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Green Curriculum Education Plan in the Iranian Education System: A Qualitative Research

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Abstract
In this study, an attempt was made to explain and identify the green curriculum training plan in Iranian education, through qualitative research design and in particular qualitative case study. In this regard, faculty members in the fields of curriculum planning, social sciences and environment from selected universities - as our study experts - were selected by using a purposeful approach. Leading experts were selected by using theoretical saturation criterion. The interview was carried out with all the10 members of the study sample. Then, the obtained data were analyzed for the content analysis technique using Nvivo software. The findings were organized in the form of themes. Based on the results, a matrix framework of curriculum elements (purpose, content, teaching method and evaluation) was formed. 4 organizing themes and 21 basic themes were identified and a network of themes was extracted; thus, the design of a green curriculum for the Iranian education system (as a comprehensive theme) with the following organizing themes in 4 dimensions introduced: objectives, content, teaching methods and evaluation. Each of the categories has different dimensions in the basic themes of the organized framework, hence as a content plan of the green curriculum in the Iranian education system. Obviously, the findings of this study have provided the possibility of teaching green curriculum in the Iranian education system in primary schools.

Keywords: Curriculum content design, Green curriculum, Iranian education system, Qualitative approach.

چکیده
در این پژوهش تلاش شد به تبیین و شناسایی طرح آموزش برنامه درسی سبز در آموزش‌وپرورش ایران پرداخته شود. طرح پژوهش کیفی و به‌طور ویژه مطالعه موردی کیفی است. در این راستا از اعضاء هیات علمی در رشته‌های برنامه‌ریزی درسی، علوم اجتماعی و محیط‌زیست دانشگاه‌های منتخب به‌عنوان خبرگان تخصصی و استفاده از رویکرد هدفمند و با روش انتخاب صاحب‌نظران کلیدی و استفاده از معیار اشباع نظری، با ۱۰ نفر به‌عنوان نمونه مصاحبه صورت گرفت داده‌های به‌دست‌آمده با استفاده از نرم‌افزار Nvivo از طریق فن تحلیل مضمون مورد تحلیل قرار گرفت و یافته‌ها در قالب مضامین سازمان‌دهی شد. بر اساس نتایج به‌دست‌آمده، یک چارچوب ماتریسی از عناصر برنامه درسی (هدف، محتوا، روش تدریس و ارزشیابی) شکل گرفت. ۴ مضمون سازمان دهنده و ۲۱ مضمون پایه شناسایی و شبکه مضامین استخراج شد؛ بدین‌صورت که طرح برنامه درسی سبز در نظام آموزش‌وپرورش ایران (به‌عنوان مضمون فراگیر) و مضامین سازمان دهنده شامل ۴ بعد: اهداف، محتوا، روش تدریس و ارزشیابی بودند. هر یک از دسته‌ها خود دارای ابعاد گوناگونی در مضامین پایه می‌باشند که قالب مضامین به‌عنوان طرح محتوای برنامه درسی سبز در نظام آموزش‌وپرورش ایران سازمان‌دهی شدند. بدیهی است که یافته‌های این پژوهش امکان آموزش برنامه درسی سبز در نظام آموزش‌وپرورش ایران در دوره ابتدایی را فراهم آورده است.

واژه‌های کلیدی: طرح محتوای برنامه درسی، برنامه درسی سبز، نظام آموزش‌وپرورش ایران، رویکرد کیفی.

