

Teaching Reform Paper of Environmental Science Introduction

--Investigation and analysis of water resources protection consciousness of Hebei Agricultural University students

Hongquan Liu, Zhicheng Li, Zexin Wang, Yufei Liu, Jiashuo Gao and Yang Yang

School of Urban and Rural Construction, Hebei Agricultural University, Baoding 071000, China.

Abstract

Fresh water is a natural resource, and it is also a scarce resource. With the rapid development of China's economy, the increasing demand for water resources leads to the situation of water resources in China is not optimistic. Taking the students of Hebei Agricultural University as the investigation object, the awareness of water resources protection was investigated, and the knowledge, attention and participation in water conservation activities of the students of Hebei Agricultural University were grasped, and some valuable conclusions were obtained, which put forward some opinions on improving the awareness of water resources protection of college students.

Keywords

College students, awareness of water resources, waste and pollution, investigation report.

1. Research background

Statistics show that China is a country with severe drought and water shortage. The total amount of fresh water resources in China is 2.8 trillion cubic meters, accounting for 6% of the global water resources. However, the per capita consumption of fresh water resources is only 1/4 of the world average, ranking 110th in the world, and the per capita available water resources are only 900 cubic meters, which is extremely uneven, making it one of the countries with the poorest per capita water resources in the world. [1] The low utilization level of water resources has aggravated the shortage of water use in the region.

The sustainable development of China's economy is inseparable from water.

On May 31, 2018, the Third Session of the Standing Committee of the 13th Provincial People's Congress deliberated and adopted the Regulations on the Prevention and Control of Water Pollution in Hebei Province, which came into effect on September 1 of that year. This is the first local water pollution prevention and control regulation revised in China after the implementation of the National Water Pollution Prevention and Control Law, and it is also the most stringent water pollution prevention and control regulation in the history of Hebei Province. Hebei province has made every effort to do a good job in water pollution prevention and control, creating a new situation of water pollution prevention and control led by the government and participated by the whole people. [2]

In order to implement the relevant requirements of the National Water-saving Action Plan and the Notice on Deepening the Work of Saving Water in Colleges and Universities, on June 24, 2022, Hebei Provincial Water Resources Department, together with the Provincial Department of Education and the Provincial Organs Administration Bureau, issued the Notice on Doing a Good Job in the Establishment of Water-saving Colleges and Universities during the Tenth Five-Year Plan, making arrangements for the work of water-saving colleges and universities in Hebei

Province during the Tenth Five-Year Plan, requiring that more than 30% of colleges and universities should build water-saving colleges and universities by the end of 2022. [3]

Colleges and universities are big users of urban public water. Some colleges and universities have been established for a long time, the water supply network and water equipment are outdated, the water management is relatively extensive, and there are problems of water resources waste and pollution to varying degrees. [4]

2. Research purpose and introduction

The water consumption of college students has certain concentration and regularity. Through investigation, we can understand the consciousness and behavior of college students' water resources protection. Popularizing the knowledge of water resources protection can alleviate the problem of water waste and pollution in schools to a certain extent, make college students become pioneers in water conservation, and thus drive the whole citizen group to participate in water conservation actions. Therefore, we specially designed a questionnaire on college students' awareness of water resources protection to learn more about college students' knowledge, attitude and participation in water resources protection, and to provide reference information and suggestions for school water resources protection. This survey takes the form of random sampling questionnaire survey. A total of 135 questionnaires were distributed, including 57 in East Campus and 54 valid questionnaires. 38 copies of the West Campus, and 36 valid questionnaires were collected; 40 copies from Modern Institute of Science and Technology, and 37 valid questionnaires were collected; A total of 127 valid questionnaires were collected, with a recovery rate of 94.1%. Among them, 33 were recycled by freshmen, 41 by sophomores, 29 by juniors and 24 by seniors. Taking random sampling interview survey, 35 students were randomly interviewed in the school to get richer and deeper information and understand their understanding and concern about water resources; By observing the daily water use of school students, we can understand the daily water use habits of students; Take the method of information inquiry, collect relevant information and policies online as reference, make the research content and form more diverse and perfect, and use Excel software for statistics.

