

Image Semiotics in the Book "Our Arabic Language" for the Third Grade in Jordan: An Analytical Study using Human and Artificial Intelligence

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Abstract

This paper focuses on identifying the image semiotics in the textbook "Our Arabic Language" for the third grade in Jordan, employing both human intelligence and artificial intelligence. To achieve the study objectives, a content and semiotic analysis method was adopted using human and artificial intelligence. The study sample consisted of 20 images, which represents the entire study population within the Arabic language textbook for third-grade students. The most prominent results revealed a male bias in terms of the number of characters, functional roles, social roles, talents, and activities. There was a convergence between the semiotic analysis using human intelligence and semiotic analysis using artificial intelligence. The results also showed that there were differences in the results of the semiotic analysis between the use of artificial intelligence and the use of human intelligence. This is because the human analysis connects images with social context and other images, while the artificial intelligence deals with every image separately.

Keywords: Image semiotic, our Arabic language textbook, human intelligence, artificial intelligence

Introduction

Images within the school textbooks hold significant importance due to the meanings and messages they conveyed. They serve as a means of communicating specific messages to a recipient (the student). Authors, artists, and technical committees responsible for textbook preparation should consider these messages to align with both public and private educational objectives, lesson content, and the students' age.

An image, in its simplest meaning, is an attempt to convey reality where the communication process is carried out. It functions as a discourse with multiple meanings that accompany the text, clarifying the intended message. Therefore, the inclusion of clear meanings is crucial to avoid ambiguity for the student in understanding the image's theme and the intended meaning (Saed & Sabti, 2011). An image includes marks, symbols, rules and indications that have roots in the prevailed social and intellectual representations within society. The image semiotic lies in our understanding of these symbols, rules and indications, showcasing our ability to read and understand their significance (Suleiman, 2014).

The importance of an image stems from the fact that it attracts the reader's attention because the sense of sight plays a significant role in terms of human perception and understanding. In instances where words alone may fall short in conveying content, an image becomes essential. It provides vital support to text by offering easy and clear explanations through elements such as color, shape, and lines. Sometimes, an image speaks more eloquently and powerfully than written words by vividly portraying events and embodying them as they are. Images often succeed in confirming information about an event in ways that written words cannot achieve (Suleiman, 2014).

Considered as a document with significant expressive value, an image's semantic function holds equal importance to any other form of text. There are three levels of reading an image and it begins with the enumeration level where a person sees the image and counts its contents. The second level is the description level where a person describes the elements of an image showing its parts, features, and characteristics. The third level is the interpretation level where a person creates a relationship among the elements of the image, and then links them together to form a concept (Bin El Din, 2018).

An image has two functions: a communicative function (analyzed by communication semiotics) and a semantic function examined through semiotics (Kababsa, 2018). According to structuralism, all phenomena are governed by some invisible rules whereby an image has two structures; the superficial structure and the deep one. In order to get the meaning of an image, the meaning should be revealed from a deep structure. As a result, the structuralism attempts to reveal the hidden layer through the rules by

organizing how people interact in a certain social context. The structural semiotics pays more attention to the relationship among elements within the image. Semiotics is often used in analyzing the text, where the text does not necessarily mean a written language. It encompasses anything conveying a message—written language, films, images, and more are all considered texts (Kılıç & Sarıkartal, 2016).

The educational image is different from images in general since it is directed to a definite purpose, which is the image in the textbook. Also, it is attached to educational texts as they perform a major role in directing the educational message and organizing the knowledge network. The educational image is also a method of introducing natural facts about education, thereby providing the viewer (student) with awareness of the difference between the previous information and comparing it to the new impression that emerged from different data (Kababseh, 2018).

Many studies have dealt with the semiotics of image in textbooks. For instance, the study of Paneru indicated that textbooks in Nepal concentrate on settings, personal details, and the use of majority of colors. Textbooks show positive changes in forming images of the book in terms of quality and gender discourses. However, the images included certain religious symbols and a regional culture, instead of cultures, regions, and various religions. It seems that religious, ethnic, and regional minorities and disagreements found in the society were not included in the textbooks. The semiotics analysis of the three textbooks to small learners showed that the textbooks need some corrections based on the child's cognitive development and his sight realization (Sovič & Hus, 2016). The results also show that textbooks that were evaluated did not have an approach or choice of "ethnic-racial" specific "location". It also shows that they are free of bias towards the mother tongue or the target language because the painter did not pay special attention to his language when selecting the images (Jam, Khiabani & Hejazi, 2021).

The semiotic analysis of the images adopted a method depending on analysis based on human intelligence (HI) through the preparation of the analysis tool. Based on this analysis, the researcher analyzed the images according to this tool and reached certain conclusions. Recently, there has been an increase in talking about Artificial Intelligence (AI) and its uses, especially in the field of education and scientific research because of the great benefits it offers. The discovery of AI has led to several controversies as it may be considered the possible rapprochement between humans and machine (Nielsen, 2016).

