ENVIRONMENTAL EDUCATION IN THE NATIONAL JORDANIAN CURRICULUM

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Formal education systems supported by suitable resources, teaching material and trained educators can play a great role in influencing the youth’s knowledge about and attitudes towards environmental issues. Within Jordan’s national education system, environmental education is still considered a relatively new subject that has been addressed only modestly.

Environmental education concepts were first introduced in Jordan’s national curriculum in 1996 by the UNDP. At this time, a conceptual framework was prepared for all environmental concepts that needed to be tackled in the textbooks. In 2003, the Water Efficiency and Public Information for Action (WEPIA) program surveyed the national curriculum specifically for learning material related to water. Based on the mapping of textbooks in five subjects, a total of 524 water concepts were found in the curriculum and about 100 concepts were inserted or revised in the textbooks, of which 13 were put online.

In 2015, the World of Letters team conducted a study to evaluate the concepts of water, energy, and solid waste that exist in the curriculum and the manner in which they are tackled. This mapping was a follow up to the mapping conducted in 2010 by the Public Action Project (PAP), and revealed negligible differences, as the textbooks were not changed during that period. The mapping was based on the three themes of the study: water, energy, and solid waste. In order to develop a holistic approach, the three themes were categorized under six main environmental education principles. These principles form the conceptual framework, based on which the mapping was conducted. Each mapped concept was classified under the environmental education objectives of knowledge, attitude, skills, participation and ethics.

A comprehensive survey of 104 school textbooks from grades 1-10 in 14 subjects was conducted in the subjects of Arabic, English, mathematics, social studies, history, geography, Islamic religion, vocational education, civic education, art, science, physics, chemistry, biology, and geology. The mapping of concepts required a specific methodology to ensure useful and accurate results. Environmental education (EE) goals were formulated initially. Based on the formulated goals all other educational concepts were organized in reference to the outlined goals.

The established goal of environmental education is to make students knowledgeable and environmentally aware citizens willing to act locally and collectively from an intrinsic motivation to defend and sustain the environment for future generations. The main analytical framework for mapping EE, classifies concepts into five main categories: perceptual awareness, knowledge, environmental skills, environmental participation, and environmental ethics.

- Perceptual awareness occurs when students appreciate and acquire sensitivity to the natural and human-made environment.
- Knowledge helps students acquire the foundation to understand and comprehend environmental systems. This is essential for taking environmental action.
- Environmental skills help students develop proficiency in identifying, investigating, communicating, and being prepared to take action for the prevention and resolution of environmental issues.
- Environmental participation helps students apply the acquired perceptual awareness, knowledge, and

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environmental skills and ethics to take action for the prevention and resolution of environmental issues at various levels of society.

- Environmental ethics are used to develop universal ethics that students can act upon regardless of their culture and religion. Thus, students are motivated by their ethical values to practice positive environmental behavior.

Results of the survey showed that environmental education concepts were vastly covered in all subjects of the study with a total of 1777 concepts. While there were more water (1045) than energy (463) and solid waste concepts (269) in the curriculum, most focused on scientific facts and information and were often repeated. Solid waste concepts were few, and lacked the depth required to promote real understanding. These concepts were often delivered as add-ons to topics. The sequential development of the water concepts was more adequately developed compared to that of energy and solid waste. While energy concepts were repetitive and did not follow a sequential flow, those of solid waste were few and scattered. Important concepts that tackle issues of the social, political and economic implications of environmental issues, as well as sustainable development, were vastly missing.

The greater, more sequential presence of water concepts was mainly due to an earlier WEPIA project that was carried out at the Ministry of Education in 2004. Despite the fact that the curriculum underwent several reforms and reviews following this project, the curriculum division kept these concepts in the textbooks, recognizing their significance.

Even so, while conducting a survey of youth, it was clear that behaviors and attitudes of youth were not dependent on the amount of knowledge they acquired. Thus, any gap in information regarding solid waste and energy, even if integrated in the curriculum, would have little influence on children’s behavior. It is thus recommended that instruction sessions be conducted with curriculum division members in order to influence the curriculum while carrying out more substantial projects that have real influence on attitudes and behaviors of youth.

Finally, Jordanian textbooks put great emphasis on information and knowledge while less attention is dedicated to the synthesis and application of this information. Concepts therefore remain only superficially tackled. In addition, the ethical dimension is virtually absent from the current curriculum. Students need to seek better understanding of the ethical imperatives needed to
keep nature alive, and to translate those imperatives into real action.

