THE SYSTEM FOR E-ASSESSMENT OF WRITTEN WORKS

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SUMMARY
The presentation covers the "System for E-Assessment of Written Works", developed by the State Students Admission Commission[1] (SSAC). Due to the constraints, imposed by multiple choice question (MCQ) tests, the SSAC decided to apply the written work assessment as well in the assessment of knowledge and skills of applicants within a broad range of disciplines. To advance and automate the grading of written works as well as shorten the time spent for the assessment, the SSAC has developed an in-house web-based "System for E-Assessment of Written Works". The grading process is conducted online: each written work is rated by two different experts; if there is a considerable variation of grades, then the automated system assigns the written work to a third higher-ranked assessor. Anonymity of the test taker is guaranteed during the process of grading.

KEY WORDS
Educational assessment, multiple choice question test, written work assessment

INTRODUCTION
The State Students Admission Commission was established in 1992 to centralise the development and administration of admission examinations for higher and vocational education. Since then the SSAC has conducted various examinations for assessing knowledge and skills of about 2 million people. Starting from 2012, the SSAC administers the centralised graduation exams for middle and secondary schools in the country. Currently, the SSAC provides admission tests to 200 000 applicants as well as graduation tests to 200 000 pupils each year. Certainly, the organization of these examinations with such a number of attendees within a short period of time would not be feasible without MCQ testing. MCQ testing is a widespread assessment method, and consists of examination questions of all subject areas of study. MCQ testing method is also a fair way of assessment, which provides equal opportunities and requirements for all applicants and excludes the subjectivism both in the procedures of admission and the process of monitoring. The MCQ test allows to assess the knowledge of test takers in different disciplines within a short period of time. Ultimately, the method of MCQ testing for large scale examinations has advantages such as being more cost-effective and automated.

Although the assessment of knowledge by MCQ testing method provides sufficient data on the knowledge of test takers, this type of assessment is insufficient to explicate the

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[1] http://tqdk.gov.az/en/background/

causes of drawbacks in education of examinees. Furthermore, standardized MCQ tests do not measure attributes such as talent, creativity, imaginative thinking, abstract conceptualization, and analytical capabilities. Unlike the written work component of examinations, at the MCQ tests, test takers do not have a chance to analyze deeply most of the subject matter.

In brief, there are a number of advantages of written works in comparison with the MCQ testing method of assessing knowledge:

1. All participants generally happen to be in the identical situations (regarding difficulty of questions, number of questions and time needed for answer selection).
2. Given grade is fully and precisely well-grounded and, re-grading is provided, if necessary.
3. The ability to impose general requirements on specific subjects.
4. The ability to fully cover the material (on subjects) by increasing the number of questions assigned.
5. Determination of participants' skills by including relevant questions, etc.

Starting from 2005, the SSAC commenced to conduct the admission examinations to higher education institutions on Master's level. As Master's level is a relatively more specialized direction than Bachelor's level, it is not possible to conduct the students admission based solely on the MCQ testing method. With this purpose, written work assessment along with MCQ testing assessment commenced to be applied in the admission examinations to a number of specializations of Master's level starting from the same year. A pressing issue in application of written work assessment is grading of written works and announcing the results within a short period of time. Theoretically, each written work ought to be reviewed by two experts, and on condition great difference emerges between the grades given by two experts, the written work is presented to the third expert for assessment. Certainly, it requires specific time and human labour. Conclusively, assessment of written works and reporting of the results demand a considerable time. If it is possible to report the results of the MCQ tests (depending on the number of examinees) in the shortest time possible, assessment of written works on the same quantity and reporting of their results require a considerable stretch of time. Thus, written works are scanned and multiplied right after the examination and submitted to the experts for assessment. Following the assessment by the experts, the grades are included in the database. In order to improve such processes, to assess written works and to optimize the reporting of results, "System for E-Assessment of Written Works" was launched within the SSAC in the current year.

The process of establishment and application of the "System for E-Assessment of Written Works" involves the following phases:

- Design of forms for written work;
- Defining the criteria for the written works to be assessed and including the parameters in the system;
- Selection of experts to assess the written works and carrying out training session for experts to run the system;
- Obtaining graphic images of written works through scanner after the examinations and their inclusion in the system;
- Assessment of written works by experts;
- Reporting of results.

