

*Waste Management Education and its Impact on the Environment  
of the Kyrgyz Republic*

Ruslan Tashiev, University of Tsukuba, Japan  
Kenichi Matsui, University of Tsukuba, Japan

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**Abstract**

In the Kyrgyz Republic, waste management has posed a great concern partly because of rapid urban population increase and poor waste management education. Past studies have shown that education for waste management can considerably contribute to reducing waste. However, few studies have examined the link between environmental education at schools and waste management in the Kyrgyz Republic. This study argues that there is an urgent need to improve waste management education at school. Therefore, the objective of this study is to examine the level of awareness, knowledge and practices of students with regard to waste management at primary and secondary schools in Bishkek city, the Kyrgyz Republic. For this purpose, a specially designed anonymous questionnaire was administered to 80 teachers from four private and four municipal schools in four districts of Bishkek city. From the survey, we found that about 35% of the respondents were doubtful about the adequacy of the current curriculum in conveying knowledge and skills to students about waste management. About 29% of the respondents thought their students knew enough about waste management. In addition, about 93% of the respondents agreed that teaching about waste management should be improved. On the other hand, about 67% of the respondents indicated that their schools hired workers for collecting and sorting school garbage. In conclusion, we discuss the level of awareness and knowledge on waste management among Bishkek schools.

Keywords: waste management education, waste education awareness, Kyrgyz educational institutions and Environmental education

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## 1. Introduction

The important components of effective waste management programs include modern technical support, sufficient funding, legislation, awareness, and active public participation in waste management (Hasan, 2004). However, the Kyrgyz Republic has experienced challenges to meet these factors as it has largely prioritized short-term economic development (Abdykaarov, 2001). In particular, public awareness and participation appear to be seriously lagging behind other countries.

In raising awareness and enhancing participation in waste management among the public, schools play a key role (Manuilenko, 2002). In the Kyrgyz Republic, however, schools face a number of challenges in doing so. For example, the curriculum content about waste management is very limited (Ifegbesan, 2010). Here the question is: how do students have sufficient knowledge of waste management? What do the teachers think about the current curriculum and what needs to be done to improve the level of awareness among the students? This paper seeks to answer these questions by attempting to clarify the actual level of awareness and practices for waste management among students and pupils in Bishkek city, the Kyrgyz Republic.

### 1.1 Study Areas

Bishkek is the capital and largest city of the Kyrgyz Republic with a population of 1 million in 2018 (NSK, 2018). The city covers 169.6 km<sup>2</sup> (65.5 square miles). It is divided into four administrative districts (Figure 1): Leninskiy, Pervomayskiy, Sverdlovskiy, and Oktyabrskiy (Wikipedia, 2018). The total number of educational institutions in Bishkek is 146, of which 36 schools are in Oktyabrskiy district, 39 in Sverdlovsk district, 36 in Leninsky district, and 35 in Pervomayskiy with a student population of 26,634, 45,218, 44,283 and 35,303 respectively (MOE, 2018).



Figure 1 Map of the study area

## 2. Methodology

### 2.1 Sample

In order to better understand the level of awareness and practices on waste management among students a questionnaire survey was administered to 80 teachers

in the above four districts of Bishkek city. In total four public and four private schools with 10 teachers from each school participated in this survey. The questionnaire was administered in October 2018. When preparing a questionnaire for students in Bishkek schools, difficulties arose, such as obtaining permission to conduct a survey from parents. This survey required more time than we planned. Therefore, it was decided to interview only teachers about the current state of students in schools, as teachers have sufficient and necessary information.

## **2.2 Survey design**

The questionnaire consisted of 25 questions and was divided into four sections. Questions in the first section focused on the demographic characteristics of the respondents. In the remaining sections, questions were related to the school curriculum, the current state of awareness among the students, and actual waste management activities like collection and sorting of garbage at school and home.

