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STEPS OF TEACHING STATISTICAL INDICATORS OF ECONOMIC AND SOCIAL GEOGRAPHY

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Annotation. In the lessons of economic and social geography, students are divided into four stages of developing the skills of calculating, analyzing and interpreting the essence of statistical indicators. The work to be carried out at each stage and their characteristics are explained.

Key words: economic and social geography, population, stage, demography, absolute figure, number of births, statistics, industry, transport.

One of the most researched areas of geography in higher education is economic and social geography. Students are forced to work harder on themselves because this subject, in particular, contains complicated knowledge about the population's economic (output), social (consumption), and demographic (regeneration of the population) aspects. Statistical indicators offer improved data integration in this aspect. Economic and social geography generally have a direct relationship with statistics and frequently employ its indicators.

A well-thought-out technique is required to teach students to work with statistical indicators characterizing the economic and social condition, and with the aid of this, the efficacy of students' cognitive activity can be boosted. Teaching technology is one strategy to address students' academic issues, in line with E.N. Kabanova-summary Meller's of the theories of techniques and student mental growth. They are made up of activities grouped from various (big, small) systems. According to D.N. Bogoyavlensky, "a system of processes or operations of analysis, synthesis, abstraction, generalization, etc. specially arranged for handling certain types and different degrees of complicated problems is what is meant by "methods of mental activity."¹.

¹ Psychology formirovaniya ponyatiy i umstvennyx deystviy. - M.: Izd-vo APN RSFSR, 1966. - 227 p.



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Based on the above, with the help of statistical indicators in the study of economic and social geography, students' calculation methods consist of several sequential logical processes and actions combined with a common goal. Based on the methodology of working with statistical indicators applied by N.N.Petrova, all methods of working with statistical data can be used in the practice of studying economic and social geography.² These are the following:

- collecting the necessary statistical data;
- comparison of selected characters;
- determination of complex statistical indicators;
- analysis of all materials;
- preparation of tables, graphs, diagrams.

At the same time, the system of tables, diagrams and indicators is also important in the methodology of economic and social geography of higher education. It is necessary for teachers of higher education to form students the essence of statistical indicators, their calculation, analysis and interpretation skills. The methodology of teaching statistical indicators of economic and social geography in geography of higher education includes the following four stages.

Step 1 - formation of statistical indicators: mathematical materials serve as the basis for performing these actions. At this stage, indicators are named using numbers and letters.

In economic and social geography, letters of the Latin and Greek alphabets are mainly used for this purpose. In addition, we suggest replacing them with local alphabet letters. The reason is that they are more understandable to students than Greek letters. For example, AS is the population; AZ - population density, EFS - land use efficiency, SFS - water use efficiency, TK - natural reproduction, etc. This allows students to connect indicator names with letter symbols and reinforce their knowledge³. At the same time, as in other subjects (physics, chemistry, mathematics), it can be used in combination (alternately). For example, in the

² Petrova N.N. Methodology of teaching geography in a differentiated school. - M.: Blik i Ko, 2000. - 336 p.

³ Namozov J.A. Geography of the use of land and water resources (based on the materials of the Samarkand region). Monograph. Chirchik, 2022.



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population density formula, the area of the territory can be designated as Latin “S” or Cyrillic “M”.

In our opinion, in the scientific naming of some statistical indicators, its change should also be taken into account. For example, “territorial production complexes” TPC (HICHM) - changed over time, non-production complexes were added to it and renamed as territorial complexes - TC (HM)⁴.

Step 2 - identification of information and clarification of signs of its application, this stage allows students to apply theoretical knowledge in practice. The definition of the indicator used and its name should be scientific and not too complicated for students to understand. It's better to keep it relatively simple. Usually, the result of a production, composition in percent (%), birth, natural reproduction, salinity of water is given in ppm (‰). Some higher rates may be expressed in larger numbers (ten thousand, one hundred thousand, etc.). In economic and social geographical studies, arithmetic mean, geometric mean, balance, fashion indicators are also used⁵. It should be noted that it is appropriate to use this indicator in specific educational conditions, on a specific topic of the lesson. The topics describe phenomena related to agriculture, industry, transport, or population geography and demography, as well as their territorial characteristics. The teacher should set the tasks in absolute or relative terms, determine its similar value together with the students, and then, using an example, teach its direct use in several stages.

