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E-EXAMINATIONS FROM STUDENT′S PERSPECTIVE – THE FUTURE OF KNOWLEDGE EVALUATION

Introduction

Process of transferring knowledge and skills is strictly associated with the measurement of its effectiveness. It's hard to imagine teaching without checking the results and evaluation of students. At the same time, the current educational system is based on the traditional paradigm existing for many years. In this model we have face-to-face contact between tutor and student. The consequence of this situation and old habits is a big resistance and difficulty to implement new educational solutions. On the other hand, technological progress may not be stopped and young generation expects changes in the current education system. This also is closely linked with examination system and the change of existing traditional paper evaluation into e-exams. The aim of this article is to deepen the knowledge of existing examination forms and to describe student's opinions on different forms of knowledge check. The article presents authors research results in this area.

1. Testing and assessment as basic operations in knowledge evaluation

Knowledge evaluation is inherent element of education. Testing and assessment operations evaluate students' knowledge, skills and behavior. Their main purpose is to provide feedback to students, teachers and people supervising the learning process. They can also be used to make improvements. By compar-

ing the achieved results with objectives, the effectiveness of the education pro-
cess can be measured.

Testing is a process that should be carried out continuously. Its goal is to
motivate students to work systematically. This action helps to acquire knowledge
and skills. Very often, be taking into account the knowledge level of particular
group or individual, the teacher can customize the didactical methods and forms
to the specific situation and thereby achieve better learning outcomes [Be06].

According to the definition given by W. Okoń, assessment is expressing
opinions using degrees or descriptive feedback. It can be carried out occasional-
ly or regularly, during or after the activity. The grades are usually expressed by
numbers from 2 to 5 or words pass/fail or know/do not know.

An assessment examiner opinion – positive or negative – about the person,
object or action. It should be noted that the assessment of human actions or any
items may contain subjective elements. They arise from social relationships and
the impact of personal education [Ok03].

There are two types of assessment [Be06]:
– emotional (especially moral and esthetic), in which the subjective elements
  are more important,
– utilitarian (practical), where to determine person's skills and knowledge we
  compare the results with the existing scale or reference system; that is why
  this method is more objective.

Testing and assessment have many functions:
– didactical – aimed to organize students' knowledge and to identify how to
  remove any errors,
– educational – associated with development of students' attitudes, responsi-
  bilities, and their overall development,
– diagnostic – allows to plan further development of the learner, analyze the
  learning process and take the appropriate actions that are necessary,
– motivational – provides the positive attitude towards lifelong learning,
– selective – used to identify particularly gifted or outstanding persons,
– control – allows to determine the level of achievement in relation to the re-
  quirements written in curriculum,
– methodological – supporting improvement of the educational process
  through analysis of teaching activities; it allows to identify and to imple-
  ment appropriate corrections to educational process.

Testing and assessment must be organized with the following good practices. All
individuals involved in the process must know, understand and accept the exist-

ing procedure. Evaluation criteria must be clear and objective, which excludes their wrong interpretation. When set and accepted, they may not be changed until the end of the course. Due to the fact that each student has different experience, personality and living situation, these factors should also be taken into account. Keep in mind that the evaluation has great importance and impact. It can serve as a reward; motivate to work and to expand knowledge or skills. Wrong or unfair grade can ruin the effects of education and demotivate for further action. Good and fair assessment takes into account the progress made during the learning process, individual commitment and contribution of work. Each grade should serve as a feedback and contain the teacher's comments and suggestions for further work. In such case learning will be more effective [Be06]. In the evaluation process it is crucial to engage learners to self-control and self-check. Individual monitoring of the learning process increases the awareness and contributes to more systematic work.

2. Different evaluation methods

The selection of evaluation methods should be different and dependent on the type of subject, time and place. Preliminary assessment, before the learning starts, allows to determine the initial level of the group. Current assessment, carried out during the study, helps to keep high motivation. Final assessment shows learning results and students' progress. All evaluation results should now be added together to determine the final grade. Both initial and current assessment are often different from the final assessment. They often express the difficulties that students meet during their studies.

