Research on Garbage Sorting in College Campus
---Take colleges in Dongguan and Jieyang as examples

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Abstract: This paper made a related survey on the current situation of the garbage in colleges in Dongguan and Jieyang, discussed the main types of garbage on campus, analyzed the attitude and behavior of college students towards garbage sorting and recycling, demonstrated the feasibility of campus garbage sorting and recycling, and put forward constructive suggestions accordingly. Relevant systems should be improved, the campers’ management of garbage classification should be strengthened, publicity should be strengthened, and students’ environmental awareness should be improved.

1. Introduction

1.1 Research background and significance

Background: With the continuous improvement of the living standards of human society, environmental problems have become increasingly prominent, so the research on waste treatment and utilization is urgent. Nowadays, there are many problems in colleges or residential areas, such as unclear garbage sorting consciousness, large amount of waste, which seriously affect the quality of our living environment.

Significance: The intelligent sorting and recycling machine can minimize the amount of garbage and realize the transformation of garbage into new energy by sorting and recycling recyclable garbage, which is conducive to the implementation of the ecological civilization thought in the new era.

1.2 Research objects and content

This paper focuses on the status of campus garbage in Dongguan and Jieyang areas college students as the research object, including the survey of the amount of garbage generated in colleges a day, the way colleges deal with recyclable garbage, the promotion of common sense on campus garbage sorting, college students' willingness and views on the use of intelligent sorting and recycling machines, and through the survey of the area where the intelligent sorting and recycling machine is put, and at the same time investigating the cognition of college students on China’s garbage sorting, summarizing the status of garbage sorting and recycling in Dongguan and Jieyang colleges, and putting forward relevant suggestions for these problems.

2. Research methods

2.1 Field survey method

The field survey method includes two methods: field observation and in-depth interview [1]. Through seminars and field visits, this research surveyed the logistics departments and garbage collection
stations of some college in Dongguan and Jieyang, and collected data.

2.2 Questionnaire survey method
This research took college students in Jieyang and Dongguan as the subjects of the questionnaire survey. The questionnaire was designed to survey the status quo of domestic garbage sorting by college students. The questionnaire survey was conducted among 1052 college students in more than ten colleges and the results were analyzed.

3. Research process and results

3.1 The basic situation of the questionnaire survey of college students in Dongguan and Jieyang

3.1.1 Survey scope and methods
From September 2020 to November 2020, a monthly survey was conducted in several colleges in Dongguan and Jieyang. The sites of on-the-spot survey were teaching buildings and dormitory buildings. From the survey, the main composition of campus garbage were observed. Through the analysis of the figure, it is concluded that the waste books and polluting garbage account for a large proportion of campus garbage. Next are electronic equipment, metals and waste plastics. (As shown below)

![Fig 1 Main composition of campus garbage](image)

**COMPOSITION OF CAMPUS GARBAGE OF A COLLEGE IN GUANGDONG FROM SEPTEMBER 2020 TO NOVEMBER 2020**

- Discarded battery: 8%
- Waste glass: 3%
- Electronic equipment: 10%
- Scrap metal: 16%
- Waste plastics: 10%
- Waste book and paper: 32%
- Experimental pollution waste: 21%

3.1.2 Basic information
Survey time: September 2020 to November 2020
The purpose of the Survey: To conduct market analysis on the feasibility of the "investment with income" intelligent recycling machine, through sampling surveys, partial surveys, on-site survey of the garbage sorting in colleges.
Survey items: Through street interviews, questionnaires and other forms to investigate "College Students' understanding of garbage sorting", "College Students' motivation and suggestions on garbage sorting".

3.2 Analysis of the results of the questionnaire survey of college students
According to the survey, there are as many as 20,000 teachers and students in the city college, and the
amount of garbage generated per day can reach 12-14 tons. Because there is no good garbage dumping site, most of the garbage dumping places for teachers and students are next to the corridor, which directly blocks the fire escape, And it also emits peculiar smell, which not only produces huge pollution to the surrounding environment, but also affects the environment of students’ lives. Therefore, garbage sorting and garbage recycling in colleges have become an important link.

3.2.1 College students' understanding of garbage classification
Under the advocacy of the country, garbage sorting has become more important. Colleges are an important group that cannot be ignored in society. Sorting and recycling college garbage is an important step to realize resource recycling. The composition of campus garbage is mainly composed of several categories, namely recyclable garbage, non-recyclable garbage and toxic and hazardous garbage. Recyclable garbage refers to garbage suitable for recycling and resource utilization [2].

Mainly include the following categories:
1. All kinds of waste paper, such as paper used by students and useless books.
2. All kinds of waste plastics. In colleges, various packaging containers take up a large proportion, including plastic bags, plastic bottles, and plastic lunch boxes.
3. All kinds of scrap metal, tinned beverage cans commonly found in schools, and discarded batteries.
4. Various waste glass, some cosmetic glass containers, glass water bottles, etc.
5. All kinds of waste textiles, mainly all kinds of discarded clothing products.

Non-recyclable garbage refers to various types of garbage that are relatively easy to decompose under natural conditions. Such as various peels, vegetable leaves, leftovers and leaves. Of course, this type is more likely to cause bad smell.

Toxic and hazardous wastes refer to those wastes that cause actual harm or potential harm to the health of the human body or the human living environment.

After the publicity of garbage classification carried out by the state and schools, most students have a certain understanding of the basic types of garbage and a better understanding of related garbage classification policies. In random interviews, more than half of teachers and students were willing to sort garbage.