3. Students' research situation

3.1. Analysis of Understanding Degree of Water Resources

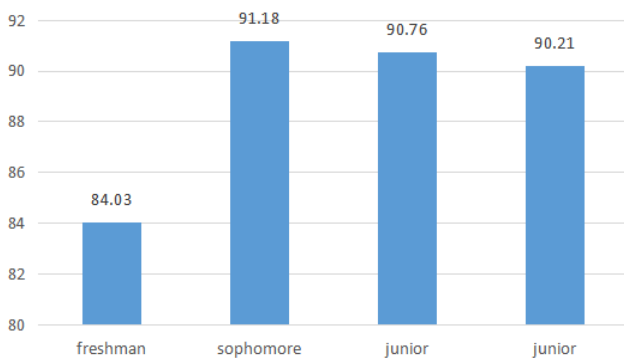


Figure 1:How well each grade understands the water situation

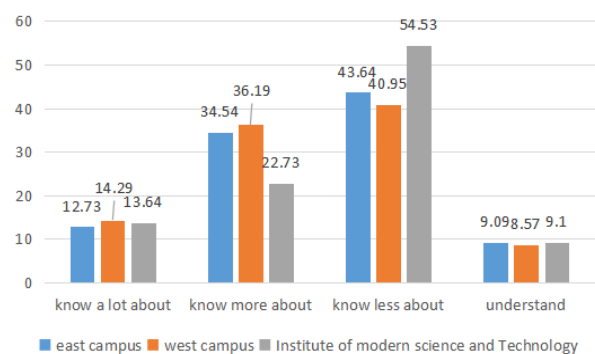


Figure 2:Knowledge of water resources in different campuses

According to the statistical analysis of survey data, in terms of the understanding of water resources in each grade, the number of people who know about water resources in freshman

group accounts for 84.03%, that in sophomore group accounts for 91.18%, that in junior group accounts for 90.76%, and that in senior group accounts for 90.21%. Freshmen have a poor understanding of water resources, which may be due to their low attention to water resources before entering the university.

By comparing the understanding of water resources between East and West universities and the current Academy of Sciences, it can be seen that there is little difference in the understanding of water resources between East and West universities and the current Academy of Sciences. Relatively speaking, more people in modern science and technology colleges know less about water resources and have a low degree of understanding, which may be related to the publicity of the college and the comprehensive quality of students.

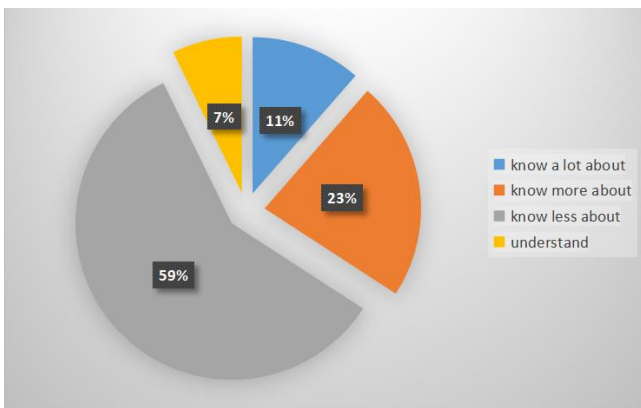


Figure 3: Knowledge of the water situation

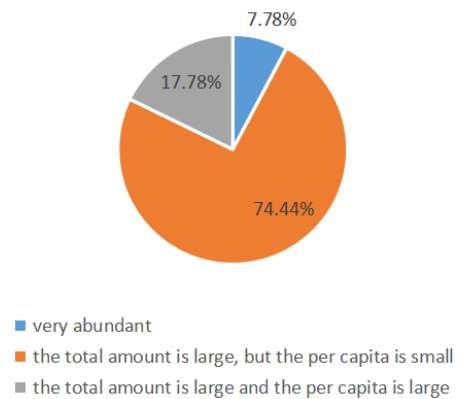


Figure 4: Current situation of water resources in China

Analysis of the overall students' understanding shows that 11% of college students know water resources very well, 23% know more, 59% know less and only 7% don't, which shows that most college students think they know water resources better.

However, among these nearly 93% people, only 74.44% people can realize that China's water resources are in a state of large total amount and small per capita at present, and 25.56% people think that China's total water resources are very abundant or large in total amount, which shows that some students have problems in their understanding of water resources, and those students with cognitive problems need to realize the shortage of water resources in China as soon as possible.

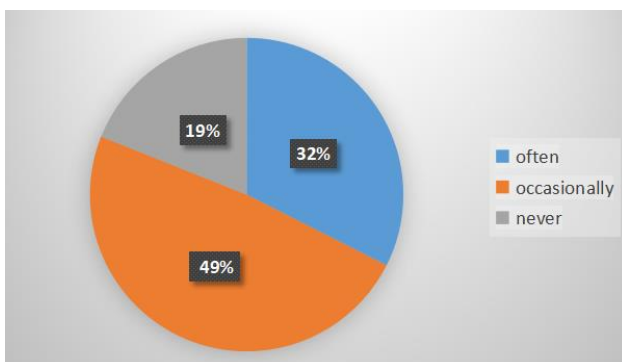


Figure 5: The degree of concern about water resources

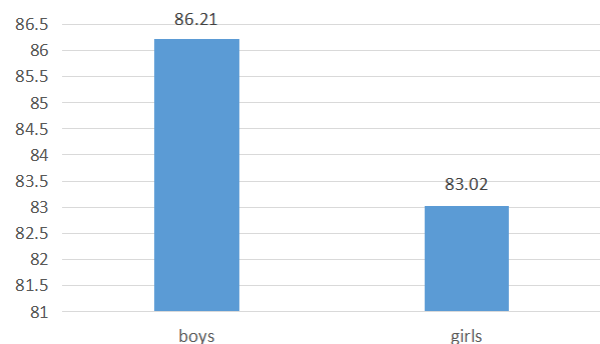


Figure 6: Level of concern about water resources among male and female students

In terms of the degree of attention, 18.96% of the college students in this survey never pay attention to water resources, 32.46% of the students always pay attention, and 48.58% of the