The various testing and assessment methods are appropriate in different situations, subjects, knowledge and skills. In the literature some different classifications can be found. W. Kobyliński proposes the following evaluation categories [So59]:

a. Conventional methods, which include:
   – oral, face-to-face exams,
   – written paper exams,
   – practical work,
   – proper usage of source materials,
   – observations.

b. Testing methods:
    – selection tests – single or multiple choice tests,
    – fill the gaps tests that require to write the missing words or elements,
    – tests that are a combination of two previous groups.
c. Machine methods, using special examinations machines, hardware and software.

W. Okoń in his classification took into account the type of communication with the environment and highlighted [Ok03]:
– oral knowledge check,
– written paper exams,
– use of books (mainly in the humanities subjects),
– practical assessment,
– human observation during their work.

Taking into consideration presented classifications we may notice that they are incomplete. They include only traditional evaluation methods. With the development of IT technology and telecommunication new, electronic methods appear. E-exams are getting more and more popularity among teachers and students.

3. Description of online exams

The most frequently used electronic forms of evaluation are single choice tests, multiple choice tests, drag and drop exercises, fill in the gaps exercises, ordering exercises, numerical and computational tasks. Figure 1 presents the example of application that allows creating online exams using different types of questions.
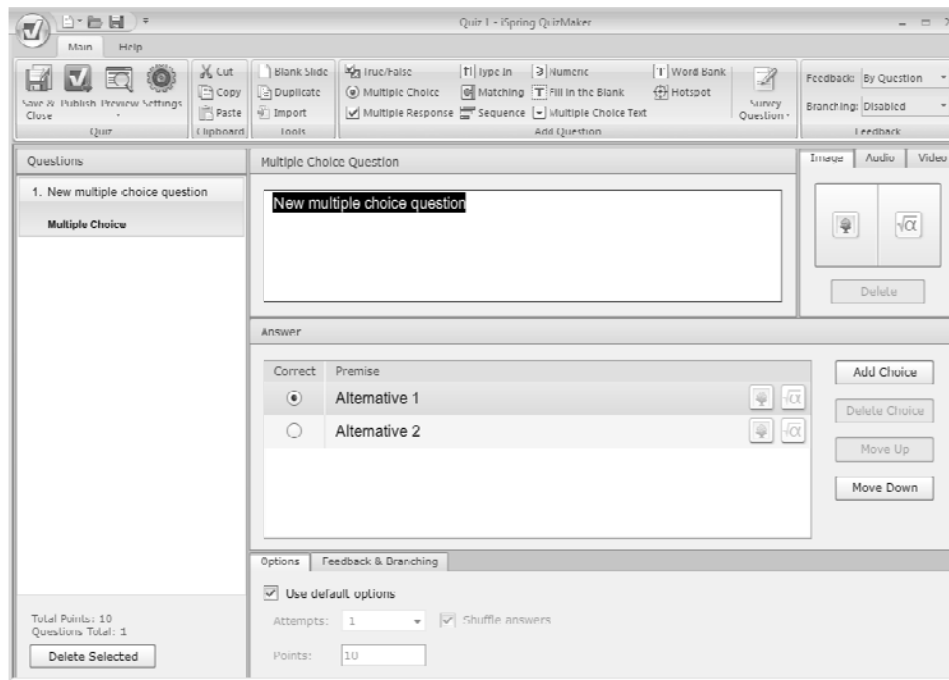
Fig. 1. iSpring Quiz Maker add-in to Microsoft PowerPoint

The characteristic feature of all mentioned exercises is strictly defined structure. It allows automating the evaluation process. The system checks automatically all questions by comparing user's answers with defined key. This makes it possible to get the result immediately after completing the exam and to receive personalized feedback. The teacher is not needed here. All created questions may be used in different situations, courses and exams.

