

## **Black Sea Conference**

on

### **University Admission and Exams**

#### ***Promoting Fairness and Equity in Access to Higher Education***

In my presentation I want to show you the way we passed from old system to a new approach of testing and assessment of university entrants.

Unified University Entry Examinations 2005 is one of the most important projects that has been undertaken by the Ministry of Education and Science of Georgia. This model in terms of its content as well as an administrative part is based on advanced technologies. It's a common agreement of the citizens of Georgia, thousands of university entrants and their parents, also international observers that the first Unified University Entry Examinations (UEE) were conducted successfully.

The new model of UEE was introduced in such a period in Georgia when there was a serious crisis in secondary and higher educational systems. Corruption in University Entry Examinations was at its peak. Examinations lost their main function – selection of university entrants due to their knowledge and skills and thus, fundamental principles of fairness was being destroyed. The situation in secondary educational system was also difficult. In most schools there was a lack of educational recourses and hence, the entrants were forced to seek the services of private tutors to receive an adequate education. Moreover, in most cases priority was given to those private tutors who were on the Board of the entrance exams themselves, who were giving guarantee to the entrants for getting places in the universities. On the other hand, private tutors' fees were affordable for few families only.

Today our country is striving for integration in an international educational area, the integral part of which it has historically been for centuries. I would like to touch just few facts from our history to make this point clear. The history of Georgian enlightenment is closely connected with the development of Georgian literacy and scholarship. Starting from the 5<sup>th</sup> century Georgian scholars paved the way to original Georgian literature and the first Georgian schools were set up then. In the 6<sup>th</sup> century several Georgian cultural and educational centers were set up abroad: in Palestine, Mount Sinai, Antioch. Foreign languages and philosophy were taught in Georgian schools already from the 9<sup>th</sup> and 10<sup>th</sup> centuries.

Historical sources say that higher educational institutions existed in Georgia in the 12<sup>th</sup> century. Scholarly centers, such as, Gelati and Ikalto Academies were established as analogies to Byzantine enlightening and scholarly centers. Georgian students learnt the subjects that were approved in Byzantine

educational practice and which were known as seven liberal arts (artes liberales). These were: Geometry, Arithmetic, Music, Rhetoric, Grammar, Philosophy and Astronomy. Medicine and Law were also taught in Gelati Academy. Later, these subjects laid the foundation for the curriculum of the European countries.

In the soviet times Georgian education was a part of a huge centralized system. That was the period when corruption was deeply rooted in an educational system. Principles of fairness, open access and equity were violated every year at university entry examinations. This was the reality when the decision of establishing a new model of examination system was made.

### **New model of University Entry Examinations**

The Ministry of Education and Science of Georgia aimed to develop a new system of university entry examinations which would ensure maximum objectivity and fairness and would eradicate corruption. Position of the Ministry was quite radical – to develop and set up the new system in a very short time. We were facing the risk of introducing new formats of examination tests and establishing centralized model in approximately one and a half year's time. But the advantages outweighed the risks. Serious opponents showed up to this initiative. Although the universities started to talk about negative sides of existing examinations and about possibilities of improving them, they still did not show their will to make radical changes to the old system. We actually did not have time to analyze how large a scale of influence of the old system was, and what the result of our slightest mistake would have been. We simply started to work very hard.

While developing the system our main postulate was: equal conditions to all university entrants. A new examination model was based on a complex assessment of achievement (subject knowledge) and skills of entrants. For ensuring unified, objective and fair selection of university entrants for higher institutions we considered some other important issues, such as:

- Full confidentiality of examination tests
- Equal conditions for every student
- Transparent and simplified registration and examination procedure
- Allocation of results on a common standardized scale
- Possibility to apply for several faculties and universities simultaneously

Our work became even more important by the fact that the Ministry of Education and Science changed the principle of financing higher institutions – Instead of direct financing of universities, “Money follows a student” principle was introduced according to which successful students at UEE were awarded a state scholarship.

It was decided to prepare three compulsory examinations – Georgian Language and Literature, GAT and Foreign Languages, and one optional

subject – Mathematics. In 2006 universities were offered the whole list of examinations. Additional optional subjects (Science, Georgian History and Social Sciences and Literature) were added.

