

## Investigating the degree of attention to the environmental crisis in the content of elementary school textbooks

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### بررسی میزان توجه به بحران محیط‌زیست در محتوای کتاب‌های درسی دوره ابتدایی

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#### Abstract

The purpose of this study is to investigate the level of attention to the environmental crisis issue in elementary school textbooks. The method is Shannon entropy. The unit of analysis contains texts, activities, and images that 3961 pages were totally reviewed. The statistical population consisted of elementary school books and all of them were selected as samples. The components and indicators of the environmental crisis were extracted from documents and earlier sources and checked out in the books. The research content validity was obtained using CVR which was 0.90 and confirmed, and the reliability was 0.98 based on the agreement coefficient. Findings have shown that in elementary books, a total of 68 cases were referred to the environmental crisis; 19 cases were related to the soil crisis, 18 cases were related to water, 18 of them were related to noise crisis and 13 subjects were related to air crisis. Also, the highest coefficient of importance was related to the soil crisis component (0.411) and the lowest coefficient of importance was related to the air crisis component (0.204). Among the textbooks; science books dealt with the environmental crisis more than any other books. In the next place were the Farsi books (reading) and finally the social studies books. No other cases for the attention to the environmental crisis were observed in the other elementary school textbooks.

**Keywords:** Environment, Water Crisis, Soil Crisis, Air Crisis, Noise Crisis, Content.

#### چکیده

هدف پژوهش حاضر بررسی میزان توجه به مسأله بحران محیط‌زیست در کتاب‌های دوره ابتدایی است. برای انجام این کار از روش آنتروپی شانون استفاده گردید. واحد تحلیل نیز شامل متون، فعالیت‌ها و تصاویر می‌شود که در مجموع ۳۹۶۱ صفحه را تشکیل می‌دهند. جامعه آماری، کتاب‌های دوره ابتدایی بود که در این مطالعه همه کتاب‌ها به‌عنوان نمونه انتخاب شدند. مؤلفه‌ها و شاخص‌های بحران محیط‌زیست از اسناد و منابع پیشین استخراج و در کتاب‌ها مورد بررسی قرار گرفت. روایی محتوایی با استفاده از CVR به دست آمد که برابر با ۰/۹۰ و تأیید گردید، پایایی نیز بر اساس ضریب توافقی ۰/۹۸ به‌دست آمده است. یافته‌ها نشان می‌دهد که در کتاب‌های ابتدایی، در مجموع، ۶۸ مورد به بحران محیط‌زیست اشاره شده است. از این تعداد: ۱۹ مورد به بحران خاک، ۱۸ مورد بحران آب، ۱۸ مورد بحران صوتی و ۱۳ مورد به بحران هوا مربوط بوده است. همچنین بیشترین ضریب اهمیت مربوط به مؤلفه بحران خاک (۰/۴۱۱) و کمترین ضریب اهمیت مربوط به بحران هوا (۰/۲۰۴) بود. از بین کتاب‌های درسی نیز؛ کتاب‌های علوم تجربی بیش از سایر کتاب‌ها به بحران محیط‌زیست پرداخته‌اند. پس‌از آن کتاب‌های فارسی (خوانداری) و در نهایت مطالعات اجتماعی قرار دارند. در سایر کتاب‌های دوره ابتدایی نیز موردی مشاهده نگردید.