students occasionally pay attention. According to the data, most students are still concerned about water resources.

In terms of boys' and girls' attention to water resources, we can see that there is little difference between boys and girls' attention to water resources. Among them, boys' attention (accounting for 86% of the total number of boys) is relatively higher than girls' (accounting for 83% of the total number of girls).

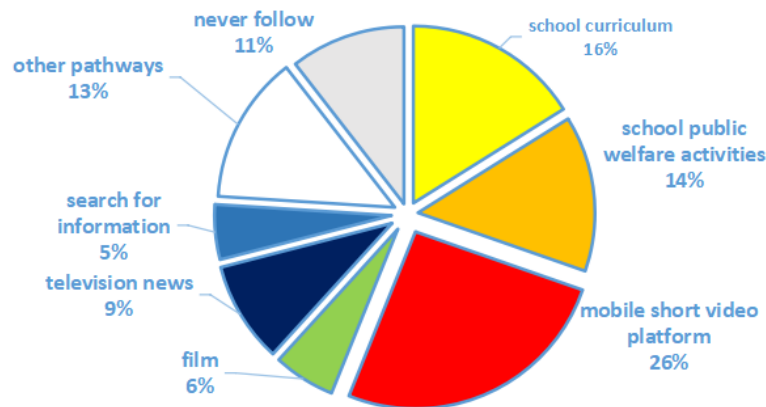


Figure 7: Ways of attention

In the investigation of ways to pay attention to water resources, we know that short videos on mobile phones have become the most important means and ways for college students to pay attention to water resources, accounting for about 26%, taking part in public welfare publicity activities and school courses each accounting for about 15%, watching movies, TV news and actively looking for information all accounting for less than 10%, and learning through other channels accounts for 13%, among which 11% students do not pay attention to and understand. From the way of attention, college students pay more attention to water resources through the short video of mobile phones, which shows that the development of the network drives college students to pay attention to water resources to a certain extent, but the number of people watching movies, TV news and actively looking for information is not much, which shows that different forms of network attention help college students to understand water resources to different degrees.

Then we interviewed 35 students at random, 12 of whom had learned about it through short video on mobile phones, but the reason was that they brushed the video for a long time and inadvertently brushed it, instead of the students taking the initiative to learn about it through short video platform.

At the same time, there are still 11% people who don't take the initiative to pay attention to water resources. From this point of view, the initiative of college students to pay attention to water resources is low and needs to be improved urgently.

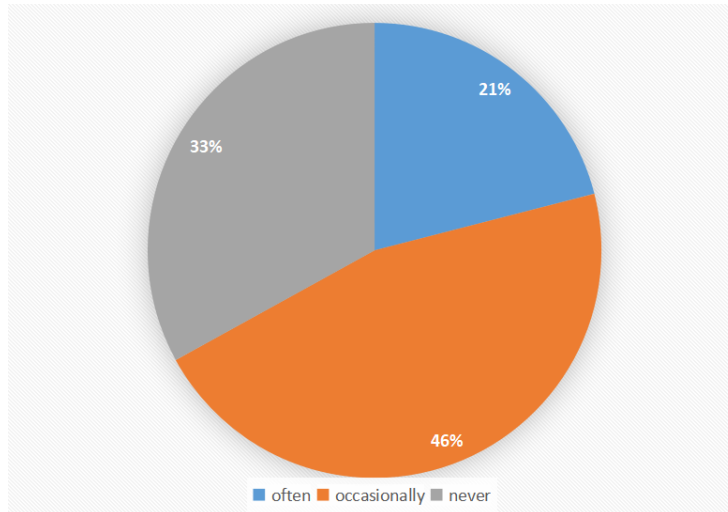


Figure 8: Whether the school or college advertises

College students will also pay attention to water resources to a certain extent through school courses and public welfare publicity activities, but the proportion is relatively small. By understanding the publicity of the college, we found that 21% people think that the college does not publicize, 33% people think that the college often publicizes, and 46% people think that the college occasionally publicizes. Taking the College of Urban and Rural Construction as an example, there was a publicity campaign from March to April in 2022, and there was a popular science publicity contest on water saving and water protection around October in 2022. Combined with the information obtained by our random interviews with students, more students did not understand and pay attention to the publicity conducted by the college, which shows that the publicity efforts of the college or school should be appropriately increased to make the water-saving publicity activities more diverse and vivid, and attract students to pay attention to and participate in the publicity activities.