The second group of evaluation forms includes text exercises (short answer, essay) and file response exercises that give a chance to prepare the answer in a file and publish it in the examination system. They are not structured as questions in the first group. They allow to prepare individual answer for given question, describe a solution to a problem, comment the topic. They do not limit the user. The unique character of such questions on one side is advantage but on the other side there is no key with the good solutions. That is why the teacher involvement is necessary here. He must open all the answers and submitted files, analyze them and then give grades and write the feedback and comments for each individual student. In big groups with huge number of users this process may be very demanding and time consuming. Figure 2 illustrates sample essay task and list of possible question types in Blackboard e-learning platform.
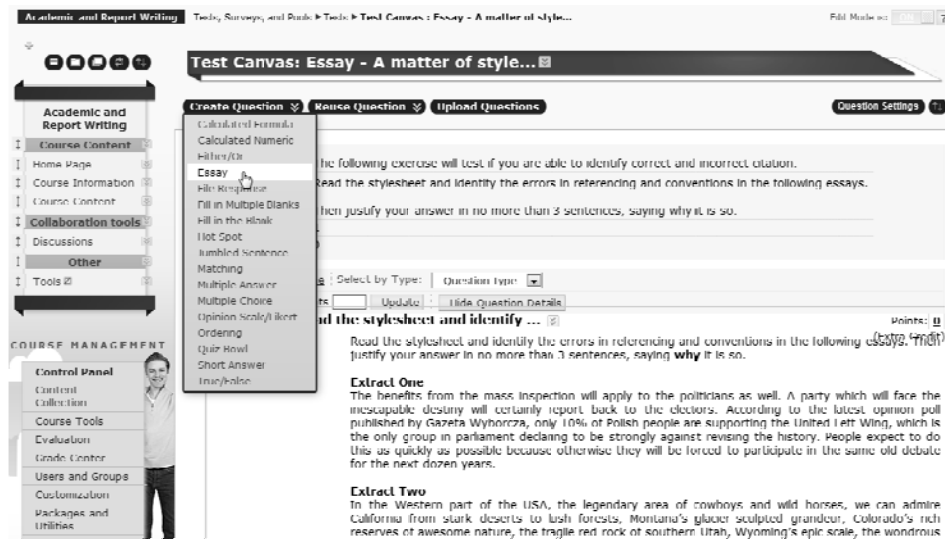
Fig. 2. List of question types build-in Blackboard learning platform

It should be noted that many of the e-learning solutions make it possible to create advanced and sophisticated exams. Using special software course designers may produce customized and uncommon questions like crosswords (see: Figure 3). They may include different types of questions in one exam. It is also possible to limit access to different modules of the course. Until the user achieves particular result from exam, some course content will be not available to the student. This process increase student's involvement and systematic learning.

E-exams are very useful when it is necessary to evaluate at the same time large group of people. They use the unified grading criteria. This eliminates subjectivity and provides a sense of justice. The students do not have to wait long for their grades and teacher role is limited. All results are saved in a central database. That is why it is easy to analyze and compare them with learning objectives. They are available on demand.

Electronic evaluation has also some disadvantages and limitations. They should be kept in mind when deciding on its implementation. Very often it is not possible to justify formulated opinions. In most question types the user can choose among given answers. There is no place to write any comments. The probability of guessing the answers, cheating and use the help of others may also be a problem. For some students such tests can be more stressful because they have difficulties in writing long texts using keyboard. Most people are accustomed to traditional forms of assessment. A major problem for electronic as-

