

Research on Statistics Curriculum Reform under the Influence of Public Security Big Data Technology

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Abstract. In the use of big data, public security mainly focuses on the key processing of data. Although it is structured, it needs to be used in many aspects. Data processing results and analysis results, but through data processing, can effectively think about the specific implementation methods. Public security data science is becoming a new public security discipline and police technical field. Under the influence of public security big data technology, there are various problems in the development of statistics education and teaching and the design of teaching courses. On the premise of combining the design of statistics-related courses and the development of teaching, this paper makes an in-depth study on the reform of statistics courses under the influence of public security big data technology, and puts forward the reform path of statistics courses. In order to improve the teaching quality of statistics course and cultivate professionals who are more in line with the development of the times.

Keywords: Public security big data, Statistics, Statistics course

1. Introduction

At present, with the development of society and the rapid progress of science and technology, human beings have gradually entered the era of big data. For statistics, entering the era of big data means that the traditional statistical methods have changed greatly, so a brand-new data analysis method is needed to deal with this change [1]. In the application of big data, public security mainly focuses on the key processing of data. Although it is structured, it needs to be used in many aspects. Data processing results and analysis results, but through data processing, can effectively think about the specific implementation methods. Under the influence of public security big data technology, the society puts forward higher requirements for the ability of professional and technical personnel related to statistical analysis. Application-oriented undergraduate colleges should keep up with the trend of the times and cultivate talents to meet the needs of social development. However, there are still many problems in the teaching of economic statistics courses, which need to be reformed urgently.

2. The nature of public security big data

Big data refers to the data whose size has exceeded the traditional scale, which is difficult for general software tools to capture, store, manage and analyze [2-3]. In public security work, knowledge about public security data will become an essential element and foundation in

the personal knowledge structure of police officers. Public security data science is becoming a new public security discipline and police technical field. Having a large amount of data has opened a new door for us to understand the world. How to collect, manage and analyze data is increasingly becoming the top priority of network information technology research. Advanced data analysis technology based on machine learning and data mining will promote the transformation from data to knowledge and the leap from knowledge to action [4].

The traditional public security cases and the main modes and processes of personnel management are not supported by reasonable data, which brings great difficulties to the detection work. Through the application of big data, we can effectively analyze the traffic flow and people flow at the crime scene through intelligent technology, mark the key suspects, and lock the people related to the case through data comparison.

Various interface standards of big data processing platforms, standards of various big data processing services, etc., in addition to the application standards of big data, such as docking related public security industry standards, safety standards of various platform applications, etc. The public security big data processing support platform is logically represented as a hierarchical architecture, including application layer, data processing layer, data storage layer, middleware layer and resource layer from top to bottom [5-6]. The relevant standards, norms and security mechanisms run through all levels.

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3. Challenges and problems faced by statistics course under the influence of public security big data technology

3.1 Transformation of thinking mode and methodology of statistical analysis

The advent of the era of big data is changing the characteristics of various industries. As a subject of analyzing data and solving problems, statistics is bound to be given a new mission. Big data will change the inertia of statistical work and change the depth and breadth of statistical research in specific scientific.

Traditional statistical analysis attaches importance to theories and methods, usually based on qualitative analysis, designs indicators and variables, conducts quantitative analysis of objective phenomena through investigation and collection of small data, and then verifies theoretical assumptions. However, big data itself can be collected, stored and analyzed directly by using computer artificial intelligence technology, and valuable information can be found. As long as the analysis results are correct, the theoretical correctness of the analysis method is not important, and the algorithm details can also be gray boxes or even black boxes.

3.2 Statistics course lacks practicality

The collection of big data involves a wide range of data, so the data is complicated, and it is often difficult for people to classify the obtained data. The traditional examples only take the minimum sample size for the convenience of manual operation, and do not emphasize the significance of the data size in statistics, let alone consider the fact that the data volume in the world is expanding rapidly [7].

The future application of statistics is mainly to have a strong ability to analyze, calculate and infer data. However, many colleges and universities only pay attention to teaching students the concept of theoretical statistics, and spend less energy on teaching students how to correctly analyze data. This can be inferred by observing the class hours occupied by the course practice of statistics major in most schools.

Although there are some methods to cultivate students' practical ability in traditional statistics courses, one is computer experiments, which can familiarize students with the use of statistics-related software, and the other is practical training. However, generally speaking, the class hours of school practical courses are seriously insufficient, and the learning effect of students is not ideal, so it is still impossible to understand the practical significance of statistical research.

3.3 The content of learning is out of touch with the times

How to deal with massive data and analyze it accurately is a challenge to statistics in the era of big data. If statistics in colleges and universities are still taught in the traditional way, statistics will miss the opportunity in the big era and turn its own strengths into its own shortcomings, so there is no way to develop.

Statistical theory and methods are very important, but it is far from enough to use statistics as a tool to solve practical problems, especially under the influence of public security big data technology. At present, in the teaching process of many statistics courses, due to the limitations of students' poor foundation and insufficient training conditions, teachers mainly focus on descriptive statistics and simple inferential statistics when teaching statistical knowledge, while multivariate statistical methods for analyzing social problems are not involved in the classroom [8].