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Introduction

Since human beings have always had a significant impact on their surrounding environment, great importance should be attached to environmental education. Environmental education has always been recognized as the best instrument for raising public awareness as part of an attempt to increase public sensitivity, attentiveness and knowledge in this field (Shobeiri & Abdolahi, 2009). The man-made changes in the environment coupled with irresponsibility and unawareness of environmental issues, have brought about many environmental problems whose adverse effects are increasing everyday (Armstrong et al., 2019). Today, human beings face numerous sustainability challenges such as climate change, water, air and land pollution, degradation of natural resources such as mountains, forests, lakes, promotion of consumerism and waste production, boundless urban expansion, land use changes, habitat destruction, overhunting, poverty and social inequality, with man playing a critical role in minimization or maximization of these harms (Xiong et al., 2013). Raising awareness of the significance of human interaction with the environment and the negative and positive impacts of his actions on the environment can be recognized as the most important goal pursued by promotion of the environmental culture in the society. Empowering people to make the right choice, change their behavior and performance, and use resources in the most optimal way is the main pillar of environmental education. Any rise in public awareness of the environment, is followed by better enforcement of laws and enhancement of public satisfaction. Therefore, investments meant to promote the environmental culture of citizens are deemed indispensable (Petersen, 2008). Meanwhile, education is of critical importance in nurturing generations tending to be committed to preservation of the environment. In order to achieve this goal, it is necessary to nurture environmental culture in the society. This assumption changes only when society transforms the system of spiritual values, moral principles, legal norms, and social institutions and sets new needs as well as the ways to meet those issues (Rasskazova et al., 2019). Accordingly, today the environmental issues actually fall within the category of cultural issues. In order to provide people in a community with the necessary training for prevention of environmental degradation, it is necessary to first determine the individuals' needs in relation to promotion of environmental culture in different ages and groups of society and then make systematic plans based on the priority of needs for raising awareness, changing public attitudes and encouraging the right action in the society. Inclusion of environmental issues in the preschool curriculums, textbooks, consideration of cultural and social programs for citizens through mass media and environmental expert training, and finally, inclusion of such matters in college curriculums are among the effective measures that could be taken in this field (Jaya, 2020). In this vein, Morren and Grinstein (2016) state that developed countries are characterized by more adaptable environmental behavior which corresponds to their environmental culture. Therefore, today, the growing life of societies is interwoven with the level of literacy and knowledge, and transformation and promotion of environmental culture calls for enhancement of human resources' productivity with respect to environmental issues and promotion of environmental education on a larger scale (Suhadi & Esa, 2017). Furthermore, Wade (2012) has emphasized on the urgent need for sustainability education to cope with some of the sustainability problems humans are facing today. He also states that humanity is facing some critical challenges such as climate change, environmental degradation, poverty and social inequality, and that development of a sustainable lifestyle has never been more essential. Therefore, people all around the world need to create knowledge, raise awareness, and master skills so that they can individually and collectively contribute to the resolution of sustainability problems. Effective resolution of sustainability problems calls for digging deeper into the root cause and effects of unsustainable methods. This procedure can help us create alternative systems of thought and innovative ideas and solutions to cope with these social and environmental challenges (Besong, 2017). From this viewpoint, education

can be recognized as a vital means of communication, so it can be used to change students' views and attitudes towards sustainability, motivate learners to change themselves and society, and foster sustainability measures (Mason, 2020). Awareness lies at the heart of the environmental crisis, that environmental education must teach pro-environmental behaviors, and that ultimately, we can help preserve biodiversity and our own environmental welfare by changing our behavior patterns. Green education endeavors to extend learning beyond the classroom and develop responsible attitudes and commitment. Research now shows that greener, more sustainable school environments can save money and resources, expand learning, and improve health. And ultimately, sustainable schools teach children to become good environmental citizens and will empower them to make a difference in the environment (Ahmad et al., 2019). Providing environmental protection training to all members of society, especially children, and inclusion of that in educational curriculums through textbooks is recognized as the most essential educational goal (Ghazavai & Liyaghatdar, 2008). However, the findings of different studies, including Afshari et al. (2018) showed that despite extensive efforts made in this field, the environmental protection endeavors made through environmental education in Iran's primary schools, are still very poor and the special attention paid to environmental protection in educational systems of pioneer countries cannot be observed in the elementary schools of Iran. According to Beigi et al. (2018) environmental education is most frequently provided to the sixth grade primary schoolers through a course known as “social studies”; however, this educational endeavor is not enough to achieve real environmental protection goals in the Iranian society. The authors of Iranian textbooks are, therefore, required to pay more attention to the environmental protection issues in the future edition of textbooks. Although some progress has been made with inclusion of the environmental issues in educational curriculums, much more attempt should be made to guarantee full protection of the environment in Iran. More attention should be paid to the environmental education in primary schools and in-service training courses must be organized to promote teachers' environmental knowledge and attitudes. Unfortunately, the findings of previous studies pose a threat to the quality of green education at schools, while the country is already wrestling with critical environmental challenges that may worsen in the future. Besides, environmental education is of vital importance during childhood mainly because childhood is recognized as one of the most sensitive and critical periods of life. Childhood is a critical period of acquisition and caring about environmental issues (Blakslee, 2020). This education helps children respond to change and thereby play a constructive role in improving their lives and protecting the environment. Moreover, by nurturing human ethics and acquiring the necessary knowledge, values, attitudes, and scientific skills, they can responsibly and effectively predict, solve and manage environmental issues (Ghazavai & Liyaghatdar, 2008). On the other hand, inclusion of environmental concepts in the textbooks makes students recognize environmental protection as a human duty. Revision of textbooks is important because it can provide us with an accurate picture of the extent to which such matters are covered by educational curriculums and gives curriculum planners and designers an insight into the neglected areas and matters that are supposed to be included in the curriculums (Hakimzadeh et al., 2007).