sessments is also difficulty to provide reliable results, comparable with traditional exams. Table 1 presents advantages and disadvantages of online assessments from students, teachers and university perspective.
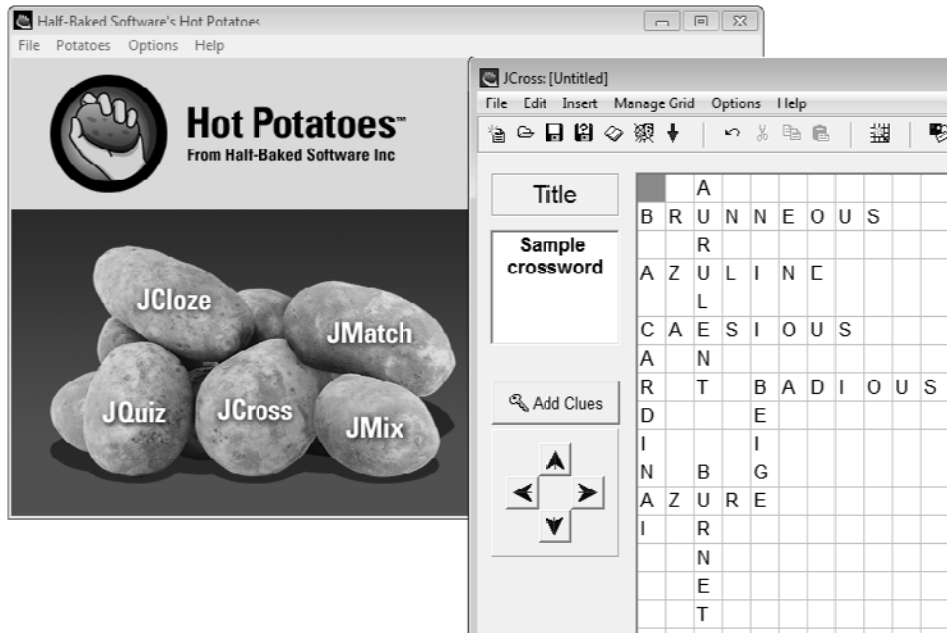

Fig. 3. Creating crossword using Hot Potatoes application, JCross module

Due to the type and functionality existing online examination programs can be divided into two groups: computer assisted assessment and computer based assessment. The first applications allow to group and manage students answers, helping teacher during checking and grading activities. The second group generates random tests, checks the answers and saves the results in data base without teacher's involvement.

With technological progress we may observe that available assessment solutions and technology are becoming more and more powerful. It is now possible to track the person activities using the camera and microphone, block other software, popup windows, generate randomized individual sets of questions, set examination window, limit available time for a response and number of attempts. All those methods are very useful but still they do not guarantee full control over the whole process and they do not eliminate cheating. To ensure high reliability of the results, certification exams must be conducted under the supervision of the teacher or selected person in traditional computer laboratory [BrWoBoRuWe06].

Table 1

Pros and cons of e-examinations

	Advantages	Disadvantages
Teachers	– reduced work load in most cases – once created, question may be used in different courses – possibility to distribute multiple versions of the exams and assignments without having to manually monitor which students got which tests – generated reports help to identify learning problems – audio and video elements may be added to make exam more practical – eliminate human errors in grading	– technology is not always reliable – results may be lost if a system breaks down – some expertise is needed to create exams – online examination is not suitable for essay writing or cognitive thinking testing – more work if individual feedback for every student is needed
Students	– transparency and effective preparation for exams – possibility to solve practice tests – Internet-based assessments may be done at friendly environment – instant result – higher grade of objectivity – possibility to receive feedback onexamination result – all results are saved in grade book	– no room for explaining the answer or getting partial credit – answers on online assessments can only be right or wrong – it is not possible to present person's line of thinking when selecting the answer – for some people more stressful because of problems with fast writing using keyboard or Internet connection
University	– greater flexibility with respect to location and timing – reduced examination costs – eco-friendly, no papers and photocopies – less storage space is needed to keep the exams. All data can be stored on a single server – rationalization of selection of students and of placement tests – support of the administration by an effective and integrated management of examinations	– huge implementation costs of assessment system or e-learning platform – some trainings for students and teachers are needed

Source: Own research.