Figure 2 shows that three themes covered in the textbook, namely water, energy and solid waste, appear mostly as knowledge. Skills were present but to a lesser degree. Most of the skills covered were in the form of asking a critical question at the end of the unit/lesson, conducting research, writing about visits to institutions, and comparing and reading graphs and figures. These were stated as activities, but a thorough explanation of the methodology needed to implement such activities was not described, nor did any evaluations follow. In sciences, most of the skills were in the form of experiments, researching, and drawing graphs and charts. In lower grades, the emphasis was on drawing pictures, comparing photos of behaviors, as well as some sorting exercise. In vocational education, some higher skills were introduced such as making electrical circuits or applying water quality testing techniques, but these skills remained minimal. In the subject of geography, most skills focused on drawing maps, researching, suggestions for field visits, and some critical thinking questions that need researching. Solid waste concepts had the highest skills compared to the number of concepts, mainly because these concepts were introduced as add-ons to subjects and often were in the form of “to do and not to do” situations.

Attitudes were tackled in the form of situations and selecting positive behavior. While students may select positive behavior to receive a high grade, this does not mean that they actually believe in it, let alone practice it. Furthermore, most of these situational questions came as add-ons and did not follow a progressive thought. To change attitudes, authors of textbooks need to align the environmental values with the values already shared by students and with the collective values of society. By making environmental ethics relevant to youth by relating it to their personal ethics and culture, students will genuinely assume the environmental values, making them an intrinsic, ingrained part of youth and thus future leaders. This progression and method of making the environment pertinent is missing from textbooks.

It is thus recommended to explore the inclusion of an ethical, value-based program to complement the knowledge-based environmental education program that is currently found in the textbooks.

The environmental ethics guiding principles as defined by the Center for Environmental Ethics and Law2 (CEEL) are as follows:

1. Promote ecological solidarity between humans
Key findings from the mapping of environment in the curriculum in Jordan

- Environmental Education concepts are adequately, if not vastly, covered in the national textbooks. However, some concepts have greater emphasis than others. For example, water concepts are covered more extensively than energy concepts and solid waste concepts. This reflects the effects of the WEPIA project, and the concepts introduced to the curriculum as a result of it.
- Water concepts are covered in abundance despite the curriculum reform that occurred after the WEPIA project. This indicates a change in the attitude and approach of the curriculum division members after the completion of the earlier project.
- Based on the mapping survey, knowledge remains the dominant form in which environmental concepts are tackled, with skills as the second most common form of presentation. Participatory and ethical approaches are virtually absent from the current curriculum.
- The textbook mapping reflected the source of much of students’ vast knowledge, but the lack of hands-on activities prevented a genuine, meaningful connection to environment. Furthermore, the methodology of the current textbook does not allow for the integration of these concepts in an interactive manner that promotes higher thinking skills and greater participation.
- When evaluating the scope and sequence chart, it was found that water themes followed a systematically developed sequence of concepts through grade levels and subjects. However, while energy concepts are vastly covered, the concepts appear scattered and un-sequenced. At times energy concepts are loaded disproportionately into one grade (e.g., grade 10). Finally, the solid waste concepts were fewer and scattered without much consideration of development over grade levels.
- In all concepts surveyed there has been greater emphasis on demand management techniques and the role of individuals in conservation. However, these concepts are presented in a stand-alone, superficial fashion, delivered in the form of brute facts that often lack the requisite knowledge base or the depth of exploration and practical application needed to change values and attitudes.
- Concepts that are scientific in nature are more extensively covered with greater depth and understanding. Other concepts that emphasize a social, political or cultural dimension of the theme under study are minimally covered, typically in the form of pure knowledge, lacking the inquiry-based learning that shapes attitudes and values. For example, natural ecosystems are covered most frequently in all textbooks, followed by demand management concepts. Concepts related to sustainability are covered least frequently.

and nature, with the obligation to respect and the compassion of love as the basis for genuine care of living beings, places and people: love for the beauty and gift of the natural world with all of its living diversity; love for our places and our homes; and love for the people of today and tomorrow.

2. Support universal human rights and efforts for social, economic and environmental justice.

3. Recognize the danger in the commodification of life, the appropriation of life processes and the synthetic creation of new life forms being introduced into the biosphere.

4. Maintain, promote and nurture bio-cultural diversity.

5. Foster local and regional alliances that recognize the knowledge and understanding that each has to contribute.

6. Recognize that the application of scientific knowledge is not value-neutral.

Finally, teachers are considered role models and represent the real agent of change to any attitude or behavior, and can shape ethical behaviors themselves. In order to make the environmental ethics program effective, comprehensive and intensive training programs need to be developed for educators.

NOTES

1. https://sites.duke.edu/eelandscape/round-i/tbilisi-goals-and-objectives/

2. https://www.environmentalethicsand-law.org/