

Education

Sample test

The maximum score for all tasks of the second round is 30 points.

12 points for the 1st part (1 point per task) and 18 points for the 2nd part (9 points per task).

Part 1.

The maximum possible score for part 1 is 12 points, 1 point per task.

*Correct answers are given **in bold***

1. A researcher interviewed the parents of 300 elementary school students and collected data on the children's academic assessment. He built a regression model and found out that children whose parents were more involved in their education had better results, and the regression coefficients are significant at the 0.001 level. Based on the regression, the researcher recommended the school principal should launch a special program on wider parental involvement. Was the researcher right?

Choose one correct answer

1.

- A. **The researcher is NOT right because this study design cannot be interpreted as a causal relationship.**
- B. The researcher is NOT right because he did not indicate the proportion of variance explained (R^2)
- C. The researcher is right because the relationship between the variables "parental involvement" and "academic achievement" is well explained by practice.
- D. The researcher is right because the correlation coefficient is of high statistical significance.

2. From the list below, select a statement that does NOT fit into the framework of the theory of human capital:

Choose one correct answer

- A. The duration and quality of education affects human productivity in the labor market
- B. Education can create externalities, that is, create benefits not only for the person who receives education but also for society as a whole

- C. **For employers, a higher level of education is indicative of the level of a person's abilities**
- D. More educated people have a higher salary

3. The theory of social learning, that is, learning through observation and imitation, was developed by:

Choose one correct answer

- A. **A. Bandura**
- B. L. Vygotsky
- C. F. Zimbardo
- D. D. Watson

4. Children with orthopedic disorders are more likely to have:

Choose one correct answer

- A. Dyslexia
- B. Dyscalculia
- C. Dysthymia
- D. **Dysgraphia**

5. What is the wrong tactics for dealing with dyslexic students

Choose one correct answer

- A. **Give them as many written tasks as possible, call them to the blackboard as often as possible to gradually develop their writing skills**
- B. Give these students more time to be aware of what is on the board, or even allow them to take pictures so they can come back to this material later to learn more
- C. Allow these students to express themselves in oral exercises, specifically designed for them
- D. When marking papers, evaluate according to other criteria and pay more attention to the content, not the spelling

6. Indicate the country in which the massification of higher education began earlier than in others

Choose one correct answer

- A. Japan

- B. Mexico
- C. the USA**
- D. Italy

7. 21st Century 4K Competencies relate to:

Choose one correct answer

- A. Soft skills**
- B. Additional skills
- C. Hard skills
- D. Industrial skills

8. In the 19th century, the Victoria and Albert Museum in London extended its opening hours into the evening and used candlelight. What was the motivation for this?

Choose one correct answer

- A. Workers can visit the museum after a working day and learn about the achievements and history of trades**
- B. By agreement with the University of Oxford due to the schedule of evening trains
- C. Because the aristocracy led an “evening” lifestyle
- D. To reduce competition with other London museums

9. Which thinker said: “If you have free time from work, devote it to your studies. And if you have free time from studies, devote it to work”?

