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Multiple choice test examination in the university

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Abstract

The goal of research is to determine the attitude and stress level of students during multiple-choice tests. To achieve the goal, we conducted a poll among students of five Russian universities. The study used the quantitative research methodology to collect and analyze the values of the poll. As a result, those who tend to worry about exams were also less susceptible to distraction when searching for goals. In

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conclusion, students, generally have a positive attitude towards multiple-choice tests, despite mentioning some disadvantages that may influence test objectivity.

Keywords: Test Examination, Universities, Stress, Students.

El examen de opción múltiple en la universidad

Resumen

El objetivo de la investigación es determinar la actitud y el nivel de estrés de los estudiantes durante las pruebas de opción múltiple. Para lograr el objetivo, realizamos una encuesta entre estudiantes de cinco universidades rusas. El estudio utilizó la metodología de investigación cuantitativa para recopilar y analizar los valores de la encuesta. Como resultado, aquellos que tienden a preocuparse por los exámenes también fueron menos susceptibles a la distracción al buscar metas. En conclusión, los estudiantes generalmente tienen una actitud positiva hacia las pruebas de opción múltiple, a pesar de mencionar algunas desventajas que pueden influir en la objetividad de la prueba.

Palabras clave: Examen de Exámenes, Universidades, Estrés, Estudiantes.

1. INTRODUCTION

Examinations are an inevitable fact of a student's life. The majority of academic programs include a certain formal

assessment. School students pass a compulsory exam at the level of primary and secondary school. Then, if students wish to get a higher education, as a rule, they will have to receive certain standardized examination scores in high school in order to qualify for university entrance. They are also awaiting further evaluation at graduation (KEOGH ET AL., 2004). Examination papers can be divided into two types: traditional and multiple-choice test examination.

By traditional examination is meant formal, end-of-year, timed examination papers to which students respond in the written form (essay-style) answers to a limited choice of previously unseen questions, set in advance and answered in examination centers where invigilators (examination supervisors) prevent communication between students and prohibit the use of notes or other revision aids (HARRIS, 2005). The traditional examination is there for distinguished from multiple choice tests, coursework, project-based work, peer review, and open-book exams amongst other styles of assessment. Here, then, the term traditional examination is shorthand for an end-of-year summative assessment method with the primary purpose of auditing students' comprehension and learning of core theory and course content.

The use of traditional examination is an entrenched practice in colleges and universities. There is an impact of various assessment methods on the performance of individual students. For example, in modules in which all or part of the assessment is based on coursework (and having corrected for factors such as class size and at which stages of the degree program the modules was taken), students achieved higher marks on average than they did in modules using traditional examination assessment only. Coursework was also found to reduce variation between student grades.

Various publications highlight the potential benefits of user testing in educational institutions (MCDANIEL ET AL., 2006). Tasting, no doubts can influence learning outcomes. Tests can be used to provide an evaluation of student performance, as well as to transmit information about learning objectives and standards of a course. However, some researchers made a more specific statement about the direct testing effect on the learning process: retrieval of information from memory during the initial test directly affects its presentation. Thus, testing is offered as a more useful training session than other alternatives, including restudying. The direct impact of testing on memory is due to the differential

processing that occurs during a search and compared to restudying, increases the availability of information and makes it less forgetting (KARPICKE AND ROEDIGER, 2007).

However, available data suggest that test results may also depend on the type of test provided. One of the interpretations of these results highlights that the tasks requiring a lot of searching are better for increasing long-term memory, and that recognition tasks are less effective because they require less processing. In this case, the multiple choice and short-answer question tests are the most common points of discussion (HINZE AND WILEY, 2011).

