cooperation within the Dutch Ministry of Economic Affairs, to carry out a project to support the Croatian National Centre for External Evaluation of Education (NCEEE) in strengthening its capacity to achieve error-free, objective and dependable administration of the external evaluation of education.

This Final Content Report describes the various activities undertaken by NCEEE and Cito in the context of this project. Both the Beneficiary and the Consultant look back on a most successful project that has created opportunities for successful National Assessment in the service of the economic development of Croatia as a future member of the European Union.

Parallel to this *Final Content Report* with its focus on technical assessment issues a more general *Project Completion Report* has been published following the guidelines of the EVD for its evaluation of the project.

2 Project Particulars

2.1 Expected Results

For the project two main results have been formulated.

Result 1

- An evaluation of the first National Assessment carried out for Grade 2 in Gymnasium with a view to improving its content and its procedure.
- Revised procedures for the administration of National Assessment in Primary Education have been produced and implemented

Result 2

- Stakeholders made aware of (improvements in) National Assessment procedures;
- Strong links between the Centre and the Ministry of Science, Education and Sports;
- A procedural relationship is established between curriculum development and assessment data.

2.2 Project Management

NCEEE has created a management team with Director Mr Goran Sirovatka heading a triangular team consisting of:

- Ms Jasmina Muraja – project coordinator and responsible for quality assurance;
- Ms Jasminka Buljan Culej – test design, data analysis and psychometrics;
- Ms Anja Habus Korbas – statistics, sampling, databases, item banking.

Cito has provided the expertise needed in this project by the following consultants:

- Managerial and policy issues: Mr José Noijons
- Psychometrics/data management : Mr Frans Kleintjes
- Questionnaires/data management: Mr Jesse Koops
- Croatian language/foreign languages: Ms Erna Gille/Ms Anneke de Graaf
- Mathematics: Mr Paul van der Molen

Note: At the request of NCEEE and with the permission of EVD, Ms Gille was replaced by Ms de Graaf in the final stages of the project to create a link between the assessment of Croatian Language and Foreign Languages, Both in future National Assessment and in Matura it was felt a synergy needed to be created between these assessment areas.

2 Report on Activities

The project plan lists two (related) results. The activities related to these will be discussed in this chapter. There have been three working visits. During the first visit to Zagreb (June 2010) the Cito experts together with the staff of the NCEEE have worked on the evaluation of the first National Assessment. Discussion groups on National Assessment have been organised with NCEEE staff and other stakeholders. A more detailed report of this activity was published in June 2010 in the Interim Report. During the second visit, by NCEEE staff to the Netherlands, October 2010, representatives of NCEEE studied many technical issues related to external assessment in the Dutch context. The third visit by Cito to Zagreb (November-December 2010) was devoted to the dissemination of project results and the exploration of further cooperation.

The Cito experts closely cooperated with their counterparts in the NCEEE responsible for language issues, Mathematics issues, questionnaire issues, psychometric issues, and managerial and policy issues. In order to achieve the project results the Cito staff members have also worked closely together with the NCEEE staff by means of long-distance contacts through various means to make the exchange of larger documents possible.

2.1 Result 1

Result 1 is described as follows:

- A An evaluation of the first National Assessment carried out for Grade 2 in Gymnasium with a view to improving its content and its procedure.
- B Revised procedures for the administration of National Assessment in Primary Education produced and implemented

In an earlier project of cooperation between Cito and NCEEE a first National Assessment was carried out for Grade 2 in Gymnasium. The results of this National Assessment have now been published in a report in the Croatian language. A translation in English has been made. This translation has been the basis for discussions between Cito experts and their counterparts.

This report was evaluated following the strategic plan for the implementation of national assessment: standards, guidelines, procedures, that was developed in the 2008-2009 Matra Project. This document describes a Strategic Plan for the implementation of National Assessment and provides standards, guidelines and procedures how to carry out such an assessment or survey.

The procedures for the administration of National Assessment in *Primary Education* that have been developed by the NCEEE, have been reviewed and revised making use of the experiences and the evaluation of the National Assessment carried out for Grade 2 in Gymnasium. For this the standards, guidelines and procedures in the Strategic Plan were used.

2.1.1 Croatian Language/foreign languages

Cito visit June 2010

The Croatian Language Group studied the document on Standards, Guidelines and Procedures in great detail. The general impression has been that the document does reflect what is needed in

carrying out NA, but that it lacked precision in places and that the ordering of subsections was not always logical. The document has since been revised.

In future the Croatian Language group hopes to be gathering information on:

- reading habits outside the class room
- how teachers stimulate/ encourage students to read outside the class room
- characteristics of a good teacher in terms of communication skills and personal motivation and in expertise (teaching skills and subject skills)

to see if there is a connection with student performance/achievement.

NCEEE Study Visit October, 2010

The present situation in the Dutch testing of Mother Tongue was presented and discussed by a Cito Mother Tongue specialist. The introduction of new item writers to the test construction groups was explained, taking Mother Tongue as an example. This was interesting in connection with some new plans for the training of item writers for future exams and assessments in Croatia. Details of the subjects in the Dutch final exam were discussed going from domain to items.

Cito Visit November/December 2010

The atmosphere in which the meetings and the discussions took place was very pleasant and cooperative. The group discussed the fact that the part of the first National Assessment of Mother Tongue contained items in the three domains of Theory of literature, Grammar, and Reading. The domain of Reading included items on literary and on non-literary texts. The weight of the literature part was rather high compared to the other domains.