3.2. Analysis of water pollution and waste

3.2.1. Analysis of water pollution and its harm

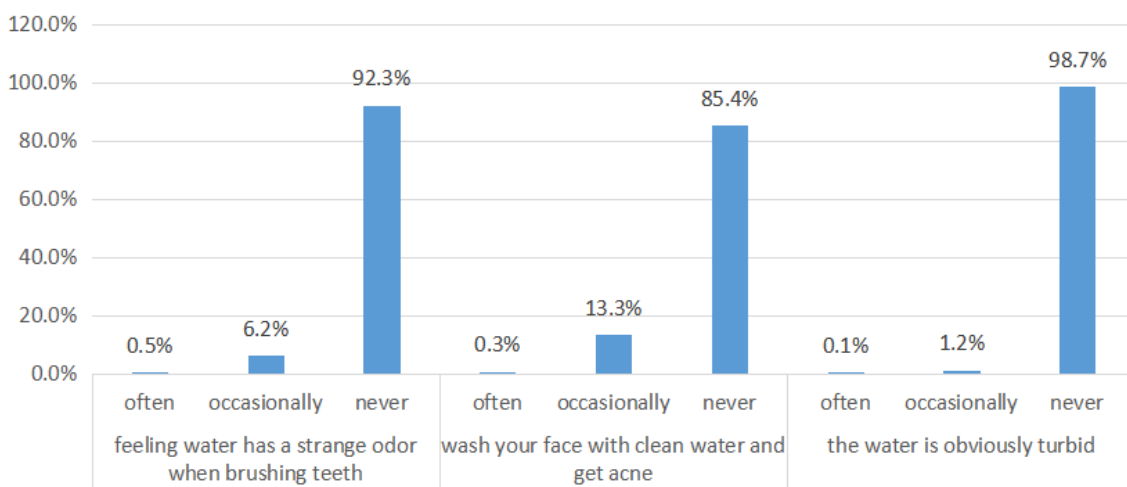


Figure 9: Whether the following water pollution phenomena have been observed

According to the statistical analysis of the survey data, 92.3% of the students never feel the water smells when brushing their teeth, 85.4% of the students never get acne when washing

their faces with clean water, and 98.7% of the students never notice the obvious turbidity of water in their daily lives, which shows that our school has provided relatively safe protection for college students, and our college students have not suffered from the harm caused by water pollution.

However, there are indeed cases of water pollution endangering the health of college students in life. In June 2022, water pollution occurred in a university in Shanxi, which caused many students to be hospitalized and aroused widespread concern in society. Therefore, college students should be prepared for danger in times of peace and improve their awareness of prevention and water resources protection.

3.2.2. Analysis of water resources waste and its harm

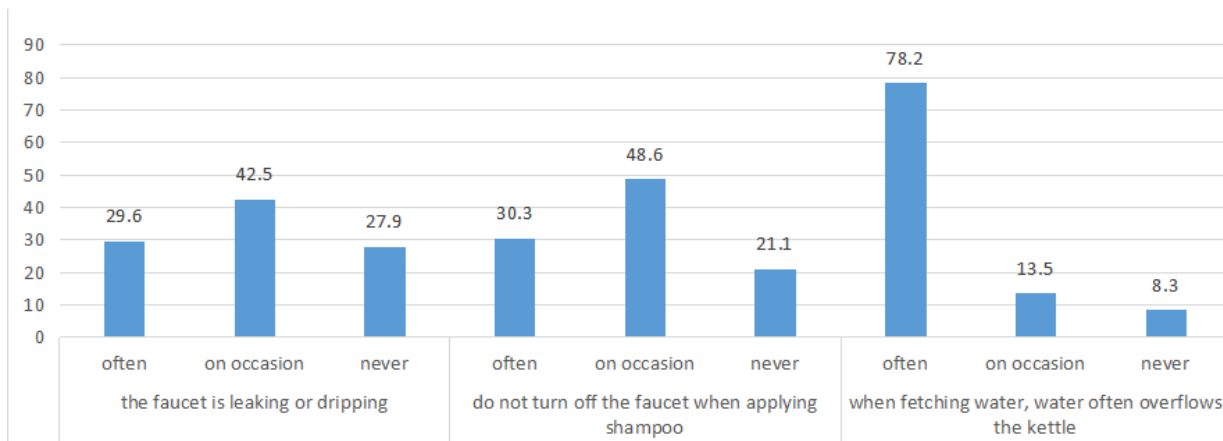


Figure 10:Have you ever observed the following water waste phenomena

In the investigation of water resources waste, 27.9% people have never observed water leakage and dripping, 29.6% people often see it, and 42.5% people occasionally see it; 21.1% people have never observed the phenomenon of leaving the tap on when applying shampoo, 30.3% people often see it, and 48.6% people occasionally see it; 8.3% people have never observed the phenomenon that water overflows the kettle when students fetch water, 78.2% people often see it, and 13.5% people occasionally see it. Generally speaking, college students have a serious waste of water resources, and their life observation ability needs to be improved, and their awareness of water saving is weak.