4. Student's opinions about e-examinations

From 2009 to 2011 the author of this article carried out the study, whose main objective was to assess and compare the effectiveness of traditional education, blended learning and e-learning. The research was made at the University of Information Technology and Management in Rzeszow. It involved 292 students from the Faculty of Economics. Results from that research show what students think about different types of assessment, how they perceive e-exams, their main drawbacks and limitations. All these information may provide a valuable argument when deciding on their implementation.
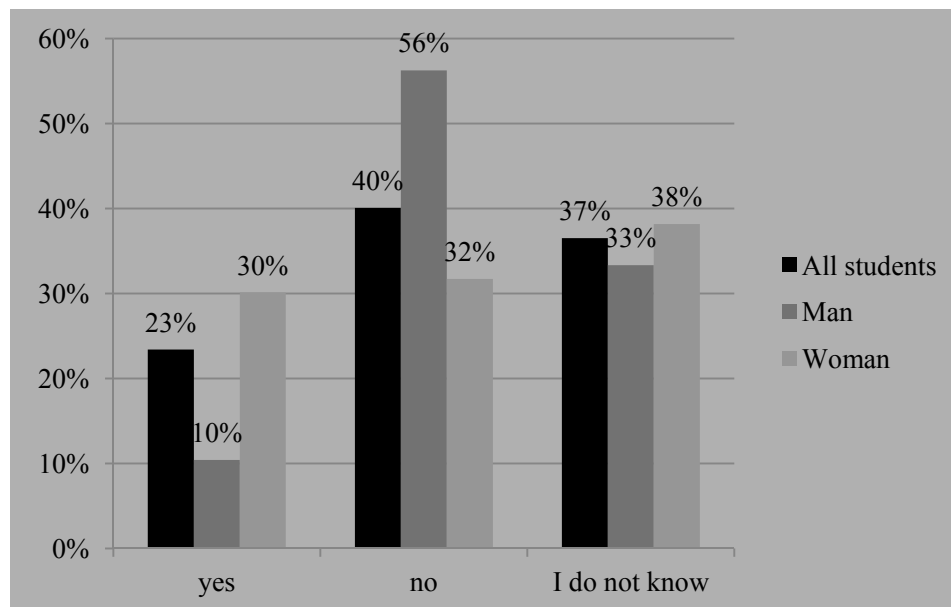
Fig. 4. E-exams are more stressful than traditional
Source: Own research.

In one of the questions the students indicated whether online exams are more stressful than traditional writing assessments. Figure 4 presents their answers about that issue. 23% of people agreed with that statement. They believe that e-exams can be more stressful because they have some difficulties in using computer software, they are accustomed to traditional knowledge verification. 40% of students have opposite opinion. They think that both forms are equally stressful. One-third of respondents had no opinion on this matter. Comparing the

results by gender, it should be noted that that women sees electronic exams much more stressful than men. The difference here was about 20%.

Similar results were obtained about difficulty of e-exams (see: Figure 5). 18% of students consider them to be more difficult than the traditional exams. 41% of the respondents think that the level of difficulty of both examination forms is the same. In this question there were also big differences between men and women. Only 11% of men believe that online exams are more difficult than traditional, while this percent was two times higher (22%) for women.
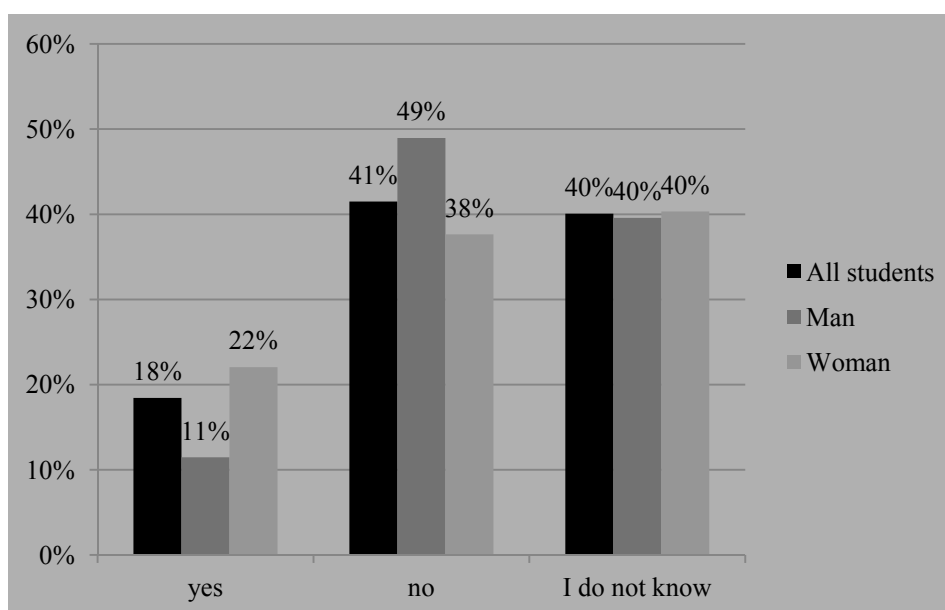

Fig. 5. E-exams are more difficult than traditional
Source: Own research.