Now that the new curriculum in Croatia has been introduced, the focus in the domains to be tested in National Assessment will change. New is the introduction of Writing. The marking and scoring of open-ended tasks in this domain will be a challenge.

The domains of Reading of literature, Reading of functional texts and Grammar will continue to play an important role in the next cycles of National Assessment. The idea is to gradually increase the number of so-called functional texts in the assessment.

With the appointment of a specialist in the assessment of Foreign Languages, it has become important to align language assessment procedures. The group focussed on and discussed issues that play a role in 'daily life' test construction, not only in the test construction of testing materials for Mother Tongue, but also for the Foreign Languages. Procedures for both domains should be similar if not identical, and care must be taken that what is tested in Foreign Languages has not already been tested in Mother Tongue. Further topics discussed were among others:

- the importance of the training of item writers;
- the question of how to find authentic materials for the different levels in education;
- how to develop items to test the various reading strategies;
- the different phases of the work in which screening (internal and/or external) of the materials is needed.

The group concluded that in the future a synergy in the workflow between Mother Tongue and the Foreign Languages can help the process of quality assurance.

2.1.2 Mathematics

Cito visit June 2010

The Mathematics Group studied the document on Standards, Guidelines and Procedures in great detail. It was felt that the guidelines and procedures were formulated in a clear, precise and helpful way for putting National Assessment into practice. A few minor changes have been made.

Discussions were held on curriculum change. How can this be organised? What is the role of the NCEEE in this? And which role will National Assessment play in curriculum change evaluation? When National Assessment will be held in primary education the centre has to develop an assessment framework. In the Mathematics working group it was discussed in which age group testing would be most useful and efficient. Preliminary thoughts indicate that grade 7 or beginning grade 8 seem to be most suitable.

In June 2010 the Mathematics group still lacked a permanent staff member in the NCEEE. The Centre depends on the willingness of people from the university to take the lead in this group.

Cito Visit November/December 2010

The goal of the meetings of Mathematics specialists was to discuss the present and future developments in National Assessment of Mathematics. Recent developments were discussed. The new curriculum framework had been finished and was published in summer 2010. The leader of the Mathematics construction team had contributed to the Mathematics section in the curriculum. She mentioned that the new curriculum promotes a dramatic change in Mathematics education. As a consequence of criticism in Croatian society it was decided to change the style of Mathematics into a form with much more applied Mathematics. In line with this change, two new domains were introduced: statistics and probability and spatial geometry. It is envisaged that teachers need to be trained thoroughly in order to prepare them for this new curriculum. Funds for this training are not yet available which makes it unclear when the new curriculum will be put into practice.

From the perspective of National Assessment the present situation is interesting. The topics of statistics and probability and spatial geometry are (almost) not being taught at the moment. A National Assessment is planned in 2011 which will allow the NCEEE to do a zero-measurement. The consultant suggested to focus on these two new domains first. It will be interesting to have a National Assessment again a few years after the introduction of the new curriculum. Besides this evaluation of the new domains the National Assessment will be able to measure the change in skills on the more traditional domains as well. A change is expected because more applied Mathematics is used in the lessons. Having more applied Mathematics could also have an effect on student's attitude towards Mathematics. This, as a consequence, could have a positive effect on learning Mathematics. Therefore it would be interesting to measure this effect.

Preparations for the National Assessment in 2011 were in full swing. This assessment will focus on students in the last year of primary school (age 13-14). According to the Cito consultant preparations were being carried out according to the procedures and guidelines as adopted by the NCEEE. They were being carried out completely independently, without help from Cito or other outside institutes. This is a remarkable and satisfying result of the efforts done in this project so far.

Questions were asked by the NCEEE staff regarding the use of the Bloom's taxonomy in item writing and on the relation that can be introduced between tests for one age group as well as between tests for one cohort. The consultant provided answers to these questions.

2.1.3 Psychometrics

Cito visit June 2010

The main findings of the Psychometrics group have been that job descriptions and responsibilities should be clearly set out before the project starts. This would especially be applicable for the statistics and the psychometric groups. In addition, the role and responsibilities of the Questionnaire Group in relation to the Statistics and Psychometrics group should be clearer.

A meeting with the Questionnaire and Statistics group was arranged. The main conclusion of this meeting was that a better communication between the groups should be established. It was the opinion of the joint group that a number of communication problems would most likely not have occurred if proper job descriptions and responsibilities had been set out in advance.

It should be noted that testing in grade 4 and 8 national tests already exists on sample basis. The group proposed to do National Assessment in Grade 8. The proposed subjects are Croatian Language, Mathematics, English, History/Geography and Physics.

It was remarked that assessment of the key competencies should be considered, rather than assessment of separate subjects. Key competencies might be defined as learning outcomes in curriculum development. Secondary school teachers might provide information to describe of the minimum competencies required for entering secondary education. This would also comprise competencies like *Learning to Learn*.

It would be interesting to research the relation between resources available per region/authority and student achievements in these regions and authorities. In primary education, it would also be desirable to do National Assessment at the end of grade 5. Up to this grade, one teacher is responsible per grade, from grade 6 each subject is taught by a different teacher.

NCEEE Study Visit October, 2010

Standard setting related to scoring and grading was presented with examples from different test such as National Assessment vs. national exams. These issues are very important and yet to be completely established in Croatia. It is important to achieve objective and error-free marking schemes that lead to setting the standards. There have been long discussions among experts in the Netherlands on how to set cut-scores.