Thanks to the relevant studies carried out in this field, inadequacy of the conventional methods, insufficiency of environmental educations, the inefficiency of textbooks contents, as well as the need to change or replace them with more effective educational programs have become more evident than ever before. As mentioned before, in order to change the curricula into green educational programs, it is necessary to take the initial measures in elementary periods of life. Since school systems have a direct impact on children and adolescents and an indirect impact on adults, inclusion of green educational programs in elementary school curricula seems to be one of the easiest and most promising methods of public education. In addition, educational programs should be preferably designed and compiled based on an integrated approach. Since elementary

education is mostly focused on the general and basic concepts in each discipline, the existing educational programs convey concepts to the child in a non-integrated manner, and the elementary students are expected to mentally link different concepts all by themselves. In these programs, students end up having to learn large volumes of terms and concepts without having the slightest idea how to use them in their lives (Soleimanpour et al., 2016). Thus, the integration of educational concepts and programs gives students the chance to deal with different subjects in a curious and inquisitive way, and enables them to study their surrounding environment in a comprehensive and integrated environment, regardless of the existing limitations (Green, 2018). Thus, this study attempts to identify the components of a green curriculum (objectives, content, as well as teaching and evaluation methods) needed to enhance the environmental culture of second grade primary school students in Iran.

Methodology

This study is a qualitative case study with a qualitative design. This method allows for in-depth and accurate investigation of subject matters and discovery of latent dimensions. Participants consisted of faculty members with expertise in curriculum planning, environmental studies, as well as experts (specialized experts) at universities of Khorasan Razavi province. 10 participants were selected through purposeful approach used as a method for selecting key experts in the study domains and later they were interviewed by considering the “theoretical saturation criterion". Data were collected through semi-structured interviews with respect to qualitative interview models and their corresponding criteria. The collected data were analyzed through theme analysis and theme network development technique (one of the basic and efficient qualitative analysis techniques) within the framework of Nvivo software version 8. The validity of the obtained theme network was tested by qualitative validation criteria (validity and reliability). Semi-structured interviews were used for data collection purposes.

As mentioned above, theme analysis was used to analyze the data in the qualitative phase of the study. Although theme analysis is not a new method, it has been successfully used in various studies on economics, health, psychology and educational sciences and is recognized as a reliable technique for in-depth and accurate investigations as well as data extraction and categorization. Theme captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set (Braun & Clarke, 2019). Theme or pattern identification in the process of theme analysis is usually carried out in two ways: either by the inductive (data-driven) method or by the deductive (theory-driven) method. In this study, the themes have been identified based on the inductive method. In inductive method, data coding is performed without any attempt to adapt the data to the pre-fabricated coding framework (or theme format) and theme analysis is carried out based on the data. Additionally, the "audit by referee" method was used to test the validity of the qualitative phase of the present study. In this method, the researcher gives an account of the process through which the themes are derived and decision are made during the study in order to gain the approval of the referee. By doing so, the researcher can increase the reliability of research results. In this study, audit by referee was carried out by two university professors. Both were fully acquainted with the theme analysis method and the green educational program, and several articles had been authored and published by them in the research field. The professors’ sub-discipline and their background and expertise were consistent with the subject of this study. Therefore, they were asked to classify themes based on the theoretical foundations of the green educational program, philosophy and grounded theories. In order to test the validity of this study, the inclusive, organizing, primary and secondary themes were selected through the investigation of theoretical foundations, relevant literature, research objectives and the references. The views of education experts were also taken into account and the final adjustment was made before coding. Moreover, in this study, Holsti method was used to calculate the reliability of the research. Theformula for the Holsti Index is as follows:

