Professional Training in Information and Communication Technologies Within the Implemention of the Grading-Rating System (GRS)

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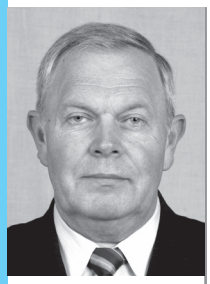

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Professional training of engineers in ICT under conditions of implementing the grading -rating system (GRS) is considered in the following paper. Such issues as an employment market survey for computer technology engineers, review of the perspective training strategies for Ict engineers are discussed. Organization of the learning process based on an up-dated grading system in determining the quality assurance of a student's knowledge, skills and professional.

Since the Russian Federation educational institution updated to 3G educational standards the requirements for student training results formulated as a competence have changed. This innovation concept invokes not only significant changes in the academic grading system of the students and graduates, but also includes newer and newer target problems. This underlines the fact that existing grading systems should be systematized - from designing essentially new strategies to the method development of indexes which would provide reliable and comparable information about the student's learning level of professional competence.

CHARACTERISTIC FEATURES OF PROFESSIONAL TRAINING IN INFORMATION AND COMMUNICATION TECHNOLOGIES

Professional training of engineers in Information and Communication Technologies (ICT) is occurring under the conditions of an accelerating development of the information-oriented society foundation, namely, based on knowledge. According to statistics, more than 350 000 ICT graduates are required to meet the demands of the national economy per year, while at present there are only 30 000 young professional engineers, i.e. significantly less than the stated needs. This implies that ICT student participation rate in higher education will considerably increase in the near future.

However, the professional training of ICT students is impeded by the following factors:

1. Accelerated changes in train ing of ICT specialists, including:
   - fast-moving civilization progression into a new development era (globalization era);
   - significant increase of global information resources;
   - rapid development of Information and Communication Technologies
2. ICT market embraces an acute increasing demand in IT engineers with intimate professional knowledge and oriented skills.

As stated by B.G. Nuraluev:

- It is extremely important to increase the number of ICT graduates several times;
- teach what is really in-demand;
- and provide the opportunity in gaining not only a University degree (graduation diploma), but also a certificate in software production design.

ACCORDING TO A.A. FURSENKO; "IN COORDINATING EDUCATION ACTIVITIES, ONE MUST CONSIDER THE INTERESTS AND DESIRES OF THE ICT- COMMUNITY."

APPLICATION OF INTEGRATED EDUCATION METHOD

In our opinion, this rather challenging problem could be solved through ICT tools, based on e-learning principles. Nowadays, this prospective education process is European Learning Space (ELS), known as e-Bologna, i.e. creating synergy network in e-learning, eventually leading to an ELS. ICT medium of e-Bologna embraces the following characteristics:

- e-teaching materials;
- e-testing elements;
- e-Portfolio (personal student competence information).

E-learning supports:

- virtual mobility and implementation of up-to-date knowledge and high- quality teaching materials, independent of the geographical and social conditions of the student;
- professionalizing teaching materials through electronic platform applying including easy access to multimedia resources, i.e. their publications, delivery and modernization;
- stimulating the student's career development through individual schedules, terms and teaching progress rates;
- reconciling mass higher education and personalization through flexibility in-terms of contents, pedagogical approaches and combination of study planning (advanced training and refresher courses) without increasing roomage and the staff itself;
- improving the professional performance of the highly-qualified staff.

Today, more than 90% of the students in Europe are involved in e-learning processes, while 85% of all universities and colleges include distance learning courses and curriculum, as well.

The learning quality assurance level should include a combination of traditional and innovative methods. Built-in quality assurance criteria and procedures applied during the whole on-line learning and automatic control of student autonomous learning activities is based on the principles of the grading-rating system of student's knowledge assessment it self.

GRADING-RATING SYSTEM(GRS) OF STUDENT'S KNOWLEDGE ASSESSMENT

The grading-rating system (GRS) of student's knowledge assessment is one of the four principles of the e-Bologna process introduced into the Russian education system. It is targeted on increasing the quality of the learning process by [1]:

- improving the professional performance of the highly-qualified staff.
- improving objectivity of performance rating and the results of final tests;
- regulating measurements of midterm exams for each specific academic course.

The introduction of GRS principles into the higher professional education system, based on standard requirements and application of a uniform assessment criteria for the results of student's activities, provides openness and transparency of the learning process and develops conditions in learning process planning, staff selection and student e-Portfolio designing [2].

However, the grading-rating system itself includes several selection and use objective problems:

- specification of accessible design and index evaluation scale for GRS;
- further flexible and " painless" modification of the learning process, adaptation of existing control methods and the implementation of modern ones, overview of traditional evaluation principles, methods and procedures;

- lack of simple and comprehensible grading-rating procedures, which include not only calculation criteria and student grade-rating determination, but also rating estimation mechanism for testing;
- influence of grading-rating system on the quality assurance of the student's knowledge and skills, by improving the learning motivation;
- grading-rating evaluation of competencies within the framework of 3G State Education Standards (SES).

