The Construction of Parenting Model of College Academic Style Construction Based on Big Data Analysis

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Abstract. The construction of academic style in colleges and universities has extremely profound significance for building the lifeline of school development and improving core competitiveness. The wide application of big data technology in student management in colleges and universities has brought new opportunities for the development of education scientifically, and the use of data collection, analysis, computation and mining to support the development of information technology in colleges and universities has become an inevitable trend of future strategy. The article combines the current situation of poor academic style in the field of student management in colleges and universities, explores the application of big data technology in the comprehensive portrait of the individual, group portrait, behavioral trajectory analysis, comprehensive early warning, and academic difficulties and other aspects, and at the same time puts forward the optimization path of the academic style construction, builds the model of parenting, and assists in the enhancement of the quality of talent cultivation in colleges and universities.

Keywords: Big data technology; Study style construction; Personnel training; sextet

1. Introduction

At present, China's higher education has entered the stage of massification, the enrollment scale of colleges and universities is expanding, and the problem of academic style is becoming more and more prominent. On the one hand, some students lack of learning motivation and goals, there are learning attitude is not correct, loose discipline, plagiarism and cheating and other undesirable phenomena, seriously affecting the school spirit and learning style; on the other hand, the development of information technology has made the students' learning and life style has undergone profound changes, the new media environment puts forward higher requirements for the construction of academic style. How to strengthen the construction of academic style and cultivate high-quality talents with innovative spirit and practical ability has become a problem that educators in colleges and universities must seriously think about and solve.

With the development of society and the progress of science and technology, big data technology has been widely used in various fields, and in the construction of academic style in colleges and universities, big data analysis also has a broad application prospect, through which students' learning behaviors, habits and needs can be deeply excavated to provide a more scientific and accurate basis for the construction of academic style, however, at present, the research on the nurturing model of the construction of academic style in colleges and universities based on big data analysis is still relatively few, how to use big data technology to improve the effect of college academic style construction is a problem worth exploring in depth.

The significance of the research on the parenting model of academic style construction in colleges and universities based on big data analysis lies in the fact that through big data analysis, the pertinence and effectiveness of academic style construction can be improved, the overall image and social influence of colleges and universities can be enhanced, and the sustainable development of colleges and universities can be promoted, and at the same time, it can help to promote the formation of a good atmosphere of learning in society, and provide a strong support for the development of the national and local economic and social development.

2. The Problems Faced by the Construction of Academic Style in Universities in the Information Age

College students are the future of the country's modernization and construction of the pillars of the material, we fully affirmed that the mainstream of the college student group positive and progressive at the same time, but also often see a lot of distressing phenomena in the campus, the current college students can't be ignored the problem of the school spirit, the school spirit of the construction of the letter to be strengthened.

(1) Internet temptation and self-discipline challenge. In the information age, the Internet has become an important part of people's life, but there are more and more temptations on the Internet, such as games and social media, which will distract students' attention and affect their learning effect. Some students lack the ability of self-restraint, easy to indulge in the Internet, resulting in a decline in academic performance, students lack of self-discipline is also one of the problems facing the construction of learning style.

(2) Academic misconduct and lack of integrity. In the information age, academic misconduct is also increasing, some students in pursuit of high scores or honors, will take plagiarism, plagiarism and other improper means, such behavior not only damages the academic fairness and integrity, but also has a negative impact on other students' learning, individual students lack the sense of integrity, cheating in exams, paper plagiarism and other behaviors occur.

(3) Conservative teaching and outdated methods. In the information age, the update of knowledge and technology is very fast. However, the teaching content and methods of some teachers in colleges and universities are still outdated and cannot meet the needs of the development of The Times, which leads to the lack of interest and motivation of students in learning and affects the learning effect. The teaching methods of individual courses are also relatively simple, lack of innovation and interaction, and can not well stimulate students' learning interest and enthusiasm.

(4) Lack of communication and interaction. In the information age, the communication and interaction between teachers and students is also one of the important contents of the construction of learning style. The communication and interaction between individual teachers and students in colleges and universities is not sufficient, resulting in teachers unable to timely understand the learning situation and problems of students, unable to provide effective guidance and help, students may also feel lonely and helpless due to the lack of communication and interaction with teachers, which affects the learning effect and performance.

(5) Evaluation lag and guidance deviation. In the information age, the evaluation mechanism is also crucial to the construction of the style of study. However, the evaluation mechanism of some colleges and universities is not perfect, with orientation deviation and unreasonable, which may lead to students paying too much attention to scores and honors while ignoring real learning and growth. The imperfect evaluation mechanism will also lead to the failure to effectively curb and manage students' learning violations.