PAO=2M/(n1+n2): (634×2/(710+634)=0.94

Where "PAO" denotes the proportion agreement observed (reliability coefficient), M

is the number of agreements in the both coding stages, n1 is the number of coded units in the first stage and n2 is the number of coded units in the second stage. This value varies from zero (no agreement) to one (complete agreement). The reliability coefficient (94%) indicates that the research results are very reliable.

Research Findings

In this section, the main research question was answered based on the collected data:

What components of a green curriculum (goals, themes, as well as teaching and evaluation methods) are needed to enhance the environmental culture of second grade primary school students?

The results obtained after examining the text of interviews carried out. The relevant literatures as well as the literature on green curriculum were presented in Table (1). This categorization includes one primary (inclusive) theme known as green curriculum design, 4 secondary themes (organizer) and 21 basic themes.

Table 1. Green curriculum themes in the Iranian primary education system

Basic themes	Organizing themes	Comprehensive theme
Respect for nature	Goals	Green curriculum design in the Iranian education system in primary school
Emotional relationship with nature		
Understand the value of the natural environment		
Responsibility for the natural environment		
Natural environment as a collective ideal		
Natural environment as a source of human survival		
Natural environment as a living thing		
Attention to the environment as a social issue		
Presence in the natural environment	Content	
Behavior in order to preserve the natural environment		
Understanding the problems of the natural environment		
Understand the need for the natural environment individually and collectively		
Behavior with the natural environment		
Role play	Teaching Methods	
Problem solving		
Dramatic Methods		
Teaching methods by the courts		
Individual and group project	Assessment	
Viewing the performance process		
Quantitative evaluation		
Evaluation by parents and peers		

Research question 2: What green curriculum model can be used to enhance the environmental culture of elementary school students?

The green curriculum model which is used for enhancing the environmental culture of primary school students consisted of four dimensions or 1.objectives; namely the basic themes: respect for nature, emotional connectedness to nature, recognition of natural environment's value, conscientiousness towards the natural environment, natural environment as a collective ideal, the natural environment as a means of human survival and the natural environment as a living entity. 2.Content basic themes: consideration of environment as a social issue, presence in the natural environment, natural environment protective behaviors, recognition of environmental problems, recognition of the individual and collective need for natural environment, development of friendly relationship with natural environment, 3.methods based on basic themes: demonstrative method, role-playing, jurisprudential inquiry model methods and problem-solving methods, and 4.evaluation based on basic themes: quantitative evaluation (written and oral tests), observation of students'

performance, individual and collective project or research conduction, evaluation by parents and peers. The collected themes (a total of 21 basic themes) were delineated as final themes.

