

The Role of Education in Addressing Environmental Challenges: A Study of Environmental Education Integration in Moroccan Geography Textbooks



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ABSTRACT: The environment is facing serious challenges like climate change and pollution. Education plays a crucial role in addressing these challenges by raising awareness, promoting sustainable practices, and developing skilled citizens for environmental conservation and sustainable development. This article explores how much three geography textbooks used in Moroccan high schools include environmental education topics. The focus of the research is on four main environmental education themes: ecosystems and cycles, pollution, use of resources, and environment preservation, as well as their subtopics. The research is based on the theoretical framework of the BIOHEAD-CITIZEN project, which aimed to understand how environmental education can encourage citizenship. The research used a mixed-method design that combined content analysis with a convergent parallel approach to examine how much environmental education content is present in Manar Algeographia 1, Alassassi fi Algeographia, and Manar Algeographia 3. The results showed that environmental education integration in these textbooks is effective in increasing students' minimum knowledge, awareness, attitudes, and behavior toward environmental issues. In conclusion, this study suggests ways in which textbooks can be used to enhance students' environmental knowledge, attitudes, and behavior.

KEYWORDS: Environmental education, textbooks, geography, evaluation, Morocco

INTRODUCTION

In this age of rapid industrialization and massive urbanism, issues of environment and ecology have become a real challenge for all nations, including developing ones like Morocco. The deteriorating state of the planet has imposed itself as an alarming issue that receives much attention and raises heated and controversial debates in all quarters of the earth. Environmental education (EE) is of cardinal importance in shaping people's minds and conduct; it has also been powerfully used in enhancing civic behavior, such as the promotion of environmental awareness, knowledge, and attitudes (Hungerford & Volk, 1990; Kollmus & Agyeman, 2002; Nolan, 2010; Goodwin, et al., 2010; Pomerantz, 1990-91; Rioux, 2011; Zelezny, 1999). The quality of life on this planet is jointly connected to the individuals' treatment of nature and rapport with the environment. The better humans are aware of the workings of the environmental system and skilled in preserving natural resources and habitats, the better and more prosperous they will live. In Morocco, much effort has been put into sensitizing citizens about the momentousness of national engagement in various programs of natural resource preservation and environmental protection. Morocco has actively participated in international conferences and summits about the environment and sustainable development and called for reforms to preserve the environment and natural resources (the royal speech to the 21st session (COP21) on climate change in Paris on November 30, 2015; the royal speech to the Summit on Sustainable Development, in Johannesburg on September 2, 2002; the royal speech to the sixty-ninth session of the United Nations General Assembly, New York, September 26, 2014; the royal speech to the Seventieth Session of the United Nations General Assembly, New York, September 30, 2015; the royal speech to the 22nd session (COP22) of the Climate Conference, Marrakech, November 16, 2016). However, the desired objectives have not been achieved yet. The issue seems to transcend the scope of a unique and single authority in the state; diverse sectors are to be called upon to cooperate strategically to establish a strong relationship between human beings and the environment.

In this context, this study intends to scrutinize the current situation related to the promotion of EE and green culture and lifestyle among Moroccan students via school curricula and programs, namely by analyzing the extent to which geography textbooks manage or fail to integrate elements related to EE and sustainability. According to previous research, school curricula attempt to include the elements of EE and integrate them into the different subject areas for students of all ages. However, the outcomes do not live up to the wished expectations (Agorram et al., 2009; El Batri et al., 2020; El Batri et al., 2019; El Moussaouy et al., 2014; Laaloua & Tamer, 2022; Riouch & Benamar, 2018). The inclusion of EE in the national curricula has gradually evolved into what we have today in our schools; much progress has been made throughout the last decades, but the wave of environmental problems

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is getting ceaselessly bigger and out of control. A constant revision of the ways and methods with which we approach this issue in our schools is, thus, much required. Accordingly, educators and curriculum developers are called upon to create more appealing learning situations and settings that will result in a visible and favorable change in the learners' behavior and attitudes toward the environment (Payne, 2006; Ramsey et al., 1992).