Although AI brought many benefits to education and scientific research, there are fears of its influence on higher institutions of education. Nowadays, AI can be used in education in various ways such as Chabot, which provide support to students and personal education algorithms that adapt with

every student's needs. These AI tools are also used to analyze large amounts of data in order to define patterns and visions which may be beneficial in developing new educational strategies and policies.

While there are several benefits in using AI in the field of education, there are also moral considerations that need attention. One of the biggest fears is that AI may lead to sustain bias and current discrimination in education. This, however, is in addition to fears the influence of AI will have on students' privacy and information security. Teachers indicated that Chabot is able to generate meaningful replies to the questions of evaluations and exams, and it is often not possible to refer these responses to a certain source, making plagiarism difficult to detect.

Mijwil (2023) indicated that AI became a major tool in the scientific research, and this could help researchers to accelerate data analysis and interpretation process, automate tedious tasks, and define patterns. One of the ways AI has resulted to a revolution in the research process is the acceleration process of data analysis and interpretation. For example, AI can be used to extract basic information from unorganized text such as research papers or legal summaries. It can also create summaries on main points in addition to the use of Chat GPT in helping researchers in writing and generating a scientific article.

The use of AI in scientific research would help scientists on innovations, discoveries, data analysis, and improve experiments. AI is used in scientific writing of research papers through several ways such as text generation, text summary, grammar checking, and literature review. It helps researchers in identifying related studies. It is important to note that AI models are not perfect as they can result in errors or create a text that is not of the same quality as human-written text. The text created by AI may lack creativity and critical thinking of a human researcher. However, AI when combined with human supervision and editing will serve as a useful tool in writing scientific research papers.

One of the most widely used programs in education and scientific research is the Chat GPT program, which is an AI program that generates dialogue. This chat bot uses auto-learning algorithms to process and analyze large amounts of data to generate responses to user's inquiries. This language-processing program can understand human language in both spoken and written form, which allows it to understand what information is being fed and the results it should give. For instance, when a student asks a question, Chat GPT is able to provide a straightforward answer (Bowman, 2022).

Study Problem and Questions

Images are considered a major component in textbooks as, together with the text, they play a significant role in conveying the desired meanings

and semantics to the recipient (student). When selecting the images to be used, it is important to take into consideration the lesson content and the targeted educational outputs (whether they are public or private). Studies related to semiotic analysis of textbooks showed that they need some corrections based on the child's cognitive development and his sight realization (Sovič & Hus, 2016). Hence, the evaluated textbooks have no specific "ethnic-racial" approach and choice of "location". This is because the person who selects the images did not pay special attention to his language during the selection process (Jam, Khiabani & Hejazi, 2021).

The results of the study of Bani Omar (2018) on the type of language books for the first three grades in Jordan showed that there was a bias towards males in the textbooks, and the professions that a woman practices are humble compared to the ones practiced by males. This study analyzed the images of the book "Our Arabic Language" for the third grade in Jordan to identify their components. However, the semiotics of these images is defined using HI and AI in light of the increasing talk about the possibility of using AI such as Chat GPT in scientific research. This is especially because of its capacity to process and analyze great amounts of data. Specifically, the study seeks to answer the following questions:

1. What are the main categories in the images of the book titled "Our Arabic Language" for the third grade in Jordan?
2. What is the semiotics of images in the book titled "Our Arabic Language" for the third grade in Jordan using Human Intelligence (HI)?
3. What is the semiotics of images in the book titled "Our Arabic Language" for the third grade in Jordan using Artificial Intelligence (AI)?

Methodology

The study adopted the descriptive method based on content analysis, as images of the Arabic language book for the third grade in Jordan were analyzed. Here, the image was adopted as a unit for analysis, and its components as categories for analysis. A form was prepared to collect data and monitor averages of categories frequency in the analyzed images. After defining the categories of analysis and its form, the analysis process began by including an analysis of the image and presenting it to the analysis list.

Then, the semiotics analysis method for the units of analysis content was adopted by analyzing them using AI of categories of analysis and Chat GPT program through putting every category in a form of a question through which it is asked to know the semiotics of the image that consists of a specific category of the categories of analysis, noting that this image is found in the book of Our Arabic Language for the third grade in Jordan. The answers of

the program -which were ordered according to main titles - were moved. In order to ensure the credibility of separating the analysis using human intelligence and the use of artificial intelligence, the analysis using (HI) was conducted in advance before conducting the analysis using AI to ensure that the human analyst did not see the results of the analysis using (AI).