It is important to emphasize that this test format still requires information retrieval since students are asked to fill in the blanks by reproducing in their memory the texts they have read. Thus, if the processes associated with retrieving information from memory are the mechanism underlying the direct benefits of testing, then gap filling tests should be more effective than re-exposure conditions that do not require extraction, at least for specially tested materials (MCDANIEL ET AL., 2007). Besides some students tell on excessive fear

of exams, and it is believed that they have a specific personality trait, known as test anxiety. Researchers and clinician scientists are particularly concerned about test anxiety as it can impact students' ability to do well, even if they are gifted and intelligent enough to succeed (RICHARDS ET AL., 2000).

Test anxiety is associated with thought disorders, somesthetic senses, and tensions. However, some scientists believe that anxiety plays a central role in the intervention of cognitive functions. They claim that test anxiety reduces the effectiveness of students' performance, but not necessarily the effectiveness of cognitive processes. Thus, it is believed that people with test anxiety suffer from disorders as they may need to intensify their efforts to achieve a satisfactory performance level, but they are not capable of performing the task effectively enough (KEOGH AND FRENCH, 2001).

2. METHODS

2.1. Research design

Based on objectives to be achieved, empirical research was conducted to collect the information, which lied in polling students. The study used the quantitative research methodology to collect and analyze the values of the poll. The poll consisted of two questionnaires in which students were asked to choose from several answers. The first questionnaire was aimed to identify the general attitude of students to multiple-choice test examination, the second - to determine the stress level while doing such tasks.

2.2. Participants

Based on objectives to be achieved, empirical research was conducted which consisted of bachelor students polling at state universities. The poll was carried out at five universities. Totally, 630 students were polled. The number of men and women polled were approximately equal (49% of men and 51% of women). All participants were full-time students. The age of respondents ranged from 18 to 21 years that was done in order to expand the scope of the study. Purposive sampling was considered the most appropriate sampling method.

125 students (major in general medicine and Russian language and literature) were polled from the National University of Moscow. 135 students (major in Linguistics) were from the Peoples' Friendship University of Russia. 130 students (major in translation, linguistic and intercultural communication and journalism) participated in the poll were from Moscow State Institute of International Relations. 110 students were represented from the Higher School of Economics' Philology department. The last university that participated in the poll was the Moscow Engineering Institute. There were interviewed 130 students major in mechatronics and robotic science and power engineering.

Students must be able to analyse the information in order to pass the multiple-choice test and also reproduce the data necessary for answering a particular question. This can be attributed to an increase in the objectivity of multiple-choice testing. The last question of the first poll was aimed at finding out whether the respondents agreed with this statement. In the second part of the poll, students were asked to choose from a list of adjectives that can describe passing a multiple-choice test. In this part of the poll were present both positive and negative criteria. This part of the poll consisted

of two mini-questionnaires. In the first questionnaire, students were asked to choose words that could generally describe multiple-choice tests.

In the second questionnaire, students had to note what emotions multiple-choice tests evoke.

2.4. The participant's selection criterion

The survey was conducted among students of varicose majors ranged from the first to the fourth year of study. The criterion for this selection is due to the fact that representatives of different spheres, age and gender may have different attitudes to multiple-choice tests and the level of stress.

2.5. Research issues and restrictions

The study involved only university students. All respondents live in Moscow and the Moscow region, which

does not indicate a problem on a larger scale. That is why some problems and difficulties that were identified, as well as recommendations for solving them, can be more applicable only to this group of respondents. The research findings can be used for further studies in broader terms among the undergraduate students attending those universities (separately for each age level), as well as in other cities. Similar research can also be carried out among students of other countries. On the basis of the results obtained, it is possible to form further recommendations on possible problems associated with passing the multiple-choice test for university students (OLIVEIRA ET AL, 2018: REN & JIANG, 2019).

3. DATA ANALYSIS

The research data analysis was carried out by the STATISTICA system, after collecting the necessary information. This software is developed on the basis of Microsoft Windows and allows you to visualize data of statistical analysis. A part of the data obtained was presented

in diagrams. The research had a margin of error of 2%. About 13 questionnaires were incorrectly filled in (some respondents did not answer all questions or chose more than one answer).