Specific parameters for the development of item banks were discussed in a small group. Problems were observed in marking items, notably with polytomous items. Every marking category for polytomous item needs to have an ability linking it objectively with students' work. Standard setting was also discussed as important tool for the comparison between expert expectations and the actual student achievement in an exam.

Cito Visit November/December 2010

One topic of discussion has been how NCEEE can increase the motivation of students (and teachers) to participate in national assessments. It was suggested to motivate the teachers, and explore possibilities to make the tests in National Assessment more awarding for students. Try to find a way how students and teachers can gain something from National Assessment. In the Netherlands we find differences between achievements under different conditions, between high stake tests en tests in National Assessment.

Another topic has been the role of National Assessment in the process of Quality Assurance. The results of the National Exams of 2007-2008 are used in the self-assessment of schools to date. Possibilities were discussed to use National Assessment data for this purpose.

Regarding special tests for children with special needs major adaptations in tests for children with special needs were highlighted. These adaptations consist of lengthening testing time, different compositions of tests, shorter tests and even more clearer and precise formation of test items.

Methods to construct valid ability scales were reviewed, with special attention to the ability scales used in Student Monitoring Systems.

The transformation of the ability score used in the reporting of the results of the National Assessment in second grade Gymnasium was discussed. It was concluded that the graphs presented in the report were correct using a transformation of the ability of $*50+250$, although a transformation leading to a mean of 250 and standard deviation of 50 was originally intended. In the latter case all graphs would have been identical, that is all would have a mean of 250.

The group also discussed Dutch tests of basic levels of Mathematics and Language to increase the basic levels at various crucial moments in a student school career. These are a series of tests intended to be taken at different periods in a student carrier: from the end of primary education to higher vocation and university level.

NCEEE staff expressed a strong desire for a further strengthening of the role of Cito experts in the quality control of the reporting on NA. It was advised to consider a clause in future contracts to enable Cito to check on the final reporting. If the Cito logo is on the report, Cito's reputation is at stake.

The position of the psychometricians in the NCEEE organization was discussed. In the current situation, members of staff dealing with psychometric issues are placed in different departments. It was expressed that it could be considered to group such staff in a psychometrical (research and support) unit in order to further develop professional skills to ensure capacity building in the area of psychometrics.

2.1.4 Collection of background data and data management

Cito visit June 2010

The group discussed the construction of a conceptual framework in some more detail. Three general purposes for background questionnaires in National Assessment were discussed. The first is to gather descriptive information about the population and the context of education. The second is to use data from contextual questionnaires to define subgroups of the population (e.g. type of student, type of teacher, gender, SES) to be able to report results on the achievement tests per subgroup. The third goal can be to identify factors that are associated (e.g. correlate) with student achievement.

In the conceptual framework all the constructs have to be clearly defined. In addition, predicted relations between constructs and student achievement have to be explained, either empirically or

by logical argument. The constructs form the basis for the questions in the questionnaire. Questions need to comply with the guidelines.

With regard to communication between the sampling and the questionnaires groups it was decided that the questionnaires group should discuss in an early stage goals and purposes of the questionnaires with the sampling group. It is possible for the sampling group (either through stratification or the use of existing databases) to provide information about several demographic variables, so that the length of the questionnaire can be somewhat reduced.

It was decided that subject specific groups should be used as a source of information on the constructs that are relevant to their subject (e.g. teaching styles, subject specific content, type of homework) and can introduce subjects that they consider important. The questionnaire team should take the lead in this discussion and has the final say in which constructs will be part of the questionnaire. It is of course important to reach consensus with the subject specific groups if at all possible. The questionnaire team is also the only party responsible for operationalizing the constructs. *The subject specific groups do not produce questions.*

It was decided that the questionnaire group will in future NA's disseminate the conceptual framework to the psychometrics group and discuss the ways of analyzing and reporting questionnaire data before the actual assessment takes place. The psychometrics group can comment on psychometrical and reporting issues with the questionnaire or individual items. The psychometrics group will not concern itself with the content of questions or constructs.

NCEEE Study Visit October, 2010

The use of background questionnaires was presented by a Cito expert and then discussed in relation to different topics. The responsibilities and roles of different parties in the development of background questionnaires were discussed in relation to the present situation at NCEEE. The importance of the existence of different viewpoints and harmonizing between them was emphasized. This is necessary from the development of background questionnaire framework to the production of actual questions related to special topics.

Data processing was described in terms of the administration and the logistics of assessments and examinations. Special attention was given to final examinations. This included organisational settings at Cito, DUO and other parties involved in the administration of Matura. It was new to NCEEE staff that in the Netherlands marking is done by teachers in school with the names of pupils known to them; the second marking is discussed among colleagues. This is rather different from NCEEE experience so far and it created a good insight into different possibilities. Also, the specific program WOLF developed by Cito and now used by schools for the provision of data was described in 18 steps. The WOLF tool proved to be a versatile and reliable computer application for schools as well as for Cito in the analysis of data whose analytical work continues after first and second teacher input of data.

Cito visit November/December 2010

In the questionnaire development group the following topics were discussed:

- Validity issues: to what extent do background data reflect the real situation that the questionnaires are to explore; what theory supports the relevance of certain background variables;
- Construct operationalization: how to define - in questionnaire terms - the background information that questionnaires are to explore;

- Formulation of questions: once constructs have been defined, how to formulate questions that will tap aspects of the construct;
- Layout of questionnaires: how to make sure that questions are clear, non-confusing and efficient;
- Preventing non-response (school, student and question non-response);
- Communication with stakeholders: how to relate with stakeholders before, during and after the NA.

