Research on College Students' Cognitive Bias and Construction of "Curriculum Ideology and Politics" under "Big Data"

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Abstract

As the main symbol of the information age, "big data" not only brings great convenience to the study and life of college students, but also poses a problem for college ideological and political education. A large amount of fragmented information and intelligent information push methods have brought one-sided and polarized information acquisition of college students, leading to cognitive bias of college students. How to use ideological and political education to correct the cognitive bias of college students and shape the correct ideological and moral concepts of students has become an urgent problem in the college "Curriculum Ideology and Politics" construction. Based on the theory of cognitive formation, this paper analyzes the formation mechanism of students' information acquisition and cognitive bias in the context of "big data", and proposes methods for correcting cognitive bias ideas for curriculum ideological and political construction.

Keywords

Big Data; Cognitive Bias; Curriculum Ideology and Politics.

1. Introduction

With the development of technolegy, mankind has ushered in a new era. In this new era of information technology, information technology is closely integrated with social life. While "big data" greatly facilitates people's lives, it also intensifies the cognitive dilemma under massive information. The explosive growth of the amount of information on the internet makes students trapped in this fragmented information. The targeted push services of major media information aimed at the individual preferences of users are gradually restricting students' reading horizons. In the face of the complex new environment, how to use the ideological and political construction of the curriculum to shape students' ideological and moral concepts has become a hot topic of national concern and social concern. General Secretary Xi Jinping emphasized at the National Higher Ideological and Political Work Conference that we should make good use of the main channel of classroom teaching, and various courses and ideological and political theory courses should go in the same direction, forming a synergistic effect. Under the background of "big data", clarifying the formation mechanism of students' cognitive deviation and exploring feasible correction ideas have become the key to the current "curriculum ideology and politics" construction.

2. Analysis of the Current Situation of Curriculum Ideology and Politics under the Background of Big Data

2.1. Basic Concept

2.1.1. Big Data

According to IBM's summary of the characteristics of big data, big data includes five dimensions (5V), namely Volume, Velocity, Variety, Value, Veracity. Compared with traditional data, big data has a larger data scale, more extensive and diverse data sources, a more complex and multidimensional data structure. The essence of big data is a data set with huge data capacity, diverse data types, and wide-ranging data uses that are generated at any time, and the data set is constantly updated and improved. Big data includes not only the data itself, but also the results of data analysis and data tracking. Some scholars believe that the core of big data capabilities is big data prediction and analysis technology, and the foundation is resource management and application capabilities.

2.1.2. Cognitive Deviation

Zheng Yuming defined cognitive deviation in his article as "a certain difference and deviation between an individual recogniton and the fact itself when he recognizes and judges things." [1]Based on the background of big data, the article focuses on the subjective cognitive biases of college students in the current environment. Drawing lessons from Yan Kunru and Li Hong's research on "statistical traps" in the era of big data, cognitive biases are divided into survivor bias, representativeness heuristics, availability bias, and hindsight bias. The survivor's bias is meant to illustrate: If you blindly pay attention to the salient information while analysing the problem, and ignore the hidden information, the conclusions you draw may be hugely biased from reality. The representativeness heuristics refers to a method by which people rely on representativeness to make judgments under uncertain circumstances. Availability bias indicates that people are prone to be influenced by what they see or hear, instead of thinking with statistical knowledge. Hindsight bias refers to the fact that people tend to think that they can predict the outcome of events before they happen. This illusion of predicting future events often makes people overconfident and make choices ignoring objective facts [2].