**واژه‌های کلیدی:** محیط‌زیست، بحران آب، بحران خاک، بحران هوا، بحران صدا، محتوا.

## Introduction

Environmental crises are among the most important negative impacts of urban life, which show themselves by their direct effect on people's health and hygiene (Graham & White, 2016; De Sario et al., 2013). Today, living in cities is associated with numerous problems including air pollution (Fang et al., 2015; Cho & Choi, 2014), congestion, car traffic and mental and psychic diseases and disorders (Patil, 2014). Uncontrolled expansion of big cities, happening as a result of population growth and immigration, has destroyed the environment and has caused environmental pollution for citizens. The exacerbation of environmental pollutions has eliminated green spaces within cities and has changed the function of such lands (Ziari et al., 2012). This is while our modern social life is highly dependent on the environment so much so that any harm to the environment has destructive effects on our personal and social life (Farahani & Mirzaei, 2016). The importance of this issue is to the extent that the sustainable development of human societies hinges on protecting the environment (Hajizadeh Meimandi et al., 2014) and any threat to this is considered a crisis (Salehi et al., 2013). Nowadays, factory smokes and exhaust gas pollute the air (Manisalidis et al., 2020), wastewaters, and pesticides poison soil and water, pollute the air and deplete the ozone layer (Hajizadeh Meimandi et al., 2014).

On the other hand, environmental behaviors as important and influential factors contributing to the environment and its crises have attracted the attention of many environmental sociologists (Salehi & Emamgholi, 2012: 125). Conceptually, environmental behaviors refer to an array of actions by individuals with regard to the environment which encompass a vast spectrum of feelings, inclinations, and particular readiness in behaving toward the environment. The energy overuse in homes, using disposable products, the unnecessary use of sub-standard means of public transportation, using different pesticides, improper way of waste disposal, ignoring the collection and separation of waste for recycling purposes, destroying trees' trunks, historical places, civil

places and facilities, littering in cities, jungles, rivers, and many other harmful actions all happen under the influence of human environmental behaviors. In every society, people react rather clearly to the environment which may encompass quite responsible and quite irresponsible behaviors, or some behavior between these two extremes. Such a wide range of treatment of the environment is influenced by numerous variables and factors which are largely related to one's social environment (Aghili et al., 2009: 237).

It can be said that societies vary in terms of their treatment of the environment. One of the most important reasons for this variety is the socio-cultural conditions (Esteban Ibáñez et al., 2020). In fact, sustainable development, particularly its environmental aspect, depends on promoting cultural capital. This kind of capital enables individuals to create some value (environmental value), to take some action (responsible environmental behaviors), to reach a goal (the sustainability of natural environment), to perform a mission and play a role in the world (Sharepour & Khoshfar, 2002: 135).

Moreover, environmental crises, among others, influence tourism as some research have shown that having a clean environment, appealing natural attractions, as well as the existence of plant and animal species are among the factors having impacts on tourists' destination loyalty (Ramezanzadeh Lasboei et al., 2019). Beautiful and clean beaches are not also excluded. Beach tourism that focuses on seashore areas and sea environments is one of the largest global activities (Amiri, 2019) for which one can consider a bidirectional relation: on the one hand, hygiene and beautiful environment attracts tourists and on the other hand tourists with various cultures and habits may bring about pollution and environmental crises.

One way to prevent such crises is education and environmental literacy (Salehi et al., 2016). It seems that the mass media can be helpful by showing environmental crises and providing people with necessary information regarding how to properly approach the environment (Hajizadeh Meimandi et al., 2014).

Furthermore, textbooks as media can be

effective in informing the students. Studies show that this important task must begin from the very elementary school (Abedini Baltork & Jafari Samimi, 2019). Thus, it is expected that elementary school textbooks reflect problems and issues, prospects, concepts, knowledge and skills related to protecting the environment in accordance with children's developmental stages and to foster correct attitudes and beliefs in them (Salehi Omran et al., 2016).

Finally, since environment crises are one of the most important human problems (Parsa, 2016), teaching environmental concepts seems necessary because we always witness the exasperation of issues and problems in all respects of the environment including water, seas, air, soil, pasturelands, sound, forests, animal species, etc. Nevertheless, so far there has been no independent research reporting on the extent the environmental crises have been given attention to in the elementary school textbooks. And this purpose is what this research has studied.

Considering what was mentioned, it goes without saying that today urban life comes with many problems including air pollution. In addition, dust is a new issue that has recently caused severe pollution in the Iranian atmosphere and has made living hard for a large part of some provinces (Abedini et al., 2016). This phenomenon results from the negligence on the part of different Arabic countries including Iraq, Kuwait, the UAE, and Saudi Arabia, which have large and barren deserts, in applying mulch to their deserts (Khoshmanesh et al., 2016). The dust phenomenon started in Khuzestan in 2001 and from Abadan, Khorramshahr and Shadegan (Arami et al., 2018). It covered the whole province of Khuzestan within four years, and five Iranian provinces within seven years and is currently engaging 17 provinces and has become a national trouble.

