The Educational Program Analysis of Iran’s Elementary School Science Books from 1st Grade to 6th Grade

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Abstract

Teach and nurture or similarly education and training has a broad and complex meaning and usage, and as a result is ambiguous. In the definition of this concept, not only among the public, but also there is a disagreement among experts. Also concepts such as literacy training, internship, breeding, nurture, discipline, socialization, and etc. are also considered as a part of «Teach and Nurture or similarly Education and Training » or are overlapped with it. Therefore, the aim of this research in this regard is to investigate The Educational Program of Iran’s Elementary School Science Books from 1st Grade to 6th Grade in a descriptive way.

Keywords: Education, Program, Elementary School, Science Books.
1. INTRODUCTION

So far, a single or comprehensive definition of this has not been achieved and experts, each presented a definition of it based on their own ideas and experiences. Regarding the concept of «Teaching and Nurturing or similarly Education and Training » it should be kept in mind that this concept is not confined to particular individuals, time, place, or action. Meaning that specifically «Teaching and Nurturing or similarly Education and Training » is not limited to particular school, children, or course teaching, but «Teach and Nurture or similarly Education and Training » is for all, and at any time (from cradle to grave) and in any place. However, this definition can be taken that since children are born illiterate, ignorant and uninformed of their own community’s culture, to learn their culture, norms of adult’s behavior, learning the skills, finding their role in society and achieving their goals, they need to be thought and this education and training is responsible for the process of guidance and deliberate direction of human experiences.

When an individual matures, his educating approach changes. He should not keep on imitating from adults anymore but instead has to make his behavior standard and regularized. In the time of maturity to be separated from childhood environment, individuals experience «initiation rituals». Matured person may separate from his family and be sent to a camo with other newly matured individuals. The reason for this separation is that the individual reduce his dependence on his family and establish himself in regards to socialization and emotions in a wider tribal culture environment. Teachers are in this initiation ritual whom the individual does not know, in fact, are relatives of the individual which have not been seen by individual before. Initiation ritual is not generally practical but inside it cultural values, tribal religion, myths, philosophy, history, rituals and customs and other information are taught. This ritual (specially the religious part of it) has the utmost importance and has been the requirement for joining the tribe.

In the teaching-learning process textbook is of particular importance and activities and educational experiences are arranged around the textbook under the guidance of teacher and with participation of students. Realizing this, reconstruction and improvement of the content of textbooks is inevitable in every educational system because with examining and criticizing the content of the textbook with considering and using teacher’s opinions as curriculum implementers it is expected that content of textbook is chosen and organized in a way that fits the need of students and has the necessary academic aspects. For this purpose, editing the principles of criticizing and examining of the textbooks in various dimensions and orientation of co-workers with this principle is necessary: 1- elements of curriculum (objectives, contents, methods and evaluation) 2- confirmation and writing 3- technical structure and educational effectiveness 4- the approach to adjusting textbook’s content, to be used in reviewing of the textbooks.

2. DEFINITION OF CRITICIZING

Exploring and judgement about negative and positive aspects (true and false) of an issue or phenomenon on the basis of reasonable grounds and recognized standards is called criticizing.

Definition of textbook

A set of materials that are specifically compiled on the basis of studying curriculum to achieve the educational and training objectives and is the most important means of education for teacher is called the textbook.

Definition of curriculum

Curriculum is an initiative designed to provide learning opportunities for people under training.

Elements of curriculum

Curriculum includes: objectives, content, methods and evaluation.

Highlights in book review
1- Textbook and objectives
   - The general objectives stated at the beginning of chapters or passages.
   - Compatibility of objectives with existing facilities
   - Coordination of objectives with each other
   - The possibility of realization of objectives
   - Compatibility of objectives with student’s abilities and needs
   - Compatibility of objectives with new academic findings
   - Selection of objectives appropriately in three domains of cognitive, emotional and skills.

2- Textbook and Content
   - Coordination of content with objectives
   - Compatibility of content with student’s abilities and needs
   - Compatibility of content with society’s issues and conditions
   - Compatibility of content with the considered time
   - Consider the sequence in content settings (from easy to difficult, from part to total, etc.).
   - Consider vertical relation of the lessons of the same book
   - Consider vertical relation of books in grade
   - Horizontal relation between textbooks of the same grade
   - Compatibility of content with active teaching methods
   - The ability to present in a real classroom situation
   - Compatibility of textbook’s content with existing evaluation methods
   - Solidarity of the entire book through the link between different parts of it
   - Appropriateness of content with new academic findings
   - Compatibility of content with nourishment of creativity spirit in students
   - Compatibility of content with nourishment of logical thinking in students
   - Compatibility of content with nourishment of critical thinking in students
   - Appropriateness of content with cognitive ability (mental) in students

3- Textbook and methods
   - Suitability of method with students’ experiences and abilities
   - Suitability of book in utilizing the methods of improving the thoughts specially the creative and critical thoughts
   - Suitability of the textbooks’ content in terms of group and collaborative activities in learning
   - Adjust content based on active teaching methods.
   - Having appropriate activities such as think, argue, discuss and.....
   - Having divergent sample questions at the end of the lesson or chapter
   - Using the relative examples and instances in the text for a better understanding of the contents

