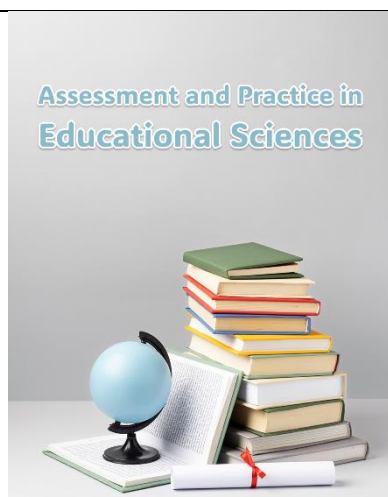




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1. Nooshin. Baradari^{ID}: Department of Educational Studies and Curriculum Planning, Mara.C., Islamic Azad University, Marand, Iran

2. Shahram. Ranjdoust^{ID}: Department of Educational Studies and Curriculum Planning, Mara.C., Islamic Azad University, Marand, Iran (Email: dr.ranjdoust@iau.ac.ir)

3. Edris. Islami^{ID}: Associate Professor, Department of Educational Sciences, Mah.C., Islamic Azad University, Mahabad, Iran

Article type:
Original Research

Article history:
Received 20 March 2026
Revised 04 June 2026
Accepted 13 June 2026
Initial Publish 14 July 2026
Published online 01 January 2027

How to cite this article:

Baradari, N., Ranjdoust, Sh & Islami, E. (2027). Identifying the Components of a Curriculum Based on Environmental Legal Literacy Education Using a Thematic Analysis Approach. *Assessment and Practice in Educational Sciences*, 5(1), 1-16. <https://doi.org/10.61838/japes.xxx>

Identifying the Components of a Curriculum Based on Environmental Legal Literacy Education Using a Thematic Analysis Approach

ABSTRACT

Considering the intensification of environmental challenges and the necessity of enhancing citizens' awareness and responsibility, this study is based on the assumption that formal education can play a fundamental role in developing environmental legal literacy. Despite the importance of this field, the absence of a coherent model for designing a curriculum based on environmental legal literacy education in the educational system is evident. Therefore, the aim of the present study was to develop a curriculum model based on environmental legal literacy education. In terms of purpose, this research is applied, and in terms of approach, it is qualitative and exploratory. The statistical population included specialists in the fields of educational sciences, law, and social sciences in West Azerbaijan Province, who were selected using purposive sampling and the snowball technique. The sampling process continued until theoretical saturation was achieved, and finally, 19 individuals participated in semi-structured interviews as the research sample. The data collection instrument was an in-depth semi-structured interview, and the data were analyzed using Braun and Clarke's thematic analysis method. As a result of data analysis, 729 initial codes were extracted and, after refinement, were classified into 110 basic codes, 18 organizing themes, and 6 overarching themes, including the foundations and philosophy of the model, analysis of the current situation, objectives and competencies, principles governing content, teaching-learning strategies, and implementation and evaluation requirements. The results showed that the proposed model requires an interdisciplinary approach, localization of content, emphasis on students' legal empowerment, and the use of performance-based evaluation.

Keywords: environmental legal literacy, curriculum, environmental education, educational system.

Introduction

Environmental degradation has increasingly become one of the most serious educational, legal, social, and managerial challenges of contemporary societies. Climate change, air and water pollution, biodiversity loss, waste mismanagement, excessive consumption of natural resources, and the expansion of unsustainable urban development have shown that

environmental protection cannot be achieved only through technical interventions or regulatory enforcement. Rather, it requires the formation of informed, responsible, legally aware, and ethically committed citizens who are able to understand environmental rights and duties, recognize environmental harms, participate in collective environmental decision-making, and demand accountability from relevant institutions. In this regard, education systems play a foundational role because schools are not merely institutions for transmitting information; they are key social organizations for developing civic competencies, environmental values, ethical orientations, and future-oriented capacities. Therefore, the design of curricula that integrate environmental knowledge, legal understanding, moral responsibility, and participatory skills has become an essential requirement for educational systems seeking to respond effectively to environmental crises.

Environmental education has developed from a narrow focus on ecological knowledge toward a broader orientation that includes sustainability, citizenship, social justice, ethics, participation, and local responsibility. Studies on environmental education have emphasized that students should not only learn about ecosystems, pollution, and conservation, but should also acquire competencies for active citizenship and responsible environmental action. Curriculum development planning in environmental education has been introduced as a means of cultivating environmental citizenship among students, particularly when curriculum objectives, content, learning activities, and evaluation methods are systematically aligned with civic responsibility and environmental participation (1). Similarly, environmental education and sustainability in curriculum frameworks have been linked to citizenship education and active citizenship, indicating that environmental learning should prepare learners to act as responsible members of society rather than passive recipients of scientific information (2). This perspective is especially important because environmental problems are not only natural or technical phenomena; they are also social, legal, political, and ethical issues that require informed public engagement.

Within this broader educational discourse, environmental legal literacy can be regarded as a more specialized and necessary dimension of environmental education. Environmental legal literacy refers to learners' understanding of environmental rights, legal duties, regulations, enforcement mechanisms, institutional responsibilities, and the legal consequences of environmental violations. It also includes the ability to interpret environmental issues through a rights-based and responsibility-oriented lens. Such literacy is essential because many environmental harms persist not only due to lack of scientific knowledge but also because citizens are unaware of their legal rights, institutional pathways for complaint and participation, and obligations toward present and future generations. Therefore, a curriculum based on environmental legal literacy must go beyond general environmental awareness and should systematically combine environmental knowledge with legal reasoning, civic agency, ethical judgment, and practical participation. In this sense, it is aligned with recent curriculum perspectives that emphasize ecological citizenship, environmental responsibility, and the development of students' capacity for social action (3, 4).