Those teachers who taught courses on ecology at private and municipal schools responded to the questionnaire through an online link (google survey). Given the teachers' busy schedule, this method was convenient for everyone, given that the questionnaire was anonymous. All questions adopted 5-point Likert scale. This decision was based on extensive work done with entry-level populations. The questionnaire was conducted in Russian, because in Bishkek city, Russian is the official language of instruction in both private and municipal schools. A summary paper of the scale used, and examples of elements presented in the text are an English translation of the original Russian version of the articles.

## **3. Results And Discussion**

### **3.1 Demographic characteristics of the respondents**

Table 3.1 shows the demographic characteristics of the respondents. The percentage of teachers' respondents were 51.2% and 48.8% for private and municipal schools respectively. About 37.5% of them were between 40 and 49 years old. Two age groups, 25-29 and 50-59, consisted of 18.8%, while those between 31 and 40 years old constituted 21.3%.

In terms of gender distribution, 75% of the respondents were females. This high percentage of the female respondents generally corresponds with the overall gender balance at Kyrgyz school. The number of female teachers at secondary vocational education schools for 2016-2017 was 5,094 (68%), while that of men was 2,333 (32%). The percentage of female teachers at daytime general education organizations (without part-time workers) for 2016-2017 was 84% (NSK, 2017).

In terms of teaching experience among the respondents, 38% had more than 10 years. Young teachers with less than three to four years of experience consisted of 11.3%. The rest of the respondents belonged to one of the following groups: 5-6 years (20%), 7-8 years (13.8%), 9-10 years (7%), and 3-4 years (8.8%). A relatively small percentage of the respondents with more than 10 years of experience suggests that teaching jobs are not high paying jobs, and many tend to change jobs (AKIpress news, 2019).

Table 1 Socio-demographic characteristics of the respondents

Socio-demographic characteristics	Percentage	Frequency
<i>Gender</i>		
Male	25%	20
Female	75%	60
<i>Age</i>		
< 30	18.8%	15
31 – 40	21.3%	17
41 – 50	37.5%	30
51 – 60	18.8%	15
Above 60	3.7%	3
<i>Level of Education</i>		
Special Secondary	5%	4
University	95%	76
<i>Work Experience/ years</i>		
< 3	11.3%	9
3 – 4	8.8%	7
5 – 6	20%	16
7– 8	13.8%	11
9 – 10	7.5%	6
>10	38.8%	31
<i>Category of Teachers</i>		
Private School	51.2%	41
Municipal School	48.8%	39

### 3.2 Frequency of teaching students on waste management issues

To better understand the student's level of awareness about waste management issues, we asked how often the respondents teach their students about waste management. The result shows that about 80% of the respondents taught once in a month while 5% did so twice a week and 15% once in a week (Figure 2). The low frequency on teaching waste management in schools is because of the curriculum design. The school curriculum includes "Geoecology" for the 11<sup>th</sup> grade, which has been developed since 2004. It requires teachers to teach only 5 hours of environmental issues. From the 6<sup>th</sup> grade to the 11<sup>th</sup> grade, biology is taught, but no topic is related to waste management.

We also wanted to know if there were practical activities related to waste management. We found that 43.8% of the respondents answered yes, 31.2% answered no. The rest did not respond to this question.