The Analysis Process

- Reviewing the book images multiple times for understanding
As highlighted by Saldana (2021), the data present in the images is encoded using the descriptive code method. Thus, this identifies six types of coding: similarity, difference, repetition, sequence, causality, and combinations of these types, depending on the nature of the data.
- Gathering the codes into themes
After encoding the data in the images, the codes were grouped, summarized, and transformed into larger and fewer themes, with similar codes being combined into one group called "Themes."
- Analyzing the themes grouped in "Themes" by the researcher and extracting conclusions from them without referencing the results of artificial intelligence analysis.
- Presenting the themes grouped into "Themes" to artificial intelligence using the Chat GPT program for analysis and extracting conclusions.
- Comparing the conclusions reached by human analysis with those reached by artificial intelligence, leading to differences between the two analyses.

Study Population and Sample

The study population consisted of all the main images at the beginning of every lesson of the book “Our Arabic Language” for the third grade. This was approved by the Ministry of Education to be taught at the beginning of the year 2019. It contains 20 pictures and it came under the following titles:

School trip, which knocks at the window? Basma’s two friends, team sport, how do you love your homeland? This is not allowed, the week of the book, prince of the sea, heart, happiness in giving, on four, let us search, visual call, school activity, water and human, my health habits, heroines from my country, summer vacation, always together, and the city of shapes. The number of images including males and females was 11, images including females were 1, images including males were 4 only, and 4 images did not include people as the entirely study population was taken.

Study Tool

The study tool is represented in a list included the following categories: characters in the images including the sub-categories (according to sex, males

and females together, males or females only), functional roles, social roles, talents and activities and other elements. Hence, they were developed after the preliminary analysis of the images of the book. Thereafter, they were presented to a group of arbitrators to benefit from their opinions in developing the tool.

Procedures for Reliability Analysis

To verify the reliability of content analysis, the researcher conducted an evaluation of her own analysis with a time difference and also compared her analysis with that of another researcher. By employing the method and equation outlined by Azaroff and Mayer (1997), she calculated the percentage of the agreement between the two analyses. Thus, this is regarded as the percentage of agreement between the two analyses. The percentage of the researcher’s analysis with herself was 94%, and the one with the other researcher was 92%. Both percentages are accepted percentages for the purposes of reliability analysis.

Results and Discussion

Results of the First Question and their Discussion: What are the main categories in the images of the book titled “Our Arabic Language” for the third grade in Jordan?

In order to identify the main elements of the images of Arabic language for the third grade in Jordan, the images were analyzed and categorized within the following main categories: characters in the images include the sub-categories (according to sex, males and females together, males or females only), functional roles, social roles, talents and activities, and other elements. Table 1 shows the analysis results of the images of the book “Our Arabic Language” for the third grade in Jordan according to the categories of analysis.

Table 1. Analysis results of the images of the book titled “Our Arabic Language” for the third grade in Jordan according to the categories of analysis

Main categories	Minor categories		
Characters in the images	According to sex	Number of males (40) with a percentage of 62.5%	Number of females (24) with a percentage of 37.5%
	Images including males and females together	Number of males (31)	Number of females (23)
	Images including males or females only	Images including males only (9)	Images including females only (1)
Functional roles	Students (19)	12 with a percentage of (63%) males	7 with a percentage of (37%) females
	A sailor (prince of the seas) standing on the ship and looking at the sea		
	Assistant sailor standing on the mast and looking with a telescope		

	A doctor standing behind an image containing a heart and medical symbols		
	A teacher in the classroom standing in front of students and explaining		
Social roles	Parents (7)	Fathers (4) (57%): a father holding the hand of his son and he is behind him, a father as his daughter standing in front him, a father reading to his daughter, a father searching for information on a tab	Mothers (3) (43%): a mother reading, a mother searching for information on a mobile, a mother celebrating her daughter's birthday, and performs a great role in taking care of her family in the absence of the father because he is ill
	Children (12)	Sons (7) with a percentage of 68%: one standing in the street with his father, two : one reading and the other searching for information in a book, two celebrating, one helps mother carry a plate of food	Daughters (5) with a percentage of 42%: one searching for information in a book, two daughters: one celebrating her birthday, one helps mother carry a plate of food
	Two aunts: the first doing volunteer works , the other using a smart application to contact her niece on her birthday		
Talents and activities	Athletes (12) including (10) males (83%) and (2) females (17%), basketball players 3+2, two children playing football, a boy playing scooter, a girl playing with a rope, a girl playing with a loop, two boys jogging		
	Volunteers works practitioners including three children, two boys (67%) doing volunteers works, a girl (33%) doing volunteers works		
	Children drawing including two girls (50%) and two boys (50%)		
Other categories	A girl sleeping in her room dreaming that she is playing with a deer and a bear		
	A boy eating healthy food		

Table 1 shows that the main analysis categories consisted of five categories (characters in images, functional roles, social roles, talents and activities, other categories), while the sub-category consisted of 16 categories. The first category included characters in the images and the following sub-categories: according to sex, images included males and females together, and images included males or females only. The second category included the functional roles and the following sub-categories: students, sailor, assistant sailor, doctor, and teacher. The third category included social roles and the following sub-categories: parents, children, and two aunts. The fourth category included the talents and activities and the following sub-categories: athletes, volunteer work practitioners, and children drawing. Lastly, the fifth category included the following sub-categories: a child sleeping in her room and dreaming and a child eating healthy food.