The necessity of such a curriculum becomes clearer when considering the limitations of existing educational approaches. In many educational systems, environmental education is either fragmented across different subjects, limited to descriptive ecological content, or implemented through traditional teacher-centered methods. Research on the position of environmental education in elementary curricula in Iran has indicated that environmental concepts often lack sufficient depth, continuity, and systematic integration across curriculum elements (5). Similarly, studies on the alignment of intended, implemented, and achieved curricula in environmental courses have shown that discrepancies between curriculum design, classroom implementation, and learning outcomes can reduce the effectiveness of environmental education (6). These findings highlight the importance of developing coherent curriculum models that define clear objectives, relevant content, appropriate pedagogical strategies, and valid evaluation mechanisms. Without such coherence, environmental education may remain symbolic, information-based, and disconnected from learners' real-life responsibilities.

Curriculum design in environmental legal literacy requires attention to both the formal structure of curriculum and the dynamic conditions of learning environments. Contemporary curriculum theory increasingly emphasizes that curriculum should be understood as a multidimensional system consisting of aims, content, learning activities, teacher roles, materials, assessment, time, place, and learning context. The revisiting of the Spider Web Model in relation to hybrid and eco-digital learning environments demonstrates that curriculum design must be internally coherent and responsive to ecological and technological transformations (7). Instructional coherence is also crucial in blended learning environments, where the alignment of pedagogical goals, content, learning tasks, and implementation processes determines the effectiveness of curriculum delivery (8). These insights are highly relevant to environmental legal literacy because such literacy requires not only the inclusion of environmental law content but also the integration of interdisciplinary learning activities, participatory methods, legal case analysis, experiential learning, and performance-based assessment.

The interdisciplinary nature of environmental legal literacy is another fundamental issue. Environmental problems are located at the intersection of ecology, law, ethics, public policy, economics, urban planning, culture, and education. Accordingly, a curriculum in this field should not be confined to a single disciplinary perspective. Green curricula have been shown to shape pro-environmental behaviors and environmental values, especially when sustainability is embedded in the educational experience as a guiding orientation rather than treated as an isolated topic (9). Similarly, the integration of environmental education into curricula requires practical elements derived from educational research and field experiences, including problem orientation, learner engagement, contextualization, and continuity (10). In environmental legal literacy, this means that learners should be exposed to national environmental laws, international environmental agreements, principles of environmental justice, rights of nature and future generations, institutional responsibilities, and examples of environmental violations in everyday life.

Localization is a core principle in designing such curricula. Environmental issues are always experienced within specific ecological, cultural, legal, and social contexts. Therefore, a curriculum that ignores local environmental problems, regional legal challenges, indigenous knowledge, and community-based practices may fail to generate meaningful learning. Environmental education based on local values has been shown to be effective when integrated into elementary school curricula because it connects environmental concepts to students' lived realities and cultural context (11). Place-based curriculum approaches, including eco-art and community-oriented environmental learning, can also encourage empathy for the environment and deepen learners' connection with local ecosystems (12). Similarly, place-based energy literacy curricula show that environmental understanding becomes more meaningful when students examine energy issues in relation to their immediate environment and daily life (13). For environmental legal literacy, localization means that legal content should be connected to regional environmental challenges, local institutions, community disputes, and the environmental rights and duties that students can observe in their own surroundings.

At the same time, environmental legal literacy should not be limited to local awareness; it must also cultivate global, intercultural, and justice-oriented perspectives. The global ecological crisis has created a need for pedagogies that confront dominant assumptions about development, nature, and sustainability. Indigenizing environmental sustainability curriculum and pedagogy has been proposed as a way to challenge conventional approaches and to incorporate Indigenous sustainabilities, relational worldviews, and ecological responsibility into higher education (14). Likewise, integrating environmental themes into philosophy classrooms indicates that environmental learning can be strengthened through ethical reflection, critical inquiry, and examination of human–nature relations (15). These approaches are relevant to environmental legal literacy because legal education in this field must be connected to ethical reasoning, environmental justice, intergenerational equity, and critical reflection on the relationship between human societies and the natural world.

The moral and ethical dimensions of environmental legal literacy are particularly important in educational contexts influenced by religious, cultural, and value-based traditions. Environmental protection cannot be reduced to legal compliance alone; it also requires internalized ethical commitments and a sense of responsibility toward other people, other species, and future generations. Research on moral education curriculum based on the Raḍavi tradition has emphasized the importance of integrating ethical foundations, value orientation, and moral development into curriculum elements (16). Character-based environmental curricula have also been shown to contribute to the development of environmental care and responsible behavior in elementary schools (17). These perspectives suggest that environmental legal literacy should be designed as a value-laden curriculum in which legal rights and obligations are taught alongside environmental ethics, social responsibility, and moral self-regulation. Such an approach can help students perceive environmental protection not only as a legal requirement but also as a moral and civic duty.