4- Textbook and evaluation
   - Compatibility of textbook’s content with the type, available assessment tools and methods
   - Compatibility of assessment tools and methods in the book with learning principals
   - Compatibility of assessment methods and type in book with student’s characteristics and abilities
   - Compatibility of assessment methods with educational objectives of the book

* Review and criticize of book’s appearances
   - Compatibility of size and dimensions of the book with the educational grade of students
- Compatibility of cover type, its color and cover design
- Compatibility of the type of book’s paper
- Compatibility of the gap between lines
- Having the proper quality of shapes and diagrams in the book
- Academic written language of the book
- The sentence fluency and fluidness
- Having the proper lane
- Considering the distance between paragraphs
- Correct spelling
- Considering the rules of punctuation (comma, point, etc.)
- Compatibility of the words with student’s word treasury
- Mentioning of necessary explanations in footnote
- Shapes and diagrams of the book should not be boring

3. The objectives of teaching science in elementary school

A) Obtaining the necessary knowledge that include the following four fields:
   1- Human Body and its Hygiene (Health Sciences)
   2- Alive Environment (Life Sciences)
   3- Abiotic Environment (Earth Sciences)
   4- Issues related to Energy and Matter (Physical Sciences)

B) Obtaining the necessary skills including:
   1- Observation skill
   2- Communication skill
   3- Measurement skill
   4- Tool Application skill
   5- Anticipation skill
   6- Variables recognition ability
   7- Hypothesized skill

C) Obtaining the necessary attitudes
   1- Respecting order, cleanness in work and appearances, paying attention to surrounding environment, ask questions
   2- Paying attention to other’s kindness, accepting simple responsibilities- being curious and inquiring, taking an active part in the work
   3- Cooperation and accepting responsibility in the group, perseverance in solving the issues—endure the opposite ideas
   4- Having interest in saving the environment, presenting suggestions to solve problems, law abiding
   5- Flexibility and acceptance of mistakes, dare to disagree with false ideas

Different parts of the textbook include:

1- Warning: This section is considered to aim for paying attention to safety, health, prevention and in terms of every one of the academic subjects, tips has been noted to teach the students
2- Historical Note: This section has been proposed with the aim to pay attention to consequence of the culture and history of Iran and the Islamic civilization
3- Thinking station: This section is presented with the aim to pay attention to five dimensional thinking
4- The wonders of creation: This section is presented with the aim to pay attention to the Creator, understanding the greatness of the universe and the wonders of the universe
5- Activities outside the classroom: This activity has been mentioned with aims to transfer learnings to learning opportunities outside the classroom and providing the possibility of obtaining individual and group experiences for the students
6- Work and Technology: This section is presented with the aims to familiarize the students with related jobs to each one of the subjects offered
7- Customs and life skills: This section is presented with the aims to familiarize with some of the traditions and society’s cultural customs and also obtaining life skills required.
8- Science and life: This section is presented with the aims to link student’s knowledge with issues that are presented in their environment

4. BOOKS REVIEW
Chapter one: The Science Hour pages 10 to 13

The overall objective: introducing students to the observation skill
Detailed objectives:
1- Introducing the students to shadow and how it forms in the form of a game
2- Introducing the students to the wonders of creation in the form of tomato slices
3- Introducing the students to light and heavy objects that lay on or underwater

Behavioral objectives: at the end of this chapter students should reach the following objectives
1- Play with his shadow and draw its painting
2- Care to maintain the health of sense organs
3- Respect the order in Q & A activities
4- Classify the objects based on their place either on or under the water
5- Bring tomatoes to the class and cut it and carefully look into it

Teaching methods: to teach this section exhibitive method, role playing and Q & A and projection can be used.
Evaluation: To evaluate this section practical method can be used and with observing and recording them, extent of student’s grasp to attitudinal goals can be measured
Content analysis: the content of this chapter take the students to their goals, but it could have been better that content were more opened and more images were used
Vertical and Horizontal relations: What Students learn about the senses and how to use them specifies the need of math and Persian, Quran and all lessons to a good listening and observing that from them the horizontal relation can be pointed out. In vertical relation also this lesson is respected the science of second and third, fourth, fifth and sixth grade which need are in need for a good observation

Science of second grade
Lesson one: science hour (walk in the park)
The overall objective: Introduction to accurate observation with the help of the senses
Detailed objectives:
1- Introduction to sensing organs and their application
2- Learn how to take notes of own observations
3- Learn how to organize field trips and visitations
4- Introduction to accurate observation of phenomenon in own surrounding environment

Behavioral objectives:
At the end of the course students must achieve the following objectives:
1- While students go to field trips or visitations and they get used to different phenomenon, they should accurately observe their surrounding environment
2- Student take notes from their observations in the field trip and express them with right sentences
3- While students present their report, they should use their notes
4- While students are on a field trip and encounter scientific phenomenon, they should use their sensing organs and apply them in different languages.

