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An Alternative Way for Students' Knowledge Evaluation

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Abstract:
The article presents an experimental way for evaluation of students' knowledge. The experiment was organized in the frame of "Computer periphery" course in New Bulgarian University during 2016/2017 academic year. Students were in third year of their bachelor degree. The achieved results are analyzed and compared to those with the previous two years. A survey on the students' opinion is also stated.

Keywords: Evaluation, Tests, Grades

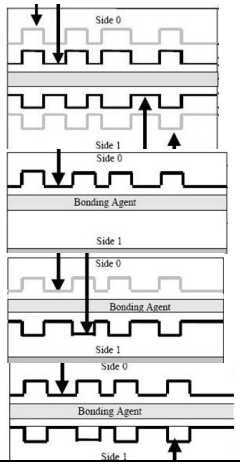
I. INTRODUCTION

Traditionally, many teachers have evaluated their students' knowledge by giving examinations and papers, often only at the middle and end of the quarter. As a result, a professor lecturing to a large introductory class might not recognize until final exams are finished that students consistently confused two important and closely related ideas. Other professors, who track their students' work more regularly—through problem sets, for example— might assume that such written homework is helping achieve a major goal of the course, such as to develop students' general problem-solving ability. [1] Assessment strategies should be considered to be more than just a tool to measure ability [2]. Aspart of higher education, examination should be used as an educational tool that influences the learning process. If the assessment is based on factual knowledge, and then the students will learn, memorize and recall facts and detail [3]. It is also considered [4] that assessment tends to dominate the student's experience of learning and can be more influential than the learning process itself. In New Bulgarian University there is a rule the final grade for each course to be based on at least two components – two assessment types during the semester. These types could be test, analyses, homework, project, survey, casus, presentation etc. Those of students who failed on two mid-semester assessments are allowed to go in for an examination after the semester. Or if students are not satisfied by the grade formed by above mentioned assessment types may go in for an examination as well. For the courses that take place in computer labs in most cases the mid-semester assessments are in the form of computer tests mostly in Moodle. But for the theoretical courses that are enrolled by many students and take place in big lecture halls the most common assessment forms that are used are paper tests with different question types, mainly essay questions.

II. EVALUATION METHOD

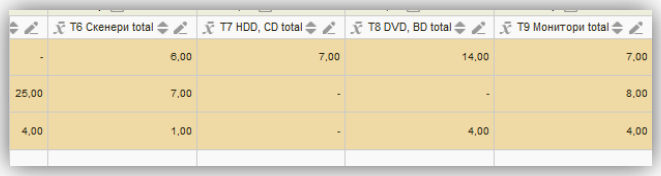
An experimental evaluation of students' knowledge was conducted on course "Computer periphery" which is absolutely theoretical course and is difficult for the students. In previous years the final grade was based on two paper tests held in the middle of the semester (7th-8th week) and at the end of the semester (14th-15th week). Last year the students were proposed and agreed to try an experimental evaluation. Each new lecture to start with 15 minutes test that contains questions on the pervious lecture. Each weekly test was assessed only with points, without a grade. Finally two mid-grades were formed – T1 (based on summed points from 7 tests during the first half of the semester) and T2 (based on summed points from 7 tests during the second half of the semester). The average of T1 and T2 forms the final grade for the course. Weekly tests contain different type of questions:

Table.1. Type of Questions in the Weekly Tests

Question type	**Example**
essay	Describe the main three technics which are applied in MP3 compression!
fill in the blank	The lightfrom a DVD laser has a wavelength of …while the light from a BluRay laser is …
matching Match the DVD formats with the relative structure	DVD5  DVD9 DVD10 DVD18
multiple choice Which of the following	☐ 8:1 ☐ 1:8 ☐ 4:1 ☐ 1:4

represents the best compression ratio?	

As the students have to be well informed about the points they received on each weekly test a grade book was developed in moodle for each lecture topic.



	T6 Скенери total	T7 HDD, CD total	T8 DVD, BD total	T9 Монитори total
-	6,00	7,00	14,00	7,00
25,00	7,00	-	-	8,00
4,00	1,00	-	4,00	4,00

Figure.1. Moodle Grade book

III. ANALYSES OF THE RESULTS

In order to estimate whether the experiment was successful two methods are used. A comparison of the current students' results with results of the students from the previous two years is made. At the end of the course an inquiry was held about the students' opinion and comments about this form of evaluation. The grading system in Bulgaria is shown in Table 2:

Table.2.bulgarian Grading System

Excellent	5.50-6.00
Very good	4.50-5.49
Good	3.50-4.49
Satisfactory	3:00-3:49
Fail	2:00-2:99

Actually the grades allowed (in New Bulgarian University) are those divisible by 0.5. The following table presents number of the students (in percent) who receive final grade based on weekly tests in 2017 and number of the students (in percent) who receive final grade based on two mid-semester tests during previous years (2016, 2015). The table contains also the respectively average grades.