Another important foundation of curriculum design in this field is the development of agency and participation among students. Environmental participation is not formed automatically through knowledge acquisition; it requires educational experiences that encourage students to observe, analyze, discuss, decide, and act. A phenomenological study of school principals' experiences of developing students' environmental participation has shown that environmental participation depends on school culture, managerial support, student engagement, and opportunities for practical involvement (18). In this regard, environmental legal literacy should empower students to understand their role as rights-bearing and duty-bearing citizens. It should help them identify environmental violations, understand the responsibilities of public institutions, participate in environmental decision-making, and pursue lawful and constructive forms of environmental advocacy. Such a curriculum is therefore closely connected to educational management, because its successful implementation requires leadership, teacher preparation, school-level planning, institutional coordination, and supportive policy structures.

Pedagogically, environmental legal literacy requires active, participatory, experiential, and problem-based teaching strategies. Traditional lecture-based instruction is insufficient for developing legal reasoning, civic agency, and environmental responsibility. Outdoor and environmental education literature emphasizes that curriculum in this field benefits from direct experience, embodied learning, interaction with place, and reflective engagement with environmental problems (19). In addition, environmental curricula that emphasize self-management can strengthen students' capacity to regulate their behavior and make responsible decisions in relation to environmental issues (4). In the context of legal literacy, these strategies may include environmental case studies, simulated environmental courts, role-playing, debates, field visits, project-based learning, school-community activities, and analysis of real environmental policies. These methods can transform environmental law from abstract legal content into meaningful, applied, and action-oriented learning.

The rapid transformation of learning environments also affects the design of environmental legal literacy curricula. Digital technologies, virtual platforms, and hybrid learning environments create new opportunities for environmental education, legal awareness, collaboration, and access to resources. Studies have shown that cyberspace can create meaningful opportunities in learning environments from students' perspectives, particularly in relation to access, interaction, flexibility, and resource diversity (20). Electronic learning environments designed on the basis of brain-compatible principles can also influence students' executive functions and improve the quality of learning processes (21). During the COVID-19 pandemic, virtual learning environments in curriculum implementation revealed both potentials and challenges for student experience, engagement, and instructional design (22). Moreover, research on e-learning during the Corona era identified opportunities and challenges that are still relevant for post-pandemic curriculum development, including infrastructure, teacher readiness, interaction, and equitable access (23). These findings imply that environmental legal literacy curricula should make purposeful

use of digital tools, multimedia resources, legal databases, environmental simulations, and online collaborative learning while avoiding purely technology-driven approaches.

Environmental legal literacy is also linked to the physical and ecological quality of educational settings. Schools and universities are not neutral spaces; their environmental conditions can shape students' perceptions, health, participation, and learning outcomes. Studies on the green and thermal environmental quality of educational institutions show that educational settings must be considered within broader urban planning and environmental quality frameworks (24). Environmental risk factors can also affect child development and educational achievement, demonstrating that environmental conditions have direct implications for learning, well-being, and equity (25). Naturalistic intelligence and environmental sustainability studies further suggest that students' relationship with nature and their capacity to understand natural systems can support sustainability-oriented education (26). Therefore, a curriculum based on environmental legal literacy should not only teach environmental rights in the abstract but also encourage students to critically examine the environmental conditions of their own schools, neighborhoods, and communities.

From the perspective of curriculum development and educational management, future-oriented thinking is also essential. Environmental crises are long-term, complex, and uncertain; consequently, educational systems must prepare learners not only for present problems but also for future environmental risks and responsibilities. A workplace curriculum model with a futurology approach in higher education has emphasized the importance of designing curricula that anticipate future needs, competencies, and institutional transformations (27). Similarly, resilience-based curriculum development demonstrates the value of environmental scanning, adaptability, and preparation for complex challenges (28). These approaches support the argument that environmental legal literacy should be future-oriented, competency-based, and responsive to emerging environmental, legal, and technological changes. Students should learn to think about long-term consequences, intergenerational justice, environmental risk governance, and the legal mechanisms needed to protect ecological systems over time.

Despite the growing body of research on environmental education, green curricula, ecological citizenship, local-value-based learning, digital learning environments, and sustainability-oriented pedagogy, there remains a significant conceptual and practical gap regarding the systematic design of a curriculum specifically based on environmental legal literacy. Existing studies have addressed environmental participation, ecological citizenship, environmental care, sustainability education, curriculum integration, instructional coherence, and digital or place-based learning; however, fewer studies have integrated these strands into a coherent curriculum model centered on legal awareness, legal empowerment, rights-claiming, environmental duties, green criminal literacy, and performance-based evaluation. This gap is particularly important in educational systems where environmental law is often treated as a specialized subject at higher levels of education rather than as a necessary component of general citizenship education. Therefore, identifying the components of such a curriculum can provide a conceptual basis for policy-making, curriculum planning, teacher preparation, and school-level implementation.

Accordingly, the aim of the present study was to identify and explain the components of a curriculum based on environmental legal literacy education using a thematic analysis approach.

Methods and Materials

This study was conducted with the aim of identifying and explaining the components of a curriculum based on environmental legal literacy education using a qualitative approach. The qualitative approach was selected due to the exploratory nature of the topic and the need for an in-depth understanding of the perspectives and experiences of specialists in the fields of education and environmental law. Within this framework, an attempt was made to identify and analyze the dimensions and components

related to environmental legal literacy education in the curriculum by drawing on the views of experts. Braun and Clarke's thematic analysis approach was used to analyze the data. This method is one of the widely used approaches in qualitative research, enabling the researcher to identify, classify, and interpret meaningful patterns and themes within textual data through systematic examination.