3. The Application of Big Data Technology in The Building of Academic Culture

Based on campus data, carry out data processing processes and services through data collection, storage and retrieval, intelligent pre-processing, mining algorithms, operation and maintenance and management, analyze in detail the relevant factors affecting students' academic styles in enrollment, life, study, management, graduation, employment, etc., and build a big data service platform for the whole campus, so as to provide a scientific basis for more accurate service to students and faster decision-making of the university, to Further improve the quality of academic style construction.

(1) Accurate analysis of the study style. Through the collection, processing and analysis of students' academic performance, attendance, classroom performance, homework completion and other data, accurately understand students' learning status, provide more accurate and comprehensive data support for the construction of college style of study, help schools better understand students' behavior habits and needs, so as to formulate more effective plans for the construction of study style.

(2) Personalized educational guidance. Big data technology can analyze students' learning habits, interests and abilities, provide personalized learning suggestions and resources for each student, stimulate students' interest in learning, improve learning results, and promote the formation of a good learning style.

(3) Teaching quality evaluation and improvement. Through the analysis of the data of teachers' teaching quality, academic achievements and interaction between teachers and students, the teaching level of teachers is comprehensively evaluated, which provides a basis for the teaching reform and study style construction of schools, and encourages teachers to improve teaching quality.

(4) Detection and prevention of academic misconduct. By analyzing the results of students' papers, exams and course design through big data technology, we can find out whether there are bad behaviors such as plagiarism, plagiarism and falsification of data, and take timely

measures to punish and correct them, strengthen academic moral education, and improve students' awareness of academic integrity.

(5) Sharing and optimization of academic resources. Through big data technology, academic resources of the whole school and even the whole society can be integrated and shared. For example, the establishment of academic resource database and online learning platform to provide students with a variety of learning resources and courses; Establish an academic exchange platform, promote academic exchanges and cooperation between teachers and students, and promote the discipline construction and academic development of the school.

Feasibility cases of big data technology to help the construction of study style

Since 2018, Beijing International Studies University has set up a special research team on study style big data, which measures the progress or increment of students in these aspects through comprehensive analysis and evaluation of various factors affecting the learning quality of students at school, and obtains the key factors affecting the learning quality, so as to provide decision support for the construction of study style.

The research team collected 11,568 undergraduate data from the university's big data platform in the past 7 years as a sample. The random forest algorithm is used to build a model of college students' learning quality, and the influencing factors   of college students' learning quality are studied by focusing on 9 characteristic indicators, such as daily consumption, online time and number of borrowed books, and the experimental results are obtained.

①   The number of books borrowed by students and the number of times they enter the self-study room have the greatest influence on the quality of learning, indicating that the number of books borrowed by students with excellent grades and the time spent on self-study are more, which proves that the time investment in learning is proportional to the quality of learning, and schools should encourage students to improve the enthusiasm of independent learning.

②   Consumption times and daily consumption have a certain impact on learning quality. Further analysis of the relationship between consumption level and students' family conditions suggests that schools should pay more attention to students from poor families.

③   Gender has a certain impact on academic performance, which is related to the discipline of the school, and the proportion of men and women is different.

④   The learning quality of foreign students is slightly lower than that of domestic students, and the foundation, learning environment, language and life of foreign students are very different.

⑤   Students' online time has a certain impact on the quality of learning. Teachers should properly guide students to use the Internet correctly and provide students with more information resources that can promote learning.

The case shows that big data technology can help schools better understand and manage students' information, and improve the efficiency and accuracy of student management.

4. Big Data Technology Helps Explore the Path of Learning Style Construction

(1)   Comprehensive personal portrait. We create a personal portrait of students in six dimensions, including personal information statistics, learning level, work and rest habits, Internet habits, social relationships, meal patterns, and consumption levels, provide students with personalized labels, and analyze their growth status to provide them with behavioral portrait analysis reports and decision-making recommendations for future development.

(2)   Group profile. For class or major groups, a comprehensive classification is conducted across six dimensions, clearly displaying the number of students in different characteristic groups. It presents a network graph illustrating the relationships among group students and extracts specific numbers of "top-performing students" and "underperforming students." The analysis identifies socially central students and those on the periphery, providing a basis for effective teaching.