This was done with the aid of a questionnaire that was previously developed to target the Roma population.

2.1.5 Managerial issues

Cito visit June 2010

The NCEEE Director has emphasized that the various units within the NCEEE need to cooperate closely in the project and indeed within the institute. The different departments should communicate more about their requirements from other departments. Communication problems can be avoided if clear job descriptions and responsibilities are set out.

At present it would seem that there is no human resource management. It was found that NCEEE staff have many tasks, too many in fact to be able to give sufficient attention to each detail in NA. Job descriptions should be clear. The role and position of a statistics department and the psychometrics department should be made clearer. Also, the need for a logistics department is widely felt. At present logistics is a shared responsibility.

It is of importance to be clear in the initial stages of the survey who is to report on what. It is also to be decided at which stakeholders the report is targeted.

NCEEE Study Visit October, 2010

At Cito the Dutch National Assessment project (PPON) was described historically from its beginning in 1989 to its present development. The project is conducted in primary education; it is a research project of which the results are presented to Ministry of Education for policy making. This is an interesting topic for NCEEE from the point of view that it has been an on-going research project whose aim is proposed by Cito experts and then approved and accepted by Ministry for the benefit of the educational system. Also it was interesting to hear that those results are used in combination with results from Cito test and Pupil monitoring test to make clearer picture and wide conclusions on schools and system.

The Cito Pupil Monitoring System (PMS) in primary education was presented. This kind of approach is quite new to NCEEE staff; it is very relevant for the future planning of quality assurance in primary education. It was also important to learn that schools themselves are interested in PMS and other related instruments. Schools use these to follow a student's progress but also for finding out about school performance and for school improvement. Details such as the dynamics of test administration, the equation of tests and standard setting through pupil reports were explained. The role of Cito as an expert organisation in test construction was emphasized but the responsibilities of the schools were also made clear.

Legal issues in the administration of tests were discussed in detail according to NCEEE questions on this topic.

Marketing and consulting are important elements in the Cito organisation and were briefly explained through a presentation which covered the three departments responsible in this area, with their roles and job descriptions. Also, all kind of Cito products and customers were discussed with an emphasis on competition and customer needs.

The issue of special needs was briefly discussed at the request of NCEEE. Descriptions of possibilities for pupils with special needs were given and some special cases discussed. Pupils with special needs have two options from the beginning of their school career depending. They are either sent to special schools or they attend regular schools with some special care given to them. They are to take standard assessments and exams but according to their needs test materials may be adapted. It is important to include such special standards from the very beginning of test development. This could be a good lead for future work in this segment at NCEEE.

Cito ICT systems were briefly described with attention paid to several main topics such as the importance of the requirements for a generic system. Also the design of an item bank was briefly introduced on a general level with new computer-testing possibilities.

Cito Visit November/December 2010

During discussions with NCEEE staff a number of issues were addressed. These are listed below.

- It appeared that the Centre does not have its own Public Relations officer and that the Centre depends for its PR on the Ministry. For a number of reasons this is not the most ideal situation: the Ministry is not sufficiently knowledgeable on all the technical issues in informing stakeholders about external assessment. The Consultants feel that PR is an integral part of the work of the Centre.
- It was emphasized again that the new psychometric unit should be a support unit in the service of all departments. It should be independent, yet it should not prescribe what needs to be done in psychometrics. It should aim at working together with departments and where there is disagreement the Head of the Centre should have a final vote.
- In some NCEEE departments staff members are to keep track of hours worked on tasks. In other units this is not yet common practice. It would be advisable for the planning and monitoring of NCEEE activities to introduce a standard tracking system for hours planned and worked.
- The Centre does not have a Human Resource Officer/Department. For an efficient planning and monitoring of *all* NCEEE staff it would be advisable to have a dossier system in place that is based on "controlled trust". Staff members are to report to their respective heads regularly, making use of standardized forms and procedures

2.2 Result 2

Result 2 is described as follows:

- Stakeholders made aware of (improvements in) National Assessment procedures;
- Strong links between the Centre and the Ministry of Science, Education and Sports;
- A procedural relationship is established between curriculum development and assessment data.

2.2.1 Communication with stakeholders

Cito visit June 2010

In the course of the 2008 – 2009 Matra Project a document was compiled on the necessity of the NCEEE developing a Communications Plan. A strategy needs to be developed for the dissemination of the outcomes of National Assessments and other projects within the NCEEE. It was acknowledged that communications, especially with the media, should be pro-active. Careful attention should be paid to what needs to be released to the press and other media, so that the NCEEE would not be the passive subject of (often negative) media coverage. The NCEEE would be able to put forward results in a positive way and thus present a positive image to the stakeholders.

Cito visit November/December 2010

In Zagreb, on 30 November the NCEEE organised a conference for all stakeholders in external assessment *National Assessment: Towards Evidence-based Changes in Croatian Education; meeting the challenges of economic development*. The conference was attended by over one hundred participants representing a great many different stakeholders, such the Croatian Parliament, the Dutch Embassy, the Ministry of Science, Education and Sports, the Ministry of Economic Affairs and Labour, various Governmental Councils, the Chamber of Commerce, various universities, teacher associations and unions, the teacher-training agency and the agency for vocational education and others. The conference was well-organised with speakers concentrating on issues of National Assessment (NA) only and strictly keeping within the time allotted to them. In Annex B a full report of the conference is given with a list of topics that were discussed by the various speakers.