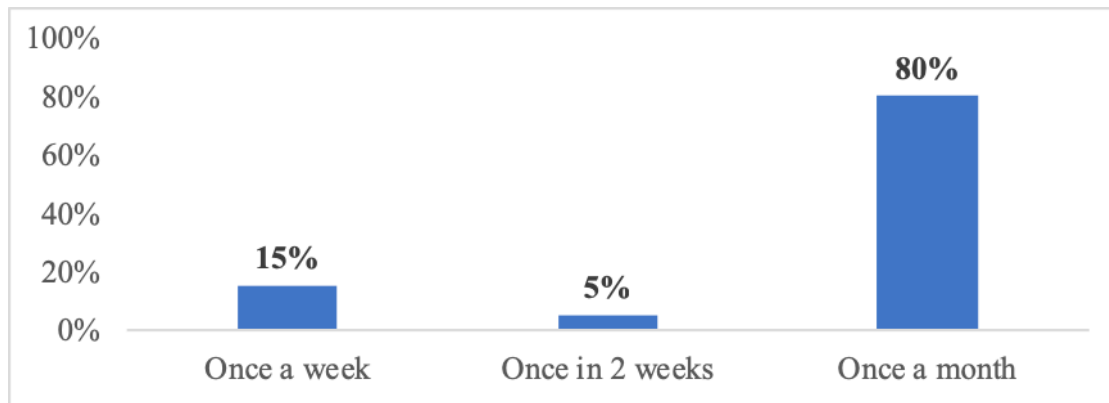


Figure 2 Frequency of teaching waste management in schools

### 3.3 Adequacy of the current curriculum in providing knowledge on waste management to students

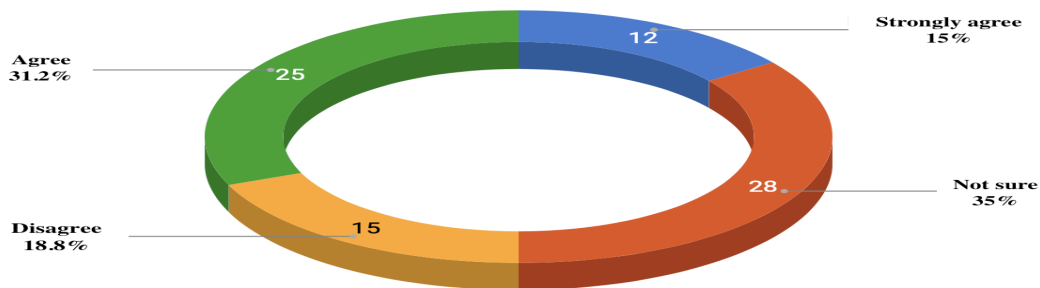


Figure 3 Adequacy of the currently curriculum in providing waste management knowledge to students

In Bishkek schools, curricula are based on the state standard that are regularly revised or updated at least once in five years to better reflect nation's strategic priorities (Ministry of Justice of The Kyrgyz Republic, 2014). On this point, we wanted to know if the current curriculum at respondents' schools is adequate to provide knowledge and skills for waste management to students. The result shows that 15% of the respondents strongly agreed and 31.2% agreed, whereas 18.8% disagreed and 35% was not sure (Figure 3). This shows divided opinion about school curricula in connection to waste management. This result also demonstrates an existing gap in the education system regarding a uniform way of teaching about waste management at schools. The Ministry of Education, Science and Culture has emphasized science-based environmental education since 2000 (Soros–Kyrgyzstan Foundation, 2001), but the national efforts have not yet been translated into local school activities yet.

In the next question, we tried to find out the extent to which teachers thought that their students had sufficient knowledge about waste management. Figure 4 illustrates that only 29% of the respondents perceived students to have adequate knowledge. For example, at Bishkek's secondary schools, environmental education is carried out in teaching biology, chemistry, geography, natural science and geocology. These courses cover broad topics that are somewhat related to the natural environment. Although interdisciplinary communication contributes to the development of environmental knowledge, it may not be enough to engender ideas of waste

management and recycling. Additional work is required on this aspect (Lukashina, 2001; Manuilenko, 2001).