(3)   Behavioral trajectory analysis. Collecting campus "one card" and other data, establishing a personal trajectory model, depicting trajectory data, realizing the positioning management of students, and also carrying out the analysis of the use of teaching buildings, group behavioral trajectory law and comparative analysis, etc., to determine the situation of students visiting teaching buildings, so as to facilitate the accurate management of students.

(4)   Comprehensive early warning. We analyze the information of campus "One Card", academic staff and teaching affairs, and establish different types of early warning analysis models, such as "psychological early warning", "academic early warning" and "abnormal behavior warning". Different types of early warning models are established, such as "psychological warning", "academic warning", "behavioral warning", etc. Once a student deviates from his/her habitual trajectory, the alarm threshold is triggered to avoid possible risks and improve the timeliness and effectiveness of management.

(5)   Academic Support and Assistance. By conducting analysis and assessments through big data, providing intuitive and visual data displays, it offers a data-driven foundation for academic support initiatives. Additionally, it utilizes big data technology to analyze changes in students before and after assistance, considering various dimensions such as spending habits, living conditions, employment status, physical activity, and more. This approach aims to enhance the effectiveness of the support program.

The construction of a big data service platform should also actively respond to the challenges brought by big data technology.

First, data security and privacy protection. In the process of using big data technology, how to ensure the security and privacy of students' personal information is an important issue. [1-2] Colleges and universities need to take measures to protect students' personal information and prevent data breaches and misuse.

Second, technology and talent bottleneck. The application of big data technology needs professional technical and talent support, and many universities have shortcomings in this aspect at present [3]. Universities need to strengthen personnel training and technology research and development and improve the application level of big data technology.

Third, adaptability and challenge. The application of big data technology requires universities to adapt to new working methods and processes, which poses new challenges to university management and teachers [4]. Universities need to strengthen the training and education of faculty and staff and improve teachers' understanding and application ability of big data technology.

5. The Construction of Parenting Model of Academic Style Construction under the Perspective of Big Data Technology

(1)　　Construction of the "six-in-one" model of academic style building and educating people

Combined with the application of big data technology in the construction of academic style, we have constructed the "six-in-one" model of academic style construction, which includes goal-led project, basic management project, environment creation project, help and assistance project, practice and success project, and role model demonstration project.

1.　　Goal-led project. Clearly define learning goals and stimulate internal motivation. Career planning education is carried out in the "first class" of new students' enrollment, so that every student has a clear academic and career planning. First, to graduate school and college as an engine, awakening the desire to learn: from the beginning of the first year, and actively guide students to set up the ambition to go to school to become a goal of success; grasp the foreign language and high mathematics learning, for the success of going to school to lay a good foundation; to go to school for students to take targeted management and services, carefully selected and hired counselors, to go to school to provide students with more professional counseling and guidance, to ensure that the rate of going to school year by year to improve; to smooth graduation and full With the goal of successful graduation and full and high quality employment, students are motivated to study hard: focusing on the formation of good study habits in the lower grades, strengthening classroom attendance, helping students to build up a solid knowledge base and improve the passing rate of the exams through the forms of tutors following classes, guiding the classes to organize self-study on their own, and helping the students who are in difficulties; in the upper grades, students are given a good grasp of the qualification certificates of foreign languages and computers, the cultivation of study skills, the cultivation of innovation and professional skills, and the improvement of study results in professional courses.[5] In the upper grades, we focus on the cultivation of foreign language and computer qualification certificates and study skills, as well as the cultivation of creative ability and professional skills, and improve the performance of professional courses. In the graduation grades, we focus on the education of vocational preparation, and carry out the activities of the resume competition and the entrepreneurial plan competition, meanwhile, we strengthen the education of the employment situation and policy, and strengthen the guidance of employment, so as to effectively improve the graduation rate and employment rate of the graduates.

2.　　Basic management project. Strengthen the basic management and consolidate the cornerstone of academic style. Establish the responsibility system of academic style construction, the student work office of secondary colleges is the competent department for

academic style construction, counselors are the first responsible persons for class academic style construction, class leaders and branch secretaries are the direct responsible persons for class academic style construction, and further clarify the specific responsibilities of different construction subjects; strengthen the system of counselors' listening to lectures, entering dormitories, and talking to each other; formulate the class assessment system focusing on the construction of academic style, and incorporate the rate of examination, advancement rate, certificate rate, failure rate, conversion rate of backward students, and examination style and discipline into the scope of assessment; improve the checking and inspection of academic style construction. [6] We have developed a class assessment system centered on the construction of academic style, which includes the examination rate, the rate of going to college, the rate of certification, the rate of failure, the rate of conversion of backward students, and the situation of examination style and discipline in the examination into the scope of the assessment; we have improved the mechanism of checking and supervising the assessment of the construction of academic style, focusing on strengthening the classroom attendance check, strictly checking the class attendance, classroom discipline and dormitory irregularities, and implementing the closed-loop management of checking every day, reporting every week, and evaluating every month; and we are seriously dealing with the students who are late for school, absent from school, and leave the dormitories early in violation of classroom discipline; Further strengthen the integrity of education, strict examination style to promote learning style, strict punishment for cheating on the examination, to eliminate the occurrence of cheating on the examination.