Traditional statistics often use writing skills in the process of data statistics and analysis, but in the era of big data, writing skills obviously cannot meet the needs of statistics, so schools should introduce computers and other equipment that can handle big data, which requires students to learn to use statistical software.

4. The reform path of statistics course

4.1 Innovative teaching mode

Although statistics is an important basic course in economics, there are still many problems in the actual teaching process: students have not paid enough attention to it, and teachers only pay attention to the teaching of calculation formulas and textbook knowledge in the traditional teaching process, lacking practical links, which leads to students' feeling of being boring and lacking interest in learning. Therefore, a mixed teaching mode of statistics can be established, as shown in Figure 1.

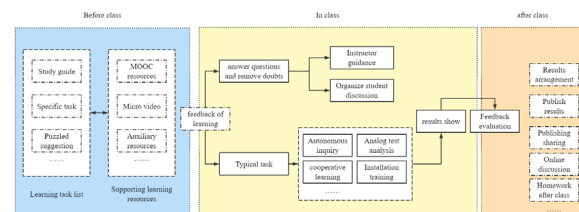


Figure 1 Teaching mode of mixed statistics course

Statistics is a very practical course. We should combine the characteristics of students in application-oriented undergraduate colleges to innovate the teaching mode and stimulate students' interest in learning statistics. Setting up a student-oriented teaching idea and cultivating students' individual development and autonomous learning ability, innovative thinking ability and comprehensive practical ability, developing thinking ability and competitive ability will help students understand and master the application conditions and ideas of statistical methods and strengthen their statistical thinking.

4.2 Improve students' ability to deal with big data

At present, statistics textbooks have not kept up with the pace of data analysis and application in the era of big data, and the vast majority of teaching materials still remain on traditional statistical theories, methods and tools, with little introduction to big data-related knowledge, which increases the difficulties in teaching and learning [9].

In this regard, teachers should strengthen the cultivation of students' professional practical ability and carry out more experimental courses, so that students can better master statistical knowledge through practical operation, and also provide some preparations for future work. In addition, teachers should strengthen the cultivation of students' ability to operate software. Only when students have good theoretical knowledge and the ability to operate software skillfully can they deal with any related problems in statistics more efficiently.

Data exploration is to transform massive unstructured data into useful information by automatic mechanism. Data exploration courses and traditional statistics courses complement each other, providing students with broader professional prospects. On the one hand, students feel that big data is around, and data mining algorithms are within reach; On the other hand, we can use massive open online course platform, broaden their horizons and cultivate students' good study habits. For non-statistics majors, it is necessary to emphasize the broad applicability of statistical analysis methods and the intersection between statistics and other majors to help students improve their data analysis ability.

4.3 Enhance the practical operation ability of software

In the past, statistics teaching was limited to textbook concepts and formulas. With the introduction of multimedia teaching equipment, it can not only meet the needs of statistics under the influence of public security big data technology, but also stimulate students' interest in learning. At the same time, it can also enable students to practice what they have learned through statistical software, so that students can combine theory with practice, thus improving the teaching quality of statistics [10]. As an application-oriented undergraduate college, Excel application software should be targeted as the training content of statistics courses according to the characteristics of students, and the training hours should be increased to improve students' application ability in basic applications of Excel, Excel functions, Excel charts and graphs and Excel pivot tables.

4.4 Optimize the evaluation method of curriculum assessment

The assessment of statistics course should be diversified, which not only assesses students' understanding of statistical theory, but also their comprehensive application ability of statistical knowledge, as well as their organizational ability, teamwork spirit, communication ability and expression ability in participating in statistical practice. Therefore, the assessment of students' learning process can be divided into two parts, one is the daily assessment, and the other is the assessment of learning effect. Among them, the daily assessment mainly assesses the attendance of students and the completion of small homework. Students can't take the final exam if they don't pass the daily examination.

According to the previous teaching experience, if we adopt open-book students, students will not attach importance to the study of the course ideologically, and

the examination will become a search for information. The real purpose of the exam is to examine students' attitude towards learning and their ability to understand and apply knowledge. Through the reform of assessment methods, students can further internalize knowledge when sorting out key knowledge and strengthen process assessment, which can increase the sense of acquisition of students who study hard at ordinary times and further ensure the fairness of teaching.

5. Conclusions

Under the influence of public security big data technology, the society puts forward higher requirements for the ability of professional and technical personnel related to statistical analysis. Application-oriented undergraduate colleges should keep up with the trend of the times and cultivate talents to meet the needs of social development. The public security big data processing support platform is logically represented as a hierarchical architecture, including application layer, data processing layer, data storage layer, middleware layer and resource layer from top to bottom. The relevant standards, norms and security mechanisms run through all levels. Facing the new social development background in the era of big data, the traditional backward and conservative teaching mode has seriously hindered the rapid progress of statistics education and teaching. Relevant educators should deeply understand the particularity of the teaching content design of their own statistics courses and adopt more scientific and reasonable teaching methods to promote and promote the efficient development of statistics education under the influence of public security big data technology.

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