Thinking About Secondary School Students' Disaster Education During the New Curriculum Reform Process From the Perspective of Constructivism

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Abstract

Although disasters have occurred frequently, the problems, such as imperfect disaster-prevention system, weak public self-help ability in the process of disaster and the disaster-relief work, need to be resolved urgently. Middle school students are lack of disaster concept and consciousness. Although China promotes education reform in recent years, geography teaching in middle school paid more attention to the disaster knowledge education gradually, most of them stayed at the theoretical level, practical teaching is obviously insufficient. Based on the theory of constructivism, this paper puts forward the improvement strategy of secondary school disaster education, and is intended to improve students' ability of disaster-prevention by questionnaire survey and analysis.

Keywords

New curriculum reform, Disaster education, Middle school student.

1. Introduction

Since entering the industrial society, with the continuous progress of science and technology and the rapid growth of economic level, the transformation of nature caused by human is becoming more and more obvious. However, as the nature of the accessories, serious influence and loss on people's production and life had been caused by disasters. In the case of earthquakes, the earth plate movement gradually entered a more active age. The average annual earthquake above seven levels occurred 18 times in the last hundred years. However, in recent years, it has reached an average of 27 times a year, far exceeding the average of the past [1]. In 1897, the forty-second United Nations General Assembly decided to set 1990-2000 as the first "International Disaster Reduction For Ten Years". And the assembly proposed "Education is the center of the disaster mitigation plan. Knowledge is the key of success or failure of disaster mitigation." [2]. Thus, to carry out disaster education, the school is the better place. It can let the students master certain disaster prevention skills, provide students with the methods of coping with disasters, and improve the students' disaster accomplishment and disaster awareness. After the Wenchuan earthquake in 2008, China began to pay more attention to the disaster education of citizens, and put forward many kinds of educational theories.

Disaster education is based on the theory of disaster-prevention, geography, pedagogy and psychology, etc. It is closely connected to geography, which is the main reason of the contents of "natural disasters and prevention" appearing in the new curriculum reform. At present, there is no accurate definition of disaster education.

Li Jingxia et al. thought: "Disaster education is to reach the purpose of disaster prevention and reduction. Its core is training educatees to have the disaster consciousness and disaster-prevention

literacy. The aim is to make the educatees master some knowledge of disaster-prevention, disaster reduction, disaster relief and disaster preparedness, ability and attitude. Thus, set up the correct view of disaster, and correctly treat the disaster itself and disaster rules of occurrence and development."[2] Another concept that is closely related to disaster education is the disaster awareness. Most scholars believe that the disaster consciousness is a kind of psychological awareness in the face of disasters.

Li Shitai summed up the disaster consciousness as the people's understanding of the disaster, including the destruction of social conditions before and after the disaster, the deterioration of material living conditions, a large number of casualties and properties destroyed, the disturbed social order and the post-disaster reconstruction. These changes are reflected in people's psychological and ideological, then, the disaster consciousness is formed under the special social and historical conditions of disaster. Disaster awareness includes two aspects: one is the low level of disaster psychology; the two is the high level of the disaster ideology. All of these run through the whole system of disaster education of Behavior, attitude and values [3]. It is an implicit result of disaster education.

Piaget Jean believes that knowledge is not an objective thing (Empiricism), nor is subjective thing (Vitalism). Knowledge is the gradual construction result during the process of the individual interaction with the environment. Students acquire knowledge only through active construction to complete [4]. The new curriculum reform tries to change the teaching idea of the past, promote students' comprehensive development and healthy growth to create favorable conditions, turn teaching into the co-construction process of communication between teachers and students, cooperation, dialogue and communication. The role of the teacher is to create situations and lead students to learn [5]. The idea put forward higher requirements for students' practical ability. The highest level of disaster education is to minimize the damage in practice, which requires a standardized exercise.