After determining whether electronic exams are either stressful or difficult than traditional students in the following question indicated if they want online assessments at their university. Figure 6 presents their answers. In total, 45% of respondents strongly agreed or tend to agree for that. On the contrary, the opposite opinion have 19% of students. The differences in gender were also present here. 57% of man compared to 40% of woman and would like to have online assessments. 14% of man and 21% of woman do not like that exams and they want traditional knowledge verification methods.
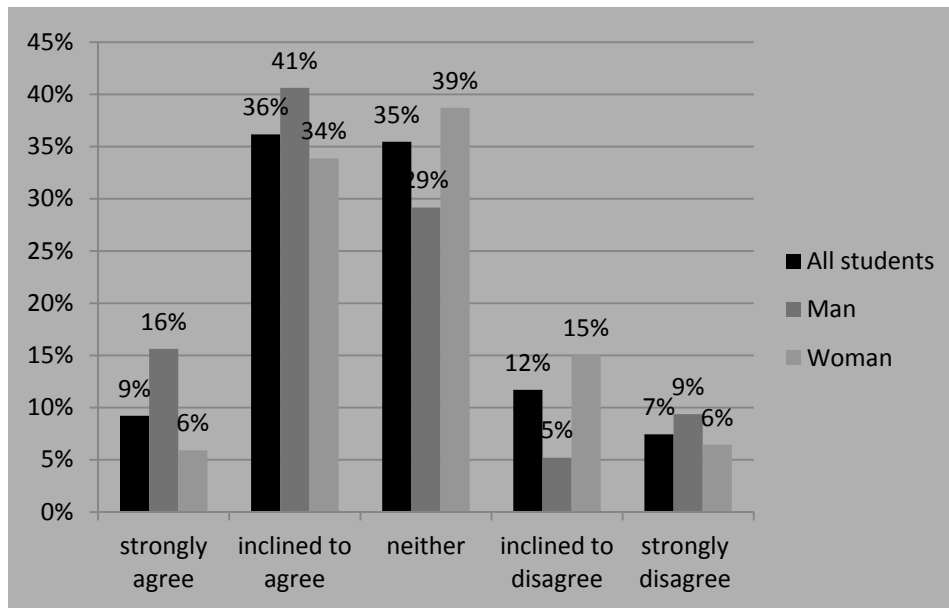
Fig. 6. Students' preferences for implementing e-exams at the university
Source: Own research.