3.2.2 Garbage sorting methods, approaches and demand tendency of College Students

3.2.2.1 Sorting method and approach
Take our school as an example. Taking the dormitory as a unit, the three types of garbage are sorted in the dormitory by themselves, and then put to the garbage collection point set up near the dormitory. At present, the problem in the student dormitory is the weak awareness of the internal sorting of the dormitory, such as housing The non-cooperation of friends still feels that garbage sorting is very troublesome. It can be understood that the motivation to promote sorting is not enough, and the environmental awareness is still not strong enough. The degree of persistence is not high, due to unsupervised school garbage sorting, the classification of garbage has not been properly guided in time, and the distribution of garbage bins is not reasonable. Most students believe that they have little influence and lack of internal driving force. And most of them are not satisfied with the current status of garbage sorting.

3.2.2.2 demand tendency
Based on the large amount of garbage, the space of garbage collection point is not large enough, and the space demand is large;

After survey and field survey, although the daily garbage is cleaned up by staff, the processing speed is not fast enough, and there is no special garbage disposal mode and systematic method, which causes the garbage to emit foul smell and cause secondary pollution. More scientific and reasonable management is needed to deal with garbage. Although students accept the new method quickly, but the
degree of persistence is not high enough, there needs to be reward and supervision mechanism [3].

Table 1  Statistics of the second questionnaire survey

| Option                                           | Subtotal | Proportion |
|--------------------------------------------------|----------|------------|
| Speed up legislation, reform related garbage    | 692      | 65.78%     |
| recycling, and clarify relevant reward and      |          |            |
| punishment measures                            |          |            |
| The government increased investment and         | 698      | 66.35%     |
| facilities construction, and strengthened       |          |            |
| intervention                                  |          |            |
| Establish a garbage disposal and recycling      | 739      | 70.25%     |
| industry chain with the help of modern          |          |            |
| technological means such as Internet big data  |          |            |
| Intensify publicity, especially the infiltration| 664      | 63.12%     |
| of various activities in Colleges               |          |            |
| Encourage related companies and institutions to | 706      | 67.11%     |
| participate in the garbage sorting and garbage  |          |            |
| recycling industry                           |          |            |
| Number of valid entries in this questionnaire  | 1052     |            |

In view of the current situation of colleges, we conducted a second questionnaire survey on the motivation and attitude of college students to garbage sorting. The questionnaire survey involves four aspects: reward and punishment, capital investment, science and technology, and publicity. Among the 1052 students surveyed, 65.78% of the students believed that it was necessary to speed up the legislation to formulate reward and punishment measures. Reward and punishment measures can arouse students' attention to garbage reuse. When the source of garbage can be traced, the disposal regulations in the process of garbage disposal can be formulated, and the implementation of garbage sorting can be included in the evaluation. 66.35% of the students believe that colleges should increase the investment in hardware settings and management personnel to deal with the problem of large amounts of garbage, and better handle the disposal, collection and storage of garbage, up to 70.25% believe that in the background of the Internet+ era, using new technologies and cooperating with local institutions to establish a complete industrial chain is a trend. 63.12% of students believe that in the education of freshmen who have just entered the, it is possible to increase the promotion of garbage sorting, open environmental protection innovation activities, so that students are willing to participate and learn, and to improve students' self-control and classification awareness.

4. Conclusions and suggestions

4.1 Conclusions

4.1.1. College and students have a certain understanding of garbage sorting, but the number of active sorting is still not high

Under the publicity of garbage classification in the country and schools, college and students have a certain understanding of the basic knowledge and related policies of garbage sorting, and more than half of the teachers and students also agree to garbage sorting, but some students still have a weak awareness of garbage sorting and lack internal driving force, resulting in low coordination and low persistence of students in garbage sorting, which reduces the initiative of most students in garbage sorting.
4.1.2. Most college and students are not satisfied with the current garbage sorting
At present, the amount of garbage generated by college and students is large, and the space of garbage recycling is small, which leads to the mismatch between supply and demand; there is no systematic garbage treatment method, and the recycling mechanism is not fast enough, which is easy to cause garbage accumulation to deal with a large amount of garbage every day. The implementation of school garbage sorting is not high, the dormitory garbage sorting method is cumbersome. Students who do not sorting have a negative impact on the students who are sorting, and the enthusiasm of most students is decreasing.

4.1.3. College and students have a positive attitude to the improvements of garbage sorting
For the reward and punishment system, capital investment, science and technology, publicity methods, and participating units, more than half of the students support to strengthen the relevant treatment.

4.2 Suggestions on the Sorting and Recycling of garbage on Campus

4.2.1 Strengthen publicity and improve student awareness
It is necessary to strengthen the initiative of students on garbage sorting, and relevant club activities and knowledge contests can be adopted to strengthen the publicity of garbage sorting knowledge, so as to improve college students’ awareness of garbage sorting. Start with environmental-related majors to increase the radiation range and increase the initiative of most students.

4.2.2 Establish and improve relevant systems
The sorting and recycling of garbage in colleges is a long-term and arduous task, which requires students and employees to implement practical actions for a long time. Students have greater support for the relevant reward and punishment system. The school can improve relevant regulations or recycling mechanisms to stimulate students' enthusiasm for garbage sorting and recycling. At the same time, improve the relevant management system, play the role of supervision and restraint, so as to ensure the continuity of its behavior.

4.2.3 Introduce advanced technology
Making new garbage disposal plan and introducing new technology to improve the existing garbage collection methods will help reduce the difficulty of garbage collection, improve the enthusiasm of college and students and improve the efficiency of garbage sorting and recycling.

4.2.4 Cooperation of various social departments and a sound resource circulation system
The final disposal of campus garbage in colleges is also a major task, so it is necessary to establish a corresponding market system of renewable resources trading and resource utilization. All in all, our country should introduce relevant policies to strengthen the cooperation between various sectors of society and improve the utilization rate of resources, so as to make the campus garbage can be returned to the land.

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