Data were collected through semi-structured interviews. This type of interview enables the researcher to guide the conversation within the framework of the research topic while providing participants with the opportunity to express their in-depth views and experiences. During the interviews, questions were raised regarding the dimensions, components, and requirements of a curriculum based on environmental legal literacy education, and the participants' responses, after being recorded and transcribed, were analyzed as the main data of the study.

The participants in this study included experts and specialists in educational sciences, social sciences, and professors of public law and environmental law in West Azerbaijan Province, who were selected because of their expertise and academic experience related to the research topic. Sampling in this study was conducted using both purposive and snowball methods. In the first stage, a number of specialists related to the topic were selected purposively, and then, through their referrals, other experts were identified and added to the group of participants. The final number of participants was determined based on the logic of theoretical saturation. Theoretical saturation is achieved when no new information is obtained from participants during the data collection process and the data become repetitive. After this stage was reached, the data collection process was stopped.

After data collection, the data analysis process was conducted based on the stages of Braun and Clarke's thematic analysis. In this process, the interview data were first read several times so that the researcher could gain deep familiarity with their content. Then, the initial codes were extracted from the data, and similar codes were organized into preliminary themes. In the next stage, by reviewing and comparing the preliminary themes, broader themes were formed, and finally, the main themes of the study were identified and explained. This process helped the researcher extract and interpret the meaningful patterns embedded in the participants' perspectives regarding the curriculum based on environmental legal literacy education.

The demographic information of the research participants across different dimensions is presented in Table 1.

Table 1. Demographic Characteristics of the Experts

Demographic Characteristics	Classification	Frequency	Percentage
Gender	Male		
	Female		
Age	Under 35 years		
	35 to 45 years		
	45 years and above		
Education	Master's degree		
	Doctoral degree		
Work Experience	10 to 20 years		
	More than 20 years		
Total	-	19	100%

Findings and Results

In the first stage of thematic analysis, the data obtained from 19 semi-structured interviews were read repeatedly and actively so that the researcher could become immersed in the depth and breadth of the concepts raised. At this stage, the focus was on the initial identification of the components of a curriculum based on environmental legal literacy education from within the interview texts. After the reviews showed that the responses had gradually become repetitive and no new original point was being raised, the coding process began. From the 19 conducted interviews, 729 initial semantic codes were extracted. The frequency distribution of the codes showed that the experts' participation in explaining the different dimensions of the topic

was active and in-depth, and that the data from the final interviews were mostly aligned with the reinforcement of previous concepts, indicating the achievement of theoretical saturation. This volume of initial codes provided an appropriate basis for organizing concepts at higher levels of analysis.

In the second stage, the initial codes were extracted manually through note-taking and marking meaningful sections of the text. Each meaningful sentence or phrase related to the aim of the study was assigned a conceptual code and placed in an initial category. In this process, an effort was made to record all meaningful data without omission in order to obtain a comprehensive picture of the participants' perspectives. Precise and comprehensive coding at this stage provided the basis for identifying the indicators related to the components of a curriculum based on environmental legal literacy education.

To explain how concepts were extracted from the interview texts, several examples of raw data and the process of converting them into concepts and analytical codes are presented below.

For example, Interviewee No. 1, in response to the first question, stated: "The environmental law course is offered only as an elective and depends on the availability of faculty members, and it has not been offered in our faculty." From this statement, the concept of "the elective status of the environmental law course" was extracted and recorded as code (1). The same interviewee also emphasized that "given the importance of the environment, this course should be offered as a compulsory course, but this has not happened," which provided the basis for extracting the concept of "the necessity of making the environmental law course compulsory" (code 3), reflecting a critical view of the current status of higher education.

In Interview No. 2, the participant stated: "Environmental legal literacy is a set of knowledge, attitudes, and skills that students must learn." From this statement, the concept of "the three-dimensional nature of environmental legal literacy" (code 4) was extracted. The participant further emphasized that "the student must be able to analyze environmental violations and damages," which led to the concept of "the ability to analyze environmental violations" (code 6). The statement "the student must feel responsible toward their own environment and future generations" also served as the basis for extracting the concept of "intergenerational responsibility" (code 8).

In Interview No. 3, one of the experts stated: "Despite Article 50 of the Constitution, practical support for the environment has been weak." From this sentence, the concept of "the gap between the Constitution and implementation" (code 20) was extracted, referring to the distance between legal norms and executive performance. The participant also stated: "Environmental crimes do not have a clearly identifiable victim and have been categorized as minor crimes," which led to the extraction of the concept of "failure to identify environmental victims" (code 21).

In Interview No. 4, the participant defined the curriculum as "a systematic, interdisciplinary, and problem-oriented program designed to empower learners to understand environmental rights and duties." From this statement, the concept of "empowering learners in environmental rights and duties" (code 45) was extracted, which was later placed among the themes related to objectives and competencies.

In Interview No. 5, the interviewee referred to jurisprudential foundations and stated: "Any activity that causes harm to the community of others is religiously prohibited." This statement led to the extraction of the concept of "the no-harm rule" (code 52). The phrase "natural resources as part of public property belonging to the nation" also provided the basis for forming the concept of "natural resources as public property" (code 54).