Geography textbooks can play a crucial role in promoting EE by offering in-depth knowledge of the environment, its components, and the factors impacting its health and sustainability (Wilbanks, 1994). To encourage EE, these textbooks should focus on the importance of the environment and introduce environmental issues, and their impact on various aspects of life such as the ecosystem, social and economic factors (García-González et al., 2021; Zelezny & Schultz, 2000). Additionally, providing case studies can help students understand environmental issues better and the solutions used to address them. Furthermore, textbooks can include practical activities such as fieldwork, data analysis, and design solutions to real-world problems, encouraging responsibility and action for the environment. Textbooks can also engage with local communities, gaining their perspectives on environmental issues, and promoting an understanding of the relationship between humans and the environment, fostering empathy and unity with the planet. Geography textbooks can serve to cultivate environmentally aware and responsible citizens who are committed to building a sustainable future (Wilbanks, 1994).

This paper aims to examine the degree to which the above-stated EE elements are included in three geography textbooks used in Moroccan high schools (Manar Algeographia 1, Alassassi fi Algeographia, and Manar Algeographia 3). The study will assess the level of integration of EE elements, namely "ecosystems and cycles", "pollution", "use of resources", and "environment preservation", by analyzing the frequency with which environmental content appears in the various units and lessons across the three textbooks. To achieve this goal, this study is designed to answer the following research questions:

1. What is the current situation regarding the inclusion of EE in geography textbooks used in Moroccan high schools?
2. To what degree do these geography textbooks cover environmental topics such as ecosystems and cycles, pollution, use of resources, and environment preservation?
3. How are EE elements incorporated into geography textbooks used in Moroccan high schools?

METHODOLOGY

This study employed a mixed-method design, specifically a convergent parallel mixedmethod design (Creswell, 2012). The study aimed to analyze the level of integration of EE elements in three geography textbooks used in Moroccan high schools using content analysis.

Both descriptive and inferential statistics were utilized to evaluate the frequency of occurrence of EE topics and subtopics in the textbooks. Content analysis was chosen as the research method for evaluating the textbooks; it is a suitable research method as it can generate valid statistical results that can be relied upon to make well-informed judgments regarding the integration of EE in the textbooks. Content analysis is a procedure used to evaluate the level of presence of specific topics within a given text or document (Krippendorff, 2004).

The research sample consisted of geography textbooks used in the three high school levels:

the common core, 1st-year baccalaureate, and 2nd-year baccalaureate, which correspond to 10th, 11th, and 12th grades, respectively.

Table.1. List of the Analyzed Textbooks

Levels	Textbooks
The Common Core	Manar Algeographia 1
The 1 st Year Bac	Alassassi fi Algeographia
The 2 nd Year Bac	Manar Algeographia 3

The textbooks being investigated are approved by the Ministry of National Education and are widely used in high schools across Morocco. Additionally, all the textbooks analyzed in this study are utilized in the same high school. This approach can provide a clear understanding of the level of integration of EE in textbooks being taught to the same group of students.

The analysis process began by carefully reading the textbooks to identify their overall purpose, objectives, level, and target audience. Subsequently, other sections of the textbooks were examined to locate the units and pages that contain EE elements and determine how they are presented. To collect data, a textbook analysis grid was used. The grid was developed by the BIOHEAD-Citizen Project and has been tested and applied for similar purposes (Caravita et al., 2008). This study employed this tool to examine various variables that influence the presence of EE, such as the frequency of environmental items, themes, and content. The study analyzed the occurrence frequency of four main EE topics and their subtopics: Ecosystems and cycles (EC), pollution (PO), use of resources (UoR), and environment preservation (EP). The collected data was analyzed using descriptive and analytical methods.

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The statistical results of the analysis would reveal the frequency and percentage of EE topics and subtopics present in the three textbooks, allowing for comparisons based on high school levels and EE topics.

