DISCRETE ELECTRONIC TEST ALGORITHM FOR STUDENTS' ASSESSMENT IN THE FIELD OF INFORMATICS

Prof.Asoc.Dr.Kastriot A. Buza
Faculty of Education
University of Prishtina
Address: Agim Ramadani, nn 10000 Prishtina
Kosova

Prof.Dr.Shaban A. Buza
Faculty of Mechanical Engineering
Address: Kodra e Diellit, nn 10000 Prishtina
Kosova

ABSTRACT
In this paper is presented algorithm for building discrete electronic test for assessing the achievement of candidates in the field of informatics. Discrete electronic test includes set of questions with different levels of assessment so that for each candidate will be generated an electronic test combining separate groups according to the level questions of the subject.
Assessment is based on the types and modalities of tests that are used and applied in accordance with standards and official documents for the certain level of education of the Ministry of Education, Science and Technology of the Republic of Kosovo.
Discrete electronic test algorithm includes input values of the group of questions, relevant calculations, the criteria and final score for each candidate to summarize the number of points and the numerical grade.
Based on this algorithm the application with appropriate software for the creation and execution of electronic test is built.
As a result could be created multiple models of discrete electronic tests in other fields or subjects to assess the knowledge of the candidates.
Keywords: *Algorithm, Discrete Electronic Test, Assessment, Application*

1. INTRODUCTION

The process of students' evaluation is a fundamental process of teaching and learning. Evaluation varies starting from an observation of the students' work in classes to the state evaluations and other institutions that deal with the work in schools. In the learning process students' evaluation is often realized by tests. Test intends to measure knowledge in a certain area, subject or a certain module. In most cases students fill a physical test which is delivered to them by their subject teacher, whether he is the Informatics teacher, although the students learn most of the subject in the Informatics lab. By building the discrete electronic test students will subject to tests in a computer in an electronic way and individually.

2. METODOLOGY

Evaluation is a diversified activity that is used to judge the achieved knowledge of students in terms of learning. Evaluation deals with the techniques that can be used to provide information about the student development providing learning information for students, to motivate, to provide the realization of actual objectives as well as to evaluate the preparation of students for their future learning.

2.1. EVALUATION TYPES

There are myriad forms of assessment that are used in school practices in different countries, as well as in our country, related to how much students can posse the learning content. Let's mention some of these important types:

- Formative Assessment aims to encourage students' learning;
- Summative Assessment identifies the standard of students' achieved knowledge at the completion of a certain period of teaching;
- Assessment based in norm is the assessment of each student related to others' assessment based in a certain average norm, spreading widely , based on their skills;
- Assessment based in criteria is the assessment in which each student that fulfills a certain criteria, will be in accordance with a corresponding mark, regardless of the others work;
- Diagnostic assessment identifies difficulties in learning or the problems that are related to it;
- Internal assessment is an assessment where its activities are developed and assessed by the teacher. This assessment takes place in their teaching plan;
- External assessment is planned, organized and realized by extracurricular organs, from experts of education board or higher authorities;
- Daily assessment is a part of the daily work in classroom and is based on checking the completion of the students' duties within the class;
- Preliminary assessment is based in preliminary testing which is organized before the test compilation;
- Continuous assessment is an ultimate assessment of the standard of fulfilling the objectives and is based in partial assessments, during a long period of time;
- Ultimate assessment is based only in a finished assessment of a program of any certain subject, usually at the end of the year, or in the maturity exams;
- Objective assessment is an assessment which has consistent thoughts between teachers and experts for the marks put.
- Assessment in process is a continuous activity, in the process of its completion, e.g. reading of a poem out loud, conduction and development of an experiment etc.;
- Product assessment is based in real, creative work, i.e. an essay, project, painting, model or a composition made for this purpose [5].

2.2. TEST TYPES

Testing is a procedure through which we collect data for students learning. Tests could be compiled by teachers, but they can also use earlier compiled tests.

Test is an assessment that aims to achieve knowledge in a certain subject, skills, strengths, physical preparation or similar classification in different areas. A test could be administered orally, by writing or by typing.

The standardized test is administered to provide a legal point. Standardized tests are used in education and many other areas.

Non-standardized tests are usually flexible in the acting field and formats. These tests usually are developed by the teachers as well as by experts of different fields.

Teacher can compile weekly tests, monthly tests in a semester or even for the whole school year. Duration of each test is determined by teachers themselves or by the education institution.

In general, developed and administrated tests from individual instructors are non-standardized tests, whilst tests developed by governmental and accredited organizations are standardized tests [1,4,6,7,8].

Some types of tests are: writing tests, multiple choices tests, alternative choices tests and blank answers tests [1].

3. BUILDING OF THE DISCRETE ELECTRONIC TEST

The structure of the built test belongs to the subject of Informatics in the pre-university level which involves a group of questions with one correct answer out of three options, whilst the other group of questions involves questions with a blank answer. Each question has its designated points depending on the level of its formulation. The test in total has 10 questions and 50 points, whiles scales of

assessment includes numerical marks 1, 2, 3, 4 and 5, realized in accordance with Assessment Standards determined by the Ministry of Education, Science and Technology of Kosovo [5].