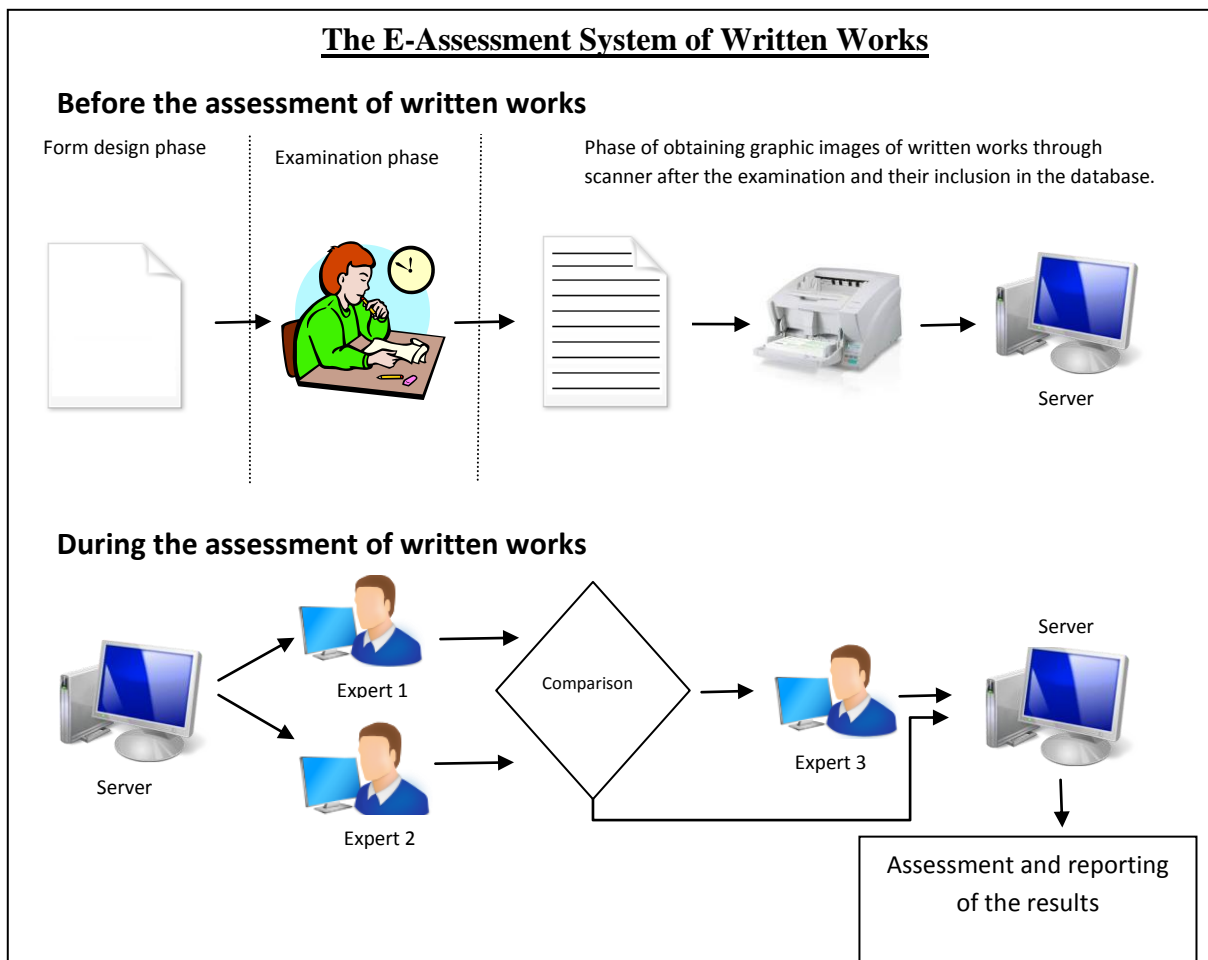The system administrator (hereafter, the administrator) controls the system workflow.

Design of written work templates

As its primary feature the system allows to assess written works on various subjects. Examinees are presented with forms to work on in each examination. These forms happen to be in various sizes (the number of pages are also included here) depending on the feature of

the written work. Whilst issuing the forms, it is required that the forms be of simplified availability for the examinee and necessary information be contained on the form in order to obtain its graphic image through scanner. Data identifying examinee and various information in regards with the written work ought to be printed on the form too.