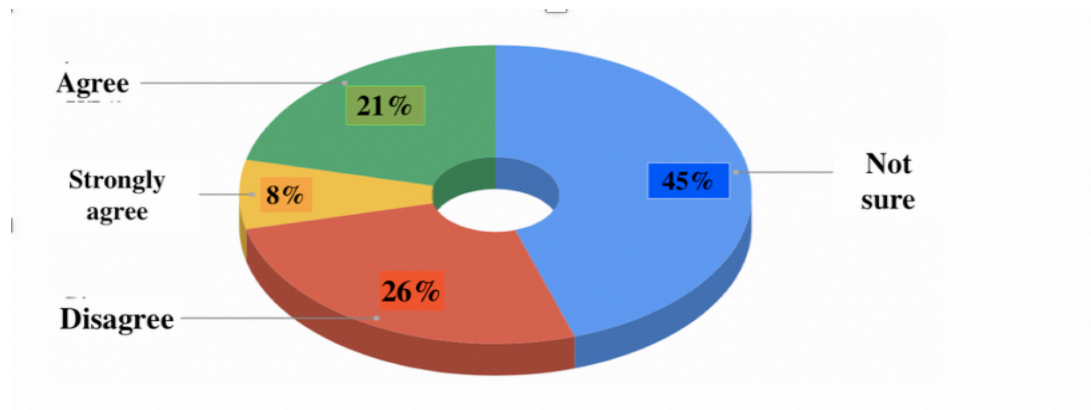


Figure 4 Students' level of knowledge of waste management

### Conclusion

This study attempted to understand the knowledge and practice of waste management at municipal and private schools in Bishkek city. The results show that for the majority of the respondent's waste management was one of important topics to be taught at schools. However, both students and teachers did not appear to be actively involved in waste management activities. Therefore, there is need for the government and the school authorities to make efforts to improve the knowledge and awareness about waste management among students and teachers by funding more workshops, field excursions to landfills, or waste management activities among students.

## References

Abdykaarov, A. (2001). Ecological Education on The Threshold of The XXI Century. In Soros – Kyrgyzstan Foundation, Environmental Education for Sustainable Development of Kyrgyzstan: Materials of the Republican Scientific and Practical Conference (pp.58-60)

AKIpress news. (2019, January 7). *Japanese teacher H. Tomisawa is surprised by the size of salaries of Kyrgyz teachers*. <https://www.youtube.com/watch?v=srEimTJ7pQg>

Hasan, S. E. (2004). Public awareness is key to successful waste management. *Journal of Environmental Science and Health, Part A*, 39(2), 483-492.

Ifegbesan, A. (2010). Exploring secondary school students' understanding and practices of waste management in Ogun State, Nigeria. *International Journal of Environmental & Science Education*, 5, 201-215.

Lukashina, A. (2001). *Environmental education for sustainable development of Kyrgyzstan*. In Soros – Kyrgyzstan Foundation, Environmental Education for Sustainable Development of Kyrgyzstan: Materials of the Republican Scientific and Practical Conference (pp.95-96)

Manuilenko, A.Y. (2001). *Problems of Ecological Education and Education in General Educational Schools of Kyrgyzstan*. In Soros – Kyrgyzstan Foundation, Environmental Education for Sustainable Development of Kyrgyzstan: Materials of the Republican Scientific and Practical Conference (pp.103-104)

Ministry of Justice of The Kyrgyz Republic (2014). State educational standard General Education of the Kyrgyz Republic. Government Decree Kyrgyz Republic. Bishkek. (Russian)

NSK KR (2018). Education and Science in The Kyrgyz Republic. Bishkek: National Statistical Committee. Bishkek. (Russian)

Soros – Kyrgyzstan Foundation, (2001). Environmental Education for Sustainable Development of Kyrgyzstan.  
[https://s3.eu-central-1.amazonaws.com/biom/lib/book/ecol\\_shishk.pdf](https://s3.eu-central-1.amazonaws.com/biom/lib/book/ecol_shishk.pdf)

Wikipedia, (2019, January 20). *Districts of Kyrgyzstan*. Retrieved from the website of: [https://en.wikipedia.org/wiki/Districts\\_of\\_Kyrgyzstan#Bishkek\\_City](https://en.wikipedia.org/wiki/Districts_of_Kyrgyzstan#Bishkek_City)

**Contact email:** mail\_kg@mail.ru, kenichim@envr.tsukuba.ac.jp.