Table.3. comparison of Number of Students, Received Final Grade during the Last Three Years and Rtheir Respective Marks

Year	Number of the students (in percent) who receive final grade	Average grade
2017 based on weekly tests	56 %	4.8
2016 based on two mid-semester tests	25 %	4.33
2015 based on two mid-semester tests	40 %	4.28

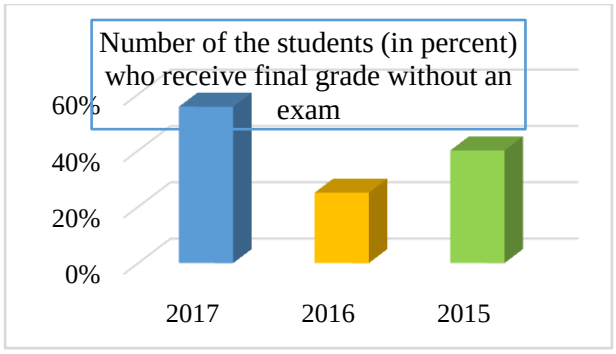


Figure.2. Number of the students (in percent) who receive final grade without an exam

It is obvious that in 2017 more than 55% of the students received final grade for the course without sitting for an exam but making weekly tests during the semester. Comparing with the previous two years, when students make only two mid-semester tests that, of course, included the whole material from a half of the semester, the percentage of the students received final grade is much lower. Also the comparison of the final grades (Fig. 3) shows that although or because students have to study each week the material from the previous lecture the results are much better in comparison with the previous years.

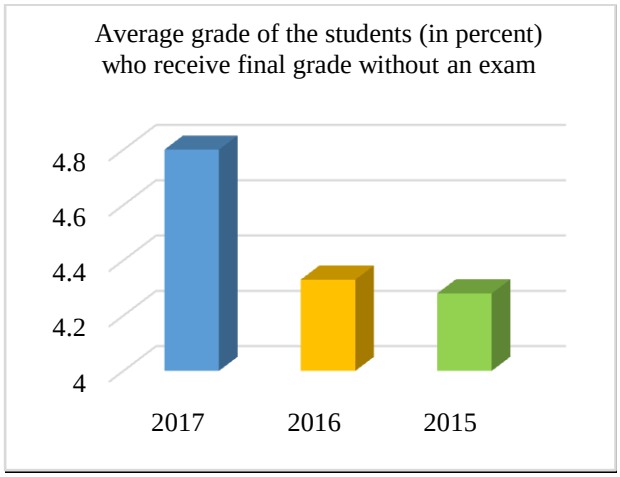


Figure.3.Average grade of the students (in percent) who receive final grade without an exam

Those of students who didn't make weekly tests or fail them have to sit for an examination. Table 4 presents number of the students (in percent) who receive final grade based on an examination and the respectively average grade:

Table.4. number Of the Students (In Percent) Who Receive Final Grade based On an Examination and the Respectively Average Grade

Year	Number of the students (in percent) who receive final grade based on an examination	Average grade
2017	7 %	3.43
2016	9 %	3.11
2015	12 %	3.6

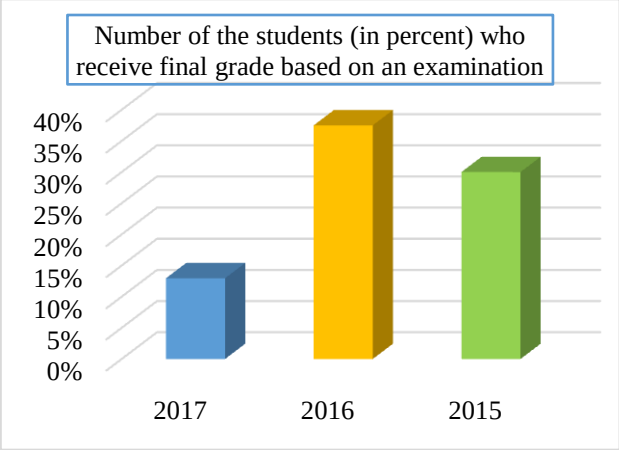


Figure.4. number of The Students (In Percent) Who Receive Final Grade based On an Examination

Logically the number of students that went in examination in 2017 is much lower compared to the previous years, because most of the students received the final grade for the course, based on the weekly tests.