2.1.3. Curriculum Ideological and Political Education

In 2014, Shanghai Municipal Party Committee and Municipal Government put forward the term "curriculum ideological and political" in the process of education reform, aiming to conduct ideological and political education from all aspects and multiple perspectives. After the concept was put forward, many universities rushed to learn from it, and the curriculum ideological and political concept was recognized by some universities for the first time. The National College Ideological and Political Work Conference held in December 2016 is the starting point for the curriculum ideological and political education in the new era. At the meeting, General Secretary Xi Jinping emphasized: "Make good use of the main channel of classroom teaching. All classrooms are the main channel for educating people. All classrooms have the function of educating people. Ideological and political work should not be regarded as merely a matter of ideological and political theory classes. All other courses must maintain a good channel, plant a good field of responsibility, and walk in the same direction to form a synergistic effect." This is a brand-new education and teaching idea. Ideological and political education should not be completed as a task course, but naturally integrated into major professional courses. Ideological and political work, as an essential element of every class, should be integrated with major professional courses, and ideological and political teaching should be done well in all aspects.

2.2. Related Research

In recent years, big data technology has developed rapidly. While bringing all kinds of convenience to people, it also brings some hidden worries. Qu Lu and Dai Gangshu pointed out that the growth of knowledge and the change of concepts mainly come from the unknown fields or unfamiliar information they are exposed to, and even things they opposed and disliked before. And use this to reflect on one's previous ideas, rebuild, and negate the negation to generate new interests and ideas, so as to realize the learning process and the establishment of the knowledge system.[3] And intelligent information push based on big data will push information according to people's preferences, and the information received by people is increasingly only centered on the individual's existing interests and knowledge system. It may cause solidification of concepts and thinking, polarization, entertainment addiction, and distortion of values. Undergraduates, as the main audiences active under "big data", due to their limited cognitive level, they often fall into the cognitive traps under big data based on the intelligent message push of big data technology, which leads to cognitive bias and is not conducive to the acquisition of knowledge.

The research focus on this kind of issues is concentrated on two aspects. On the one hand, it is about the research on the effect of public cognition in the intelligent environment of big data. The research focuses on the algorithm structure of big data and the information dissemination path of major social media platforms, exposing the current "black box" of algorithm distribution under big data and the deviation caused by the public opinion guidance of major social media. [4] On the other hand, it is about the research of curriculum ideological and political construction under big data. The research mostly focuses on how to use big data as a tool to carry out curriculum ideological and political reform and construction. [5] Curriculum ideological and political is the most important thing in college education reform. At present, in the research on curriculum ideological and political construction, there is obviously insufficient attention to the problem of students' cognitive bias in the context of big data. General Secretary Xi Jinping pointed out: "The foundation of a higher education institution lies in establishing morality and cultivating people." Promoting curriculum ideological and political construction in an all-round way and correcting students' cognitive biases under big data are key issues that cannot be ignored in college education. For this reason, curriculum ideology and politics are necessary and need to be reconstructed.

3. The Formation Mechanism of Cognitive Bias under the Background of "Big Data"

Based on cognitive theory, the formation process of cognition formation can be shown in Figure 1. First, it acquires various information from the outside world through the senses, and then the brain stores, memorizes and processes all kinds of information, and finally transforms it into cognition. In this process, problems in each link will affect the formation of cognition.
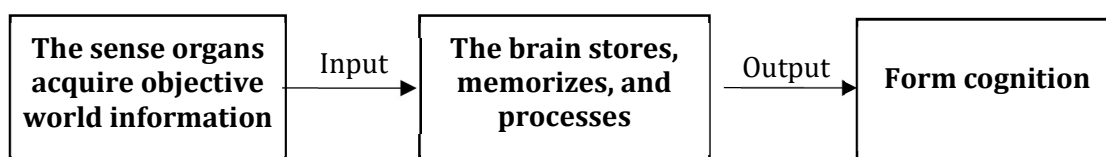

Figure 1. The process of cognition formation

3.1. Information Acquisition

3.1.1. The Phenomenon of Information Narrowing

Currently, social media continues to optimize the user experience in order to gain more support from its own interests. The usual feasible method is to make personalized content recommendations to users based on the user's interests, social relationships, etc., using network recommendation algorithms and technology. For example, "Headline Today" proclaimed "Headline is what you care about", which is to grasp the user's point of interest based on the user's click-through rate and accurately push the content that they are interested in. But if a person is only confined to paying attention to what he is interested in and what he likes. Then, his vision will inevitably become narrower and narrower, and it will be more difficult to fully grasp the problems in life. Obviously, the lack of reception of multiple information will lead to undesirable results such as narrow personal vision and solidified opinions.