Defining the assessment criteria for the written works and including the parameters in the system

While designing the system, it was taken into account to provide a wide circle of its application. The SSAC utilizes the written work component in the examinations of various levels. The written works on various admission programs represented during admission examinations to Master's level are great examples in regards with this issue. The written works are assessed on the basis of various criteria considering the charecteristics of each admission program. Taking all these into account, the system administrator includes the assessment criteria, parameters (the number of experts to assess the written works, the allowed difference in granted grades, minimal time needed to assess a written work and so on) in the system, after these matters are identified.

The E-Assessment System of Written Works

Before the assessment of written works

Form design phase

Examination phase

Phase of obtaining graphic images of written works through scanner after the examination and their inclusion in the database.

Server

During the assessment of written works

Expert 1

Expert 2

Server

Comparison

Expert 3

Server

Assessment and reporting of the results

Selection of experts to assess the written works and carrying out training session for experts to run the system

The administrator either inputs the experts assessing the written works to the system (database of experts) or selects the necessary experts from the database of experts. Theoretically, the experts attend special tranings to learn how to run the system and the rating of the experts is defined due to the results of their training performance. The rating is subject to alteration in regards with the utilization of expert's grading of the written work during the

final assessment (the rating is either decreased or increased following predefined guidances). In result, along with the assessment of the written works, the work effort of the experts is assessed as well. The rating scale consists of lower, average and higher ratings.

Obtaining graphic images of written works through scanner after the examinations and their inclusion in the system

Following the examinations, the written works are collected and scanned to obtain their graphic images and in order to ensure the confidentiality, the information printed on the form identifying the examinee is removed through the use of the special software, as a result, it remains unknown to grading expert whom the written work belongs to. The graphic images are included in the system following this.

Assessment of written works by experts

Each individual who attended special trainings in advance and registered as an expert on relevant subject within the system is given a user name and password. Any individual may be registered as an expert on several subjects within the system. The expert logs on the system using his user name and password. The system represents the written work arbitrarily to the expert for assessment whenever the expert is available. The expert is not presented a second written work for assessment, unless he has finished assessing the first one. The expert is given predefined time to assess the written work and when the time is over, the written work is retrieved from the expert and represented to another expert for assessment. This allows to adjust the system's workflow and speed the assessment process. Using the tools within the system, the expert makes notes on the graphic image of the written work and assesses the work in compliance with the imposed (depending on the criteria included within the system) criteria or rejects to carry out the further assessment indicating a reason.

At least two experts assess each written work. The system tries to assign the written works to the experts with various ratings. If the granted grades differ more than the predefined allowed difference, the system assigns the written work for further assessment to the third expert with a higher rating and at the end the system calculates the final grade via averaging the assessment of the experts. This ensures fairness of the assessment and enhance its objectivity. A vital logic of the assessment is that each expert is unaware of the grades granted by other experts.

The system allows to control the assessment process via online regime.

Reporting of results

Following the assessment of all written works, the results are reported. The results (along with the graphic images of written works) are reported through a special web software. Eventually, the candidates get familiar with the notes of the experts having assessed their written works.

CONCLUSION

Thus, as a result of launching the system for usage, the following were achieved: the effort of the experts assessing the written works grew more efficient and anonymous, the transparency of the process increased and the time necessary for assessment considerably shortened and so on.

When launching the system, a wide scope of its application was taken into account. Thus, the system allows to assess the written works in various examinations of various types in compliance with various criteria.

The software of the system is created on the Microsoft Visual Studio / VB.net [4] platform and the database is developed on the Microsoft SQL Server 2008 R2 [5] environment.

LITERATURE

1. http://testobr.narod.ru/4.htm, Достоинства и недостатки тестирования

2. http://www.isuct.ru/edu/recomend7.html, Письменные экзамены: преимущества и недостатки
3. Microsoft Visual Studio 2010 Unleashed by Mike Snell
4. Microsoft SQL Server 2008 R2 by Ray Rankins, Paul Bertucci, Chris Gallelli and Alex T. Silverstein