Results of the Second Question and their Discussion: What is the semiotics of images in the book “Our Arabic Language” for the third grade in Jordan using Human Intelligence (HI)?

The results related to this question revealed the following:

Characters in the Images

The semiotics analysis of the images showed an increase in the number of males over females in general by 25%, as the number of males reached 40 and the number of females 24. In addition, the images include both males and females together. Thus, the number of males was 31 and that of females was 23. For the images that included males or females only, the number of images including males was 9 and the females only are one image. The numerical superiority of males in the characters of the book’s images indicates a clear masculine superiority confirmed by the excessive citation of male characters at the expense of female characters. However, this may mean to the thinker that this superiority is due to the culture of directed discourse, a culture of masculine discourse to the marginalization of the role of women in society, which launched the features of masculine repercussions and their supremacy to some extent in the textbook. This serves as a great hint at the general dominance of male images in the textbook.

As for reducing the numerical difference to 8 points in images that bring males and females together, this may mean that there is a direction towards achieving justice in the image distribution of representation of males and females. However, this direction still depends on the subjectivity of the authorship teams, and it is not governed by matrix controls or weight tables. As a result, male supremacy in the image distribution remained dominant.

Regarding the presence of 9 images that include only males and one image that includes only females, it once again confirms the repercussions of male bias among the authoring teams, whether this repercussion was intentional or unconscious. However, the authoring and drawing teams of the book are females only (Ministry of Education, 2022), which indicates that females are affected by the prevailing social context in society with the dominance of males. The population of Jordan was 11 million and 302 thousand people. Out of this number, 5 million and 984 thousand people were males with a rate of 52.95%, while 5 million and 318 thousand were females with a percentage of 47.05%. It has a difference of 666 thousand for males at a percentage of 5.9% (Department of Statistics, 2023). Therefore, these figures indicate that the difference in the number between males and females in the Jordanian society does not exceed 5.9%. Also, the reality of population distribution was not taken into consideration in the images of the book.

Functional Roles

The distribution of functional roles in the images of the textbook indicates the continuity of the dominance of the masculine role, its centrality, its importance, and its supremacy over the female role (student, sailor, assistant sailor, doctor). It also indicates the simplicity and traditionalness of female roles (student, teacher). It is probable that this reflects the stereotype in Jordanian society that the appropriate work for women is education (teacher), whereas other professions are suitable for males. Nonetheless, the social reality indicates the presence of women in all functional roles, such as doctor, nurse, engineer, airline captain, judge, policewoman, etc. The question that arises here is why there is still an insistence on showing women in the traditional roles in the textbook despite the development of social life and the change in women's roles?

Social Roles

The semiotics induction of the parents' images in the textbook indicates some intellectual semantics and reflections. This is because the emotional relationship seemed to be clear between the father and son (holding the hand), which is a closed one than the father with his daughters. Here, one of them is standing in front of him, and he reads to another. His other role indicates a shift towards benefiting from technology in researching since it requires new shift in light of the dominance of the infomedia revolution as a new environmental culture. Regarding the role of the mother, it is represented in that she is busy with the phone and organizing birthday celebrations for her children. This indicates the marginalization of the mother's interests and the limitation of her important role in one case, which is the absence of the father, as the care is limited to the father.

As for the role of parents and children, the predominance of the male role remains clear except for the son's help to his mother in carrying the dishes. Here, it is considered as a hint to depart from the usual role and participate in roles limited to females.

With regard to the two aunts, there was an image of the aunt doing volunteer works, and another one using a smart application to contact the daughter of her niece during her birthday. It is noted here that relatives on the father's side are absent, and the images are limited to the relatives on the mother's side. Therefore, this may refer to a social fact that began to appear in the Jordanian society in the recent period, which was sticking to relatives on the mother's side more than the father's side. This is an indicator that the authors of the curriculum do not work according to controls but seeks to create a type of balance among relatives both on the mother and father's side. They also aim to help the student establish a new relationship on both sides, i.e., the father's relatives and the mother's relatives.