The disaster has the characteristics of sudden and uneven distribution in time and space, and disaster prediction technology is limited. Therefore, when a disaster comes, people rely more on disaster hedge skills to survive. For middle school students, on the one hand, they are lack of survival experience, on the other hand, they are about to adults, and accepting a certain disaster education is conducive to their future life, work and family safety education. Therefore, it is of great benefit to understand the level of secondary school students' disaster education.

2. Data sources and methods

This paper adopts the method of the questionnaire to study the status of middle school students' ability of fighting and hedging disaster. The content of the questionnaire mainly includes two parts. One is to study the students' mastery of the basic disaster theory, and the two is to understand students' disaster awareness and practical ability in disaster. The main research object is the students coming from the area with poor natural conditions and disaster-prone. 246 freshmen in four liberal arts classes were issued questionnaires, and 235 valid questionnaires were collected. The recovery rate was 95.5%.

3. Results and analysis

3.1 High-school students' mastery of the theory of disaster

Survey shows that students have a lack of knowledge about disaster elementary theory (Table 1). From the correct rate of different questions, the correct rate of second questions is lower than the error rate. Although the correct number of fourth and fifth questions is relatively slightly more, the difference between each option is not obvious. However, for the sixth questions, due to the daily education, all the answers are right (Table 1). At the same time, from Fig. 1 and table 1, most students' disaster knowledge comes from internet media, newspaper and TV, not geography classroom teaching. The lectures and publicity of the disaster knowledge in the school are far less. Obviously, the school is not a sufficient emphasis on the degree of disaster education. Because the school leaders, including teachers are one-sided pursuit of further studies, the content of disaster has been taken.

There is no understanding of the importance of disaster basic theory knowledge to the students' response to the disaster, which may be related to the examination oriented education in China.

Table 1 Questionnaire on students' knowledge of the basic theory of disaster

Subject	A (%)	B (%)	C (%)	D (%)	Accuracy (%)
1. Which of the following is a geological hazard?	Earthquake	Typhoon	Flood	Flague of locusts	97.02
	97.02	0.85	2.12	0	
2. Which of the following rivers in China has the largest number of floods?	Minjiang River	Heilongjiang River	Yellow River	Yangtze River	41.28
	0	0	58.72	41.28	
4. A huge earthquake refers to __.	5—6 magnitude	6—7 magnitude	Above 7 magnitude	Above 8 magnitude	26.39
	17.45	22.97	33.19	26.39	
5. How long can a drowning cause death due to the breath and the heart stopping?	15 minutes	10 minutes	4-7 minutes	2-3 minutes	41.70
	22.98	26.38	41.70	8.94	
6. People at the moment of shock proof, the first choice is to protect __.	Chest	head	hands	feet	100
	0	100	0	0	

One question of the questionnaire was designed to "what is the most probable natural disaster in the past few years in Tianshui" to investigate the understanding of the local natural disasters and the ability to interpret the local natural disasters through geographical learning (Fig. 2). However, the survey found that some students were wrongly selected for the storm surge and typhoon that will not happen in the northwest inland region. Some students were also wrongly selected for the plague of locust and rats, although the incidence of the two plagues is relatively low. For this question, a lot of students chose the landslide, debris flow and drought. In fact, because Tianshui area is located at the seismic belt of the junction of the plate, the number of earthquakes is also more frequently. Unfortunately, only 58.3% of the students think so. Thus, through the study of geographical knowledge, students have a certain mastery of regional geography knowledge, but there is a lack of learning of the local geography. China's basic education performs a three-level management system, i.e. the course management of three national, local and school levels is carried out. As far as the middle school geography course is concerned, the new curriculum reform advocates the development of local schools. And the geographical learning often links with life closely, especially in a disaster. So in the geography class, it can be combined with the local conditions to teach, so that students can accept more effectively.