Choose one correct answer

- A. Plato
- B. Aristotle
- C. Confucius**
- D. Buddha

10. What tasks are the most suitable for achieving this result:

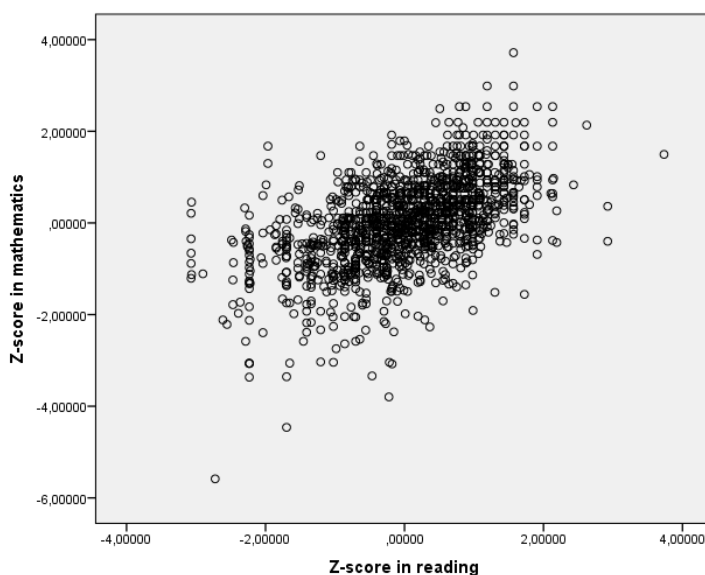
The student can formulate and justify his opinion of the reforms of Peter the Great?

Choose two answers

- A. A written test on Peter the Great's reforms
 - B. An opinion essay on the significance of Peter the Great's reforms**
 - C. A debate about Peter the Great's role in history**
 - D. A poster describing one of Peter the Great's reforms
 - E. Presentation on the image of Peter the Great in popular culture
11. Rank educational outcomes in increasing order of complexity according to the SOLO taxonomy
- A. Can choose his/her favorite time of year and explain why
 - B. Based on his/her reflections, can assume that there is a difference in the change of seasons depending on geographic location
 - C. Can say what time of year it is
 - D. Can list items of clothing that people wear at this time of year
- Answer: C-D-A-B**

12. Analyze the graph. What is the correlation between standardized scores in reading and math?

Choose one correct answer



- A. The relation between the scores is positive
- B. The relation between the scores is negative.
- C. There is no relation between the scores
- D. It is incorrect to determine the correlation between standardized scores

Part 2.

The maximum possible score is 18 points: 9 points per task.

Task 1.

Study the situation and give a detailed answer to the questions. To substantiate your answers, we recommend that you should refer to theories, research and facts in education.

Situation

Teacher A. decided to use the flipped classroom instructional technology in her 5th-grade history class. She asked students to read a new paragraph of the course book at home. Then she asked the class to do practical assignments based on the home material. However, it quickly became clear that some of the students simply did not read the text they were supposed to read. Some did it, but could not remember anything. As a result, the teacher had to change the lesson plan and explain the topic in class. Then A. decided she would give a mini-test on the home assignment at the beginning of each lesson.

Questions

1. What problem (or problems) is manifested in this situation? Why is this a serious problem? What are the possible causes of this problem?
2. How can you evaluate the teacher's decision? What will the positive and negative results of this decision be?
3. What would your recommendations to the teacher be? Suggest several scenarios taking into account various factors and explain your choice.

Evaluation criteria (max. 9 points)

1. The problem (or problems) described in the task has been identified (0-1 points)
2. At least 2 possible reasons for the problem have been given (0-2 points)

3. A substantiated assessment of the teacher's actions and their consequences is given (0-2 points)
4. The proposed solutions (0-2 points)
 - a. have internal structure and logic
 - b. are aimed at solving the stated problems
 - c. take into account the information from the description of the situation and also contain additional information
 - d. original and comprehensive
 - e. related to modern reality and trends in education
5. The justification of the proposed solutions demonstrates proficiency in terminology and the knowledge of relevant literature and research in education (0-2 points).

Sample answer

In the flipped classroom, traditional in-class learning and homework assignments are reversed. This methodology helps teachers prioritize active learning during class time by assigning students some lecture materials and presentations to be studied at home. If the level of home preparation is insufficient, then the lesson based on this material will be highly ineffective or may even be cancelled. This is precisely the difficulty that the teacher faced. In this situation, we can see two major problems.