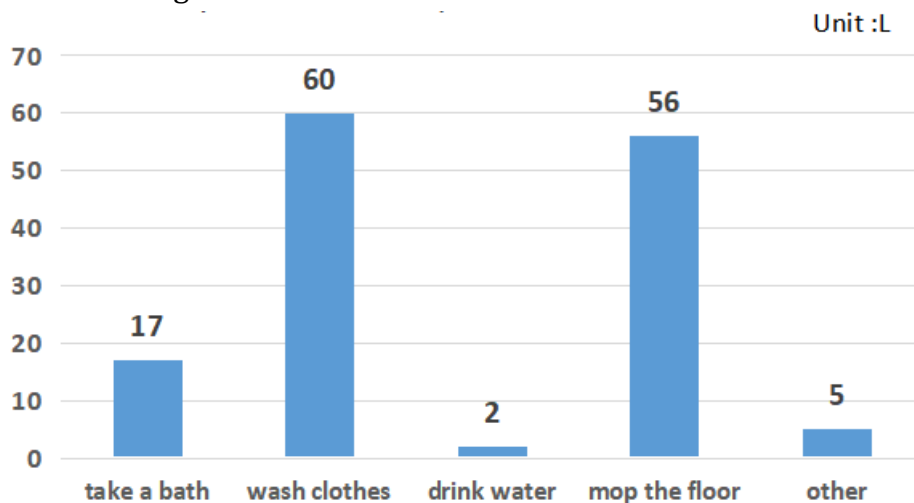


Figure 11:Daily water consumption of school students

Relevant data show that the average water consumption of college students is more than twice that of urban comprehensive water consumption, and the average water consumption of some

colleges and universities is 500 to 600 liters. For this reason, we searched the information about the per capita water consumption of Baoding City through official website, the People's Government of Baoding City. By August 2021, the per capita water consumption of Baoding City was about 115.6 liters per person per day. By observing the students' water consumption habits in different scenes, we calculated the water consumption per person per week, and calculated that the per capita water consumption of students in our school is about 140 liters per person per liter, which is about 24.4 liters more than that of urban residents. Among them, washing clothes and mopping the floor consume the most water, 60 liters and 56 liters respectively, bathing consumes about 17 liters more, and drinking and other aspects consume less water, totaling 7 liters.

When students wash clothes, most people choose to wash small clothes by hand, and use the impeller type washing machine in the dormitory water room to wash large and oversized clothes, and the washing mode is mostly 40 to 50 minutes, which leads to great water consumption. Students should try to reduce the number of machine washing, shorten the time of machine washing, try to wash clothes by hand and save water.

In mopping the floor, students usually fill the mop pool with water. In addition, the mop pool is large in size and has few washing times, which causes the problems of large water consumption and serious waste of water resources. Therefore, schools or colleges should improve mop pools, and students should "drain less water and wash more" to reduce waste of water resources.