3.2 High-school students' awareness of disaster and disaster response capacity

The analysis of the students' ability of disaster awareness and response to disasters is mainly reflected by investigating students' awareness of the fire, flood and earthquake. The investigation revealed that the middle school students' knowledge of fire is relatively larger. However, students who can use fire appliances only accounted for 9.79% of the students; students who have received instructions but do not know how to use accounted for 56.17%. There are some students will not use or even do not know where the fire appliances (Table 2). For the possible cause of high-rise building fire, there are still some students think that cigarette butts, a short circuit and forgetting to turn off the gas will not cause a fire. This indicates that the students' awareness of disaster prevention is poor, and they are not concerned about the dangerous habits in life. According to the survey of fire response capacity,

11.06% and 5.96% of the students chose the option of running to the top-floor balcony and running to the downstairs quickly; 82.98% of the students can make the proper choice. In the choice of life and death, students' fire emergency ability is still low. Overall, although the school has started to pay attention to safety education for students, and has organized the safety publicity activities, education is insufficient and lack of field demonstration. Piaget, founder of the theory of constructivism, believes that children gradually construct knowledge about the outside world during the process of interacting with their environment, and then make the development of their own cognitive structure [4]. Therefore, it should consider the characteristics of students' cognition, and pay attention to students' disaster-prevention practice.