4. RESULTS

The data of the first poll turned out to be rather low, only 32% of the respondents reported that their university held in the traditional exams. This suggests that most of the schools switched to multiple-choice testing. The data on the second poll was expectedly high. 77% of respondents reported that their university held in multiple-choice test examinations. According to the data on the third question, 47% expressed their positive attitude to traditional examinations, while 33% were negative and 20% chose – I do not care. Attitude to multiple-choice tests was almost the same: 42% of students are positive, 40% are negative and 18% remain indifferent. The results obtained on both questions may indicate that students are comfortable enough to take exams in both forms. However, it is worth noting that the attitude to the traditional tests is still slightly more positive than to the

multiple-choice test. A rather large percentage of students (52%) agreed that it is easier to take a multiple-choice test examination.

However, since this question is general, it is impossible to judge why students consider such a form to be easier. Expectedly a large number of respondents (68%) agreed that if you are not aware of the answer to multiple-choice test question it could be guessed. This suggests that students understand this obvious vulnerability of multiple-choice tests and can use it, which may affect the objectivity of test result. A fairly large number of respondents (52%) agreed that such a possibility can be considered as a disadvantage. This suggests that students understand that a random answer can influence the objectivity of the test result.

Thought on the following issue were divided almost equal to 51% reported that multiple-choice tests cause them more stress while 49% did not agree with this. This may indicate that students have quite an adequate attitude towards multiple-choice test examinations. The data on the following question turned out to be quite high - 72% of students agreed that multiple-choice test examination is more convenient.

This may be due to several factors, which, however, cannot find out by a general question. Only 46% of students agreed that in order to pass multiple-choice tests one must be able to analyze information. This may indicate that students do not understand the principle of multiple-choice tests, or simply do not realize that they are analysing information during such type of test.

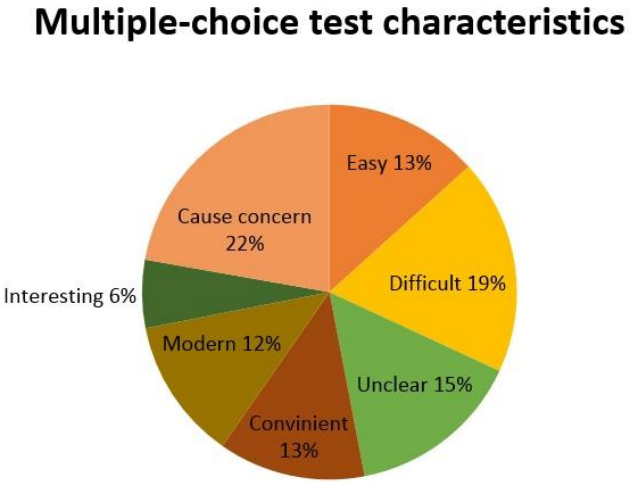

Figure 1: Multiple-choice test characteristics.

According to the data from the first mini-questionnaire, the most frequent associations were caused concern then difficult and unclear. This may indicate that students are quite negative about taking multiple-choice tests. However, it should be noted, a sufficiently large number of respondents agreed that multiple-choice tests are more modern and convenient.

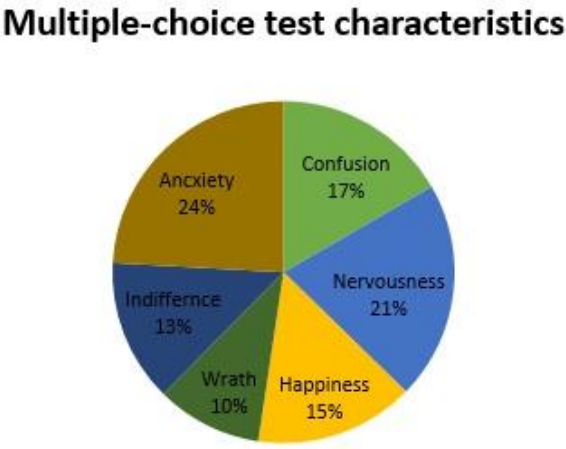

Figure 2: Emotions caused by multiple-choice tests

According to the diagram, the most common associations were nervousness and anxiety, which indicates that multiple-choice tests cause students a high level of stress. Besides quite a lot of respondents chose confusion, which suggests that students experience confusion which interferes with the thinking process.