2.2.2 Links between the NCEEE and the Ministry of Science, Education and Sports

Cito visit June 2010

The Director of NCEEE and a representative from Cito visited Ms Monika Vričko who is head of the Quality Assurance Department in the Ministry of Science, Education and Sports. The department is responsible for external examinations and surveys and uses the data gathered in such tests for quality control and improvement at school and national level. The Ministry is particularly interested in data on the performance in VET schools and the comparison with Gymnasium. Ms Vričko would welcome National Assessment in that area.

NCEEE Director Mr Goran Sirovatka, Ms Jasmina Muraja, NCEEE Project Coordinator, and Mr Noijons from Cito paid a visit to Dr Dijana Vican, State Secretary of Science, Education and Sports. Dr Dijana Vican also emphasized the importance of the present project, and in particular its relevance to curriculum development. The foundation of the NCEEE was a first step in this development.

NCEEE Study Visit October, 2010

The Dutch PPO project presents its results to the Ministry of Education for the purpose of policy development. This is an interesting issue for the NCEEE in that it has been an ongoing research project whose aims are defined by Cito experts, which are then approved and accepted by the Ministry for the benefit of educational policies.

The visit to CVO (*College voor Examens*) has exceeded the expectations of the NCEEE participants in that it gave a very broad and at the same time detailed picture of the CVO organisation including roles description and test construction. A presentation on the above topic was given and many answers were given to specific questions on syllabus issues, exam programme and test construction. Materials were also kindly shared with participants in order to for

them to gain new knowledge and possibly include some of experiences to present situation or future plans at NCEEE.

The presentation covered the institutional setting of the CVO organisation from its Board to the subject specialists. It also referred to documents such as exam programmes, syllabus and test construction. This will be of much use in further work of NCEEE in establishing improved administration of exams in Croatia,

Another visit was paid to the Dutch Ministry for Education, Culture and Science. A representative of the Department for Secondary Education described the Dutch educational system from different perspectives. Other topics discussed were institutional settings and the role of the Ministry as a governing body. In comparison, the position of the Ministry and the institutional roles and settings in Croatia were found to be similar.

Cito visit November/December 2010

During the conference for all stakeholders in external assessment *National Assessment: Towards Evidence-based Changes in Croatian Education; meeting the challenges of economic development* the Ministry specifically urged NCEEE to assist in a number of activities related to external assessment, such as the assessment of previously acquired competences.

2.2.3 Procedural relationships between curriculum development and assessment data

Cito visit June 2010

Dr Dijana Vican, State Secretary of Science, Education and Sports emphasized it would be senseless to change the curriculum without having data on how students perform at the moment. Similarly, changes in the curriculum need to be monitored through the collection of data on their success. The NCEEE seems well-equipped to collect such data.

The State Secretary mentioned that a new National Curriculum Framework (NCF) is due to be published at the end of June 2010. A translation in English will be available in the autumn of 2010. The State Secretary hopes that during the second visit of the consultants the relationship between the NCF and National Assessment can be further discussed.

Dr Dijana Vican would like National Assessment to focus on the subjects of Croatian Language, Mathematics and Natural Sciences as these, among others, have shown to need better monitoring. At present good marks given to students do not necessarily mean that students perform well on an independent national scale. If National Assessment shows that students do not perform well enough according to national standards, the teachers must not automatically be blamed. Rather, the country should try and adopt modern methods of teaching and train present and future teachers in applying these methods. The universities play an important role in this as they are responsible for teacher training. The NCEEE should be careful in approaching the (independent) universities in explaining the results of NA.

In the past few years most attention has been paid to the improvements of secondary education. Now the time has come to focus on primary education and to make sure that its quality becomes comparable to that of secondary education. The Department for Quality Assurance needs to play an important role in making this happen. The State Secretary has expressed the wish that in all these developments other agencies and departments, such as VET and Teacher Training cooperate.

Cito visit November/December 2010

Now that the new curriculum framework has been published plans have to be developed for the assessment of the success of this new curriculum. It is proposed to do a zero measurement before the curriculum is implemented to be followed by regular (four-year) cycles of NA.

3 Conclusions and Recommendations

3.1 Conclusions

The project has been successful in achieving all its aims as defined in Results 1 and 2:

Result 1

- An evaluation of the first National Assessment carried out for Grade 2 in Gymnasium with a view to improving its content and its procedure.
- Revised procedures for the administration of National Assessment in Primary Education have been produced and implemented

Result 2

- Stakeholders made aware of (improvements in) National Assessment procedures;
- Strong links between the Centre and the Ministry of Science, Education and Sports;
- A procedural relationship is established between curriculum development and assessment data.

The NCEEE has increased its capacity and skills for the development of adequate tests and testing procedures. Furthermore, the NCEEE and the Ministry of Science, Education and Sports have now joined hands in developing strategies for continuous improvements on the basis of the outcomes of assessments. Besides capacity building and training, this has meant revising the strategy and focus of external assessments, applying current European insights in the education field.

In the project Cito, the Dutch National Institute for Educational Measurement has been active in supporting the NCEEE in strengthening its capacity in educational assessment knowledge and skills through a capacity building program, including training of the NCEEE staff and external experts, and through assistance with the development of future strategy for the implementation of external assessment, including recommendations for improvement.

Both the NCEEE and Cito look back on a most successful project that has created opportunities for successful National Assessment and external assessment in general in the service of the economic development of Croatia as a future member of the European Union.