Also, in terms of erosion rate, Iran is the leading country in the world, four times more than the average Asian rate (IRNA, 2019). Another type of pollution prevalent in Iran is that of water (Ghasemieh & Jiehoni Naeini, 2016).

Martin Heidegger held that the roots of aggressive and offensive treatment of the nature can be searched in the predominance of

instrumental, hegemonic, and technical thinking of modern human beings. He thought that this state goes back to humanism having its basis on modern metaphysics that notified the separation of subject from object. Indeed, modern human considered himself to be the foundation of the world and hence felt legitimate to manipulate it. The extremely high desire to conquer nature that appeared in modern human has led to a new interpretation of the world, of human, and of the relations between these two. Technical and scientific thinking is a result of such a new attitude (Saffar Heidari & Saffar Heidari, 2019). Accordingly, tourists' behavior toward the environment as well as social and cultural heritage is influenced by their understanding, which if reformed - by emphasizing respect and a sympathetic view on them, together with teaching the right knowledge and skills - can reduce destructive environmental effects of tourism (Saffar Heidari, 2017). One way to solve this problem is teaching these concepts in the educational system because it familiarizes individuals with norms and the right way to behave when travelling and with respect to environmental issues, keeping public places such as hotels and restaurant clean (Mehdipour et al., 2019).

Regarding environmental crises, various studies have been carried out so far. In this section, some of these studies are going to be mentioned. The results of a study entitled "A Postmodern Look at International Environmental Crises" show that based on a postmodern view, nature or at least our understanding of nature is conventional. Postmodern thought implies that today's problems require new solutions. Overcoming the view that the earth is not merely an endless material source to benefit humans but is a divine grace and all its components deserve attention, protection, love and respect, can prevent environmental harms (Amini & Akhondi Nematabad, 2019)

Abdolhassani et al (2019) analyzed the relationship between the pollution of the environment with the economic growth (Kuznets hypothesis) emphasizing the role of education. The results showed that industrialization, (reverse) energy consumption, economic status and lack of teaching (in the current way) are effective in

improving the quality of the environment. Moreover, Karimi et al. (2017) studied the design of the curriculum for teaching ecology to Iranian students at elementary schools. The findings of their research have been presented as the curricular components of the foundation, purpose, content, teaching method, and assessment. The foundation for the program of teaching ecology includes responsibility, environmental values, sacredness of the environment, and perpetuating the environment. With respect to purpose, aims such as being present in the environment, conventional behaviors to protect the environment, friendship with the environment, discovering environmental problems, observing environmental hygiene, and understanding the differences in the living environment were mentioned. In the content section, concepts such as teaching ecology as a divine trust put for humans, including basic sciences in the curriculum, the effects of overusing natural sources, displaying hygiene messages, and using Qur'anic verses related to the environment. Also, with regard to the teaching method, project, role play, group work, theater performance, discovery, problem-solving and lecture were mentioned. Finally, methods like showing an environmental status, painting about the environment, asking questions about movie or picture messages and asking to collect movies or photos taken from polluters have been introduced as methods of assessment of this program.

The results of a study entitled "Evaluating the Position of the Main Components of Teaching Ecology in the Books of the Sixth Grade of the Elementary School" indicated that the highest rate of coefficient of significance in the *Social Studies* textbook has to do with how to use mortal and immortal sources and the lowest concerns for the elements of lagoons and population, the role of technology in the environment, the depletion of the ozone layer as well as the role of global warming. In the textbooks of *Qur'an*, *Mathematics*, *Work and Technology*, *Heavenly Gifts* and *Persian Writing* of this grade, no attention has been given to the environment. The results also showed that no balanced and all-inclusive

attention has been paid to the components of teaching ecology in the content of the books (Salehi Omran et al., 2016).