3.   Environment creation project. Carry out rich activities to create a favorable environment. Carry out activities such as "My Ten Minutes Before Class" and "My Advocacy for the First Row" in the secondary colleges, vigorously advocating that students actively attend classes and strive to sit in the first row; carry out the activity of "Showing My Report Card The activity of "Showing my report card" is launched to encourage students to show their report cards; activities such as exchange of experience in further studies are carried out to provide guidance and help for students who want to go to graduate school and higher education; higher mathematics competitions and related disciplines are carried out in conjunction with the actual situation of second-level colleges; experts, scholars, outstanding alumni and entrepreneurs are invited to give presentations and carry out academic lectures; around the construction of the academic style, monthly seminars are organized for teachers and students to understand the students' learning situation and help solve the problems of students in the class.[7-8] We organize monthly seminars for teachers and students around the construction of academic style, so as to understand the learning situation of students and help them solve the difficulties they encounter in study, life and work.

4.   Helping the needy and helping the project. Caring for the disadvantaged groups and joining hands to make progress together. For students with different situations such as learning difficulties, family financial difficulties, indifference to the concept of discipline, psychological disorders, interpersonal tensions, complex family relationships, as well as changing majors, taking a break from school and resuming studies, repeating classes, etc., we have established a one-to-one support system between student cadres and students with outstanding performance and students with difficulties; counselors follow up on students who fail subjects, make up exams, repeat courses and other key students to ensure that each student can successfully complete their studies and graduate smoothly.[9] The counselors will follow up and guide the

students who fail the exams and repeat the exams, so as to ensure that every student can successfully complete their studies and graduate.

5.   Practice makes perfect project. Combine with practice and promote growth through practice. Make full use of the teaching practice bases on and off campus to provide students with a platform for social practice and internship training; make full use of the "Innovation Studio", "Modeling Studio" and other laboratories to hold regular training in various disciplines and skills, professional skills competitions;[10] guide students to We actively guide students to obtain various kinds of vocational qualification certificates to improve the competitiveness of employment; actively guide students to participate in extracurricular academic and scientific and technological competitions at provincial, municipal and national levels to improve the level of competitions; and organize social practice activities for college students during winter and summer vacations, to enhance the cohesion of the students' team, to sharpen their will and to increase their talents.

6.   Role model demonstration project. Improve the incentive mechanism and play the role of role models. Carry out excellent academic style "model class", "model dormitory", "advanced individual" creation activities, excellent academic style class, dormitory and individual recognition and reward, and with counselors, Classes, dormitories and individuals with excellent academic style will be recognized and rewarded, and linked to the assessment of counselors and classes for the academic year;[11] we will vigorously publicize the advanced and typical students in the construction of the academic style, and publicize the excellent and typical students on the official website of the university and other media platforms, and give full play to the role of role models as a stimulus and guide by organizing experience exchanges, etc., so as to create a good atmosphere of pursuing and catching up with the advanced in the whole university, and strive to push the construction of the academic style to a higher level.

(2)   Operation of the "six-in-one" model of academic building and human development

Each year is divided into three phases, with the publicity and mobilization phase taking place from March to April, the organization and implementation phase from April to November, and the wrap-up and recognition phase in December.

Publicity and mobilization phase. The overall task of this stage is: to clarify the objectives, unify the understanding, and form a program. To achieve full coverage of publicity and mobilization, everyone participates in the construction of academic style, everyone supports the construction of academic style.

①   A mobilization meeting was held to point out the guiding ideology, objectives and tasks, general arrangements and specific requirements of the "six-in-one" mechanism for building and educating students.

②   Hold thematic class meetings and thematic party days in conjunction with the characteristics of the profession, analyze the current situation of the construction of classroom learning styles, and formulate measures to improve the work of building learning styles.

③   The second-level colleges hold theme discussions, form programs, and create a public opinion atmosphere of rigorous governance and participation by all through various channels such as the official website.