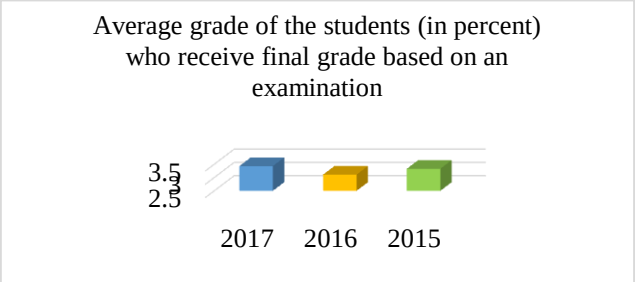


Figure.5. average Grade of the Students (In Percent) Who Receive Final Grade based On an Examination

And the final grades are better, because some of the students who went for an exam had made some weekly tests and they were prepared more or less for them. The inquiry about the students' opinion and comments about this form of evaluationwas held at the end of the course and was organized in model system. Below are the questions and the respective students' answers, visualized by charts.

Q1. How many weekly tests did you make during the first half of the semester?

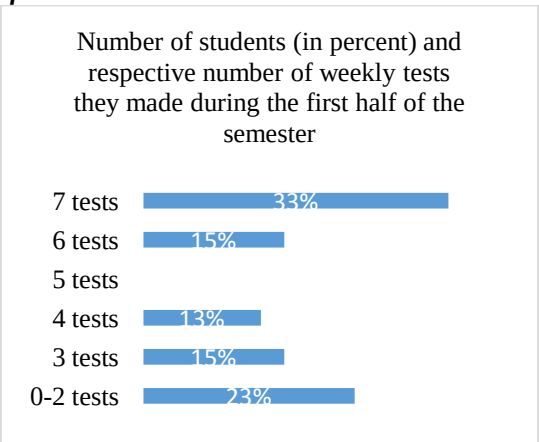


Figure.6. number of Students (In Percent) And Respective Number of Weekly Tests they made during the First Half of the Semester

It is visible that there is a stable percent (about 50%) of students that tried to do most of the tests.

Q2. What grade did you receive for the first half of the semester (T1)?

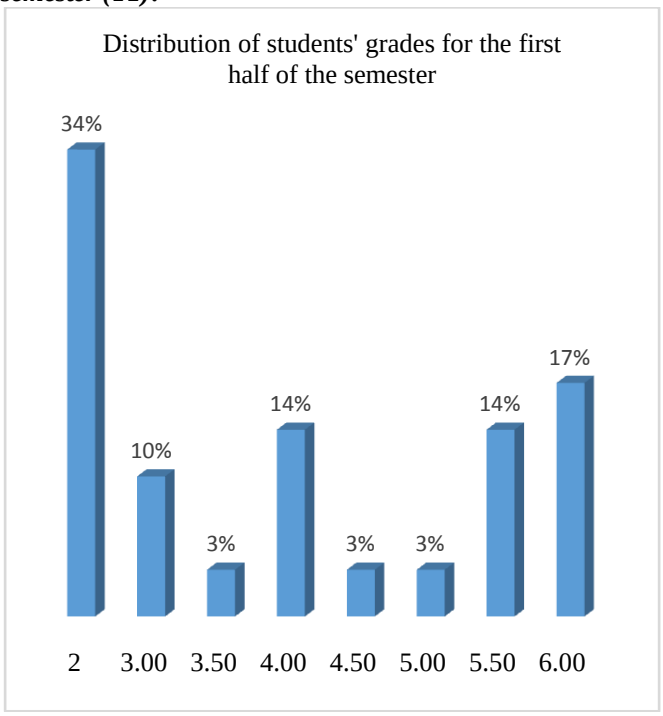


Figure.7. Distribution of Students' Grades For the First Half of the Semester

We can see the grades vary in different range. The high percentage of failed students shows that tests were not easy and the students were not well prepared for them.

Q3. How many weekly tests did you make during the second half of the semester?