Talebi et al. (2016) studied environmental crises and how to encounter them. The results indicated that using alternative energy sources, environment-friendly ways of transportation, trying to reduce waste production and recycling of wastes, ecotourism and teaching ecology were among the methods to encounter environmental crises. They finally stated that while there had been years of solutions and policies to inform the environmental problems, the key solution was the human being.

Another research entitled "Content Analysis of Social Teachings Textbooks in terms of Considering Environmental Problems" revealed that in the textbooks analyzed little attention has been paid to environmental problems. Additionally, the highest rate of attention was in the textbook of the fourth grade and the lowest rate was observed in the textbook of the fifth grade. Also, environmental water problems and environmental sound problems had received the highest and the lowest attention respectively (Ghazavi et al., 2010).

Wu et al. (2020) studied the demand for teaching ecology and evaluated the ecological literacy of citizens. The results showed that Beijing citizens were interested in learning green lifestyle as well as the knowledge and skills related to protecting the environment. Also, they were interested in environmental sciences for education but were less interested in the knowledge of environmental factors and environmental moral. Additionally, they tended to favor presenting the teaching of environmental concepts through new programs and channels such as WeChat, MicroBlog and short video programs more than traditional media like newspapers and television.

In another research, Pinto and Totti (2020) reviewed ecological teaching and understanding among high school teachers and students. The results of their study showed that there was a considerable space between ecological teachings and the policies considered, on the one hand, and the social-environmental reality, on the other. The results also indicated that the need for more

participation of Brazilian teachers and students in societies, NGOs, as rangers, and for teaching experts and other stakeholders the future challenges.

Findings of another study showed in order to overcome environmental problems, educational systems should act based on a systematic program. The researchers hold that to develop a green society, educating people plays an important role which finally brings about sustainable development. Regarding ecological teaching for the environment, educational institutions should conform their curricula to this principle through teaching the concepts related to the environment while fostering the interest in the environment. For example, teachings about plants, cleanliness in parks, recycling on tourist roads, and rivers. Furthermore, in the ecological teaching, environmental issues should be discussed and analyzed more deeply. More in-depth discussions occur aiming at raising awareness, criticism, and the comparison of some realities against the environment. In this regard, teaching was offered for special circumstances and solutions were provided to protect the environment (Boca & Saracli, 2019).

Trishala et al. (2019) studied the importance of education in solving environmental problems, for raising awareness of the students about the effect of water pollution on sea life. The results indicated that a meaningful ecological teaching should include the teachings on and for the environment. The educational activities that raise people's awareness and enable them to protect water resources should be encouraged and financed. Teaching ecology raises critical thinking, problem-solving and the skill of effective decision-making which ultimately can protect the environment and aid water resources.

Furthermore, teaching ecology as a solution in preventing water pollution is the title of a study carried out by Karatas and Karatas (2016). Water pollution in the rivers and wetlands studied by the mentioned researchers were caused by a number of reasons such as mines, industrialization, factories, urbanization, deforestation, and agriculture. In the study mentioned, teaching ecology has been introduced as an important tool for promoting public awareness to solve this problem. Farmers should be taught by well-

informed and skilled experts about the overuse of fertilizers and right fertilizer usage. Educational clips, slides and posters should be created highlighting environmental protection. People should use more public transportation and be informed about wasting oil and petroleum. They also pointed out that awareness should be raised about the significance of natural resources in life so that we may expect decreasing environmental problems in different aspects, particularly water pollution.

### Research Methodology

The research design of this study was quantitative and thus the research method was also quantitative data analysis using Shannon's Entropy technique. The analysis unit was sentences (text, activities, and pictures). To perform content analysis, several steps were taken. The three major stages described below were the most important stages: pre-analysis (preparation and organization), material (message) review, and processing of the results.