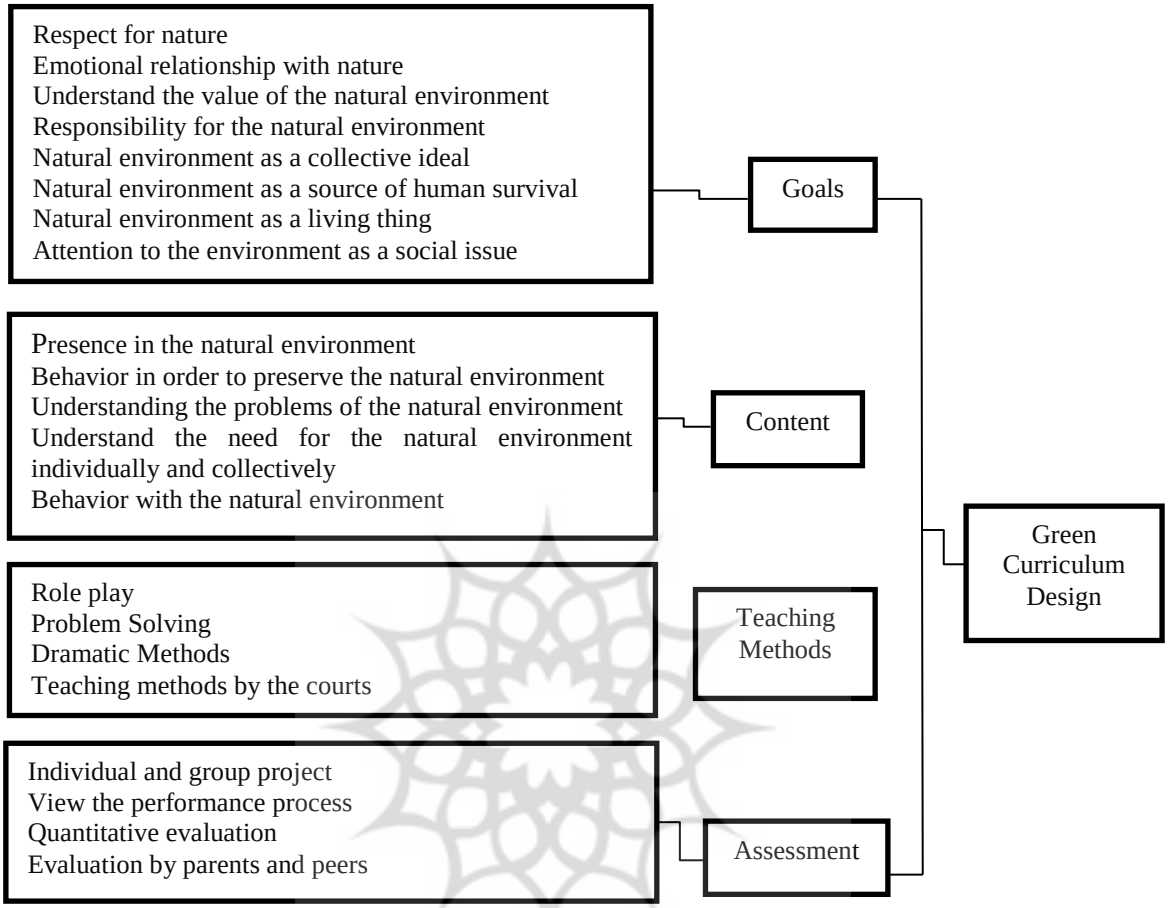

Figure 1. Format of topics related to green curriculum components

Discussion and Conclusion

This study was an attempt to investigate and identify the components of the green curriculum in order to enhance the environmental culture of elementary school students. Thematic analysis method was used to achieve this goal. The findings of this analysis were classified into 4 components namely theme, goals, teaching methods and evaluation methods and 7 basic themes including respect for nature, emotional connectedness to nature, recognition of natural environment's value, conscientiousness towards the natural environment, natural environment as a collective ideal, and the natural environment as a means of human survival and the natural environment as a living entity were identified as subsidiary components of goal as well. Additionally, the theme component encompassed 6 basic and primary themes including: consideration of environment as a social issue, presence in the natural environment, natural environment protective behaviors, recognition of environmental problems, and recognition of the individual and collective need for natural environment, and development of friendly relationship with natural environment. The methodological component was found to encompass several components including demonstrative method, role-playing, jurisprudential inquiry model methods and problem-solving methods which are recognized by experts as fundamental methods in green curriculum. The evaluation methods were also found to encompass several subcomponents such as quantitative evaluation (written and oral tests), observation of students' performance and individual or collective project or research conduction which have been recognized as green