Initially, the researcher carefully identified and counted the specific parts of the textbooks that dealt with environmental education sub-topics such as titles, texts, dialogues, pictures, graphs, and figures. The frequency of appearance of each sub-topic was then limited and entered into an Excel spreadsheet using the textbook analysis grid. This grid displayed both the frequencies and percentages of EE elements in the textbooks. The percentages represented the proportion of EE-related elements out of the total number of elements in the textbooks. To ensure the reliability of the analysis, the following steps were followed:

1. Conducting a comprehensive and attentive reading of each textbook to determine the precise number of components, including titles, paragraphs, texts, dialogues, figures, and pictures.
2. Identifying the number of research categories that relate to EE topics or sub-topics within each textbook.
3. Writing the frequency of occurrence of each topic or sub-topic into the textbook analysis grid, which is designed in Excel spreadsheets for this purpose.
4. Counting the frequencies and percentages for each EE element occurrence in the three textbooks.
5. The frequencies refer to the total number of elements that are relevant to EE topics and subtopics in the entire textbook.
6. The percentages indicate the number of components that contain EE elements divided by the total number of components in each textbook.

RESULTS

EC in High School Geography Textbooks.

The statistical results illustrated in Table 2 confirm that Manar Algeographia (CC) contributes considerably to the enhancement of the common core students' EE by devoting 38,91% of its components to EC subtopics. The emphasis is put mostly on the "environmental risks" subtopic by 56 frequencies with a percentage of 12,17%. This textbook also provides a relatively considerable number of documents relating to "types of environments" and "components of the ecosystem" with a total number of frequencies of 50 (10,87%) and 41 (8,91%) respectively. In a way of comparison, the other geography textbooks Alassassi fi Algeographia (1st-year bac) and Manar Algeographia (2nd-year bac) include very limited numbers of documents related to EC subtopics. The number of frequencies traced in these textbooks together does not exceed 36 items with a total percentage of 7,56%. A general reading of the table uncovers the huge discrepancy existing between Manar Algeographia (CC) on the one hand and Alassassi fi Algeographia (1st-year bac) and Manar Algeographia (2nd-year bac) textbooks on the other hand. In this regard, the big majority of EC subtopics exist in the CC textbook (38,91%) whereas only 3,35% exist in the 1st year bac textbook and merely 4,21% appear in the 2nd year bac textbook.

Table 2. EC in High School Geography Textbooks.

EE elements	CC Manar Algeographia		1 st year bac Alassassi fi Algeographia		2 nd year bac Manar Algeographia		Total	
	f	%	f	%	f	%	f	%
	Definition of the environment		0,00%		0,00%		0,00%	0
Environmental risk	56	12,17%	5	1,05%	10	2,11%	71	15,33%
Environmental balance	6	1,30%	2	0,42%	1	0,21%	9	1,93%
Environmental imbalance	5	1,09%	5	1,05%	3	0,63%	13	2,77%
Environmental adaptation		0,00%		0,00%		0,00%	0	0,00%
Humans' relationship with the environment	14	3,04%		0,00%		0,00%	14	3,04%
Food chain	1	0,22%		0,00%		0,00%	1	0,22%
Water cycle	5	1,09%		0,00%		0,00%	5	1,09%
Gas cycles	1	0,22%		0,00%		0,00%	1	0,22%
Components of the ecosystem	41	8,91%	2	0,42%	1	0,21%	44	9,54%
Types of environments	50	10,87%	2	0,42%	5	1,05%	57	12,34%
Total	179	38,91%	16	3,35%	20	4,21%	215	46,48%

PO in High School Geography Textbooks.

In Table 3, it is apparent that the most dominant subtopic is "water pollution" specifically in Manar Algeographia (CC) textbook with 15 frequencies that belong to this subtopic representing 3,26% of the total number of documents that constitute this textbook.