Since the problem of accessibility to high quality secondary education still exists in Georgia (implementation of a new national curriculum, development of a teacher qualification and certification system has just started), the entrants were offered an important novelty – General Aptitude Test (GAT). GAT puts all the entrants in essentially equal conditions and is a good predictor for assessing learning potential and success in an academic life of a future student. Society accepted this novelty with a big skepticism. Serious opponents also showed up. They tried to do their best for discrediting new examination model and the novelty – GAT.

Besides GAT, there was another novelty which was offered to entrants and higher institutions. This was a compulsory examination in Georgian Language and Literature. For this reason two types of tests were prepared. They differed in their difficulty levels. The decision was of a national importance and it enhanced integration of non Georgian citizens and a resumption of a status of Georgian as a state language, as is the case in an almost every civilized country. We knew that the implementation of this decision required politically very careful actions. That's why NAEC staff conducted many try-outs in the regions with non-Georgian population. This helped a lot to take into account existing situation and a level of teaching Georgian Language in non-Georgian schools. Test booklets were prepared and published specially for this target group.

Having a foreign language as one of the compulsory examination subjects was also of the significant importance, especially for the country which is striving for integration in an international educational area. The entrants had a right to choose one out of four foreign languages: English, German, Russian and French.

In a preparation period NAEC staff started compatibility studies of school and university requirements. Several meetings were held with university representatives. After a qualitative analysis of school syllabi and university requirements, we prepared examination syllabi for all subjects.

This period was very hard for the NAEC staff. There was no region left in Georgia where try-outs of test items were not carried out. Mainly school leavers took part in this process. They were the first who got acquainted with new circumstances and accepted it with ease. Information and test booklets were prepared and published, where in addition to typical test items and instructions, strategies of right answers were explained. These materials were very helpful for entrants.

Everything was prepared to assist entrants – comparing with previous years less emphasis was made on factual knowledge and more on practical skills. Such an approach decreased inequity between those entrants who did not have equal educational resources either at school or at home.

Subject tests (except GAT) included test items of different types: closed and open-ended items and an essay. As we lacked the experience of developing objective and unified criteria for assessing open-ended and especially essay type items, NAEC staff started to prepare a group of markers. For this purpose we used try-out materials and carried out intensive trainings for a big group of proposed markers. Finally, those who were selected who strictly followed the criteria stated in the marking schemes and marked the scripts in due time.

*Short statistics – 565 markers took part in the marking process who were selected out of about 2000*

### **Methodology of test development**

Classical test theory was used while developing examination tests. As it has been mentioned already, test items were tried out several times on representative samples for estimating difficulty level and discrimination of test items. Content validity of test items assessed by experts was also taken into account. A pilot test, based on the psychometric analysis, was prepared in every examination subject. Pilot of an examination test format was carried out. Based on pilot results, test reliability, difficulty, standard error of measurement and other important psychometric parameters were estimated. At the same time main methodological principle of analysis of exam results had been developed. We used so called scaling method as one of the ways of achieving objectivity and fairness. Priority was given to a linear transformation model.

The scaling model makes it possible to compare scores of those entrants who took different versions of the same exam subject. It also makes it possible to compare scores of different subjects.

Based on the scaling method, the first stage determined correspondence between scores of different versions of the same exam subject. On the second stage equated scores in each subject were placed on a common standardized scale.

Faculties were advised to give weights to examination subjects by allocating coefficients to them. Competitive score of an entrant for each faculty was evaluated as the sum of scaled scores per each subject, respectively multiplied by the coefficients.

### **Administration and IT applications**

The First step for preparing UEE was to develop an administration project.

Initial statistical information on the number of entrants and their choices (language of instruction, foreign language, examination city, etc.) was prepared. According to this information about 32 000 entrants were expected.

It was decided to:

- open registration centers in all regions (76)
- establish 14 examination centers and define their structure (every center was divided into sectors with 15 seats)
- identify the positions who would be responsible for an examination process in examination centers (an administrator and a coordinator) and in each sector (two proctors per sector)

There was no experience in our country of undertaking such a nationwide testing. That's why preparation of mechanisms of confidentiality of scripts, the scenario of an examination process, detailed instructions for administrators, coordinators, proctors, examination rules for entrants were of a significant importance.