In Interview No. 8, the participant stated: "Learning should be participatory for children through dialogue, debate, and role-playing." From this sentence, the concept of "participatory learning and role-playing" (code 98) was extracted. The phrase "we conduct process-based and qualitative evaluation instead of test-based evaluation" also led to the concept of "process-based and qualitative evaluation" (code 102), which was used in the section on implementation requirements.

In Interview No. 18, the reference to “Article 24 of the Convention on the Rights of the Child” led to the extraction of the concept of “referring to international documents to explain the right to the environment” (code 155), and the phrase “every Muslim individual must protect the environment” formed the concept of “religious and ethical duty to prevent the destruction of nature” (code 157).

Finally, Interviewee No. 19 stated: “Environmental legal literacy helps individuals become aware of their legal rights in protecting the environment.” From this statement, the concept of “awareness of legal rights and duties for environmental protection” (code 164) was extracted. The participant’s emphasis on “promoting environmental justice” also led to the registration of the concept of “strengthening environmental justice” (code 173).

In the third stage, similar and synonymous codes were compared, merged, and categorized into potential themes. From among the 729 initial codes, after eliminating repetitive cases and integrating overlapping concepts, 110 basic codes were ultimately identified. This stage led to the consolidation of the data and reduced conceptual dispersion, providing a clearer semantic structure of the findings.

In the fourth stage, the themes formed were reviewed at two levels: first, at the level of the coded data, and then in relation to the entire data set. In this review, the internal coherence of each theme and its distinction from other themes were examined in order to produce a coherent thematic map. The result of this process was the formation of organizing themes that encompassed value-based and normative dimensions, structural and policy-making challenges, content-related requirements, action-oriented dimensions, as well as teaching–learning and evaluation methods, thereby presenting a coherent narrative of the data.

In the fifth stage, the final themes were defined, explained, and named. At this stage, the nature of each theme was precisely identified, its conceptual boundaries were clarified, and its relationship with other themes was analyzed. Thus, the final structure of basic, organizing, and overarching themes was formed, and the conceptual framework required to explain the components of a curriculum based on environmental legal literacy education was developed.

Table 2. Stages of Converting Basic Codes into Overarching Themes

Overarching Theme	Organizing Theme	Basic Codes
1. Foundations, necessity, and philosophy of the model	1.1. Religious, jurisprudential, and ethical foundations	The right to a healthy environment; jurisprudential foundations and Islamic law; optimal consumption and avoidance of wastefulness; Islamic worldview of protection; environmental justice as protection
	1.2. Strategic necessity and intergenerational justice	Strategic necessity and importance; intergenerational responsibility; sustainable development education; futures thinking in law; compensation-oriented approach to violations; education for protecting planet Earth; use of international experiences
2. Analysis and critique of the current situation: challenges	2.1. Policy-making and macro-structural challenges	Structural critique of the existing educational system; components of environmental legal literacy; critique of the focus on postgraduate education; absence of an independent undergraduate course; deficiency in macro-level policy-making; identification of environmental violations; independent course unit as a proposal
	2.2. Content-related and methodological shortcomings	Challenge of translated literature; critique of the dominance of theoretical education; dominance of knowledge-based objectives as critique; inadequacy of traditional teaching methods; abstract nature of concepts as a challenge; content coherence of textbooks
	2.3. Weakness of infrastructure and professional competence	Need for training specialized teachers; empowerment of school stakeholders; physical infrastructure of schools; professional competence of teachers
3. Expected objectives and competencies	3.1. Legal empowerment and rights-claiming	Strengthening informed rights-claiming; legal empowerment of citizens; granting agency to students; cultivating responsible citizens; protective and participatory attitudes; linking awareness with social action; activism and civic participation; awareness of citizenship rights
	3.2. Green criminal literacy and	Identification of environmental violations; legal thinking skills; green criminal policy and criminalization; rights of environmental victims; secondary environmental crimes; education of fundamental green concepts

	identification of violations	
	3.3. Development of responsible attitudes and activism	Prevention of environmental harm; internalization of values in childhood; environmental ethics and justice; culture of lawfulness; challenges of urbanization and development; triangle of knowledge, motivation, and skill
4. Principles governing content and syllabi	4.1. Knowledge of national and international laws	Linking education with legislation; education on national laws, including the Constitution; international conventions; education in schools as the current status; compulsory nature of the curriculum; commitment to law and enforcement guarantees
	4.2. Biophysical knowledge and connection with nature	Education on the rights of nature and animals; biophysical knowledge of the environment; self-knowledge through nature; environmental and personal hygiene; energy and fossil-fuel pollution; position of the environment in the sciences; waste and garbage management
	4.3. Localization and alignment with regional needs	Localization and regional needs; management of environmental crises; localization of content based on local issues; critical analysis of laws; linking education with policy-making
	4.4. Interdisciplinary integration and practical application	Practical and non-specialized education; interdisciplinary nature of the curriculum; integration into mathematics and other subjects; share of environmental content
5. Teaching-learning strategies: methods	5.1. Participatory and interactive learning	Active and interactive learning; participatory teaching methods; teacher's facilitative role; familiarity with responsible institutions; informal education and family; role of non-governmental organizations (NGOs); legal debates and dialogues; role play; school-community linkage; festivals and competitions
	5.2. Experience-based learning and simulation	Innovative educational approaches, including field-based and experiential methods; problem-based learning; simulation, including environmental court; analysis of policy impacts; case studies; education from preschool; direct experience with nature; advance organizers in education; green curricula; new ecocentric system of thought; longitudinal process of knowledge acquisition
	5.3. Innovative methods, narration, and media	Use of media and technology; multimedia and digital education; storytelling and scenario development
6. Implementation requirements and evaluation system	6.1. Process-based and performance-based evaluation	Performance-based and qualitative evaluation; project-based evaluation; formative and process-based evaluation; portfolio; self-assessment and peer assessment; inquiry and research skills
	6.2. Dynamism, flexibility, and continuity of the model	Institutional and cultural dimensions; dynamism and flexibility of the curriculum; ethical decision-making; gradual nature of education based on age