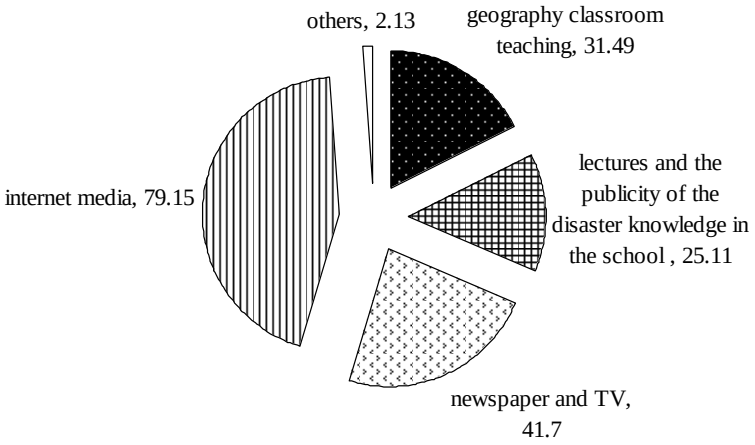


Fig. 1 The number of people acquiring disaster knowledge through different means

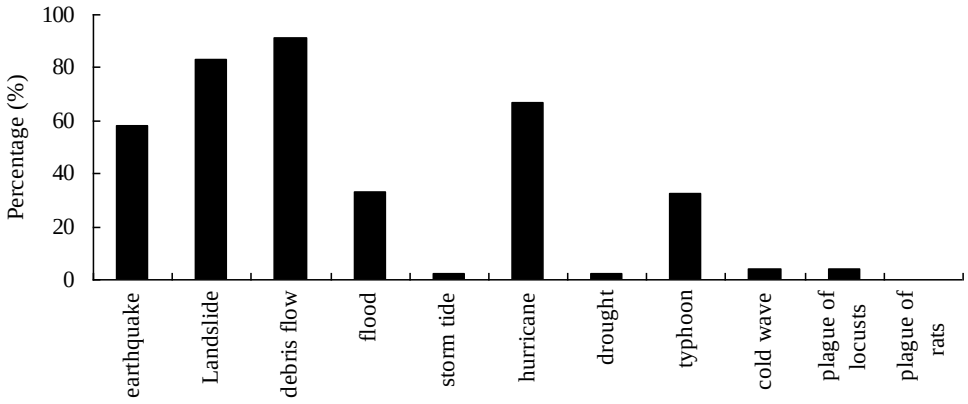


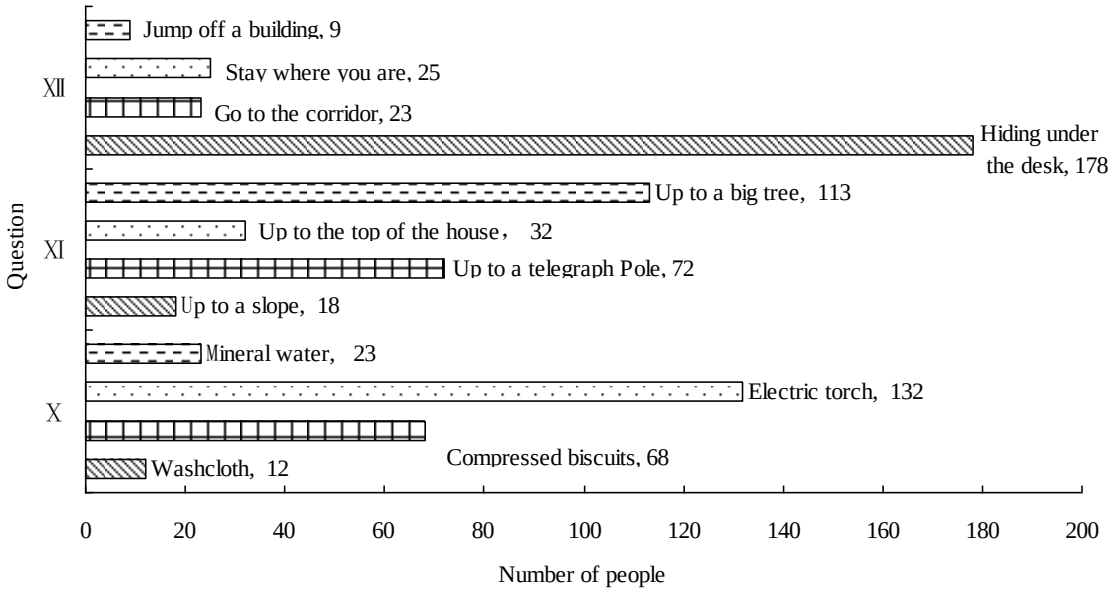
Fig. 2 Natural disasters that may occur in Tian Shui, Gansu Province

When asked whether students had the awareness of disaster-prevention and mitigation in advance and can make a self-rescue in disaster, they made different choices (Fig. 3). To some extent, it reflects the ability of the students' emergency and disaster-prevention in disaster. However, the result is not ideal. Imagine if it's true, it is likely to cause death. To middle school students, whether the social experience or the knowledge reserve, they are obviously insufficient. Generally, the number of teachers is obviously less than that of students in the school. Therefore, at the time of the disaster, the teacher's ability to disaster relief is very limited, which requires students to help themselves in the guidance of teachers to escape. This requires the school attaches importance to the disaster drills for students, and teachers should not only carry out the theoretical education of disaster, but also improve the practical ability of students. At the same time, students should drill combined with the local frequent occurrence of natural disasters in case of need. The investigation of the treatment of the rescue of drowning persons shows that the measures of 60.43% students are wrong. In fact, heart and lung recovery is the first principle during the process of cure. Moreover, the drowning person should not be put flat on the ground (Fig. 4). On the contrary, the correct way is to let him lie prostrate, and pat on the back. A timely, right remedy can save a person's life and this is in line with the new

curriculum reform advocated by studying “to geography developing usefully of life” and “to geography developing usefully all the life” [5].

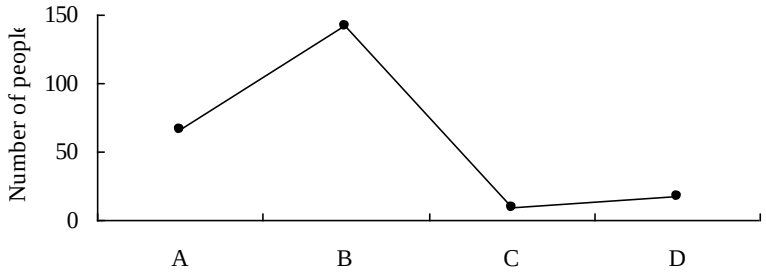
Table 2 Fire emergency ability of middle school students