Logistics and IT departments developed a scenario of activities for ensuring strict confidentiality of exam test papers and scripts. The scenario was the following:

- Examination test papers printed abroad, sent to NAEC in sealed boxes; test papers placed in special secure envelopes for each sector and stored in warehouses of the National Bank of Georgia
- Examination centers receive the respective boxes prior to the exam. The boxes escorted by the police guard
- Secure envelopes opened in front of entrants just before the test taking time. All the papers coded by bar codes. Entrants' scripts put in similar envelopes and sealed
- Proctors rotate during the whole process
- Entrants' scripts sent to our center after each examination day and escorted by a police guard; the scripts registered in logistics and IT departments
- Scripts randomly distributed among markers. They receive coded scripts and every script marked twice. In case of discrepancies between the first and second marker the script marked third time
- Marked scripts returned to IT department; data-base prepared
- After releasing results, entrants make a decision on appealing
- Enrollment procedure starts after appeal results. For those who are not enrolled in their chosen faculties, a list of left over vacancies announced. This provides extra opportunities for the entrants

This was schematically an administration project of UEE.

The process started with the registration of university entrants. Registration centers opened in all regions (76) of Georgia. After submitting all the necessary documentation and filling in the application form, entrants received

,so called, examination cards with the individual bar code on them. This was the bar code by which the entrants were registered before examinations.

This year we tried to make the registration process even easier for entrants – they were registered in their own schools. All the documentation was sent to our center where the whole data-base was prepared; examination plastic cards were printed and sent back. This was a centralized registration process which almost excluded technical errors.

14 examination centers were established and technically equipped in 10 cities of Georgia. For monitoring and administration of the process a big group of proctors, registrars, administrators and coordinators were selected and trained intensively. For ensuring technical monitoring of examination process video surveillance system was installed in all sectors of examination centers. The process was led by a special technical monitoring group. The system was switched on during the whole process starting from registration till the end of test taking process. Later, in few cases video tapes were used during an appeal process.

An international tender for printing examination test papers was announced. The winner in 2005 was Cambridge University Printing House and this year - **Stephen Austin**.

*Short statistics: 2030 people took part in the process. About 1400 proctors, 150 registrars, 28 administrators and coordinators and others.*

According to the set plan, IT department started to prepare IT applications for ensuring proper functioning of the whole process. It should be mentioned that the project would have lost its originality if not the innovations offered by IT department. One of the most important parts of IT applications was a registration process of entrants in the examination centers. In some centers we had to register more than 2500 entrants in one hour. IT prepared special software for placing entrants per sectors and allocate table numbers to them. The software also included registration program of the staff (proctors, registrars, etc.). The software was installed in HP iPac handy scanners. It turned out that it was one of the most effective innovations in the whole process. We managed to place more than 2500 entrants in less than 45 minutes.

IT department developed special software for registration, coding, decoding, scaling, enrollment and allocation of the state scholarship. It was a hard time with many discussions and debates around all the steps that should have been included in the software, mathematically proving the uniqueness of algorithms, etc. It was for the first time when entrants had a chance to apply for several faculties simultaneously. This approach was attractive for entrants but on the other hand, caused difficulties in developing the software. In addition, we had to take into account the procedure of calculating a competitive score for each faculty.

This is why piloting of an examination system in a whole was one of the most important stages of the preparation period as it would have shown how the system worked and was sustainable. It was a general rehearsal of UEE, the main purpose of which was to examine the administration project developed by NAEC.

In order to make the rehearsal as close to the real situation as possible, we did the following:

- The pilot was carried out in one of the real examination centers
- Seats were placed per sectors in the same way as in the real exam situation
- Video surveillance system was installed in every sector
- Everybody, who later worked in the examination center, took part in the process (an administrator, a coordinator, proctors, etc). They fulfilled the functions for which they were responsible in a real situation

What was learnt from the general rehearsal?

- The time needed for a registration of one entrant
- Optimal distribution of functions between two main persons of an examination center – an administrator and a coordinator
- Coordinating work of proctors
- Revision of the main documentation (instructions for administrators, coordinators, proctors, etc) developed for administration purposes
- Registration of scripts, coding and decoding
- Marking process
- Creating data-base, etc.

Pilot was carried out with minimal errors, but we had time to improve the system. The pilot was a really important experience for us.

## **PR activities**

It was not easy for the society to accept all the novelties connected with UEE and thus we paid a serious attention to developing optimal strategy of PR company.

The purpose of public relations strategy was to present the significant novelties to the public in an understandable way, also to gain trust and support.