4.1. Conducting a poll among students

According to research results, multiple-choice test examination is not equally suitable for all students. Students may perform worst or experience serious problems with focusing because of stress. In order to avoid this, we can conduct a special poll, which would reveal the form in which specific students are more comfortable to take exams.

4.2. Dividing exam into two forms

Since passing multiple-choice tests can negatively affect the results of some students, we can consider the possibility of dividing the exams into two forms. After carrying out the poll proposed above, the university authorities can arrange both multiple-choice test and traditional examination, if possible, depending on students' needs.

4.3. Psychological support for students

If it is impossible to organize two types of examinations at the same time, then the university authority should provide psychological support for students under stress of testing. The psychological support can be carried out both individually and in groups. It should be aimed at overcoming the psychological barrier and fear of passing multiple-choice tests. Such a practice can also be organized distantly.

4.5. Special training

Since one of the causes of stress is that students do not know exactly the information encountered in questions, it is possible to reconsider the way of preparing for exams. After studying all the material, it is possible to repeat individual blocks, or tell students what information is most likely to be included to test. This practice will help reduce stress, which, in turn, should have a positive impact on the results.

5. DISCUSSION

There are a lot of researches related to multiple choice test passing. One of them was a study of the multiple-choice test effectiveness, 2011 (HINZE AND WILEY, 2011). This study consisted of three experiments. In the first experiment attended 69 students of the Psychology department from a large university in the Midwest. After reading of six scientific texts, students were introduced with sentences from texts and asked to either fill in the blanks with specific information from the text or re-read the sentences. After two days, the participants again tried to fill in both the old and new blanks for each text. According to this experiment, fill in the blanks'

tests can be representative, but very specific. The effects of testing were found only after repeating of some test elements, without significantly facilitating of related information compared to recalculations (ROACH ET AL., 2008).

The second experiment was almost identical to the first one. 26 students of psychology attended the experiment. The procedures were the same, except the fact that students tried again to fill in blanks after seven days, not two. Thus, the results of current research have shown that tests with filling in gaps, prospectively can help with the performance of final tests involving the same elements, even without feedback and with the comparison that controls repeated exposure. There is no evidence found that the practice of writing such tests can improve the performance of related tests (KANG ET AL., 2007).

The third experiment involved 25 students Psychology department. Five short explanatory scientific texts were used as target materials. These texts have been adapted from a high school science textbook (COOLIDGESTOLTZ ET AL., 2001). Topics were: endocrine system, vision, respiratory system, viruses, and the water cycle. The texts contained from

335 to 432 words. After reading each text, participants were doing one of five initial training or test exercises: read, reread, fill in the blanks, retell the paragraph, retell, and reread the paragraph. The main conclusion of the third experiment was that the test for retelling the paragraph, which required a more extensive search than the test for filling in the gaps, could have an impact on the new multiple-choice tests. This further demonstrates that the positive effects of multiple-choice testing can be observed even without feedback.

However, this study also illustrated some of the limitations of the initial tests with filling gaps as training activities. This demonstrates the superiority of more open tests. In 2016 was conducted a study related to international attitudes to multiple-choice testing (EVERS ET AL., 2016). Previously, polls were conducted from 2000 to 2009 in different countries (Belgium, Croatia, the Netherlands, Slovenia, Spain, the United Kingdom, etc.).