#### Stages of content analysis in Shannon's Entropy technique:

**Stage 1:** Obtaining the normalized matrix of the frequencies of the Frequency Table was based on the following relation:

$$p_{ij} = \frac{F_{ij}}{\sum_{j=1}^m F_{ji}} \quad (i = 1,2,3,\dots,n, j = 1,2,\dots,m)$$

**Stage 2:** Calculating the information load of each category and putting them in the relevant columns; the following relation was used:

$$E_j = K \sum_{h=1}^m |p_{ij} \ln p_{ij}| \quad (i = 1,2,\dots,m) \quad K = \frac{1}{\ln m}$$

**Stage 3:** Using the information load (n = 1, 2, ..., 2 and j=1), the coefficient of significance was calculated. The category having a higher information load also enjoys a higher degree of importance (WJ). To calculate the coefficient of significance, the following relation was employed:

$$W_j = \frac{E_j}{\sum_{j=1}^n E_j}$$

The research population consisted of all

textbooks of elementary school, comprising 34 books used in the academic year 2018-2019. The components studied were extracted by reviewing documents as well as previous domestic and foreign research. Examples include Ghazavi et al. (2009), Boca and Saracli (2019), Babaoghli (2013), Karatas & Karatas (2016), Trishala et al. (2016).

Accordingly, the components of this study comprised environmental soil crises (elements consisted: entry of various detergents into the soil, the increase in pesticides and herbicides, salinization and acidification of the soil, desertification, littering garbage in various places, soil erosion and its threat to the natural resources, as well as forests and pasturelands, increased natural disasters such as earthquake, floods, storm, and nuclear wastes); noise environmental crises (consisted: the noise made by electric home appliances, noise of audio & video equipment and musical instruments, noise resulting from living in apartment buildings, noise of crowds and playground equipment in the parks and sports areas, the noise of construction machinery and activities, honks and engine sound of motor vehicles, the noise from the movement of airplanes and helicopters, the noise of industrial activities, and factories); air environmental crises (including using personal vehicles instead of public transportation, the increasing effect of greenhouse gases, increasing acid rain, respiratory problems, the activity of volcanoes, accumulating and trash-burning, increasing airborne particulate matter, and ozone depletion); water environmental crises (consisted: elements of overexploitation of groundwater resources, water wastage due to lack of complete control of water resources (water management), salinization and acidification of fresh water, wastewater of

houses and industries end up to the rivers, pouring industrial wastes and household industries materials into the water, detergents entering to and contamination of fresh water, water pollution due to the entry of garbage and pollution, oil spills into the ocean and sea, aquatics death in seas and rivers, low culture in using groundwater, rising sea levels or melting ice, and water scarcity).

The content validity was obtained using Content Validity Ratio (CVR) which was 0/90. To estimate reliability, three raters were asked to examine the components of this study. There was a consensus among the raters with a coefficient equal to 0/98.

### Research Findings

Out of the 3961 pages of the elementary school textbooks that were examined, the highest and the lowest rates of attention had been given to the elements of environmental soil crisis and environmental air crisis respectively. Additionally, the highest frequency observed was in the third grade. It needs to be mentioned that it was found that the Empirical Sciences textbooks, as compared with other textbooks, had paid more attention to environmental crises. Following that, were the books: Persian Reading and Social Studies. In other textbooks no instance was found. Table 1 shows the frequencies obtained from the environmental crisis in different grades of the elementary school distinguished by component and element/indicator. The studied components in all the grades were presented in Table 2. Table 3 depicted the normalized data from the previous stage. Finally, Table 4 presents the EJ and WJ of the components under investigation.