3.1.2. The Phenomenon of Information Fragmentation

Driven by technology, students are exposed to massive amounts of information, and shallow and fragmented reading has become a common way for students to receive information. Woolman once expressed such anxiety about fragmented information: Fragmented information easily makes individuals lose the ability to use their own "common sense" to see problems. For example, the social software "Weibo", which is currently popular among students, has a limit of 140 words for the edited information, and the information it presents has typical fragmentation characteristics. On the surface, fragmented reading saves students' reading time, but in fact this kind of "fast-food" knowledge acquisition process often leads to students' mental inertia. They began to gradually lose patience after reading an entire article, and were even satisfied with "headline reading" that directly regarded the headline information as the truth, thinking that "contact" meant "understanding". [7]Moreover, they misinterpreted, forwarded, shared, and even used false information to worsen the network environment without knowing the whole incident.

3.1.3. The Quality of Information is Worrying

In an era when all kinds of social media are popular, the value orientation of media has a profound impact on information recipients. However, the competition of major platforms for profit often leads to the fact that the content released by the media tends to the hot topics that people are paying attention to, while the content about mainstream social values and positive energy is becoming less and less. In order to increase the number of clicks on the content published on the platform and cater to the curiosity of some people, under the operation of interests and capital, a large number of platforms have inevitably emerged vulgar content has seriously affected the values of contemporary students.

3.2. Information Processing

3.2.1. Students Lack the Awareness of Consciously Avoiding Deviations in Information Processing

In the process of screening network information, it will inevitably be induced by personal knowledge reserves, experience skills, and value orientation. Students always selectively accept the information they are willing to receive and stay in the "cocoon room" of information that they have woven for a long time. The push of personalized information on major platforms is also intensifying the occurrence of this type of phenomenon. Wang Haidi and others conduct a questionnaire survey with students from Guilin Institute of Tourism and find that 90% of the students are aware of the push of personalized information on the media platform, but 62.6% of them said they didn't care about it. The students do not deeply realize the harm to their personal cognition caused by the specific information space created by the Internet in

information processing. A large amount of homogenized information is continuously limiting students' cognitive horizons and threatening the improvement of students' interpersonal communication, innovative thinking, self-awareness, and other abilities.

3.2.2. Students Lack In-depth Thinking about Information Processing

In today's information explosion, in-depth thinking is often needed to break the trap of cognitive bias. For example, according to a platform report, there are far more women than men among elderly patients over 70 years old in hospitals in a certain area. The information received seems to express those elderly females are more likely to get sick. But is it so? When you think about the problem dialectically, you will find that, in fact, the reason is that the female elderly in the area have a longer lifeline. However, for college students, due to their limited cognition and insufficient in-depth thinking about information, it is difficult to accurately grasp and analyze the information. In the absence of discrimination, students are often confused by the prejudiced or even false information, making their heads a racetrack for others.

3.3. Cognitive Formation

Under the "information cocoon room", college students began to gather in a certain network aggregate due to similar hobbies. Affected by the phenomenon of "group polarization", they gradually lose their ability to discern information and form a kind of inert thinking, which seriously affects their way and ability to think about problems. In addition, under the personalized recommendation of the Internet, a large amount of "homogeneous information" gradually solidifies students' thinking styles, which seriously affects their innovative thinking. As a special group, students are curious, full of ideals, and daring to innovate, but they have less contact with the real world, simple in mind, easy to follow suit, and weak in distinguishing right from wrong. The unevenness of information on major media platforms will cause them to fall into information traps, distort their values, and cause serious harm to physical and mental health.

4. Correction of Cognitive Bias under the Background of "Big Data"

According to the law of cognition formation, to correct the cognitive bias in the context of big data, it can be carried out from three stages of cognition.