In the fifth stage of thematic analysis, after reaching a satisfactory thematic map, the process of reviewing and final defining of the themes was conducted so that the nature, conceptual boundaries, and relationship of each category with other themes could be precisely identified. At this stage, by examining the degree of overlap among the organizing themes and their relationship with the overarching themes, the internal coherence of the analytical structure was evaluated. The results of this review showed that the extracted themes possessed desirable conceptual coherence and could provide a coherent narrative of the research data. Accordingly, the overarching themes, as the macro level of analysis, formed the general framework for interpreting the findings and explained how meaning was formed at different levels of the data. Finally, the thematic map of the study consisted of six overarching themes, each encompassing a set of related organizing themes and representing different dimensions of environmental law education in the educational system.

In the sixth stage, the final analysis of the data was conducted and the research report was developed. At this stage, the extracted codes and themes were organized and interpreted coherently in order to present a clear picture of the research findings. The results showed that a total of 729 initial semantic codes were extracted from the analysis of the interview data, which, after merging similar concepts and eliminating repetitive cases, were organized into 110 basic codes. These codes were then classified into 18 organizing themes and ultimately arranged under 6 overarching themes. Thus, the final structure of thematic analysis provided a conceptual framework for explaining the components of a curriculum based on environmental legal literacy

education. It should be noted that the extracted themes resulted from the analysis of this study's data, and their interpretation is valid within the framework of this study.

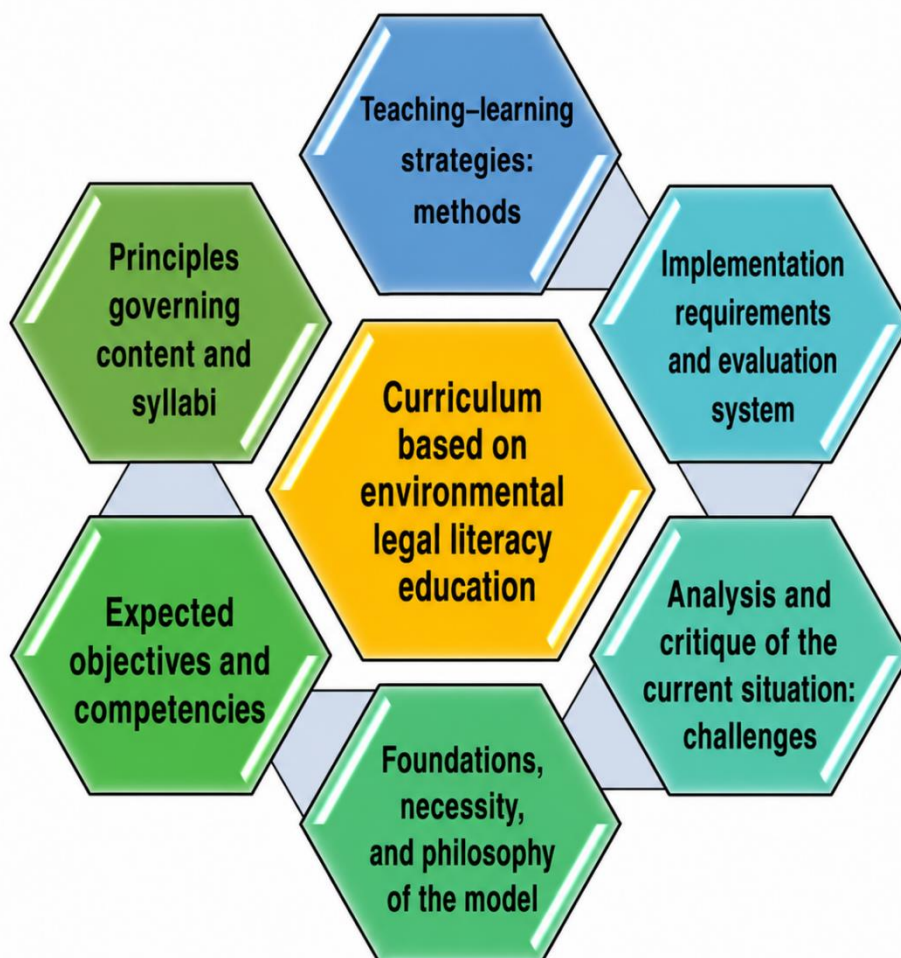


Figure 1. Conceptual Model of the Study

Discussion and Conclusion

The present study aimed to identify the components of a curriculum based on environmental legal literacy education using thematic analysis. The analysis of 19 semi-structured interviews with specialists in educational sciences, social sciences, public law, and environmental law led to the extraction of 729 initial semantic codes, which were refined into 110 basic codes, 18 organizing themes, and 6 overarching themes. These overarching themes included foundations, necessity, and philosophy of the model; analysis and critique of the current situation; expected objectives and competencies; principles governing content and syllabi; teaching-learning strategies; and implementation requirements and evaluation system. Overall, the findings indicate that environmental legal literacy cannot be reduced to the simple transmission of legal or ecological information. Rather, it requires a coherent, interdisciplinary, value-oriented, and action-based curriculum capable of linking environmental knowledge, legal awareness, ethical responsibility, civic participation, and practical competencies. This result is consistent with studies emphasizing that environmental education should move beyond fragmented knowledge delivery and be designed as a systematic curriculum for developing environmental citizenship, responsibility, and participatory capacity (1-3).