The questionnaire used has been created for the administration of 2009–2012, but it was not identical to that one used in 2000. The main difference was that, according to developments in testing, six items were added related to

various aspects of computer software testing and internet testing. In addition, the questionnaire contained an open question, in which respondents were asked to list three tests that they use most often, and three questions related to biographical information (age, gender, and area of specialization). The poll was compiled in English and translated if necessary. The total sample consisted of 20,467 psychologists (HAMBLETON ET AL., 2005).

The results of the multiple-chose test and traditional oral exam are significantly different at the Department of Pathological Anatomy of Sechenov University. If during the multiple-choice test the average mark is quite high (4.2-4.9), satisfactory and unsatisfactory marks are rare, then with the oral exam the results are much lower (3.4-4.8) and the number of unsatisfactory marks reaches 5 - 7%. This data also suggests the need for further comparative analysis of traditional and digital examination technologies.

An important observation obtained from the data is the positive attitude of the participating psychologists toward the use of tests. Therefore, it can be concluded that this positive attitude applies to all countries participated in the poll. It

seems plausible to expect that test users are more willing to participate in a poll on test attitudes and might show a more positive attitude than non-test users (HAMBLETON, 2006). Another study conducted in 2004 was aimed at examining the relationship between stress caused by taking a test and results (KEOGH ET AL., 2004). The sample consisted of 106 freshmen psychologists from Goldsmiths College, University of London.

There were 24 men and 82 women, aged from 18 to 50 years old (average age 22.08 years). The anxiety test group (high vs. medium vs. low) was determined by a component score of the revised test anxiety scale. Participants who scored high (14 or higher) and lower (8 or lower) quartiles in the RTA-anxiety sample group were identified as high and low. Participants were offered a revised test anxiety scale. The scales were composed of elements specifically related to anxiety (e.g. autonomic arousal, skeletal muscles effects), depression (e.g. dysphoria, hopelessness) and non-specific symptoms of stress and arousal. All participants were initially recruited during six laboratory classes conducted as part of the 1st year undergraduate degree course in psychology started February 4, 2002. Each class included about 20-25

students. During these sessions, participants completed the task of distraction and questioning.

The results were not quite as expected despite the fact that anxiety contributed to a moderate tendency to distract. It was found that those who experienced strong and moderate anxiety, relatively slower detected targets accompanied by distractions threatening than those accompanied by distractions that were not associated with the threat. Indeed, those who tend to worry about exams were also less susceptible to distraction when searching for goals. This result represents an amazing situation in which students prone to anxiety are particularly susceptible to distraction from the threat, but at the same time less susceptible to common distractions. These results indicate that certain personality and cognitive factors prevent some students from showing their academic potential. This not only harms the students themselves but also deprives the industry of potentially valuable employees (KEOGH AND REIDY, 2000).

6. CONCLUSION

Multiple-choice test examination is gaining increasing popularity at all levels of education in all countries. Such tests have both advantages and disadvantages, which can tell the results and their objectivity. It is also impossible to deny that multiple-choice test examinations are more modern and progressive. To achieve the goal of the research, we conducted a poll among students of five Russian universities. The respondents were of various majors in both engineering and humanities fields from freshmen to fourth-year students in order to enlarge the scope of research. It was in a study revealing that, students, generally have a positive attitude towards multiple choice tests, despite mentioning some disadvantages that may influence test objectivity. According to a poll based on stress level, the research highlights that many students are worried when taking such a test that may affect their performance. Below are some recommendations:

1) Conduct a poll among students in order to find out the more comfortable form of test examinations; according to these universities can also provide exams in both forms, which will allow students to choose the one that is more comfortable for them. Besides, the organization of psychological support can provide

positive results. It can be carried out for students (who have difficulties at multiple-choice test) both individually and in groups.

2) Overview principles of test preparation mainly provide students with topics covered in the test, as well as repeating specific information, rather than all the material in general. Further research can also be carried out more broadly among the undergraduate students attending those universities (separately for each age level), as well as in other cities. Similar research can also be carried out among students of other countries. The findings and results of the research can be taken as a basis for conducting other surveys or comparing statistical data from different years.

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