Talents and Activities

There were 12 athletes including 10 males (83%) and 2 females (17%). Here, five of them are basketball players, two children playing football, a boy playing scooter, a girl playing with a rope, a girl playing with loop, and two children practicing jogging. The image used in the textbook, which is related to practicing various sports, confirms the predominance of mental assumptions that are not supported by scientific reference. Despite the cultural and social portrayal that perceives women as weak and lacking in abilities, impacting the distribution of sports roles—where difficult sports like basketball, football, scooter riding, and jogging are predominantly associated with males, while females are relegated to simpler and traditional activities like playing with a hoop and a rope—Jordan's social reality demonstrates extensive female participation in various sports. Women actively engage in football, basketball, and handball teams, and the country boasts world champions in karate, taekwondo, and athletics. A woman effectively participates in the various sports, as this confirms that the textbooks authors teams do not depend on specification tables that take into account the tendency to enhance the status of women in society and move away from the stereotyped image of a woman. This limits their sports roles to certain games suiting the cultural and social heritage that witnessed a remarkable change in the recent period. However, the textbook did not rise to the level of this change.

As for the volunteer works practitioners, the images included three children, two of them were boys (67%) doing volunteer works and a girl (33%) doing volunteer works. This is continuity to male bias which appeared clearly in the images of the book.

With regard to drawing talent, the images revealed a group of children drawing, as two of them were girls (50%) and the other two boys (50%). Subsequently, this reflects a balance in the distribution of this talent between males and females. Hence, this may reflect the cultural and social heritage which sees drawing as equal for males and females because it does not require great physical effort.

Other Categories

The textbook contains an image of a little girl sleeping in her room, dreaming that she is playing with a deer and a bear. The repercussions of this image indicate that there is semiotic contradiction in the semantics of images of the dream between meekness and beauty. Thus, this is expressed by the image of the deer in the given image, and the predation and brutality expressed by the image of the bear, which confirms the weakness of the semiotic awareness of the authoring teams to eliminate the contradiction in the image. As for the image of a child eating healthy food, it shows that children should pay attention to eating healthy food in light of the spread of unhealthy food

among children and excessive obesity. Nonetheless, this requires concentration on targeted healthy messages, and it is calculated by the authoring team despite the modest reference to the healthy pattern compared to the size of the problem of obesity and unhealthy food.

Results of the Third Question and their Discussion: What is the semiotics of images in the book titled “Our Arabic Language” for the third grade in Jordan using Artificial Intelligence (AI)?

To identify the semiotics of images in the Arabic Language textbook for the third grade in Jordan, AI was used through Chat GPT program. The images were analyzed to identify the main themes and elements in them. Thereafter, every theme is inserted separately into the Chat GPT program by addressing the theme through a question on the semiotic of the images including the following elements in Arabic language textbook for the third grade, and receiving answers through Chat GPT program. Thus, the analysis revealed the following results:

1. Characters in the Images

A- According to Sex:

The number of the characters in the images was 64: the number of males is 40 with a percentage of 62.5%, and the number of females is 24 with a percentage of 37.5%. Here, the results of the analysis results show the following:

- Male characters occupy more presence in the images, as this representation may be important in reinforcing the positive image for males and the male modes in the society.
- Female characters are considered an important part of the book images, and these images may be an expression of the feminist representation, involving students in stories and experiments of females and reinforcing gender equality.
- Gender Balance: Although of the male characters superiority in the images, the presence of female characters with a percentage of 37.5% indicates that there is some gender balance in the representation. Thus, this could serve as an attempt to encourage students to think about the various gender models, and reinforce gender equality.
- Symbolism and Influence: Characters in the images have certain symbolism that may affect students, encourage them to develop the social skills, and reinforce social awareness and interaction between the genders.

B- Images including Males and Females

The number of males is 31 and that of female is 23. The analysis results showed the following:

- **Balanced Gender Representation:** Presence of 31 males and 23 females indicates that there is some gender balance in the images, and this may aim to reinforce gender awareness, encourage students to think about the various gender models, and reinforce gender equality.
- **Multiple Stories and Experiences:** The presence of males and females in the images reflects diversity of characters and stories that students could identify, and the images can be designed to encourage students to develop the capacities of cooperation and interaction between genders.
- **Educational Messages:** The presence of males and females in the images may be to explain certain concepts or reinforce understanding and communication in the various educational subjects. The various characters can be used to show the individual and cultural differences and to reinforce the acceptance of diversity.
- **Positive Representation:** The positive representation of males and females in the images can be a part of efforts to reinforce the positive image of both sexes, and encourage students to develop the social and cooperative skills between both sexes.

C- T he images including only males were 9, and the images including only females were 1. The analysis results showed the following:

- **-Unbalanced Sexual Representation:** There are clear differences in the sexual representation in the images, as 9 images including males only and one image including one female may reflect unbalanced distribution of the male and female characters in the textbook.
- **Messages of Sexual Diversity:** The single image, including one female, may symbolize the weakness of concentration on the woman's role, and also the weakness of reinforcing the power and importance of females in the society.
- **Educational Pattern:** The use of various images may explain different concepts or reinforce interaction between both sexes in the educational context. The individual male and female images may have certain educational messages related to topics studied in the textbook.