There are many disadvantages of today's grading-rating system, one of which is the fact that existing grade-rating scales are incomplete. A questionnaire was produced to establish the student term assessment and exam result ratios. The following results are: 48 % of the respondents indicated that this ratio should be 70 to 30 credit points, respectively; 37% of the teachers showed 60 to 40 credit points, respectively; while 15% could not give an exact answer.

According to the 3G State Education Standards (SES), the grading-rating system of competence acquisition should:

- evaluate engineer-specialist's knowledge, skills and professional competence;
- determine strategies of ICT involvement in different professional areas;
- define and solve different applied problems by ICT;
- design, implement, manage and maintain IT system and
- design business and management processes for information and knowledge acquisition.

In this case, testing should not be the only grading-rating evaluation method.

APPLICATION OF GRS IN STUDENT KNOWLEDGE ASSESSMENT (KABARDINO-BALKARIAN STATE UNIVERSITY)

GRS in the quality assurance assessment of a student's knowledge, skills and professional competence has been entirely implemented and is now successfully being applied in Kabardino-Balkarian State University n.a. H.M. Berbekov [3].

During the term, the teacher's evaluation of a student's learning activities should include the following factors:

- compliance with schedule of the subject studied;
- attendance record of lectures, laboratory research, hands-on seminars;
- performance activity at classes and seminars, testing results;
- participation level in teamwork discussion;
- execution level of reports, quality performance of laboratory research, tasks for autonomous learning activities and term papers;
- test results and other monitoring types.

To evaluate testing procedures in grade scores within the framework of one discipline, the following formula is used:

$$2uBj \blacksquare K/ + П + Э = 100 \text{ scores}$$

where,

B - maximum grade of a student during testing procedures;

K - number of testing procedures;

i - type of testing procedure (testing, discussion, reports, lab research, and others);

П - maximum grade for class attendance;

Э - maximum grade for exams and credits.

There are the following types of testing procedures: testing, colloquium (discussion groups), tests, debating (forum), summary papers, reports, laboratory research and others.

The grading-rating exam scale should be determined beforehand and students should be informed in the following ways: (1) procedure organization at deparments, including testing -type selection; (2) choice of procedure; (3) working-out schedule plan; (4) testing material preparation; (5) working out of student grading-rating criteria; and (6) monitoring [4].

Electronic platform procedures could be the following: (1) testing in computer classes or on-line; (2) written or e-tests; (3) tutorial or topic discussion; (4) survey or discursive chat; (5) individual tasks (reports, situation analysis) and others.

Based on department information testing procedure schedule plan for each discipline consists of the following: (1) the procedure itself; (2) procedure start and

expiration dates; (3) time duration; (4) material content; (5) maximum and pass grade.

Before starting the term students should be informed about the future grade-rating criteria for each discipline. These might include the following standards:

Current performance progress monitoring - laboratory research and tutorials, which are evaluated as the total grade sum of all provided tasks and based on 20-grade score scale.

Tests or colloquium (discussion) - there are three procedure activities, as a forum. Each forum includes 5 questions; each answer equals 1 grade score. The answers should be precisely formulated. Maximum grade for each question - answer is 5, while minimum - 3.

Testing - according to the schedule plan (during one term) there are three tests. Each test includes from 20 to 30 questions. Maximum grade is 5, while minimum - 3.

Individual tasks - involve specific tasks for students, for example, a report. Besides confirmed report topics, the teacher can include other specified topics. Maximum grade for each report is 5. Report requirements are the following: report topic stated clearly, with logical, credible pattern of development; supported by effective references; stated precise conclusion of results; designed as a presentation or Word format; content volume: 7-10 pages (8- 12 slides).

Student's attendance record and performance activity, which includes a maximum grade of 10.

Grade for **other monitoring types** is 5. Thus, the maximum total grade-score throughout the term is more than 70, while the minimum limit is 36. Those students, who have less than 36, are not allowed to take either the exams or credit-tests and must take retesting in the same course.

Monitoring procedure could include teacher's commentaries; result grades; intermediate discussion of the results; monitoring journal of students' performance; openness of results.

The existing grade-rating system at Kabardino-Balkarian State University n.a. H.M. Berbekov differentiates the student's learning performance during the whole term grading period. The next stage in GRS is the State Exam to evaluate the student's knowledge and competencies. The above-mentioned factors evolve that differential and versatile information of academic progress results and personal achievements for further moral and material incentives of a student (i.e. recommendations for Master and post-graduate degree programmes, scholarships, internship, academic scholarships, and others), as well as, successful employment for future graduates on this or that profession.

Table 1.
Grading-rating scale of a student's test-paper answer

Grade-rating in 4- scale	Grade-rating in 100-scale	Answers to test-paper
Excellent	26-30	Answers - complete, correct
Good	21-25	Answers - complete enough, correct
Satisfactory	15-20	Answers - incomplete for all questions or some of them
Unsatisfactory	0-14	Answers - fragmentary or non-complete

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