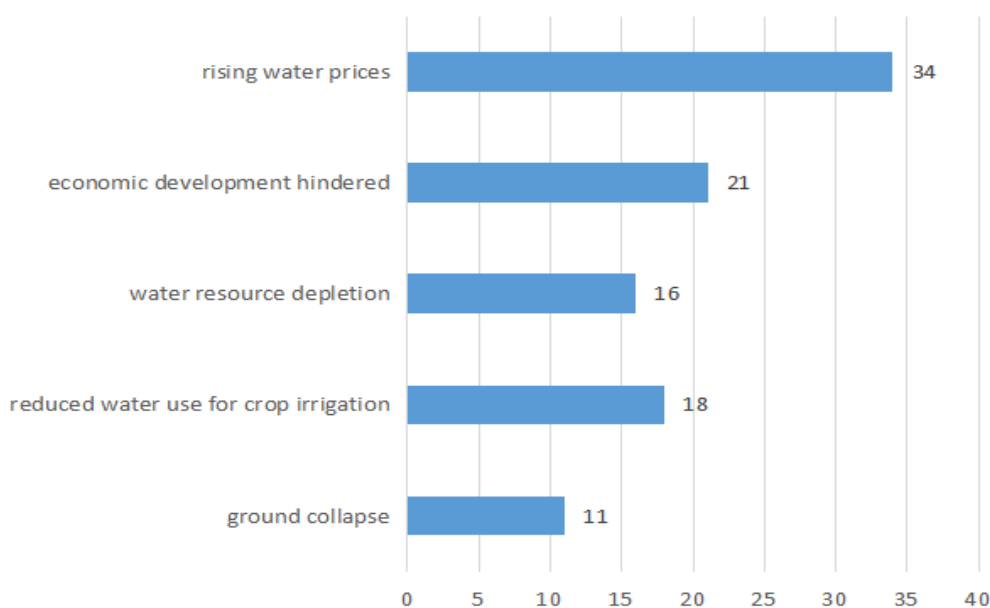


Figure 12: The hazards of water resource waste

We investigated the consequences of several common water resources waste, and found that 21%, 18%, 11% and 16% of the total population think that the most serious consequence caused by water resources waste is the increase of water price. With the rise of water price, the living burden of urban residents began to increase, which directly affected the happiness of citizens. Therefore, we must pay more attention to water resources in our lives and develop the habit of saving water.

3.2.3. Cause analysis of water resources problems

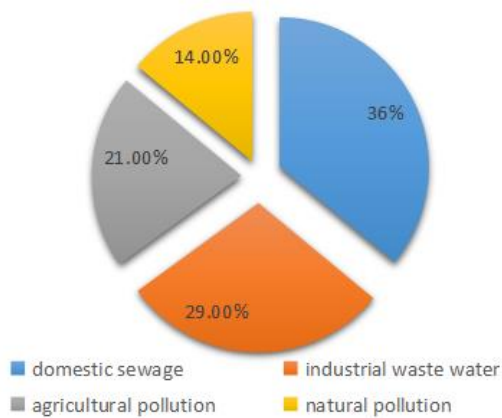


Figure 13:Causes of water pollution

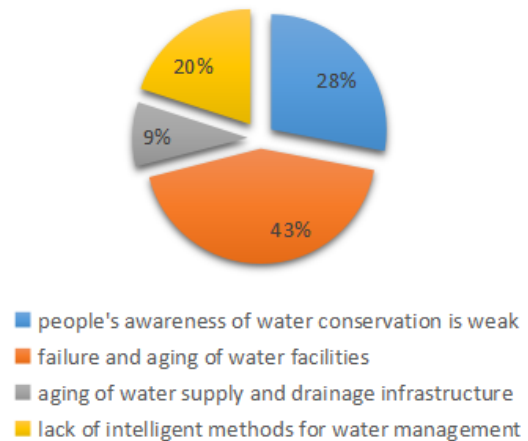


Figure 14:Reasons for water waste

In the statistical data of the main causes of water pollution, we find that the number of people who think it is the discharge of domestic sewage accounts for 36%, industrial wastewater accounts for 29%, agricultural pollution accounts for 21%, and natural waste accounts for 14%. It can be seen that there are many reasons for water pollution, especially domestic sewage and industrial wastewater, which are the most serious. Therefore, to control water pollution, we should mainly start from people's domestic sewage and industrial wastewater.

Statistics on the causes of water waste show that 9% of students think it is caused by the aging of water supply and drainage infrastructure, 20% think it is caused by the lack of intelligent methods in water management, 28% think it is caused by people's weak awareness of water saving, and more people (about 43%) think it is caused by the failure and aging of water facilities. It shows that the waste of water resources is not only the students' weak consciousness, but also the aging and failure of water and drainage facilities in the campus.

3.3. Analysis on the governance of water resources problems

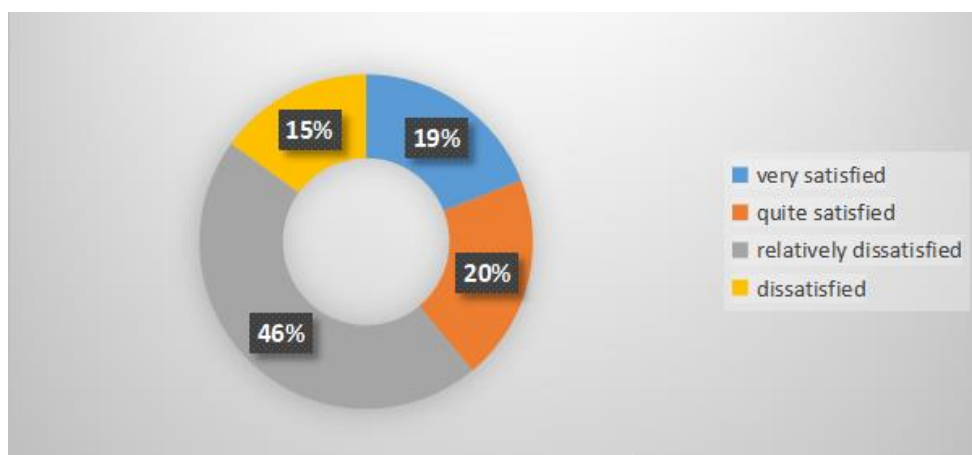


Figure 15:Satisfaction with water resource pro motion and governance

According to the survey data, all the students surveyed are dissatisfied with the publicity and management of water resources in the school, of which 15% are dissatisfied, 46% are relatively dissatisfied, only 20% are satisfied, and only 19% are very satisfied with the publicity and management of water resources in the school. Judging from this data, the publicity and