During the creation of the discrete electronic test we should consider a few steps before achieving a successful and practical application. The steps are: laying the task, algorithm in a block-diagram form and testing the algorithm for discrete electronic testing [2].

The building of application for electronic testing in Microsoft Visual Basic 6.0 should pass phases which are important for the successful creation of the application, such as: Realization of interface, editing of Properties, Event code and Execution and Saving [1,3].

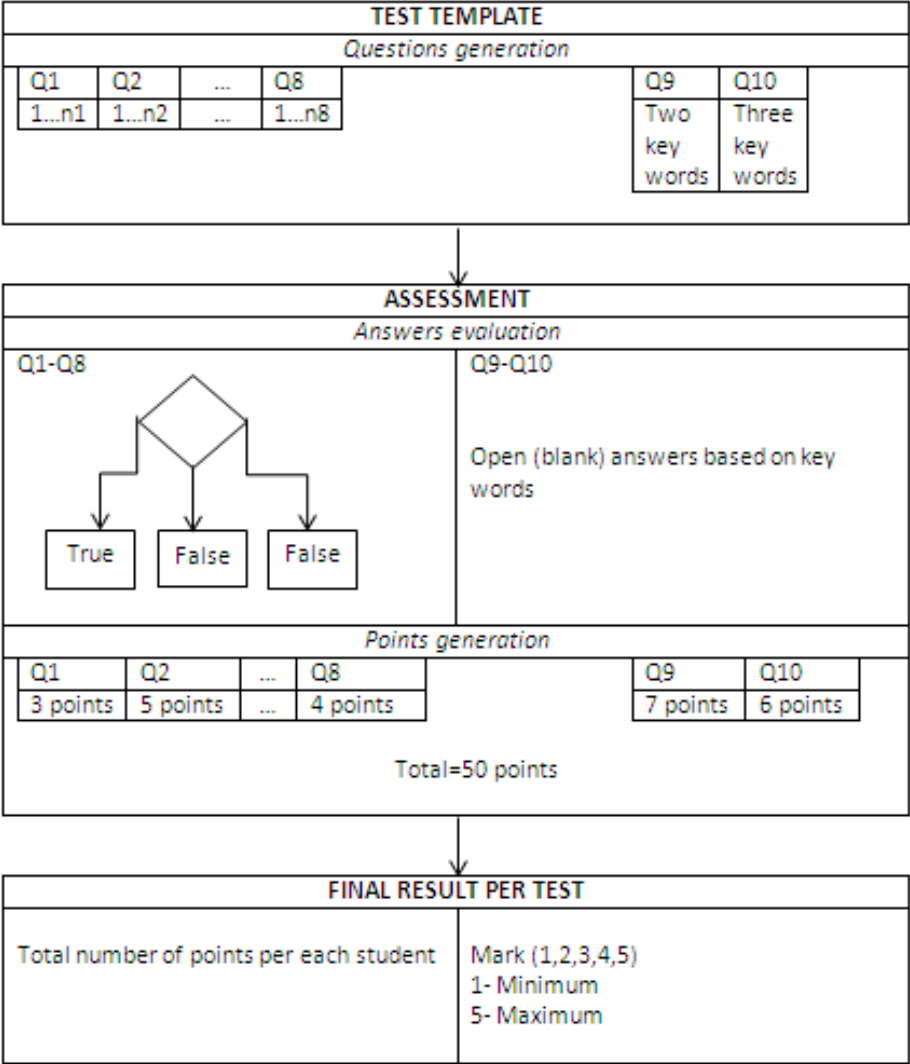Figure 1 shows the algorithm for designing the discrete electronic test.

TEST TEMPLATE							
Questions generation							
Q1	Q2	...	Q8			Q9	Q10
1...n1	1...n2	...	1...n8			Two key words	Three key words

ASSESSMENT	
Answers evaluation	
Q1-Q8	Q9-Q10
True False False	Open (blank) answers based on key words

Points generation						
Q1	Q2	...	Q8		Q9	Q10
3 points	5 points	...	4 points		7 points	6 points

Total=50 points

FINAL RESULT PER TEST	
Total number of points per each student	Mark (1,2,3,4,5)
1- Minimum
5- Maximum

Figure 1. Algorithm for discrete electronic test

4. CONCLUSION

In this project by building the discrete electronic test we can gain important results regarding the implementation of qualitative assessment of students in the learning process. After setting the subject for the compilation of the discrete electronic test, the creation of the algorithm, the building of the application and its execution, we conclude:

- The discrete electronic test successively generates a number of unique tests depending on the quantity of students that undergo the assessment;
- Feedbacks for the achievement of certain skills from the discrete electronic test are faster, more valuable and more reliable than feedbacks from the classic test;

- The realization duration of the discrete electronic test is very effective and rational;
- Applied methodology for compiling a discrete electronic test for the subject of Informatics serves for a successful application in the other subjects too;
- Education institutions receive fast and correct information regarding the results achieved by students;
- Parents and others can be informed at any time;
- Teacher and student interact through analyses and discussion for points achieved in the electronic test;
- Teachers develop qualitative professional practices for the assessment of students;
- Assessment process is provided in all levels of education.

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