4.1. Information Input Stage

4.1.1. Cultivate Students' Information Gathering Ability

With the development of information technology, big data has penetrated all aspects of life. Students are prone to cognitive biases under the complicated data. But the comprehensiveness of the data itself is also an important means to crack the cognitive bias. In education, we should focus on cultivating college students' ability to use big data, so that students can use big data to dig and collect deeper and more diverse information, and continuously broaden students' reading horizons, guide students' diverse reading needs, and exercise their logical thinking abllity and information analysing skills.

4.1.2. Improve Students' Information Selection Literacy

Today, when information is fragmented and fragmented, personal choice of information is particularly important. Education should focus on cultivating students' information selection literacy, breaking their established information acquisition model, and enabling them to jump out of the "information cocoon" they have constructed and master more comprehensive information. At the same time, it is necessary for students to realize that the positive information they need to receive should be based on the values generally recognized by society and contribute to personal development and social progress.

4.2. Information Processing Stage

4.2.1. Improve Students' Information Cognition

Information environment cognition refers to the ability of deep understanding of the current information environment and to dialectically examining the received information from a more objective perspective. Education should focus on improving students' understanding of the status quo of information, letting students know what kind of information environment they live in, and understanding the cognitive bias traps caused by big data information push. At the same time, let students understand that if a person is only limited to what he is interested in and under a single homogeneous information for a long time, then his vision will inevitably become narrower and more difficult to deal with the problems in life.

4.2.2. Improve Students' Information Analysis Ability

Information discrimination is a kind of conscious thinking and analysis ability when people are exposed to information. Education should focus on the cultivation of students' abilities in this area, so that students have a global mindset, and inhibit their selective and blind obedience when they are forced to receive information. For example, when someone encounter such remarks: "A certain uncle who smokes lives to be eighty years old, so the person who smokes will live a long life", "Someone has recovered from a certain health product, so the health product can cure the disease", "Those who have read are working for those who have not, so reading is useless" etc. Students should be guided to discern this is a typical cognitive bias. There are indeed people in the world who smoke and live longer, but more people are affected by their health and life expectancy because of smoking; the reason behind the "curing" of certain health products is that the patient cooperates with the doctor for treatment; There are people who can still reach the peak of life with insufficient education, but the vast majority of people are the ones who have achieved success by the benefit of knowledge. In the process of analyzing and mastering things, we must look at problems in a comprehensive and objective manner, grasp things from the outside and inside, and rationally look at all kinds of information gathered around them. And add their own thinking and judgment in the process of receiving information, so that they will not be confused by the illusion that appears on the surface of things. Let students gradually liberate from the lazy thinking that only accepts information without thinking.

4.3. Cognitive Formation Stage

4.3.1. Use Big Data for Personalized Correction

One who lives in the room knows it when it leaks. In the past, the students' personal thinking dynamics are really only known to the students themselves, and it is difficult for teachers to grasp the degree of students' cognitive deviation. The lack of information between teachers and students makes it difficult for education to correct students' cognitive deviations to achieve the expected results. However, in the context of big data, the comprehensiveness and real-time nature of big data make it feasible for teachers to capture and grasp the dynamic changes of students' thoughts. Benefiting from data analysis tools, teachers can use data to "individually profile" students. Analyze the individual students' ideological value orientation, hobbies, focus, etc., and use the data feedback of the individual student information to instantly capture the students' cognitive bias dilemma, so as to provide personalized and precise ideological and political guidance to the students.