management of water resources in the school is low, which has not been satisfied and recognized by most students. Therefore, colleges and universities need to intensify publicity and management, clarify the corresponding school rules and disciplines, and let more college students actively want to increase their satisfaction.

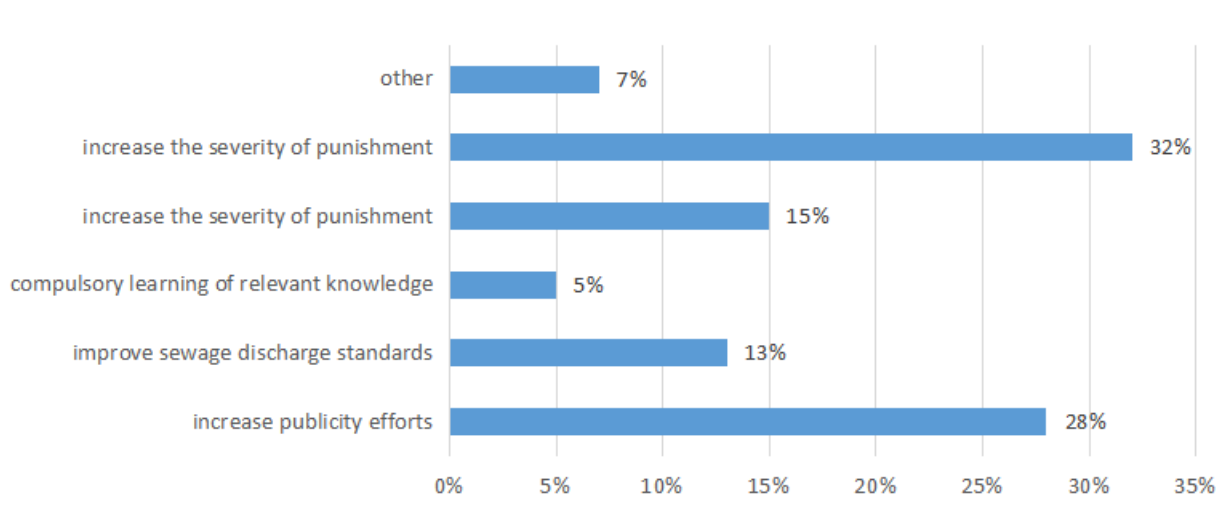


Figure 16:Methods for alleviating water resource problems

Water resources problems include water pollution and water waste. Only by starting from these two aspects and grasping the key control factors can we achieve good control results.

When students answered the question of what methods should be taken to alleviate the water resources problem, the number of people who agreed to compulsory learning related knowledge accounted for 5% of the total number, the number who agreed to improve sewage discharge standards accounted for 13% of the total number, the number who agreed to increase punishment accounted for 15% of the total number, and the number who agreed to increase publicity and improve water resources utilization accounted for 28% and 32% of the total number respectively. Most students thought that increasing publicity and improving water resources utilization would alleviate the water resources problem.