Firstly, students had no motivation for doing homework. From the point of view of the expected utility theory, motivation means answers to two questions: "How much do I want this?" and "How likely will I be able to achieve this?" The answer to the first question can lead to internal motivation (curiosity or the desire for development) or external (other goals that can be achieved through this activity). The second question is related to the barrier that has to be overcome. Accordingly, the reasons for this problem may be that the task has no value for the students, or that the entry barrier to the task is too high. For instance, the material is too complex, or it is difficult to have access to it. It may look too complicated or may take a long time to read and try to understand.

Secondly, some of the students could not cope even though they really tried. This means that there is a problem with the task itself. It was difficult to memorize the material and comprehend it. It is very important to notice such students and to deal with the situation since the students did work on the material but failed miserably in class. This can significantly demotivate them. Most likely, the problem with memorization is rooted in the fact that students tend to memorize the material mechanically, and not logically. In elementary school, teachers often encourage rote learning. Naturally, students may not be able to cope with the memorization of a larger volume of material. They approach the

task mechanically, without thinking or processing the information, as it is required by logical voluntary memorization. Another reason may be the quality of the material itself.

Teacher A. decided to introduce some sort of assessment (a mini-test) at the beginning of the lesson to increase the students' motivation. In this case, she tries to achieve external motivation since the goal of the students will not be to get a poor grade. On the one hand, it can improve the performance of the tasks and strengthen discipline. On the other hand, this may, firstly, substitute internal stimuli with external ones (marks instead of the pleasure of learning), and secondly, it will only make it worse for those students who cannot remember the material despite their efforts.

I would suggest the following. Firstly, it is necessary to talk to the students and understand what they think of the problem, what difficulties they faced when working on their homework. In addition, it is necessary to assess the quality of the material critically. Probably, it is written in such a way that it is generally not suitable for independent study. In this case, the teacher has to find other sources of information. If they are not available, the teacher should be ready to create the teaching material herself (for example, to record short videos containing the explanation of the material to be learnt). Perhaps at this stage, the teacher may even give up the idea of employing the flipped learning methodology.

If there are materials of relatively good quality, then it is necessary to think how to improve them or supplement them with additional theoretical material. This will strengthen the students' motivation and make the work more productive by developing logical memorization skills.

To increase motivation, John Keller's ARCS model can be used. Elements of this model will make it possible to reconsider both the task itself and the follow-up classroom activities. It is necessary to form the internal motivation for working at home. It is also possible to introduce an additional form of control, as the teacher did. If need be, the teacher may simplify the material so that any student who read it at home can understand it.

There are two ways how the teacher can introduce the material. Firstly, the teacher can show the students learning strategies and tools that could help them in their independent work. For instance, the teacher can discuss how the students read the text and what they do to understand it better. If there are any good practices that some students are already using, then it would be good to start with them. If not, the teacher can offer some simple tasks to help structure the text in different formats. If the students are ready for this, then the work can be organized in an 'action research format', where the students, together with the teacher, will try to figure out what works best for them. Secondly, it is possible to prepare a set of tasks that students can do to structure their work on the material and

to make it more consistent. It is important to develop reading skills. It is also advisable to have pre-text, text, and post-text tasks.

The two proposed solutions to the problem are not mutually exclusive. They approach the problem from different positions. In the first case, we focus on the students' subjectivity and self-regulating learning whereas in the second, on a more active role of the teacher. In any case, it is necessary to use additional material and introduce tasks aimed at teaching students how to read, process and memorize the text in a logical and mindful way.

Task 2.

International research on academic achievement (such as PIRLS, TIMSS, PISA) assesses the difference in academic performance between boys and girls. Why is this research important? What are the practical implications of this research? Write an opinion essay using educational analytics, theories, and case studies for argumentation.

Evaluation criteria:

1. Completeness of the answer to the questions posed in the assignment (0-2 points)
2. The level of argumentation, reference to relevant theories and concepts (0-2 points)
3. The structure and consistency of the essay (0-2 points)
4. Language and style of essay writing (0-1 points)
5. The originality of the ideas and theses presented (0-2 points)

Sample answer

The opinion of the author of the essay and the selection of theories and arguments do not necessarily reflect the opinion of the authors of the assignment and should not guide the view and choice of theories and arguments by the participant of the Olympiad.