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The other reoccurring subtopics detected in this textbook are “air pollution” with 7 frequencies (1,52%), “Electromagnetic pollution” with 5 frequencies (1,09%), and “soil pollution” with one single reoccurrence (0,22%). Concerning the 1st year bac textbook (Alassassi fi Algeographia), the PO topic is almost absent except for 2 reoccurrences connected to air and water pollution. As far as the 2nd year bac textbook (Manar Algeographia), all the PO subtopics are present, though insufficiently, with 1 frequency for all the subtopics except air pollution (5 frequencies / 1,05%) and water pollution (3 frequencies / 0,63%). Generally, the CC textbook allocated more opportunities for students to tackle PO-related topics compared to the other two grades with a total percentage of 6,09% out of the total percentage of 9,45% in the three textbooks all together.

Table 3. PO in High School Geography Textbooks.

EE elements	CC Manar Algeographia		1 st year bac Alassassi fi Algeographia		2 nd year bac Manar Algeographia		Total	
	f	%	f	%	f	%	f	%
	Air pollution	7	1,52%	1	0,21%	5	1,05%	13
Water pollution	15	3,26%	1	0,21%	3	0,63%	19	4,10%
Soil pollution	1	0,22%		0,00%	1	0,21%	2	0,43%
Food contamination		0,00%		0,00%	1	0,21%	1	0,21%
Pharmaceutical contamination		0,00%		0,00%	1	0,21%	1	0,21%
Acoustic pollution		0,00%		0,00%	1	0,21%	1	0,21%
Visual pollution		0,00%		0,00%	1	0,21%	1	0,21%
Electromagnetic pollution	5	1,09%		0,00%	1	0,21%	6	1,30%
Total	28	6,09%	2	0,42%	14	2,95%	44	9,45%

UoR in High School Geography Textbooks.

Table 4 shows the statistical results relating to the UoR topic and subtopics in the three textbooks under study. It is noticeable that all the subtopics are included in the CC textbook Manar Algeographia with a clear difference in the number of frequencies from one subtopic to the other. Focus is mainly put on renewable resources' subtopics with a total number of frequency reaches 41 and a total percentage of 8,91%: wildlife extinction (12 frequencies / 2,61%), plant depletion (15 frequencies / 3,26%), and soil depletion (14 frequencies / 3,04%). Regarding the 1st year bac textbook Alassassi fi Algeographia, all the UoR subtopics are included, with relatively close numbers of reoccurrences, except for “wildlife extinction” and “uses of rocks”. However, the number of documents related to UoR in this textbook remains small as it does not go beyond 5,03% out of the overall textbook constituents. The 2nd year bac textbook Manar Algeographia provides UoR elements except for “permanent resources” subtopics. The biggest focus falls on the “non-renewable resources” with 32 elements as a total number of frequencies (6,72%) in comparison to only 4 elements (0,84%) related to “renewable resources”. Similar to the previous EE topic (PO), the CC textbook (51 frequencies / 12,51%) allows students to encounter almost as many as UoR elements in the 1st and 2nd-year bac textbooks put together (60 frequencies / 12,61%).

Table 4. UoR in High School Geography Textbooks

EE elements	CC Manar Algeographia		1 st year bac Alassassi fi Algeographia		2 nd year bac Manar Algeographia		Total	
	f	%	f	%	f	%	f	%
	Permanent resources Solar uses	2	0,43%	1	0,21%		0,00%	3
Air uses	8	1,74%	1	0,21%		0,00%	9	1,95%
Uses of water	2	0,43%	3	0,63%		0,00%	5	1,06%
Renewable resources								
Wildlife extinction	12	2,61%		0,00%	1	0,21%	13	2,82%
Plant depletion	15	3,26%	5	1,05%	2	0,42%	22	4,73%
Soil depletion	14	3,04%	4	0,84%	1	0,21%	19	4,09%
Non-renewable resources								
Coal uses	1	0,22%	2	0,42%	7	1,47%	10	2,11%

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Uses of natural gas	1	0,22%	2	0,42%	7	1,47%	10	2,11%
Uses of oil	1	0,22%	2	0,42%	8	1,68%	11	2,32%
Uses of metals	1	0,22%	4	0,84%	7	1,47%	12	2,53%
Uses of rocks	1	0,22%		0,00%	3	0,63%	4	0,85%
Total	58	12,61%	24	5,03%	36	7,58%	118	25,22%

EP in High School Geography Textbooks.