Organizational implementation phase

Around the construction of academic style, the second-level colleges and classes to implement the "six-in-one" academic style construction and nurturing mechanism, and effectively improve the students' learning atmosphere, the formation of the "compare, learn, catch up, help and surpass" learning atmosphere, to promote the construction of the academic style of the excellent trend.

Wrap-up and recognition phase

① In conjunction with the evaluation of awards and merits in the academic year, we will summarize and evaluate the construction of academic style, and select "model class", "model dormitory" and advanced individuals in the construction of academic style.

② Holding the "academic style construction experience exchange meeting" and "student work summary commendation meeting" to summarize experience, commend the advanced, find shortcomings, and determine the direction of efforts.

③ Further establish and improve rules and regulations, and set up a long-term mechanism of "six-in-one" academic style building and educating people under the perspective of big data technology.

(3) Evaluation of the "six in one" model of learning style construction

The engineering department of Haidu College of Qingdao Agricultural University has more than 2,700 teachers and students. Since January 10, 2023, it has been practicing the "six in one" learning style construction education model from the perspective of big data technology, and has been running smoothly for one year. In order to evaluate the effect of the "six in one" model of learning style construction, we comprehensively evaluated the data of the overall work and learning style construction big data service platform of the engineering department of Haidu College of Qingdao Agricultural University in 2023, including education and teaching quality, student satisfaction, teachers' ability to educate, campus cultural atmosphere and learning style construction effect.

① Quality of education and teaching. We assessed the quality of education and teaching by collecting and analyzing data on teachers' teaching quality, curriculum setting, selection of teaching materials, teaching methods, and interviewing 33 teachers' representatives. The evaluation results show that the teaching quality and classroom effect of teachers have been significantly improved, the teaching happiness index of teachers has increased by 7.8% compared with 2022, and the model of learning style construction has achieved remarkable results in improving the quality of education and teaching.

② Student satisfaction. We assessed student satisfaction with learning by collecting and analyzing data and feedback on student evaluations of the school, teachers, curriculum, campus culture, etc. The evaluation results show that the student satisfaction in 2023 is 99.30%, which is 4.10% higher than the average satisfaction of 95.20% in 2018-2022. The model of learning style construction has achieved results in improving students' learning satisfaction.

③ Teachers' ability to educate people. By collecting and analyzing the data of teachers' educational concept, teaching method, teaching ability, ethics and style, we evaluate the teachers' educational ability. The evaluation results show that the evaluation value of teachers'

comprehensive educational ability in 2023, such as teaching research, scientific research, paper publication, patent application and approval, has increased by 5.10% compared with that in 2022, and the educational model of learning style construction has achieved remarkable results in improving teachers' educational ability.

④ Campus cultural atmosphere. We evaluated campus cultural climate by collecting and analyzing data on campus cultural activities, academic climate, and teacher-student relations. The evaluation results show that in 2023, the number of students and teachers participating in campus cultural activities and academic forums increased by more than 700 compared with 2022, and the number of students and teachers talking and academic exchanges increased by more than 300 compared with 2022. The campus cultural atmosphere is strong, and the model of learning style construction has achieved remarkable results in creating a good campus cultural atmosphere.

⑤ Study style construction effect. By collecting and analyzing the data of students' academic performance, attendance, classroom performance and homework completion, we evaluated the effect of learning style construction. The evaluation results show that compared with 2022, the failure rate of students in 2023 has decreased by 35%, the number of academic early warning has decreased by 10%, the learning performance of compulsory courses has significantly improved, the admission rate has increased by 4.5%, and the enthusiasm and performance of students in participating in academic science and technology competitions for college students at all levels have significantly improved. The model of learning style construction has achieved remarkable results in improving students' learning effect and comprehensive quality.

6. Conclusions

The "six in one" model of learning style construction based on big data analysis highlights the application of big data technology in the construction of learning style, guiding the learning style with education, promoting the learning style with service, and promoting the learning style with management. To strengthen the basic management work as a breakthrough, pay close attention to learning discipline and learning habits; To stimulate students' learning motivation with the platform of higher education and learning competition; With excellent learning style "demonstration class", "demonstration dormitory" and advanced individual creation as the carrier, give full play to the role of excellent students. Through the operation of the "six in one" study style to build a model of education, students correct learning attitude, clear learning goals, enhance learning motivation, generally establish the concept of "learning is the first priority of students", form a learning atmosphere of "catch up with learning and help super", and help the school develop in high quality.

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