**Table 1.** Distribution frequency of attention to the components in the textbook pages



**Table 2.** Distribution frequency of attention to the studied components in the elementary school textbook pages

Environmental Crisis Components				Text Books
Water crisis	Air crisis	Noise crisis	Soil crisis	
0	0	14	3	<b>Farsi (Reading)</b>
0	0	0	0	<b>Farsi (writing)</b>
4	4	2	4	<b>Social Studies</b>
0	0	0	0	<b>Quran</b>
0	0	0	0	<b>Hedyehae Asmani</b>
0	0	0	0	<b>Work &amp; Technology</b>
0	0	0	0	<b>Thinking &amp; Research</b>
14	9	2	12	<b>Science</b>
18	13	18	19	<b>Total</b>

Based on the data obtained, all in all, out of the 3961 pages examined, 68 frequencies related to the research topic were observed, 19 cases of which concerned the oil crisis component, 18 cases were associated with the noise crises, 18 cases were related to the water crisis, and 13 cases had to with the air crisis. Among the textbooks, Empirical Sciences had considered soil crisis (12 frequencies) more than others studied books. In the books:

Qur'an, Persian Writing, Hedyehae Asmani (Heavenly Gifts), Work and Technology, and Thinking and Research, water crisis, air crisis, noise crisis & soil crisis had been ignored. Treating noise crisis was more frequently observed in Persian Reading book and more attention was observed to have been paid to air and water crises in Empirical Sciences textbooks.

**Table 3.**  $P_{ij}$  in the pages of elementary school textbooks

Environmental Crisis Components				Text Books
Water crisis	Air crisis	Noise crisis	Soil crisis	
0	0	0.77	0.15	<b>Farsi (Reading)</b>
0	0	0	0	<b>Farsi (writing)</b>
0.22	0.51	0.11	0.21	<b>Social Studies</b>
0	0	0	0	<b>Quran</b>
0	0	0	0	<b>Hedyehae Asmani</b>
0	0	0	0	<b>Work &amp; Technology</b>
0	0	0	0	<b>Thinking &amp; Research</b>
0.77	0.15	0.11	0.63	<b>Science</b>

**Table 4.** EJ & WJ of the components studied in textbooks

Environmental Crisis Components				
Water crisis	Air crisis	Noise crisis	Soil crisis	
0.232	0.124	0.232	0.249	<b>EJ</b>
0.383	0.204	0.383	0.411	<b>WJ</b>

As Table 4 shows, the highest significance coefficient is related to the soil crisis component (0.411) while the lowest concerns the air crisis (0.204).

## Discussion and Conclusion

Protecting the environment is associated with many problems, the most important of which are cultural issues. Abnormal behaviors to the environment can be potentially due to the



misunderstanding of environmental conditions which inherently originate from the fact that the culture of coexistence with nature has not been taught or because individuals have not internalized it properly (Adhami & Akbarzadeh, 2011). Science and technology development after the Renaissance also brought about more domination of man on nature and led to the wasteful use of it which led to the environmental crises (Parsa, 2016). The outbreak of numerous pollutions and crises in the environment of many big cities in the world with various problems endangered human health. The trend in these pollutions will lead cities to a position where they will not be habitable for the future generation and this means the unsustainability of cities (Daripour & Amanpour, 2018).

Due to the significance of the abovementioned problem, according to Article 50 of the Constitution of the Islamic Republic of Iran, environmental protection is considered a public duty. Therefore, any activity that pollutes or destroys the environment, and is irreparable, is illegal (Lesani & Edalatju, 2017). To reduce the outcomes or to get out of this situation, and also to prevent it in the future, necessary education and awareness should be provided for the public and it should be started from the early childhood for more effective results. In Iran, because of the centralized content in the public education, it is expected that the concepts related to the environmental crises have already received enough attention while the results of this study showed that in none of the elementary school grades studied such crises have received enough recognition.

Based on the analysis of the content of the elementary school textbooks, the soil crisis and the air crisis have received the highest and the lowest attention respectively. Yet, as the results indicated that there has been no place in the textbooks devoted to modern environmental problems, it can be concluded that on the whole environmental issues were under-presented. To elaborate on it, in the first grade only water and air crises, in the second grade water, air and sound crises, in the third grade noise, water and soil crises, in the sixth grade soil, water and air crises, and only in the textbooks of the fourth and the