3.4. Water-saving and water-protecting activities publicity and self-action

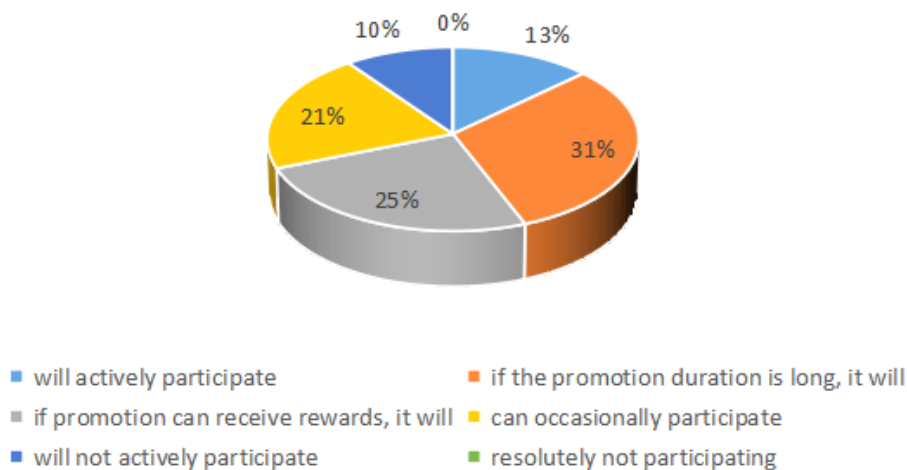


Figure 17:Will you actively participate in publicity during your spare time

In the survey on whether college students will take the initiative to participate in publicity in their spare time, the number of people who will take the initiative to actively participate accounts for 13% of the total number of people surveyed. If the publicity is long, the number of people who will participate accounts for 31% of the total number of people surveyed. If the publicity can be rewarded, the number of people who will participate accounts for 25% of the total number of people surveyed, the number of people who can participate occasionally accounts for 21% of the total number of people surveyed, and the number of people who will not actively participate accounts for 10% of the total number of people surveyed.

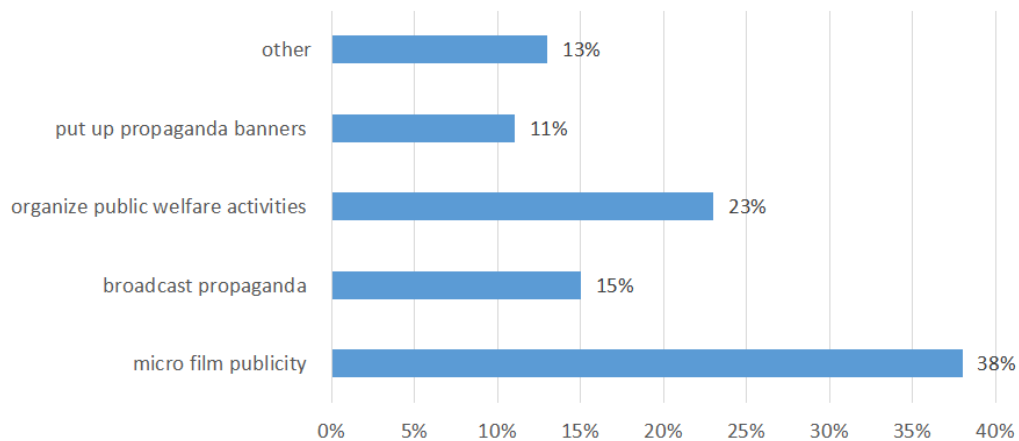


Figure 18: Whether they will participate in the following publicity measures

Among the students who will take the initiative to participate in publicity, most of them (about 38%) like to participate in microfilm publicity, 23% like to participate in public welfare activities, and 11% and 15% will participate in radio and banner publicity respectively. It can be seen that college students prefer interesting and active publicity activities, so increasing such activities in colleges and universities can make students participate more actively.

4. Conclusions and recommendations

Through this survey and statistics, we have a brand-new understanding of college students' awareness of water resources protection.

In the investigation of college students' awareness of water resources protection, we found that:

1. College students have a certain understanding of water resources, but some of them have deviations and mistakes in their own cognition.
2. Most students pay attention to water resources through the internet, but they are not active in paying attention to water resources. Although they pay attention to a certain extent, they seldom pay attention to the publicity of schools and colleges around them. The reason for this phenomenon is not only the students themselves, but also the publicity of the school.
3. A small number of college students are indifferent to the propaganda work of water resources protection, and students who are willing to participate in the propaganda work of water resources protection prefer interesting and lively propaganda forms.

To this end, we believe that:

1. Schools should strengthen and improve water-saving education.

In the process of education, efforts should be made to improve the situation that college students' knowledge and behavior are out of touch, and to cultivate them to achieve the unity of knowing and doing. College students should not only have a strong sense of participation, but also actively participate in water conservation. [5] Schools should pay attention to the cultivation of college students' awareness of water resources protection, offer relevant

compulsory elective courses, and organize more publicity activities, with various publicity contents and richer forms;

2. Schools should improve water-saving management mechanism and update water supply facilities.

Colleges and universities should improve water-saving efficiency from improving water-saving management system and mechanism, innovating campus water-saving technical means and so on [6], start with hardware, update water-using equipment, and promote the intelligence of water-using, water-purifying and drainage systems;

3. College students should actively participate in and drive more people to participate in water saving and water protection;

The purpose of this survey of water resources protection awareness of Hebei Agricultural University students is to understand their awareness of water resources protection, so as to facilitate the publicity of water resources protection on campus and reduce the pollution and waste of water resources. I hope this survey can help the water resources protection work.

5. Conclusion

As a necessary natural resource for human survival, water resources are of great significance to the development of the country and society and people's lives. At present, the ecological environment pollution is serious, and people's awareness of ecological protection needs to be strengthened. [7] The earth is our only home. Everyone on the earth should contribute their own strength and do what they can to protect water resources. Protecting water resources means protecting ourselves.

Acknowledgements

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