curriculum evaluation methods from the perspective of experts. The findings obtained from this research question are consistent with the results of research conducted by Blakslee (2020), Soleimanpour et al., (2016) and Besong (2017). Today, the concept of green curriculum has expanded well beyond a slogan and is put forward as one of the main goals at schools. Since childhood is a critical period of life, enhancement of environmental culture of students in primary schools requires compliance with specific conditions and criteria. In fact a variety of factors and issues need to be taken into account in training courses organized for enhancement of environmental culture of students in this period of life. The age conditions, as well as the needs and learning capabilities of students at these ages should be evaluated and used as the building blocks of the programs designed to enhance students' environmental culture. As the results of the thematic analysis of the first research question shows, the goals were finally identified as 7 basic themes. Education actually sets out to shape human behavior. In different communities around the world, educational systems are founded as part of an attempt to develop fellow citizens who are supposed to behave desirably and favorably. In education, some favorable behaviors such as reading and math skills are clearly defined, while other favorable behaviors are more complicated. The Charter of Environmental Education was defined in the1977 Intergovernmental Conference on Environmental Education which was held Tbilisi. In this charter, environmental education objectives are:

Awareness—to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

Knowledge—to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.

Attitudes—to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.

Skills—to help social groups and individuals acquire the skills for identifying and solving environmental problems.

Evaluation capabilities: to help individuals and social groups evaluate environmental criteria and relevant educational programs in terms of ecology, politics, society, aesthetics and educational factors.

Participation—to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

Taking into account the above-mentioned goals, a responsible environmental citizen could be considered as a person with the following characteristics:

Awareness and sensitivity to the environment and its allied problems

Basic understanding of the environment and its associated problems

Concern for the environment and the motivation for actively participating in environmental improvement and protection;

Skills for identifying and solving environmental problems.

Active involvement at all levels in working toward resolution of environmental problems

Environmental protection will come to realization only when it is successfully turned into a belief and habit. Childhood is the best time to develop such a belief. Environmental education as one of the goals of the green curriculum in elementary school can: provoke students as the founders of the future to actively participate in the process and take up responsibility for environmental issues and ultimately make them diligently preserve biodiversity in the society. By educating children and adolescents schools can significantly contribute to this process. The above-mentioned traits can't be obtained except through education and training.

On the other hand, growth and development are dependent on sustainable development of countries and sustainable development requires planning at economic, political, social, cultural and human levels. Humans are placed at the center of attention as one of the components of sustainable development, and hence they need education. Since education is also one of the components of sustainable development, education in general and nourishing in particular can effectively contribute to sustainable development. In fact, education department, as the most

fundamental institution in society, is certainly one of the main pillars of national development. There is a bilateral relationship between education and development. On the one hand, education is the bedrock of development, and on the other hand, development requires a fundamental transformation in the educational system. Therefore, any society that takes sustainable development into consideration must set optimal education as a top priority. Sustainable development requires systemic thinkers, people with interdisciplinary and trans-disciplinary outlooks, as well as knowledgeable, creative and participatory individuals, and education department is known as one of the most important, effective and widespread social organizations responsible for selecting and conveying cultural elements to the new generations. Education department also serves as the main building block of social, cultural, moral and economic growth and developments in the society. Students, among different social groups, play a key role in environmental preservation. In fact, students' role with respect to environment is particularly important for several reasons: first, their current behavior affects the environment in which they live. Second, as educated and knowledgeable members of future generations in the society, they will occupy sensitive occupational positions that are important in terms of environmental protection. If students are to acquire specific information within the realm of knowledge, skills, and emotions as teachers expect them, this information must be logically and meaningfully organized and follow a specific pattern. This educational program which deals with the materials that are supposed to be presented by school teachers is referred to as curriculum. Selection of appropriate and favorable educational content is the first step that should be taken to achieve this goal. Content is the main ingredient of curriculum and encompasses facts, concepts, principles and theories and generalizations that are supposed to be acquired. Content also refers to the cognitive processes that learners use when thinking about content. In other words, educational content refers to the principles and concepts that are provided to students to enable them to get involved in educational activities and achieve their executive goals. The contents of green curriculum should be designed and formulated with respect to the goals of green curriculum and encompass the facts, concepts, principles, theories, cognitive processes, attitudes, values, functions, and skills whose acquisition and internalization by students is emphasized. Obviously, the interest and ability of students, principles and rules of environmental science, novelty and up-to-datedness of the subject, development of basic concepts and methods, relatedness to contemporary issues and teaching time should be carefully taken into account in selection of green curriculum content. On the other hand, the religious orientations and manifestations related to this field should also be taken into account and emphasized in the process of green curriculum content selection. According to the religious teachings of Muslims, human beings are the noblest of all creatures and the caliph of God on earth and all the terrestrial phenomena are created for the sake of Man. Nature is at Man's disposal and can be freely exploited by him; Man can use the divine abilities he is blessed with in order to make the most out of nature. Green curriculum content can also encompass concepts and attitudes related to the environmental ethics. Environmental ethics can be brought into realization by acquisition of knowledge, raising awareness and changing the environmental attitude of individuals. it can be argued that environmental ethics is meant to delineate citizenship rights and human responsibility towards natural and environmental issues, so everyone is required to respect others' right to life and take up responsibility for the environment. The contemporary generation must bear in mind that future generations are very vulnerable to their inconsiderate actions, behaviors and activities. Therefore, the contemporary generation is required to provide the ground for the establishment of a dynamic and efficient system that enables the future generations to enjoy the natural blessings. Such a process can guarantee the transition of moral obligations from the present to the distant future.