Step 3 - creating a mathematical model. In this case, the teacher should provide the students with the calculation formula of the problem to be worked on and define its measurement units. Here, the teacher should not just distribute the examples, but should provide the students with information about each of them. For example: The absolute indicator of natural population increase is expressed in the difference between the number of births and deaths and is determined using the following formula.

$$K=T-O'$$

Here, K is the natural increase; T-number of births in a certain period; O'- is the number of deaths in a certain period.

⁴ Soliev A.S. Theoretical foundations of regional complexes. T., 2003.

⁵ Soliev A., Karshiboeva L. Theoretical and practical issues of economic geography, T., 1999.



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Its relative indicator is used when comparing natural population growth by world regions, countries, individual regions, districts. On the basis of an absolute indicator, regions cannot be compared, because the population of each region is different, and the number of births and deaths in them depends on the total population. The relative indicator of the natural increase of the population is determined by the coefficient of the natural increase of the population. Population natural reproduction coefficient represents the absolute rate of natural reproduction per 1000 inhabitants in per thousand (‰).

The coefficient of natural reproduction of the population is determined using the following formula.

$$Kk = \frac{K}{S} \times 1000$$

Here, Kk is the coefficient of natural reproduction; K – natural reproduction; S - the average number of the population in a certain period; 1000 per 1000 people.

Also, the coefficient of natural reproduction of the population can be known from the difference between the birth rate and the death rate. For this, it is necessary to determine the birth and death rates.

The birth rate represents the number of children born per 1000 inhabitants in per thousand (‰) and is determined using the following formula.

$$Tk = \frac{T}{S} \times 1000^6$$

Here, Tk is the birth rate; T – number of births; S - the average number of the population in a certain period; 1000 per 1000 people.

In this case, we will not write the formula in a ready-made form, but consider the most optimal development ways to obtain it based on the definition of the indicator. It should be remembered that the definition of the indicator and the content of its formula, although related, are not the same. Knowing the meaning, you can make a formula, and conversely, knowing how to read the formula, you can give a definition of the calculated indicator. For example, the death rate is the number of deaths per 1,000 of the population per year. Knowing this definition, students can formulate its formula. To calculate it, it is necessary to divide the number of deaths in the country in one year (O') by the annual population (S) and multiply this ratio by 1000. So, the formula for this indicator is:

⁶ Tojjeva Z.N. Population geography. T., 2010.



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$$O'k = \frac{O'}{S} \times 1000$$

Here, O'k is the death rate; O' is the number of dead; S - the average number of the population in a certain period; 1000 per 1000 people.

If the birth and death rates are known, the rate of natural reproduction is determined using the following formula.

$$Kk = Tk - O'k$$

Here, Kk (CNR) is the coefficient of natural reproduction; Tk (BR) – birth rate; O'k (DR) is the death rate.

Step 4 - practical interpretation of the digital indicator. After the calculations are done, the geographical analysis is carried out. It is very necessary to teach students about statistical indicators that describe the economic and social geographical situation. The teacher always monitors how much the work done with the help of the mathematical model is strengthened in practice. In the process of strengthening methodological knowledge, students acquire the skills of calculating and analyzing indicators first together with the teacher, and then independently. A number of simple tasks are given to perform the calculation, which can be presented as an element of practical work (it is also possible to have several options using the form of teaching in groups). For example, using the above formula, the industrial, agricultural production of regions (continents or countries) is compared with each other or with the average indicators of other regions. In addition to mathematical calculation, students can be asked to show the values obtained in a graphical or cartographic form.

In addition to these, we believe that working with statistics can include data comparison, calculation, systematization, graphical interpretation, numerical data analysis and summarization, and the use of questions and assignments.

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