Table 5 demonstrates the statistical results of the EP topic and its subtopics in the three geography textbooks under study. In the CC textbook Manar Algeographia, 10/15 subtopics are covered with a total number of frequencies of 65 elements (14,13%) in comparison to 6/15 subtopics in the 1st year bac textbook Alassassi fi Algeographia with a total number of frequencies of 23 elements (4,82%) and 4/15 subtopics in the 2nd year bac textbook Manar Algeographia with a total number of reoccurrences of 9 items (1,89%). This indicates that the CC textbook contributes a great deal to the enhancement of EP among students more than the 1st and 2nd years bac textbooks. A quick look at the statistics will confirm that in the CC textbook, the main emphasis lies in the subtopics of “activating the efforts of ministries, environmental agencies, and non-governmental organizations” (17 frequencies / 3,70%), “enacting and applying environmental laws and legislations” (15 frequencies / 3,26%) and “stimulating participation in environmental activities” (10 frequencies / 2,17%)

Table 5. EP in High School Geography Textbooks

EE elements	CC Manar Algeographia		1 st year bac Alassassi fi Algeographia		2 nd year bac Manar Algeographia		Total	
	f	%	f	%	f	%	f	%
Combating environmental pollution		0,00%		0,00%		0,00%	0	0,00%
Preserving the beauty of the environment	8	1,74%		0,00%		0,00%	8	1,74%
Stimulating participation in environmental activities	10	2,17%	5	1,05%	2	0,42%	17	3,64%
Activating the efforts of ministries, environmental agencies and nongovernmental organizations	17	3,70%	7	1,47%	4	0,84%	28	6,01%
Establishment of Natural Reserves	1	0,22%		0,00%		0,00%	1	0,22%
Enacting and applying environmental laws and legislations	15	3,26%	4	0,84%	2	0,42%	21	4,52%
Waste recycling		0,00%		0,00%		0,00%	0	0,00%
Rationalization of the use of pesticides		0,00%		0,00%		0,00%	0	0,00%
Economy in the use of chemical fertilizers		0,00%		0,00%		0,00%	0	0,00%
Combating Desertification	2	0,43%	2	0,42%	1	0,21%	5	1,06%
Rationalization of water consumption	3	0,65%	3	0,63%		0,00%	6	1,28%
Rationalization of electricity consumption		0,00%		0,00%		0,00%	0	0,00%
Rationalization of fuel consumption	2	0,43%		0,00%		0,00%	2	0,43%
Use of Clean Energy	5	1,09%	2	0,42%		0,00%	7	1,51%
Demonstrating the efforts of scientists to preserve the environment	2	0,43%		0,00%		0,00%	2	0,43%
Total	65	14,13%	23	4,82%	9	1,89%	97	20,85%

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A Summary of the Results of the Status of EE in Geography Textbooks in Moroccan High School.

The figure below furnishes a more comprehensive statistical illustration of the status of EE in high school geography textbooks concerning the four EE topics: EC, PO, UoR, and EP. The graph demonstrates that the CC textbook Manar Algeographia caters significantly to the students' necessary EE needs by providing 330 environmental elements belonging to all the EE topics and subtopics with different degrees of intensity. 71,74% of the documents constituting Manar Algeographia (CC) are related to EE with considerable emphasis on EC with a reoccurrence of 179 frequencies which signifies a percentage of 38,91%. The topic EP is also significantly present in the CC textbook by dominating 65 documents which implies a percentage of 14,13% of its constituents while UoR and PO are present in less notable degrees: 58 frequencies / 12,61% and 28 frequencies / 6,09%. Concerning the 1st and 2nd years bac textbooks, Alassassi fi Algeographia and Manar Algeographia EE elements are moderately present with proportions of 13,63% and 16,63% respectively, but it is worth highlighting the fact that PO is almost absent in Alassassi fi Algeographia (2 frequencies / 0,42%) and deficient in Manar Algeographia (9 frequencies / 1,89%). By and large, the CC textbook remains more incorporating EE elements than the two other textbooks put together.