1. Functional Roles

A. This comprises a total of 19 students: 12 of them are males students with a percentage of 63%, while 7 were female students with a percentage of 37%. The analysis results showed the following:

- Representation of both Sexes in the Students' Role: The presence of male and female students in the images reflects diversity of educated students, and it reinforces the balanced presence of both sexes in the students' role. The image may symbolize the power and importance of both sexes in the collective work and learning.
- Reinforcement of Recognition of Diversity: The presence of male and female students in the images can encourage students to recognize diversity and accept differences between the sexes, and the pictures can reinforce the message of cooperation and positive interaction among students regardless of their gender.
- Reinforcement of Positive Models: The representation of students of both sexes may reinforce the positive models and ideal directions in learning, and images may be employed to reinforce values of cooperation and equality, and self- confidence among students.
- Balance of both Sexes and Inclusivity: The presence of a balanced percentage of males and females in the images may contribute to reinforcing equality between both sexes. It would also encourage inclusivity and effective communication in the learning environment.

B. A sailor (Prince of the seas) standing on the ship and looking at the sea.

The analysis showed the following:

- A sailor (Prince of the seas) represents a symbol of the leader or important character in the sea and it may symbolize courage, adventure, power, wisdom, and exploration.
- Determination and ability to face challenges. Thus, it may symbolize new opportunities and unlimited possibilities.
- The sea symbolizes ambiguity, depth, and freedom. It may also represent challenges and difficulties that should be overcome, and it may also serve as a symbol of life, refreshment or calm, and tranquility depending on the nature of the sea in the image.

C. The sailor assistant standing on the mast and looking into the telescope.

The analysis results showed the following:

- The Sailor Assistant: He is considered a symbol for assistance and support, and he may symbolize collective work and cooperation. Thus, this may reflect the need for assistant tools to achieve the goals.
- The Telescope: It is considered a symbol for vision, research, and exploration. It symbolizes the ability to see things, challenges, and opportunities clearly from afar.

E. A doctor behind him and an image including a heart and medical symbols.

- The Doctor: He represents a symbol for health care and medical experience, and he symbolizes science, specialization, and medical skill. He also represents taking care of peoples' health and his desire in helping and treating people.
- The Heart: It is considered a universal symbol for love, emotions, and life. In the context of the image, the heart may represent good healthcare or diseases and heart problems treated by the doctor.
- The Images related to Medicine: They may include images of medical tools such as stethoscopes or medical devices such as blood pressure or x-rays. Therefore, these images may symbolize treatment, diagnosis, and medical monitoring.

F. A teacher in the classroom standing in front of male and female students and explaining.

- The Teacher: She represents authority, knowledge, and educational guidance. She is a symbol for education, counseling, and experience. She depicts the significant role the teacher plays in conveying knowledge and directing students in the learning process.
- Male and Female Students: They represent a symbol for education, intellectual, and social development. Their presence reflects vitality and dynamism in the classroom, and they represent diversity, interaction among students, and cooperation during work.
- Classroom: It symbolizes the formal education environment and study communication. It reflects the required organization and quietness for the learning process. Meeting in the classroom represents the collective work and interaction between the teacher and students in the context of education.
- Explanation: It represents conveying knowledge, explanation, and clarification. It may symbolize the cognitive communication and interaction between the teacher and students. Explanation reinforces understanding, active learning, and exchange of knowledge in the classroom.

1. Social Roles

A. There are a total of 7 parents, comprising 4 fathers (57%) and 3 mothers (43%). Among the fathers, one is seen holding his son's hand while standing behind him, another is standing in front of his daughter, one father is engaged in reading to his daughter, and another father is searching for information on a tablet. Among the mothers, one is observed searching for information on a mobile device, another is celebrating her daughter's birthday, and a third

mother is playing a significant role in taking care of her family in the absence of the father due to illness.

- Family Ties: It is clear that the images show the presence of the parents, and this reflects the importance of family ties and love relationship between the parents and their children.
- The Role of the Father in the Family: There are images of fathers holding the hands of their sons and reading for them. This reflects the major role that the parents play in communication and in educating and teaching the children.
- The Role of the Mother in the Family: There are images of mothers reading, searching for information on a mobile, celebrating their daughters' birthdays or performing a great role in taking care of the family in absence of the father because he is ill. Therefore, this reflects the mother's role in providing care, emotional support, and in contributing in the children's growth.
- Balance between Work and Recreation: The image of a father searching for information on a tab and a mother searching for information on a mobile phone may reflect the importance of balance between work and recreation.

B. There are 12 children in total, comprising 7 boys (58%) and 5 girls (42%). Among the sons, one is seen standing in the street with his father, two are engaged in reading and searching for information in a book, and two boys are celebrating. Additionally, one son is assisting his mother in carrying a plate of food. Among the daughters, one is observed searching for information in a book, two are celebrating, and one is helping her mother with a plate of food.