Environmental protection education and inclusion of that in students' textbooks, is based on the principle that each individual student must know the acceptable human

lifestyle in the future. The position of environmental education in the younger generation nurturing processes well and its relevant mechanisms have been subject of numerous studies. Increasing incorporation of environmental education content in different courses and ensuring that they are consistently and continuously addressed at different grades of elementary school can enhance students' environmental knowledge. However, active techniques should be used for this purpose.

Teaching method is another important component of the green curriculum. When it comes to teaching method or curriculum teaching, prediction of some conditions of the curriculum is taken into account as the main theme. In other words, curriculum planners predict or determine how the curriculum will be implemented by the teacher. In general, the teaching method refers to the organization and reconstruction of the learning environment, offering sufficient guidance to student at the right time, and giving students the chance to gain experience, retrieving information from the student, and correcting mistakes. The environment is equivalent and complementary to classroom. It is actually a rich resource that can be effectively used by resourceful teachers in the absence of audio-visual materials. Since teacher is the basic and perhaps the most important constituent of the presentation system and the teaching method chosen by teachers depends on the teaching goals they pursue, as well as their own interests, teachers must be provided with a richer teaching inventory. In the green curriculum, the goals of environmental education can be achieved only when teaching methods focus on activities and areas that require increasing involvement and participation of students. Emphasis should be laid on student inquiries regarding events and environmental issues in their immediate environment and finding solutions to them. Selection of the most appropriate method from among a set of methods in a particular situation, takes talent and skill. The demonstrative method, role-playing, jurisprudential inquiry methods and problem-solving methods were identified, by experts, as the main green curriculum teaching methods.

Four basic themes were identified in the evaluation method component. Evaluation is an integral part of any educational activity and is meant to measure the value or success odds of that activity. The evaluation rationale lies in utilization of that to report on data and taken measures, improve performance by identifying areas of strengths and weaknesses, enhancing the motivation of employees and participants involved in a particular activity by providing them with feedback on progress, direction of the activity towards the pre-determined goals and formulation of decision-making guidelines. The green curriculum is an extensive educational activity that covers all levels and areas of education. Evaluation should be utilized as one of the most important activities to guarantee successful implementation as well as efficiency and effectiveness of the green curriculum, because evaluation in the green curriculum will enable teachers to detect flaws and shortcomings in the objectives, content, methods, teaching instruments and the shortcomings of the green curriculum in general. Evaluation also helps teachers to figure out why some students succeed or fail, find out if students are ready for future activities and finally, identify the strengths and weaknesses of their teaching methods as well as the adequacy of the instruments used to measure and assess academic achievement of students. According to the results, it can be argued that: presentation of green curriculum contents to elementary school students can provide a coherent ground for the design of a green curriculum in Iranian education system.

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