Research into academic performance in primary and secondary schools involves the collection of the data on the academic achievement of male and female students and their separate analyses. During their school years, students do not only gain knowledge but also acquire social skills. It is known that the physical and social development of male and female students occurs at a different pace. Consequently, there are gender-related differences in the academic performance of girls and boys.

The main reason for doing international research and analyzing the academic results of male and female students separately is the fact that girls and boys go through the stages of growing up differently. Girls are known to develop much faster both physically and socially, being 2-3 years ahead of their male classmates. That is why it is important to analyze their academic achievement separately. To analyze the aggregate data for both sexes or even the aggregate data for one sex would be wrong from the research methodology point of view.

Another important reason for such comparative studies is to explore how boys and girls acquire hard and soft skills, also referred to as 'the skills of the 21st century.' Research has shown that girls and boys do it differently, particularly at a younger age. There is a growing body of evidence that with time this difference will eventually level off.

However, research into the differences in the process of learning conducted at an early age can help in identifying the most capable students already in primary and lower secondary school. Parents and teachers can pay special attention to gifted students to achieve impressive academic results both within the school curriculum and beyond it, for instance, by participating in subject competitions and Olympiads. At the same time, these studies allow researchers and teachers to identify those students who also need special attention but for a different reason. They experience some learning difficulties and require a more individual approach that, regardless of gender, could facilitate their better academic progress.

Gender analysis of academic achievements helps to better understand the difference in studying a particular discipline and material or mastering a particular skill by representatives of different genders. Based on the analysis of the collected data, researchers can give useful recommendations and instructions on how to approach male and female students experiencing learning difficulties and to achieve better academic results. To give an example, the study of the results of the national competition in geometry for 6th graders helped to identify gaps in the curriculum and also understand how and why boys and girls process the same information differently. This knowledge can bring about a considerable change in the school curriculum, which will translate into the introduction of new themes or the adaptation of academic tasks taking into account gender-specific differences in approaching tasks of various types.

Another reason for the growing importance of comparative gender studies in education is the fact that research into gender peculiarities of the acquisition of knowledge and skills should facilitate a real individualization in education and training. Unfortunately, modern Russian school still pays more attention to standardization, unification and teaching skills, which may be inessential in modern society. Given the trends in modern education, we can say that the further individualization of education, mostly in high school, should be based on the results of international gender studies. The emergence of new academic fields, specialized classes, changes in the design of the curriculum, the introduction of new tailor-made mandatory courses and electives will definitely facilitate further individualization of secondary education. Comparative gender studies help identify academically advanced and average students as well as underachievers. Based on these observations special study groups of both genders are formed according to individual inclinations, interests and skills.

Finally, gender analysis of educational outcomes results in a proper understanding of the factors underlying problems in studying certain disciplines. Recent research shows that primary and secondary school play a key role in the assimilation of knowledge and the acquisition of skills, which are essential for the reproduction of human capital.

However, problems and gaps in education lead to a gap in information transfer between genders and may result in a decrease in the growth of human capital in some groups.

Summing up my reflection on the significance of international and national gender studies, their main causes, theories and results, I can make the following conclusions: 1) separate analysis of the academic performance of male and female students is justified from the point of view of the difference in the pace of their physical and social development; the academic results of female pupils should not fully correlate with those of male classmates; 2) international and national research has been done not only into specific disciplines but also into the skills the development of which depends on the age and gender of the student; 3) the gender-based approach to research makes it possible to modernize curricula taking into account the specificity of gender; 4) Separate analysis of research results by gender should become the basis for the real individualization of education; 5) conducting research in primary and secondary school allows researchers and pedagogues to identify and eliminate problems and gaps in increasing the value of human capital.