4.3.2. "Curriculum Ideology and Politics" and "Ideological and Political Course" Work Together to Guide the Establishment of Values

In the context of big data, the complexity of information acquisition by students makes it less and less effective to rely solely on "ideological and political courses" to guide students to establish correct values and achieve the purpose of cognitive correction. [8]What's more, under

the diversified social ideological trend, Internet hotspots and social public opinion are constantly influencing students' values at a rapid pace. In the process of correcting students' cognitive biases, "ideological and political courses" should be the first to bear the brunt, and continuously strengthen students' political awareness, ideals and beliefs, and value orientations with the Marxist scientific world outlook, outlook on life, values, traditional ethics and national spirit. In addition, the "Curriculum Ideological and Political" should be combined with the "Ideological and Political Course". On the basis of imparting curriculum knowledge, the course teacher strengthens the individual's ability to understand and transform the world, and continuously improves the individual's cognitive level and moral accomplishment. , To lead the shaping of correct values, change the wrong values, and achieve the purpose of cognitive correction.

5. Curriculum Ideological and Political Construction under the Background of "Big Data"

Under the background of "big data", if students do not have their own firm stand, in the mixed Internet environment, it is easy to fall into the "information cocoon room" and cause cognitive bias. This kind of cognitive deviation is a huge obstacle to the ideological and political construction of the curriculum. Based on the formation mechanism of cognitive bias, combined with the current situation of the development of curriculum ideology and politics in China, the following suggestions are put forward for the construction of curriculum ideology and politics.

5.1. Reform Curriculum System

5.1.1. Increase Big Data and Information Processing Courses

Add courses related to big data information collection, expand students' horizons, and cultivate students' thinking about processing information correctly. Let students learn to scientifically collect, process, and analyze massive amounts of information from various channels, develop a mindset that grasps the overall situation and has an insight into the overall situation, looks at problems from multiple aspects, and rejects one-sided thinking. Cultivate the ability of college students to process massive amounts of information, so that while studying the course, college students can recognize the limitations of their own cognition, broaden their thinking about problems, and recognize that there are survivor biases and availability biases in information acquisition. In the big data course, teachers need to conduct targeted teaching to make students aware of the importance of data collection. In addition, the students' subjective initiative is fully mobilized in the classroom, and students are given the opportunity to "brainstorm" together, so that students can jump out of their comfort zone and focus not only on current political issues they want to pay attention to, but also on social issues.

5.1.2. The Library and the College Jointly Carry Out Information Literacy Education Activities

Since the information resources of each university have certain limitations compared with the library, and the ability of the library to organize and coordinate activities is weaker than that of the university, the two can jointly carry out information literacy education activities. Make use of the massive resources of the school library and the strong organizational and mobilization capabilities of the colleges to rationally apply the theoretical knowledge in the big data and information processing courses to practical activities. For example, according to the professional needs of various colleges, the evaluation system of information literacy education for college students is established, and practical course assessments are set up in different categories [9]. In addition, diversified information processing lectures can also be held in the library to give full play to the educational role of various resources of the library. Schools should also incorporate the improvement of students' information literacy into their long-term

teaching goals, and combine them with curriculum ideology and professional courses to effectively improve students' information literacy.

5.2. Reform Teaching Process

5.2.1. Incorporates Ideological and Political Elements in Teaching Process

In the process of teaching professional courses in the traditional model, it is easy for teachers to ignore the ideological and political teaching, let alone find out the cognitive deviations of students in time, and the quality of teaching is worrying. Therefore, teachers and students are required to change their thinking in an all-round way. Teachers do not regard ideological and political education as a special duty and obligation. They must make ideological and political education invisible while teaching professional knowledge, and naturally integrate ideological and political elements into professional teaching, so as to truly "moisturize things silently and silently."[10]. Allow students to improve their ideological and moral qualities invisibly when they study professional courses. Students do not regard ideological and political education as a learning task, and actively take in ideological and political content from all aspects, and take the understanding of ideological and political content as a matter of course. In addition, the integration of ideological and political elements into the existing teaching model requires a comprehensive revision of the old teaching cases, teaching PPT and other basic teaching materials, and the ideological and political elements are cleverly integrated into it.