- Family Communication: It is clear from the images the presence of fathers and sons, as this reflects the importance of family communication and interaction and reinforcement of family ties.
- Education and Searching for Information: There are images of children reading and searching for information in the book, and this reflects the importance of learning among children and encouraging them to explore knowledge.
- Participation and Cooperation: A son is seen assisting his mother carry a plate of food, while a daughter also helps her mother with a plate of food. This reflects the importance of cooperation and participation in daily tasks within the family.
- Family Celebrations: There are images of male sons celebrating and a daughter celebrating her birthday. These images can reflect the importance of family celebrations and reinforcement of joy and positive communication among family members.

C. There are two aunts depicted: one engaged in volunteer work, and another is using a smart application to communicate with her niece on her birthday:

- The Volunteer Aunt: She represents a symbol of giving and pay attention to others, and her interaction in volunteer works symbolizes her desire to serve the society, contribute in improving others conditions, and help others. This, however, may reflect the social values and good spirit.
- The Aunt and the Smart Communication Application: It reflects the use of technology for emotional connection and special celebrations. Using a smart app can symbolize innovation and easy communication at the family level. It reflects the aunt's interest in her niece and her desire to share joy and create family ties.
- Birthday: It symbolizes a happy and festive occasion; it can reflect joy, love, and family communication; and it may symbolize care and attention for family members and respect for family ties.

1. Talents and Activities

A. There are a total of 12 athletes, consisting of 10 males (83%) and 2 females (17%). Among them are 3 basketball players, 2 children playing football, a child on a scooter, a child playing with a rope, a child playing with a hoop, and 2 children jogging.

- Gender Diversity: The presence of 10 male athletes out of 12 indicates gender diversity in the group.
- Diversity in Sports Activities: There is a variety of sports activities in the image, such as basketball, football, scooter riding, rope game, loop game, and jogging. These activities reinforce the importance of diversity and encourage children to practice different forms of physical activity.
- Sportsmanship and Team Play: It is clear from the image that there are basketball and football players, and this can reflect the importance of sportsmanship and team play in developing social skills and team play among children.
- Recreational Activities: The presence of children playing with scooters, ropes, and loops indicates that the textbook may concentrate on reinforcing recreational activities, developing movement, and coordination skills among children.

B. Children drawing, including two girls drawing (50%) and two boys drawing (50%)

- Children: They represent a symbol of innocence, creativity, and intellectual growth. Seeing children in the textbook reflects the

importance of developing their artistic and creative skills. It may express the value of collective work and cooperation in the classrooms.

- Drawing: It symbolizes the artistic and creative expression of children. It can express their artistic and imaginary abilities and creative thinking. Drawing reinforces developing the accurate motor skills, and the ability to express thoughts and feelings.
- A Girl drawing (50%) and a Boy drawing (50%): This distribution may be equal to activity between both sexes to reinforce everyone's capacities for artistic expression. The equal distribution reflects the equivalent between boys and girls in art and creativity.

C. Practitioners of Volunteer Work: Three children including two boys (67%) and a girl (33%) doing volunteer works.

- Practitioners of Volunteer Work: They represent a symbol of giving, sacrifice and contribution to society, pay attention to others and the desire to help and serve them. They may reflect values such as cooperation, solidarity, and initiative.
- Children: They represent innocence, hope, and the generation to come. The presence of two children indicates that volunteer works include all age categories, and it encourages young people to participate in charitable work. Also, they may serve as a source of inspiration and reinforcement of social communication and positive spirit.
- Percentage: The use of the percentage (67% and 33%) helps in directing attention to the details of volunteer work and the distribution of participation among different groups. This symbolic use may have an educational influence, which encourages stimulating social participation and reinforces awareness of the importance of volunteer work.

Other Categories

A. A child eating healthy food

- A Child: This is a symbol of children, growth and development, and it may symbolize health, activity, and vitality. It may also be a symbol of healthcare and encouraging children to eat healthy food and living a healthy lifestyle.
- Healthy Food: It symbolizes food that is useful and nourishing to the body. It represents proper nutrition and healthcare. The image helps to reinforce the awareness of the importance of healthy foods and eating them regularly.
- Textbook: It reflects the educational and cultural context. It can symbolize providing knowledge, information, and teaching children

about healthy nutrition. It reflects interest in learning and developing healthy skills.

B. A girl sleeping in her room and dreaming that she is playing with a deer and a bear

- The Imaginary World and Dreams: Indeed, capturing an image of a girl sleeping and dreaming about playing with a deer and a bear often symbolizes the imaginative world that children can access. This represents the children's ability to get out of reality and create stories and adventures in their dreams. This picture can motivate imagination and creativity among children and encourage them to explore new worlds.
- Nature and Wildlife: The presence of a deer and a bear in dream may symbolize the child's desire to communicate with nature and wildlife. The image may reinforce the environmental awareness, encourage children to protect the wildlife, and keep the biological diversity.
- Happiness and Joy: The image may symbolize the girl's feeling of happiness and joy during her dream of playing with animals. This image reflects the positive and entertaining aspects of the learning experience, encouraging children to enjoy their task.
- Social Interaction and Participation: The image may symbolize the value of social interaction and joint playing among children, and how they enjoy their time together. The image may reinforce cooperation spirit and social interaction in the education environment.