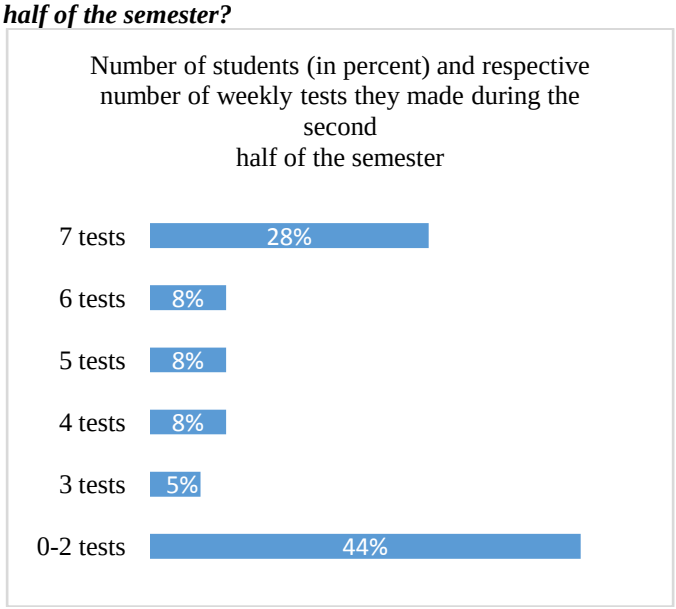


Figure.8. number of Students (In Percent) And Respective Number of Weekly Tests they made during the Second Half of the Semester

Fig. 8 shows that the number of the students who made less than 3 tests during the second half of the semester is extremely increased, but the number of the students who made all 7 tests is very slightly decreased. And the percentage of the excellent grades (Fig. 8) is nearly the same as during the first half of the semester (the difference is only 1 %).

Q4. What grade did you receive for the second half of the semester (T2)?

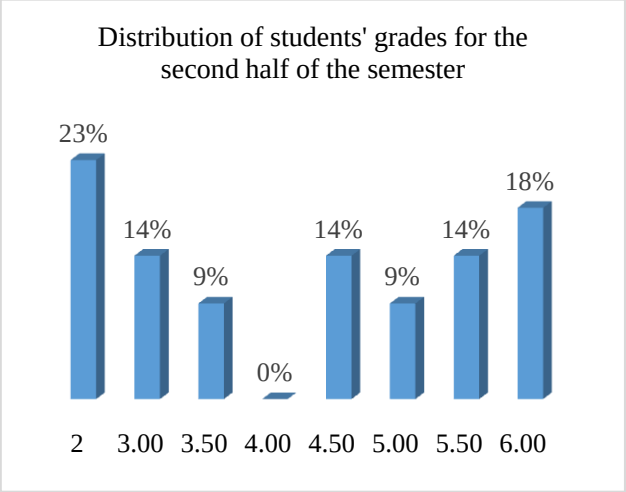


Figure.9. distribution of Students' Grades for the Second Half of the Semester

Q5. Do you consider you get more knowledge when you study each week because you have to be ready for the weekly test?

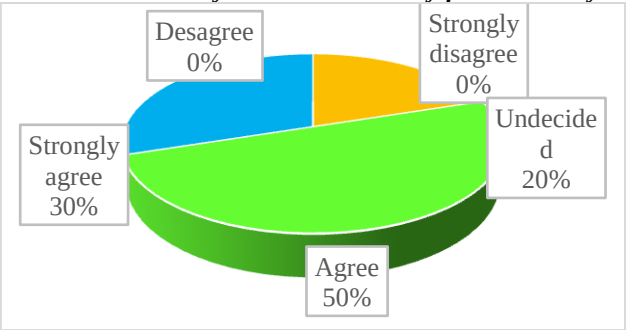


Figure.10. Students' Opinion

Although it is time consuming and not easy to prepare themselves each week for a test, 80% of the students think that learning is more efficient with this method of evaluation.

Q6. I will appreciate any comments (positive and negative).

This question was not obligatory to be answered, but most of the students gave responses. All of them were positive, they mentioned that the course was useful for them as in their work as in their daily life. Most of them express their approval of the applied method for evaluation of their knowledge, pointing that it is more reasonable to study each week a lecture, instead to study huge material twice in the semester.

IV. COCLUSION

The analyses of the experiment give a proof that the selected method of students' knowledge evaluation is an efficient:

- Students are more motivated to study each week;
- More students receive a final grade based on weekly tests without going for an exam;
- The grades are higher;
- Students assimilate new theory lightly, gradually and steadily.

The only disadvantage is for the professor who has to check many tests each week, to set up a gradebook and fulfill the tests points/marks. But finally she/he is satisfied of the students' results and the efforts were worthwhile.

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