3.2 Recommendations

- During the consultancy period the number of NCEEE staff has been increased, yet it would seem that for the various tasks that the NCEEE has to carry out, there is still a need for more staff members, certainly in the area of Public Relations, Communication and Human Resource Management. It would be very useful to have job descriptions for all staff members.
- The NCEEE will need to further develop its management structures, with special emphasis on Public Relations, Human Resource Management and Time Planning. Consultancy on these issues would be most welcome.
- It would seem that future funding will have to come from the EU, rather than from the Netherlands. There are a number of EU programmes which the work of the NCEEE relates to. Such programmes focus on:
 - Promotion of Equity
 - Fight against Corruption

- Regional Development
- Education of Roma People

The NCEEE is strongly advised to contact the EU bureaus in Zagreb to discuss the possibility of joining some of these programmes. The Cito project director has promised his help in addressing these issues.

- The NCEEE can play an important role in the certification of the skills acquired through non-formal education and of previously acquired competences. Both the Ministry and the Chamber of Commerce are prepared to contribute to this certification process.

Specific suggestions from NCEEE

During their study visit to the Netherlands the NCEEE also made suggestions for future collaboration with Cito. The main points follow below.

- Future collaboration brings new possibilities for consultancy in specific areas such as instruction on software for test construction developed by Cito and joined work in regional development.
- In the near future one-to-one consultancy will be needed with an emphasis on psychometric work. Therefore it was proposed that NCEEE psychometric team could join Cito to further develop competencies which are established in prior projects.

Annex A Report of a Study visit by NCEEE to Cito, 4–8 October 2010.

The following report has been submitted by staff members at NCEEE.

National Centre for External Evaluation of Education has established the collaboration with Dutch examination centre Cito since 2008. With first project Development of Instruments in Croatian National Assessment in two years time NCEEE has been consulted by Cito experts throughout first National Assessment. This has taken place in secondary school with emphasis on two subjects: mother tongue and mathematics. Aims of the Project have been reached and the results were presented at Conference in September 2009. The Project has also ended in September 2009 with reports and mutual agreement to extent the collaboration if possible.

The second project was then proposed and accepted as short Matra flex programme. This new project under title *Towards modern assessment policies and practices in Croatia* started in June 2010 with first visit from Cito experts and will finish with Conference in December 2010. One 5-day study visit of NCEEE experts to Cito has been planned for early October 2010 and ended with successful outcome.

Expected results of Project are:

1. An evaluation of the first National Assessment conducted/carried out of Grade 2 in Gymnasium with a view to improve its content and its procedure.
2. Revised procedures for the administration of National Assessment in Primary Education have been produced and implemented.
3. Stakeholders made aware of (improvements in) National Assessment procedure. Strong links with Ministry of Science, Education and Sport and establishing relationship between curriculum development and assessment data.

In respect to aims of the Project a study visit of NCEEE experts was planned at introductory visit in February 2010 by Mr José Noijons – project director and Ms Erna Gille – project manager with NCEEE director Mr Goran Sirovatka and NCEEE experts.

The general aim of study visit was planned toward:

1. Introduction on the Dutch education system and its institutions
2. Introduction on the Dutch system of administration of external assessment and monitoring of educational progress

Participants from NCEEE Study visit to Cito:

- Goran Sirovatka, director NCEEE
- Jasmina Muraja, PhD - Head of Department for Quality assurance (project coordinator)
- Sanja Fulgosi, PhD – senior adviser at Department for Quality assurance (mother tongue specialist)
- Zlatko Zadelj – senior adviser at Department for Test Organisation and Conduction (mathematic specialist)

- Josip Šabić – expert adviser at Department for Research and Development (data analysis and psychometrics)

Monday, 4.10.2010.

Study visit started with introductory to Cito and discussion of programme in order to plan in detail following days. Programme was presented with description of each session which was of much help to have a clear view into actual content of stated topics. Special requests by NCEEE participants were expressed such as meeting with mother tongue specials and introduction to VET system and assessment possibilities. Also, legal issue of all exams and assessments provided by Cito were mention to be important issue to hear at this visit.

By the end of visit all requests and topics were met successfully in respect to National Assessment but also toward external evaluation of education in general.

Department for National Examination was presented with introduction to Dutch educational system and institutions. The process of test development starting from curriculum development through work of CEVO and collaboration with Cito was described. Differences in school programme were mentioned and related to levels of National Exam and also results of final exam were commented. Some questions concerning primary education were raised from NCEEE and introduction to system was provided followed by several presentations during study visit on this topic which is much interest.

National Assessment project was described historically from the beginning in 1989 through it's development. The project is conducted in primary education and stated as research project which results are presented to Ministry for Science and Education for policy making. This is an interesting topic for NCEEE from the point of view that has been an ongoing research project which aim is proposed by Cito experts and than approved and accepted by Ministry for benefit of educational system. Also it was interesting to hear that those results are used in combination with results from Cito test and Pupil monitoring test to make clearer picture and wide conclusions on schools and system.

ICT system was briefly described with several main issues such us importance of requirements for generic system. Also design of Item bank was briefly introduced on general level with new computer testing possibilities.

Tuesday, 5.10.2010.