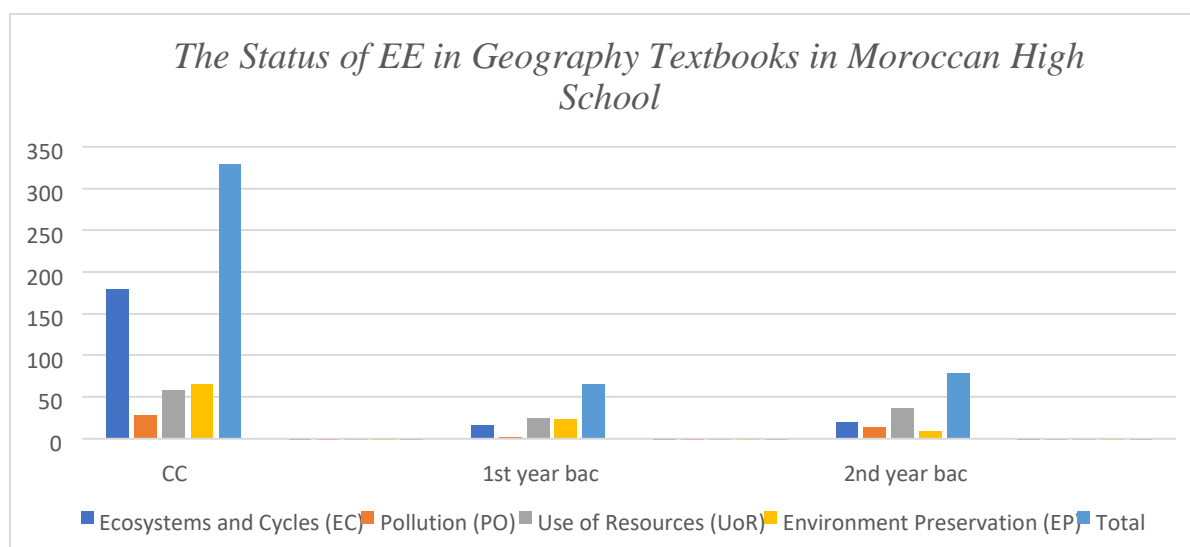


Figure 1

DISCUSSION

As a central subject in high school education, geography presents prominent possible opportunities for the promotion of students' EE knowledge, awareness, attitudes, and participation skills. Using content analysis techniques through a textbook analysis grid, this study examined the degree of presence of EE topics (EC, PO, UoR, and EP) and subtopics in a sample of three textbooks used to teach geography in the three levels of high school. According to the official pedagogical guidelines issued by the Ministry of national education in 2007, the geography curriculum in Moroccan high schools tackles a wide range of content ranging from physical geography to human geography. The environment constitutes just one of many subtopics comprising the field of physical geography. This voluminous content renders the task very hard for textbook writers to incorporate EE topics amply and symmetrically in all the textbooks of the three levels/grades in high school. Therefore, it is obvious from the statistical results that only Manar Algeographia (CC) proves to provide very significant levels of integration of documents related to EE topics and subtopics with a percentage of 71,74% of the overall documents of the textbooks. However, Alassassi fi Algeographia (1st-year bac) and Manar Algeographia (2nd-year bac) supply low integration levels of EE topics that do not exceed the proportion of 16,63% at best. In other words, EE elements are most dominantly included in the CC with a lower degree in the other two baccalaureate levels.