The first overarching theme, namely the foundations, necessity, and philosophy of the model, showed that the curriculum should be grounded in religious, jurisprudential, ethical, legal, and intergenerational principles. The participants emphasized concepts such as the right to a healthy environment, Islamic jurisprudential foundations, environmental justice, intergenerational responsibility, sustainable development education, and the protection of planet Earth. This finding suggests that environmental legal literacy education must be built on a normative foundation, because legal literacy in this field is not merely technical knowledge about regulations; it is connected to moral judgment, public responsibility, and the recognition of environmental protection as both a legal and ethical obligation. This interpretation aligns with research on moral education curricula, which emphasizes the role of ethical foundations, value formation, and culturally grounded principles in curriculum design (16). It is also consistent with studies showing that environmental care and character education can strengthen students' sense of responsibility toward nature and society (17). Furthermore, the philosophical and ethical orientation of the extracted model is supported by recent work on integrating environmental themes into philosophy education, where environmental learning is presented as a field for critical reflection on human responsibility, ecological justice, and the meaning of sustainable life (15).

The second overarching theme concerned the analysis and critique of the current situation. The findings showed that the current educational system suffers from structural, policy-related, content-related, methodological, and infrastructural shortcomings in environmental legal literacy education. Participants referred to the absence of independent curriculum units, the dominance of theoretical instruction, the weakness of teacher preparation, lack of coherent educational policy, insufficiency of localized content, and the limited position of environmental law in general education. These results are consistent with prior studies indicating that environmental education in existing curricula is often insufficiently integrated, weakly implemented, or limited to partial and descriptive content (5). The finding also aligns with research on the misalignment between intended, implemented, and achieved curricula in environmental education, which shows that the existence of official curriculum goals does not necessarily guarantee effective classroom implementation or desirable learning outcomes (6). Therefore, the present study extends previous findings by showing that the challenge is not only environmental education in general, but specifically the lack of legal, civic, and rights-based dimensions within environmental education. In other words, the current curriculum gap is both ecological and legal.

The third overarching theme, expected objectives and competencies, emphasized legal empowerment, rights-claiming, green criminal literacy, identification of environmental violations, civic participation, responsible attitudes, and the internalization of environmental values. This result shows that the proposed curriculum should aim to produce learners who are capable of understanding environmental rights and duties, recognizing environmental harm, analyzing legal and social consequences, and engaging in responsible environmental action. Such a competency-oriented view is consistent with studies on ecological citizen curricula, which highlight the need to cultivate responsible, participatory, and environmentally aware citizens through formal education (3). It also corresponds with research on students' environmental participation, which demonstrates that participation develops when schools provide appropriate opportunities, supportive leadership, and practical engagement experiences (18). In this regard, the present findings suggest that environmental legal literacy is a higher-order form of environmental competence because it connects knowledge with civic agency and legal action. This result is also aligned with studies showing that green curricula can shape pro-environmental behavior and environmental values when sustainability is embedded in learning objectives and educational experiences (9).

The fourth overarching theme, principles governing content and syllabi, indicated that the curriculum content should include national and international environmental laws, constitutional principles, international conventions, rights of nature and animals, biophysical knowledge, environmental health, energy and pollution, waste management, regional environmental issues, critical

analysis of laws, and interdisciplinary integration. This finding confirms that the content of environmental legal literacy education must be multilayered. It should include legal knowledge, environmental science, social analysis, local environmental problems, and applied decision-making. This is consistent with studies emphasizing the integration of environmental education into curricula through practical, contextualized, and research-based elements (10). It also aligns with work on local-value-based environmental education, which argues that environmental curricula become more meaningful when connected to local culture, community needs, and students' lived environments (11). Similarly, studies on place-based and eco-art curricula have shown that direct connection with place and environment can strengthen empathy, environmental understanding, and responsible behavior (12). In the same direction, place-based energy literacy curriculum indicates that students' environmental learning improves when abstract environmental concepts are connected to real energy issues in their surroundings (13).

The findings also showed that content localization and attention to regional environmental needs are essential components of the proposed model. This result is important because environmental legal literacy should enable students to understand not only general environmental rights but also the specific environmental risks, institutional responsibilities, and legal challenges of their own region. Localized curriculum content helps learners interpret environmental problems as real social and legal issues rather than distant scientific concepts. This finding is also compatible with Indigenous and culturally responsive approaches to environmental sustainability curriculum, which emphasize that environmental education should confront dominant universalistic assumptions and incorporate local, Indigenous, and relational understandings of sustainability (14). Therefore, the present study supports the view that environmental legal literacy education should combine universal legal and environmental principles with local ecological knowledge, cultural values, and region-specific environmental concerns.