Activities and progress in Croatia were reported by Mr Goran Sirovatka, NCEEE director which were well taken by Cito experts and consultants on this Project. Special interest in description of aim in National Assessment from NCEEE part was well accepted and discussed in detail from different perspectives. General aim as well as aim on level of certain subject namely Mathematics and mother tongue were observed and proposed throughout morning. Some points were of special interest such us development of instruments in National Assessment toward new Croatian curriculum and setting standards. The importance of background questionnaires was also acknowledged at this session in regard to different issues from socioeconomic status to details in subject matter. Also, the ownership on all results from exams and assessments stays at Cito which is relevant to position of NCEEE in educational system in Croatia and collaboration to schools and stake holders.

Knowledge centre and Information centre were shown to participants with list of material and literature in relevant topics for external evaluation in education.

The use of background questionnaires was presented by Cito expert and then discussed in relation to different topics. Responsibilities and roles of different parties in development of BQ were observed with much interest and relation to present situation at NCEEE. Importance of different viewpoints and collaboration between them was emphasised from development of BQ framework to actual questions related to special topics.

Standard setting in respect to scoring and grading was presented with examples from different test such as National Assessment vs. national exam. Decision making is based on grades but the process starts from scoring. This issue is very important and yet to be completely established in Croatia to achieve objective and error free marking scheme that leads to setting the standards. Also, calculation of possible cut score took many years and experience in the field. Specific parameters for development of item bank were discussed in small group. The problems were observed on item marking with specific issue of polytomous items since every marking category for polytomous item needs to have an ability linking objectively with students work. Also, from a psychometrician point of view standard setting was discussed as important tool for comparison of expectation and student achievement at exam.

Wednesday, 6.10.2010.

In respect to first aim of study visit and introduction to different institution the trip of NCEEE experts to CVO, Utrecht and Ministry of Science and Education at Hague was kindly organized.

Visit to CVO has exceeded expectation of participants giving a very broad and at the same time detail picture of CVO organisation including roles description and test construction. Presentation on above topic was given as well as many answers to specific question on syllabus, exam programme and test construct were answered. Material was also kindly shared with participants in order to gain new knowledge and possibly include some of experiences to present situation or future plans at NCEEE. Presentation covered institutional setting with details in CVO organisation from Board to subject specialist and also documents such as exam programme, syllabus and test construct. This will be of much use in further work of NCEEE in establishing improved administration of exams in Croatia,

At Ministry for Culture, Education and Science responsible party from Department for Secondary Education described Dutch educational system from different perspective. That led a way into institutional setting and role of Ministry as governing body. In that respect comparison with actual position of Ministry and institutional roles and setting in Croatia was found to be similar and lead to conclusion

Thursday, 7.10.2010.

Pupil monitoring system in primary education was presented and given documents that followed presentation. This kind of approach was quite new to hear and very interesting for future planning of quality assurance in primary education. The important part was also to learn that schools themselves are interested in PMS and other instruments in order to follow a student progress as well as school situation and improvement. Details such as dynamic of test conduction, equation of test and standard setting through pupil report were explained in order to screen a picture of complete monitoring system in elementary schools. Role of Cito role as an expert organisation in test construct was again observed and responsibility of school was made clear.

Legal issues were explained in detail according to NCEEE questions on this topic.

Marketing and consulting as an important part of Cito organisation was briefly explained through presentation which covered three responsible departments with roles and jobs description. Also, all kind of Cito products and customers were mentioned with emphasis on competition and customer needs.

Data processing was described through administration and logistic of assessments an examination. Special interest was shown in final examination and therefore presented in more detail. This included organisational setting from Cito, DUO and other parties involved in administration through marking process to various reports at the end of the cycle. It was new to hear that marking is done by teachers in school with pupils' names known and than after second marking discussed by colleagues. This was rather different from NCEEE experience so far and good to have insight into different possibilities. Also, the specific program WOLF developed by Cito and now used by school for provision of data was described in 18 steps. WOLF tool proved to be a versatile and reliable computer application for school as well as Cito whose analytical work continues after first and second teacher input of data.

Friday, 8.10.2010.

Assessment in VET schools was introduced referring to interest of NCEEE in that topic through interactive presentation. That showed how important it is to make clear description of competencies followed by marking scheme and scoring. The special requirements for VET schools such as competence indicators are made and observed but with awareness of specialities of each VET program and school. Diversity of 500 programs is a challenge to externally evaluate therefore the present situation brings 7 general standards that school observe in their work. Cito has been providing so far training and consultancy and might take part into developing new test for VET schools in mother tongue and mathematics. The approach differs to one in Croatia due to different educational system but some of the challenges were find to be similar.

Mother tongue challenges and present situation in testing were presented and discussed by mother tongue specialist. The introduction of new item writers to test construct group was explained based on this example of mother tongue subject. This was interesting in relation to some new plans for training of item writers for future exams and assessments in Croatia. Details in mother tongue subjects on final exam were discussed from domain to item.

IRT model was discussed and use of it explained as a specific tool for problem solving in comparing the different markers in essay. This knowledge will be of much importance for future essay analysis at Matura exam in Croatia.

Special needs were presented on request from NCEEE briefly with description of possibilities for those pupils and same special cases. Pupils with special need have two options from the begging depending on kind and they are sent to special schools or in regular school with note for special care. In that case they are to take assessments and exams but taken into account the need test material is adapted. It is important to include these standards from the very begging of test preparation which could be a good lead for future work in this segment at NCEEE.