TEACHING METHOD:
In exhibitive methods—Q&A—field trip and conference method
Evaluation:
Evaluation of this section is through oral—report preparation—presentation.
Content Analysis:
In this lesson of the book the images are appropriate with the subject of the course but more images can be used from student’s observations of how to use their notes in their life to make students reach their desired goals.
Vertical and horizontal relation:
What students know about the sensing organs
In the first year: introduction to sensing organs and recognizing each one of these organs in their body
In the second year: in the second year the correct application of each one of the sensing organs in their observations in life

Analysis of the content of third grade science book

The first lesson: animal needs pages 10 to 21
The overall objective: introducing students through observing the animals or their pictures with the animal needs for survival
Detailed objectives:
1- Students become familiar with animals habitats and differences.
2- Students become familiar with animals food type by observing their teeth
3- Students become familiar with habits of some animals such as winter hibernation and migration
4- Introducing students with existence of air in water and soil
5- Understanding the needs of animals

Behavioral objectives:
At the end of the course students must achieve the following objectives:
1- By gathering information about animals living location express the differences of their location
2- List the animals needs
3- By comparing animals teeth, determine the type of their food
4- To be interested in studying animals and observing their behaviors
5- To work for saving animals and faunas environment
6- Pay attention to others ideas in group activities

Appropriate teaching methods:
To teach this lesson methods such as conference—demos—Q&A—field trips can be used.
Evaluation:
To evaluate this course practical method have to be used and with the observation and recording of the observations the level of reach of students to their observational goals can be determined.
Content analysis:
In our view the content of this section of the book will take students to their goals but in the section of the need for a suitable place to nest—need for food—need for water no names of the animals have been mentioned or no image has been painted
Vertical and horizontal relation:
What students know about animals:
First grade: animals live either in water or on land, they are either herbivores or carnivores, the type of animal movements differs, some animals build nests and some migrate, humans use animals in different ways.

**In second grade:**
Location of various animals and plants differ from each other, some live in water, some in the woods and some in the deserts. Animals and plants need air to survive.

**Analysis of fourth grade science book content:**
First chapter: structure of living species page 12 to 17

The overall objective: introducing the students to body structure of living species and compare the species

**Detailed objectives:**
1- Familiarizing the students with differences between living and non-living creatures
2- Understanding structural units of living organisms (cells).
3- Introduction to onion skin cells
4- Introduction to the parts of an egg (cell components)
5- Introduction to plant cells and their growth

**Behavioral objectives:**
At the end of the course students are expected to achieve the following objectives:
1- Discussion about the differences between living and non-living creatures and take notes in a table
2- With the help of a microscope, observe the onion cells and draw its shape
3- Introduce different parts of a cell on the picture
4- By observing the shape of cut-leaf cells, understand the differences in cell size and shape
5- Understand the growth and division of cells by observing the image and discussion
6- Become interested in reading about living organisms body structure
7- Actively participate in group activities.
8- In the time of work division, take some responsibilities

**Appropriate teaching methods:**
Q&A—field trips—experiments—demos—conference—brainstorming

**Evaluation:**
In the form of practical and oral and activities outside of class

**Content analysis:**
Text and images will take students to high goals
Vertical and horizontal relation:
First grade: diverse species, the main organs of a plant, root, stems and leaves, plants are each different in regards to root, stem and leaves
Second grade: coating of animals is different, flowers become fruits, and fruit is where the seed is being kept. Seed is composed of different parts. With the seed plantation, new plants grow similar to the first.
Third grade: vertebrate and invertebrate animals- vertebrates are divided into five groups.
ANALYSIS OF FIFTH GRADE:

Chapter one: material structure

The overall objective: introducing the students to the concept of molecules and type of their movement in three states of matter

Detailed objectives:

1- Introduction to materials properties
2- Introduction to concept of molecule
3- Introduction to interpretation of surrounding phenomena
4- Introduction to movement and abstraction of molecules
5- Introduction to the condition of molecules in three states of matter
6- Introduction to unit of molecule structure
7- Introduction to elements and combination

Behavioral objectives: students at the end of this chapter:

1- With observing materials, distinguish and recognize them
2- Earn skills in understanding the concept of molecule through text reading
3- Carefully observe and interpret the phenomena around them
4- By collecting information find out about movement and abstraction
5- Gather information about the state of material molecules in three states (solid-liquid-gas)
6- Earn skills in construction a model and materials or recognizing the material from their model
7- Introducing atom as the building unit of the molecule and explain the difference between element and combination with mentioning an example
8- Feel the sense of responsibility in group activities
9- Be interested in observing the phenomena around them and be curious about them

Teaching methods:
The methods of Q&A—group discussion—demos—conferences—role playing—field trips

Evaluation:
The evaluation of this chapter of the book is in the form of practice—oral(written)—activities outside of class—making reports and researching

Content analysis:
In our opinion the intended content and subjects of the book are really good with respect to the intended objectives, but it was better to put better and more images in each subject

Horizontal and vertical relation: what students know about the material:
In the first year:
In the second year: the name of the things around us is matter and it exist in three states and material has mass and volume
In the third year: the volume of material increases due to heat and decreases due to cold. Materials change their state due to sufficient heat.
Fourth year: the materials exist in the form of mixed or pure, mixtures may be a solution in the water
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