The fifth overarching theme addressed teaching–learning strategies. The results indicated that environmental legal literacy education requires active, participatory, interactive, experiential, simulation-based, media-based, and problem-oriented methods. Participants emphasized dialogue, debate, role-playing, environmental court simulation, case study, problem-based learning, direct experience with nature, school–community linkage, cooperation with NGOs, storytelling, scenario development, and digital technologies. This finding is consistent with outdoor and environmental education literature, which highlights the importance of experiential learning, direct engagement with place, and reflective activity in environmental curricula (19). It is also consistent with studies showing that self-management-based environmental curricula can help students regulate their behaviors and develop more responsible environmental action (4). From a curriculum implementation perspective, this result is further supported by research on instructional coherence and blended learning environments, which emphasizes that teaching methods must be aligned with curriculum goals, learning tasks, and assessment procedures (8). Thus, environmental legal literacy education cannot be effectively implemented through traditional lecture-based methods alone; it requires pedagogies that transform learners into active interpreters, decision-makers, and participants in environmental legal issues.

The role of digital and hybrid learning environments was also reflected in the findings through the emphasis on media, technology, multimedia education, and digital learning tools. This result is consistent with contemporary studies showing that cyberspace can create opportunities for more flexible, interactive, and resource-rich learning environments (20). It is also aligned with research on brain-compatible electronic learning environments, which demonstrates the potential of well-designed digital learning contexts to support students' executive functions and learning processes (21). In addition, experiences with virtual learning environments during the COVID-19 pandemic confirm that digital platforms can support curriculum continuity and student engagement when they are pedagogically structured and aligned with learning needs (22). However, the findings should also be interpreted in light of studies that identify both opportunities and challenges in e-learning, including issues of

infrastructure, access, interaction, and teacher readiness (23). Therefore, digital tools should be used as supportive instruments for environmental legal literacy, not as substitutes for experiential, participatory, and community-based learning.

The sixth overarching theme concerned implementation requirements and the evaluation system. The findings showed that implementation requires institutional support, teacher professional competence, school infrastructure, cultural readiness, curriculum flexibility, gradual age-based education, and process-based, qualitative, performance-based, project-based, portfolio-based, self-assessment, and peer-assessment approaches. This result reinforces the idea that environmental legal literacy should be evaluated not only through written tests but through learners' actual ability to analyze environmental issues, participate in problem-solving, conduct inquiry, make ethical decisions, and demonstrate responsible action. This finding is compatible with curriculum design models that emphasize coherence among aims, content, pedagogy, learning environment, and assessment (7). It also aligns with future-oriented curriculum approaches, which argue that curriculum design should anticipate future competencies, social changes, and emerging institutional needs (27). In addition, resilience-based curriculum studies show that environmental scanning, adaptability, and preparation for complex risks are necessary for curriculum development in uncertain contexts (28). Therefore, the implementation of environmental legal literacy education requires an adaptive and sustainable curriculum system rather than a static syllabus.

Finally, the findings can be understood in relation to the broader environmental conditions of educational institutions and learners' developmental contexts. Studies on the green and thermal environmental quality of educational institutions indicate that educational spaces themselves are part of the environmental learning experience and can influence how students perceive sustainability, health, and environmental quality (24). Likewise, research on environmental risk factors suggests that environmental conditions affect child development and educational achievement, thereby making environmental protection directly relevant to educational equity and learner well-being (25). The importance of students' connection with nature is also supported by research on naturalistic intelligence and environmental sustainability, which highlights the role of nature-related capacities in sustainability-oriented education (26). Consequently, the proposed curriculum model should not be understood as a separate instructional package, but as part of a broader educational management strategy that connects curriculum, school environment, citizenship education, legal empowerment, and sustainable development.

This study had several limitations that should be considered when interpreting the findings. First, the data were collected from experts in West Azerbaijan Province, and although the participants had relevant academic and professional expertise, the findings may not fully represent the views of specialists in other provinces or educational contexts. Second, the study used a qualitative thematic analysis approach, which provides depth and conceptual richness but does not allow statistical generalization. Third, the data were based on interviews, and therefore the findings reflect participants' perceptions, interpretations, and professional experiences rather than direct observation of curriculum implementation in schools. Fourth, students, teachers, curriculum planners, and policy-makers were not all included as separate participant groups, which may have limited the diversity of perspectives on the practical implementation of the proposed model.

Future studies should examine the proposed curriculum model in different educational levels and geographical contexts to determine its transferability and contextual adaptability. Quantitative and mixed-methods studies can be conducted to validate the identified components and examine the relationships among foundations, objectives, content, pedagogy, implementation requirements, and evaluation indicators. Future research may also design and pilot an instructional package based on environmental legal literacy education and evaluate its effects on students' legal awareness, environmental responsibility, civic participation, and problem-solving skills. Comparative studies across different countries or regions can also provide deeper insights into how environmental legal literacy curricula may be localized while remaining aligned with international environmental principles and educational standards.

Educational policy-makers and curriculum planners should consider environmental legal literacy as an essential component of citizenship education and integrate it systematically into formal curricula. Teacher training programs should prepare educators to teach environmental rights, legal duties, environmental ethics, and participatory problem-solving through active and experiential methods. Schools should use project-based learning, environmental case analysis, role-playing, simulated environmental courts, field visits, and community-based activities to connect legal concepts with real environmental issues. Evaluation should move beyond written tests and include portfolios, student projects, peer assessment, self-assessment, and performance-based tasks. Finally, successful implementation requires coordination among schools, universities, environmental organizations, legal institutions, local communities, and policy-making bodies.

Acknowledgments

We would like to express our appreciation and gratitude to all those who helped us carrying out this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

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