fifth grades all crises have been referred to, however, marginally. Furthermore, based on the findings, the degree the books have been devoted to environmental crises and issues is not also the same. In the first grade, only the Science textbook has mentioned environmental troubles regarding water and in the form of a picture indicating the pollution of the water as a result of the waste entering it, asking students a question "When you go on picnic, which case you would like to see?" Air pollution in the same grade has only been reflected in a photo emphasizing the use of personal automobiles rather than public transportation. In other textbooks no indication of environmental crises were found. All in all, only 3 frequencies were observed in this grade despite the fact that the first grade is of utmost significance and sensitivity because it is the life period the basis of intellectual and social personality of individuals is being formed. Similarly, in the second grade the focus has been on the Social Studies textbook with some references to water, noise and air pollutions. On page 18 of this book, there was a sentence that read "some human activities pollute river water." And on the same page, a picture accompanied the aforementioned index. Or on page 55 there was a sentence regarding noise pollution that read "The honk of cars is annoying to humans". A photo on the same page depicted the respiratory problems resulting from the environmental air crisis. In the section entitled CONVERSE through asking the following question, air crisis have been dealt with: in your opinion, what kind of harms can exhaust gas have? In other textbooks of this grade we found no other instances related to the environmental crises. On page 25 of the textbook: Persian Writing of the third grade, the element of noise crisis is mentioned by referring to the disturbing noises of construction machinery and activities as well as the honking noise of vehicles. Also, in Persian Reading Skills, the noise crisis has been pointed out in a variety of ways. For example, on page 35 "the venter shouting" or "the loud sound of TV and tape recorder" on page 36, as well as vehicle noise all indicated the noise crisis. In this regard, on page 38 there was this sentence: "I woke up because of the honk of

my neighbor's car last night.” In the Science textbook of the same grade, the focus was on the water crisis. For instance, page 48 displayed photos how wastewater disposal of the houses entering water, the industrial wastes, and overexploitation of groundwater resources.

In the fourth grade, unlike the previous grades, all types of crises have been mentioned. For instance, on page 4 of the Social Studies textbook, the noise of apartment life and the noise of radio and TV that indicated noise crisis were referred to. Further, on page 86 of the same book, industrial materials that pollute water were displayed (water crisis) and on the same page the soil crisis is also indicated by referring to the improper disposal of wastewater and waste. This textbook, by including a picture of children wearing masks (on page 22), reminded the readers of the air crisis. Soil and water crises were seen in the Science textbook of this grade too. On page 90, which was the only instance, related to the soil crisis, by increasing pesticides and herbicides and on page 105 water pollution as a result of the entry of waste and polluters as well as sewage have been depicted. In the fifth grade (Social Studies textbook, page 39, Activities) by mentioning that “Which one: the public transportation or personal vehicles pollute air less?” by this way the air crisis was referred to. Also, on page 31 water pollution has been indicated in the form of disposing industrial materials into water, and the pollution of water as a result of wastewater of houses and industries end up to the water. In the Science textbook, erosion and the troubles caused by, the increase in the change of the land usage and destroying natural fields, mines and forests were mentioned (soil crisis). There was one frequency of referring to soil crisis as a photo on page 127 of the Persian - Reading Skills-. In other textbooks of the same grade, no other instances were found. In the sixth grade, the highest frequency (6) and the lowest frequency (0) were devoted to the soil and the noise crises respectively, all of which were only found in Science textbook. On page 44 of this book the emission of toxic gases and acid rain were mentioned as air

crises. On page 30 in the section “Think”, there was this question “Why does the entry of factory sewage harm fields and rivers?” (i.e. the water crisis), or in the same section the improper disposal of waste which was related to the soil crisis had been mentioned.

The findings were in line with Ghazavi et al. (2010) who had shown that in the Social Studies textbooks little attention had been given to the environmental crises. Moreover, from the perspective of the lack of consideration of the noise environmental crisis, their research was in conformity with our study. Studies have shown that many environmental crises result from irresponsible behavior of humans towards the environment which education should compensate for it. This feature was consistent with the research reports by Trishala et al. (2019), Boca and Saracli (2019), Karatas and Karatas (2016), Babaoghli (2013), Talebi et al. (2016), as well as Amini and Akhondi Nematabad (2019).