The above strategy determined the form of information-advertisement material, design and distribution period. Target groups were clearly identified.

- The design, logo and slogan “You are the first” were created for every type of information product

- Different types of printed materials were published and distributed: special newspaper which included detailed information on universities, registration, examination process, also booklets, brochures, posters, etc.
- During the year approximately 50 presentations and “open door” days were held on UEE in different regions of Georgia. The meetings played a decisive role in creating trust in UEE
- 32 information advertisements were prepared and aired on the various TV channels
- Press-conferences were systematically held with the aim to inform the society on ongoing process

It was obvious that attitudes of the society towards UEE had changed and we gained the trust of the most part of it. Results of sociological research proved this. UEE was awarded the first PR project of the year.

## **Examinations**

*Short statistics – Number of entrants in 2005 was 31 174, while 32 792 in 2006.*

First examination day exceeded all the expectations. Everything went smoothly: registration of a huge number of entrants in a short time period, accurate fulfillment of the instructions and exam rules, distribution of test papers, coding, collecting, transportation

Georgian and international observers stated that the first UEE was conducted successfully.

Georgian observers - mainly representatives of NGOs - mentioned that the most important achievements of UEE were its transparency, objectivity, fairness and equal examination conditions for examinees.

International observers mentioned that all the measures were taken into account to ensure fairness and transparency of the test taking process. It was obvious that there had been a comprehensive planning which avoided complications. Indeed, adherence to the testing procedures created a professional and respectful atmosphere.

On a plenary session of International observers it was specially mentioned that: *“Unified Admission Exam was the watershed event in Georgian History, it proved that it is possible to conduct objective and unbiased contest on the country scale. New examination model should provide momentum for reforming civil service and election system”*.

We met UEE 2006 with serious experience. The confidence of the society was already gained and that’s why examination process went in a more peaceful and organized atmosphere.

Innovations in UEE 2006 were mainly connected with IT applications:

Last year there were complaints from entrants and their parents about not being able to see copies of their own scripts, although they were allowed to take so called “draft papers” with them. But this was not enough – the applicants wanted to see their marked scripts to make right decision to appeal. It was technically impossible to provide more than 30 000 entrants with copies of their scripts in all subjects with approximately 28 pages in about three days!

IT department worked very hard to solve the problem and this year we were able to slightly change the system. At the exams entrants received answer sheets together with the test papers. They had to transfer their answers on answer sheets. Bar codes were stuck on answer sheets and not on test papers. Filled in answer sheets were scanned and images of originals stored in our data-base. Markers received only copies of answer sheets. Marked scripts from our data-base were put on our website and entrants were able to see the images of their marked scripts via special searching system.

Placing 120 000 scripts on our website was quite risky. The image of our center depended on an accuracy and qualification of markers. Maximum transparency, objectivity and gaining the trust of the stakeholders – these were the reasons of implementing the changes. Nobody is protected from mistakes. If we make it we are ready to correct it – that was our motto.

As a result of this we got an absolutely unique system which ensures the highest level of transparency and objectivity and is based on high technologies. Comparing with the previous year the number of appeals dramatically decreased – it was only 0.6% out of the total number of scripts. However, it should be mentioned that the number of corrected scores was relatively high.

According to UEE results, the number of students from rural regions and poor families increased, especially of those who had been enrolled on prestigious faculties. It's worth noting that the number of the non-Georgian applicants increased by 32% this year.

This was briefly the way we passed from old corrupted system to a new approach in testing and assessment. I am proud to say that our Center played a crucial role in the reform of the education system - so much important for creating a new-minded society and a developed democratic country.

Unified University entry Examinations are one of the most important events in the process of establishing Georgia as democratic, constitutional state. It has become apparent for the society that knowledge and education is much valued. Creating such attitudes toward knowledge and education is of great importance in the process of state realignment and establishing state thinking.

I would like to thank the Ministry of Education and Science, who empowered us with the responsibility to carry out such an important project for our country. It is obvious that a successful administration would not have

happened if not an exceptional support of the government (Ministry of Internal Affairs, Ministry of Health, etc.) who was actively involved in the process.

We are delighted to have such colleagues as our consultants, who were with us during the whole process and are now sharing our success. Thank you to the World Bank for a financial support and, of course, last and not least – many thanks to my colleagues, to NAEC staff.