Question	A(%)	B(%)	C(%)	D(%)
Do you know how to use fire appliances in the corridor?	5.11	28.93	56.17	9.79
A. I don't know where there is fire equipment.				
B. I don't know how to use.				
C. I know, and I have received instruction, but there is no practical operation.				
D. I know, and I've been practicing.				
There are plenty of factors of fire in the high-rise buildings. The main reasons do not include __.	7.66	30.64	13.62	48.08
A. Cigarette butt ignites materials.				
B. A short circuit.				
C. Forget to turn off the gas.				
D. Setting off firecrackers				
When the fire is relatively large, what will you do if you are in a room on the fifteenth floor?	82.98	0	11.06	5.96
A. Wet self as much as possible, and wait for rescue by the window.				
B. Jump off a building quickly, because if you don't jump off a building, you'll die. However, jumping off a building will not go to die.				
C. When the fire is found, quickly run to the balcony roof.				
D. Quickly ran downstairs desperately.				



Ⅹ. When an earthquake occurs, which of the following is the most useless? Ⅺ. Which of the following is dangerous when a flood occurs? Ⅻ. You are in class when the earthquake happened, how should you do

Fig. 3 Situation of middle school students in response to disaster



A. Place the drowning man on the ground and press the abdomen to drain the water from the body. B. Do not need to remove water from the body of the drowning man, and take heart and lung recovery measures immediately. C. If you encounter a drowning man to stop breathing or unconsciousness, quickly open the airway, and blow 2 times by the mean of mouth to mouth. D. Pull out the drowning man's tongue out of his mouth to keep his airway unobstructed.

Fig. 4 Middle school students' cure ability

4. Improvement strategy of geography disaster education in middle school

Disaster education is a long-term and arduous task. Although the new curriculum materials for elective textbooks (Natural disasters and Prevention) have added the contents of disaster education, there are still a lot of improvements in the practical teaching.

(1) Pay attention to disaster education, Integrate with the teaching resources of geographical disaster closely

The survey results show that China's disaster education for middle school students is not optimistic, which is related to the education system of China. The education department should pay enough attention to the necessity of disaster education and build disaster education system. In the course of teaching, it should explore more potential disaster geography teaching resources. For example, in order to cultivate students' awareness of disaster-prevention and reduction and establish the correct concept of disaster, teachers can combine with the practical case of national conditions and nostalgia to teach. At the same time, explore the students' understanding of disaster by using current affairs, news and disaster hot spots.

(2) Redesign the teaching course, change the teaching method

Schools can broaden the course of disaster education and should not only be limited to paper materials. Schools can also open online security education platform for students to learn independently. The content of the design can be integrated into the disaster animation and games related disaster to increase the student's interest in learning. Of course, teachers should change the traditional teaching methods in the classroom. Teachers can use multimedia technology to create situations to guide students to learn. Of course, teachers can guide students to make small disaster simulation teaching aids, arrange short paper of disaster, carry out the simulation of disaster drills and publicity activities to cultivate the students' awareness of disaster and disaster-prevention ability gradually.

(3) Improving the evaluation methods of disaster education

As it is known to all, the teaching mode of China has a significant relationship with the way of examination and evaluation. Parents, schools and society are all to evaluate students based on the students' scores. In senior high school, they pay more attention to the students' enrolment rate and ignore the so-called non key knowledge of disaster. Therefore, it is necessary to intensify the proportion of disaster education knowledge in geography examination. Moreover, the school should order all the liberal arts students and the science students to attend the examination. At the same time, the examination contents may also be diversified to test students' mastery of the disaster education knowledge.

(4) Improving teachers' disaster accomplishment

The teachers' disaster accomplishment can be improved by two aspects. One is to strengthen geography normal college students' disaster education, and make them learn and practice by setting up specialized courses; the two is to strengthen the in-service teacher's training. Through training, it not only makes the teachers learn knowledge of disaster education, but also it enables teachers to set up examples for others with both precept and practice. Therefore, through the training of teachers, whether it is for students in teaching or in the actual disaster, teachers and students can handle themselves to reduce the losses brought about by disasters.

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