Evaluation and future collaboration

Study visit finished with short discussion on possibilities for future collaboration. Evaluation of study visit was made through questionnaire but also participants clearly expressed their satisfaction with content of programme and presentation as well as performance of Cito experts through 5 day study visit. Most of the issues were relevant to Project but also to present situation or future plans at NCEEE. Although the programme was prepared months ago there was a flexibility to accommodate new questions and themes that were raised through this project but also on the spot. Future collaboration brings new possibilities for consultancy in specific area such as instruction on software for test construction developed by Cito and joint work in regional development. In near future one to one consultancy will be need with emphasis on psychometric work. Therefore it was proposed that NCEEE psychometric team could join Cito to further develop competencies which

are established in prior projects. Also, it was mentioned that this could be a bridging period for preparation of more specific proposals for collaboration.

This Project will be finalized with last visit of Cito consultants at NCEEE later this year during which will be organized final Conference. The aim of Conference and draft ideas were presented on this occasion by NCEEE experts. Main issue at the conference will be bringing the results of this Project to the different stakeholders from educational system but also from economy and labour area. This will be time to inform public on importance and role of National Assessment in quality improvement of educational system linking it to development of economy and labour market in Croatia.

Annex B Report of the Final Conference, Zagreb, 30 November 2010

National Assessment: Towards Evidence-based Changes in Croatian Education; meeting the challenges of economic development

The conference was organised by the NCEEE. It was held in Zagreb on 30 November and was attended by over one hundred participants representing a great many different stakeholders, such as the Croatian Parliament, the Dutch Embassy, the Ministry of Science, Education and Sports, the Ministry of Economic Affairs and Labour, various Governmental Councils, the Chamber of Commerce, various universities, teacher associations and unions, the teacher-training agency and the agency for vocational education and others. The conference was well-organised with speakers concentrating on issues of National Assessment (NA) only and strictly keeping within the time allotted to them. Below follow a number of topics that were discussed by the various speakers.

- Changes in education will necessarily be slow: stakeholders must think in terms of cycles of years. Effects of curriculum changes can only be measured after a number of years, the same goes for trends in education.
- Thanks to the project, a clear document with standards on how to administer National Assessment is now available. Future National Assessment will be administered following the guidelines in this document.
- National Assessment is concerned with collecting data and hard evidence for stakeholders to develop educational policies on.
- Stakeholders should be involved in the set-up of NA: what data to collect among whom?
- For Croatia to be a successful economy, it is important to focus on the development of its human potential, also in view of the comparative lack of natural resources.
- In the light of the Lisbon strategy, Croatia is to become a knowledge-based economy. National Assessment will help identify where the human potential is to be found and how it is to be developed.
- It is important to institutionalize the dialogue between stakeholders in educational change. The NCEEE can play a pivotal role in this.
- Lifelong learning has become an important aspect of education. The assessment of informal education and previously acquired competences will need to be focussed on by the NCEEE.
- The gap between formal education and the skills required on the work floor is widening. The NCEEE needs to chart this gap.
- The Chamber of Commerce is offering the NCEEE its help in meeting the above challenges in the area of lifelong learning and in bridging the gap between formal education and the work-floor skills.
- Universities regard changes in the assessment system as part of general quality assurance.
- It is important in National Assessment to also focus on the vertical outcomes of the educational system: does it yield sufficiently qualified people in all layers of the National Qualification Framework.
- The educational system needs to become more project-based and programme-based, it needs to focus on problem solving.
- Traditional skills are less in demand nowadays. Education needs to be adapted to the requirements of the labour market.
- Education should focus more on entrepreneurship, on social responsibility and on flexibility.

Staff members of the NCEEE and Cito then reported on the results of the present project. These have been discussed in Chapters 2 and 3 of this report.

The conference was concluded by a round-table discussion in which attention was paid to the following:

- Polytechnics need to be given more attention to when discussing educational change.
- More attention should be paid to the needs of higher levels in vocational education.
- There is a need for the certification of previously acquired competences.
- The ministries will continue to support the NCEEE as it can play an important role in changing the educational system.

Programme



CONFERENCE

NATIONAL ASSESSMENT: TOWARDS EVIDENCE-BASED CHANGES IN CROATIAN EDUCATION MEETING THE CHALLENGES OF ECONOMIC DEVELOPMENT

Croatian journalist association, Perkovčeva 2, Zagreb

PROGRAMME

30. November 2010. (Tuesday)

- 9:30 – 10:00 *Registration*
- 10:00 – 10:10 Goran Sirovatka, director *National Centre for External Evaluation of Education*
Welcome words
- 10:10 – 10:20 Representative, Embassy of the Kingdom of Netherlands
Introduction words
- 10:20 – 11:20 Representatives; Ministry of Education, Science and Sport
Ministry of Economy, Labour and Entrepreneurship
Chamber of Commerce
University of Zagreb
- 11:30 – 11:40 *coffee break*
- 11:40 – 12:00 Jasmina Muraja, *National Centre for External Evaluation of Education*
Towards modern assessment policies and practise in Croatia: project report
- 12:00 - 12:10 Sanja Fulgosi, *National Centre for External Evaluation of Education*
National Assessment: Results and possible implication for Croatian education
- 12:10 – 12:20 Natalija Gjeri, *National Centre for External Evaluation of Education*
Quality Assurance of National Assessment
- 12:20 – 12:30 José Noijons, *Cito - Dutch Institute for Educational Measurement*
National Assessment: helping to develop evidence-based policies
- 12:40 – 13:00 **Closing words and conclusion:** Impact of National Assessment in future development of educational system – meeting the challenges of economy and labour.
G. Sirovatka, MoSES, MinGORP, J. Muraja