Based on the results, although - among the objectives of many lessons in the surveyed textbooks- attention to the environmental crises were included, they did not contain enough materials to help achieve such an aim. For example, one of the goals of the course Social Studies is preserving and promoting the environment. In the third grade, this had been totally ignored and in other grades they were mentioned only scarcely. In addition, another important goal of Social Studies book in the elementary school was teaching concepts of citizenship and nevertheless ignoring one of the characteristics of a good citizen which is respecting the environment. To protect the environment, it is necessary to raise awareness about the current crises so that one can expect the observance of and prevention from these problems. In a part of the Social Studies textbook in the fifth grade, groundwater is defined and how it reaches to the surface explained. Alongside presenting information to add to the knowledge and to be memorized, it is possible that in the same place, the destructive effects of the incorrect use of water to be also mentioned, especially in many southern regions of Iran where water

wells have been drilled by the local inhabitants in an uncontrolled way. However, the wells have been filled with stones by the government and the police interference. Even banks have allocated loans for the provision of water for the farmers so that they may avoid drilling illegal wells (IRNA, 2018). Despite these sensitivities, problems have still been reported in this regard in different provinces. This is not the case only in southern Iran, but there are other provinces facing this problem and even because no limit has been set for the extraction of water for the owners of illegal wells and they are not being inspected, they extract as much as they wish which exerts a big pressure on the groundwater aquifers (Dana, 2020). For example, in Kerman province, the number of illegal wells has been reported nine thousand which has caused crisis in the supply of fresh water for 15 cities (Fars news, 2020). In spite of these conditions and problems, the introduction and teaching about this crisis in the textbooks and its destructive effects on people's lives do not mean prevention is better than cure?

Besides, in the textbooks of Qur'an and Heavenly Gifts, there was no mentioning of the environmental crises while from the perspective of the Holy Qur'an, the only creator of nature and its creatures is God and humans are the trustees of the environment and must not harm it (Akbari Rad, 2013). In numerous verses such as verse 56 of Surah Al-A'raf and verse 195 of Surah Al-Baqarah, polluting the environment and endangering oneself have been warned against. The first verse has been interpreted as polluting the air is considered corruption in the earth. Also, regarding the second verse, polluting the air of one's place of living, as air is a vital substance, is considered like murder (Dihim, 2017; Fatahi et al., 2015). In Persian textbooks although reading and writing have been introduced as the main objectives of the course, regarding the environmental crises and issues related to, in different ways there is a possibility of further education. For instance, proverbs can be used to refer to these crises and in the "Activity" sections students can be asked to write the potential solutions to such problems.

The main goal of the course Thinking and

Research has been declared as the necessity and significance of reasoning development. Thinking is vital in any social issue one encounters because humans are responsible for their choices and for this responsibility they should choose reasonably. In this course, the concepts of decision-making together with a number of relevant stories have been presented. Therefore, and in view of the critical situation of the environment in various dimensions and its effect on every individual, part of the content of this book can be also devoted to the environmental crises. That is an individual chooses whether to put trash in trash cans or leave it on the street floor? Or more specifically put his or her gloves and masks in trash cans or leave them on street floor? These are some examples of what can be taught. They are all choices we deal with in a certain point in time while we see the results of these choices at societal level. It is because of this that is said media especially the educational system is an effective factor in teaching a certain concept or culture.

Based on the abovementioned findings, it is recommended that in writing textbooks enough attention should be paid to the important topics such as desertification, ozone depletion, increase in the effects of greenhouse gases, the waste of water, etc. The experts and writers of the textbooks must also pay more attention to some problems, given the conditions of the society, among which environmental crises are the most important ones as they influence children's future life. In addition, providing a formal curriculum in the educational system seems to be necessary and those involved in educational policies should consider this. Using environmental issues experts and professional curriculum designers in designing and writing textbooks is another suggestion. Finally, the possibility of designing the curriculum on the basis of major provincial crises can also be helpful for raising knowledge and awareness, as well as for presenting solutions to the environmental crises.

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