5.2.2. Enrich the Content of Ideological and Political Education Using Massive Information

First of all, with the development of the era of big data, schools should actively use the Internet to collect various forms of ideological and political content and curriculum ideological and political methods, and conduct regular training on the ideological and political level of teachers to improve the overall ideological and political quality of teachers. Schools can also push ideological and political content to students on the official website and official account, and combine specific cases to make ideological and political education more vivid. In addition, teachers can use new media to collect relevant teaching resources, and they must always pay attention to political trends, have their own correct and profound insights into updated current political information, and then show these content to students to increase their awareness Understanding of relevant political theory knowledge. It is also necessary to cultivate students' ability to distinguish radical speeches on the Internet, avoid falling into the "information cocoon room", and allow students to have a full and correct understanding of current affairs knowledge. Students should also take the initiative to obtain current affairs news from major official websites, keep up with the pace of the times, and maintain a rational mind and correct cognition.

5.2.3. Improve the Overall Ideological and Political Level of Teachers

Schools should recognize the status quo of ideological and political teaching, and put forward solutions based on the problems of ideological and political teaching in the school's curriculum. The first thing to do is to impose strict requirements on the teacher team. In the context of "big data", it is necessary to improve the ability of every in-service teacher to process big data and analyze big data, and regularly conduct current political content promotion and ideological and political teaching skills training for all teachers. In addition, it is also necessary to recruit young talents who are good at using big data and new media, as well as comprehensive talents who are proficient in big data technology, so as to improve the curriculum ideological and political ability of the overall team of teachers. [11] Schools can also use new media to push current affairs information to all teachers in a timely manner to avoid teachers' cognitive biases. Schools also need to supervise teachers' political thoughts to prevent teachers from appearing incorrectly, and to prevent teachers from showing extreme thoughts. Once such a situation occurs, it must be criticized and dealt with seriously. At the same time, establish a curriculum

ideological and political teaching evaluation system, incorporate the curriculum ideological and political evaluation system into the general teaching evaluation system, and let all teachers attach importance to the curriculum ideological and political ideologically.

5.3. Reform Teaching Methods

5.3.1. Make Rational Use of New Teaching Methods

Reasonably use new teaching methods such as MOOC, case-based teaching, inquiry-based teaching, and flipped classrooms. The idea of "student-centered" is not a formalized new ideological and political teaching method for the purpose of simply attracting students. Instead, it takes the students' "cognitive bias" as the starting point, uses the analysis capabilities of big data to obtain the content of most students' cognitive bias, and combines the new teaching model to improve students' enthusiasm for ideological and political issues, and at the same time make targeted The curriculum ideological and political teaching. For example, when using the "case teaching" method to teach, not only explain the cases in the textbook, but also incorporate the latest Chinese cases. When introducing Chinese cases, add the time background of the case, and the ideological and political content can be subtly integrated into the time background of the case. You can also use the "flipped classroom" teaching method, that is, the time between the students and the teacher inside and outside the classroom is exchanged, and the learning initiative is given to the students. When the teacher answers questions to the students in the classroom, he integrates into the background of the knowledge background and the times, takes the students' questions as the starting point, and expands and supplements the ideological and political elements.

5.3.2. Conduct Precise Ideological and Political Education

The "precise ideological and political education" is to prescribe the right medicine for students' "cognitive bias" and other problems, and to accurately teach ideological and political content. [12]First of all, establish a student database, and by analyzing students' attendance, campus card, dining, social activities and other information, get each student's personalized habits, preferences, and thought dynamics. Secondly, the database is provided to the teacher team, through the analysis of the students' personalized information, the students' consumption preferences, social conditions, hobbies, and learning conditions can be obtained. Finally, focus on the thought dynamics of individual students who deviate from the group, such as abnormal consumption tendencies, abnormal hobbies, and abnormal social situations. Combining students' own conditions and ideological education goals to carry out precise ideological and political teaching, and correcting students' cognitive deviations with the right medicine. [13] However, when accurate ideological and political teaching is carried out in combination with the student database, the ideological and political thoughts of students cannot be materialized, and the dynamics of individual students' individual behaviors can not be materialized.

Acknowledgments

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