The last question in this section of the survey was about students prefer-ences for different forms of examination depending on questions types (see Fig-ure 7). In all cases, a written exam is the most preferred form of knowledge veri-fication. This method has huge advantage over different forms in all types of questions. E-exams may be an alternative for traditional in most of the cases ex-cept open questions, where oral exam was more accepted.
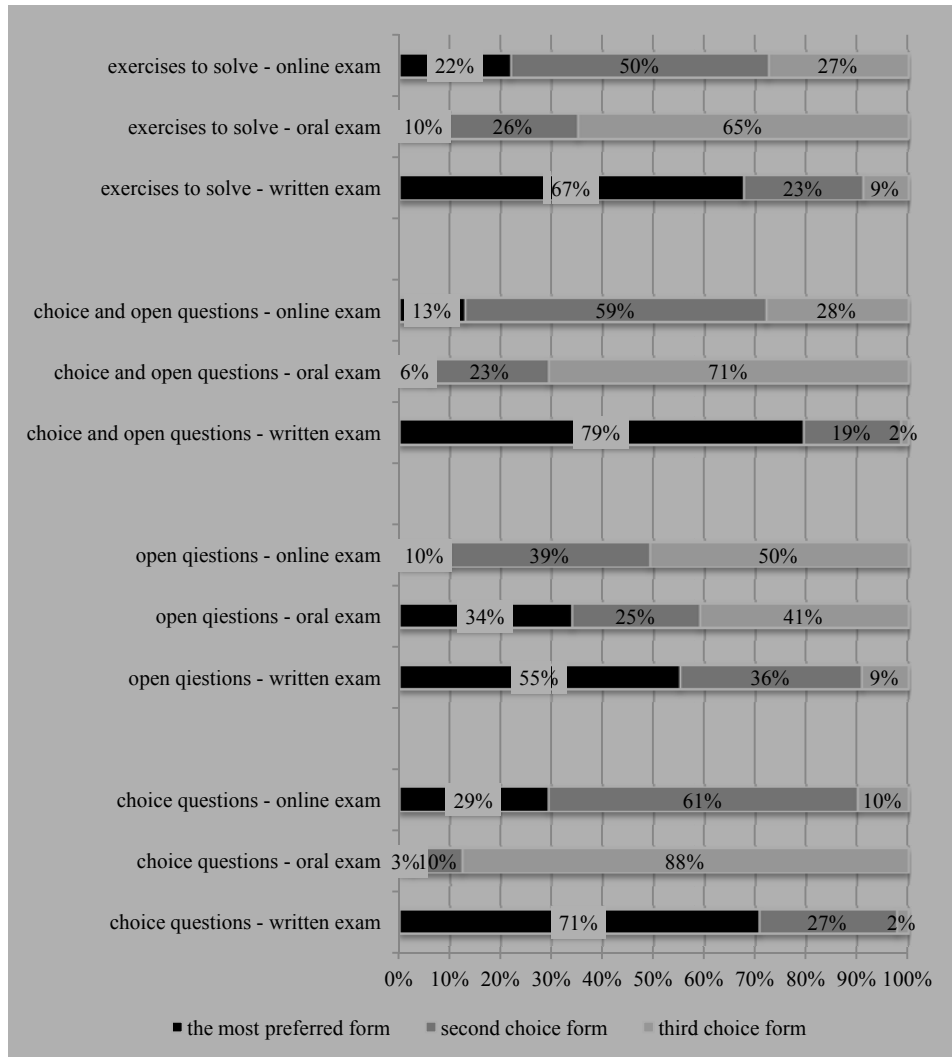
Fig. 7. Students' preferences for different form of evaluation related to question
        type
Source: Own research.

The survey results show that students are ready for e-exams. Majority of
people believe that they are not more stressful of difficult than traditional ones.
Most students want online assessments to be implemented at their university. For
most respondents e-exams may be an alternative form knowledge verification. It
is the second choice form, just after traditional written exams.

Conclusion

Online assessment is gaining more and more popularity. Its advantages are very encouraging for students, teachers and universities. In most of the cases they exceed their weaknesses. Combined with e-learning they offer new educational possibilities for different groups of people. They are the answer for changing word, new mobile technologies and students' mobility. Described research results support the opinion that students are ready for this form of knowledge verification. The remaining question is how to ensure the reliability of achieved results and avoid cheating. Until this is not solved, key exams will have to be done at university facilities with a supervisor. But this issue does not eliminate e--exams. They also can be used but in computer laboratory.

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E-EGZAMINY W OPINII STUDENTÓW
– NOWA METODA WERYFIKACJI WIEDZY

Streszczenie

Rozwój e-learningu jest ściśle związany z koniecznością weryfikacji zdobywanej w ten sposób wiedzy i umiejętności. Celem niniejszego artykułu jest charakterystyka e-egzaminów oraz odpowiedź na pytania, jaka jest przyszłość tej formy egzaminacyjnej i jak postrzegają ją studenci. Przedstawiono w nim wyniki badań Autora w tym zakresie. Opisano tu również sprawdzanie i ocenianie, jako podstawowe czynności oceny procesu kształcenia, dostępne metody weryfikacji wiedzy i umiejętności oraz zalety i wady egzaminów elektronicznych.