EE can be approached from a geographical standpoint from the human, social, economic, political, and ecological perspectives. "Geography can be considered one of the sciences which facilitates the comprehensive study of today's environmental problems" (García-González et al., 2021). Geography textbooks, thus, provide a suitable framework where educational decisionmakers, mainly textbook designers, could integrate cognitive, affective, and operational contents and materials to promote EE. Nevertheless, the quantity of EE integrated elements is disproportionate among the three textbooks used to teach geography throughout the three high school levels. There is a clear discrepancy between the CC and the other two years of baccalaureate. This discrepancy can probably be justified by the voluminous curriculum that needs to be covered during these three years. Besides, the concentration of EE elements in Manar Algeographia (CC) alone hinders the progressive development of students' environmental knowledge and attitudes throughout high school education. Conversely, GarcíaGonzález et al. (2021), in their study of EE in Spanish geography textbooks, found that the progression of environmental content in the textbooks increases as the students move upward in the school levels. In this regard, Alassassi fi Algeographia (1st-year bac) and Manar

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Algeographia (2nd-year bac) do not contain sufficient EE topics. This insufficiency implies that Moroccan high school students benefit from a rich exposure to EE in the CC but, this process is thwarted at the end of high school education.

The official pedagogical guidelines issued by the Ministry of national education in 2007 situate the geography course as a basic pillar for the students' conceptual, civic, and social education. However, our analysis of geography textbooks demonstrates that Manar Algeographia (CC) places considerable emphasis on ecosystems and cycles with a percentage of 38,91%. Moreover, environment preservation occupies a significant position in the CC textbook by taking a percentage of 14,13% of its constituents. Meanwhile, the use of resources and pollution are presented to lesser degrees. These findings relatively reflect the partial achievement of the objectives set by the official guidelines in Manar Algeographia (CC) which succeeded in equipping the CC students with quite a rich EE content. However, regarding Alassassi fi Algeographia (1st-year bac) and Manar Algeographia (2nd-year bac), EE topics are not sufficiently presented with a total absence of some EE subtopics. This indicates a clear mismatch between the initial goals of the official guidelines and their procedural application at the level of textbooks' design and implementation.

Considering the centrality of the geography course to promote different types of high school students' education especially EE, the textbooks alone are not adequate to fulfill this end. In this respect, other instructional materials, procedures, and agents need to interfere to complement this task. Ballantyne (1999), in an international study about geography educators' perceptions of EE, underscores the teachers' strong commitment to environmental knowledge, attitudes, and behavior. Geography teachers also tend to prefer fieldwork (Ballantyne, 1999) as an efficient method to promote EE rather than relying solely on textbooks and in-class activities (Ballantyne, 1999). Fieldwork, despite its obstacles, may provide a possible pathway for enhancing EE in Moroccan high school geography courses. It can also recompensate for the existing shortage in first- and second-year baccalaureate textbooks. Ultimately, the integration of EE topics in Moroccan high school geography textbooks requires extra efforts to be repropportioned in a more even and progressive manner among the textbooks of the three grades. Likewise, extra-class activities and fieldwork remain of paramount importance in the cultivation of students' EE ethics and behavior, especially with the current deficiency in textbooks.

CONCLUSION

The results revealed significant deficiencies in the incorporation of EE elements in the examined high school textbooks, and it is recommended that future textbook designers ensure to include appropriate EE elements. The analysis identified gaps in the geography textbooks used in the first and second-year baccalaureate. Therefore, EE should be integrated into all school subjects using a multi-disciplinary approach (Hungerford et al., 1980), without compromising the lessons and units of the textbooks. This approach would enable the smooth and effective incorporation of EE elements throughout the ongoing process of the courses, leading to a better understanding and retention of the subject matter.

In this regard, the study's findings suggest various pedagogical recommendations to bridge the gaps identified in geography textbooks. The integration of relevant EE elements into the geography textbooks, mainly concerning topics such as ecosystems and cycles, pollution, use of resources, and environment preservation, should be ensured by textbook designers. Furthermore, geography teachers should be trained and encouraged to incorporate EE elements in their lessons, utilizing interactive and participatory learning methods. The use of multimedia resources, such as videos, images, and simulations, could supplement the textbook content and engage students in the learning process. Additionally, organizing extracurricular activities like field trips and environmental projects related to the topics covered in the geography textbooks could help reinforce students' understanding of environmental issues. Finally, adopting a multidisciplinary approach to EE, with relevant elements integrated into all subjects taught in high schools, including geography, is essential. This approach could help students comprehend the interconnectedness of environmental issues across different subjects and develop a more holistic understanding of the environment.

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