Conclusion

Based on the semiotic analysis of the images in the book titled "Our Arabic Language" for the third grade in Jordan using HI and AI, the following conclusions were drawn:

1. Characters in the Images

HI: It revealed a clear male superiority confirmed by the excessive quotation of male images at the expense of females, and this is confirmed by the images including only males or females. In images featuring both males and females, efforts were made to minimize numerical disparities and ensure equitable representation. This direction could depend on the subjectivity of the painter rather than being governed by specific subjective controls.

AI: The male characters occupy more presence in the images, and this reinforces the positive image of males and male modes in the society. It also reinforces unbalanced sexual representation. The images, including males and females together, indicate a balance in sexual representation, which may reinforce sexual awareness.

Both human semiotic analysis and artificial analysis exhibit similarities, yet human analysis incorporates observations related to the painter of the images in the textbook.

2. Functional Roles

HI: The analysis revealed the superiority of male role and its centrality, importance, and dominance on the female role through the multiple of functional roles of males. Thus, this limits the female role of a student or a teacher.

AI: The focus lies on diversity by featuring both male and female students. However, regarding other functional roles, each role is addressed individually, detached from the context of the images as a whole. For instance, the sailor is symbolized as representing leadership, adventure, and power, while the sailor's assistant embodies help and support. Similarly, the doctor symbolizes healthcare, and the teacher represents knowledge and guidance. It is noted from the human semiotic analysis that there is a tie between the functional roles and gender. While human analysis aimed at connecting these symbols to societal views, artificial intelligence addressed each image individually, interpreting them as expressing specific symbols, regardless of the number of individuals occupying functional roles or their gender.

3. Social Roles

HI: The father's image indicates semantic emotions between the father and brother, which is a more closed relationship in his dealing with the daughter while searching for information using technology. As for the mother, her role was limited to following up using the mobile phone and celebrating her children's birthdays. Her role is limited to care in the absence of the father, and this indicates the marginalization of the mother's role.

The images of the children show a son helping his mother to carry a plate of food, which may indicate getting out of the familiar role and participating in the roles limited to females. This may motivate students to share the mother's role in housework, while the focus on the two aunts reinforces bonding with relatives on the mother's side and ignores relatives on the mother's side.

AI: The images reveal family ties and show the role of father in upbringing and the role of mother in terms of care and emotional support. They point to children as a symbol for family communication, education, participation, cooperation, and family celebrations. On the other hand, the two aunts symbolize giving, paying attention to others, joy, love, and family communication.

It is noted that human intelligence is focused on linking the images to the social context of the Jordanian society in terms of caring for males more than females. This, therefore, reveals new roles for males and is focused on social relationships on the mother's side, while Artificial Intelligence dealt

with every image separately from the rest of the images without linking them to the nature of the Jordanian society.

4. Talents and Activities

HI: The images used in the textbook related to various sports confirmed the dominance of mental assumptions and are unsupported with scientific evidence but with a cultural and social one. This suggests a portrayal of women's weakness and a lack of trust in their abilities, influencing the distribution of sports roles. Difficult sports roles were predominantly limited to males, while easier sports roles were confined to females. Additionally, a male bias is evident in volunteer work, as the participation of females has doubled compared to males in volunteer activities.

AI: It pointed to the gender diversity in practicing various sports, various activities, sport spirit, collective games, and practicing volunteer works symbolizing the giving, sacrifice, and participation in community service. On the other hand, drawing symbolizes innocent and creativity.

It is noted that artificial intelligence dealt with the images separately without linking them to the social context of the Jordanian society.

5. Other Categories

HI: The image of the dreaming child has a semiotic contradiction in the semantics of the image. Thus, the deer indicates gentleness and beauty, while the bear indicates predation and brutality. A child consuming healthy food sends a positive message about prioritizing nutritious eating habits, especially in light of the prevalence of unhealthy food among children.

AI: The image of the dreaming girl indicates the world of imagination, dreams, nature, wildlife, and protection of wildlife. It symbolizes happiness, joy and social interaction, while the child eating healthy food indicates growth, development, health, activity, and importance of nutrition to the body.

Human Intelligence is focused on contradiction in the first image between gentleness and predation. In the second image, the focus was on messages to children about healthy food in light of the spread of unhealthy nutrition habits. As for Artificial Intelligence, it dealt with the first image without linking it to contradiction between gentleness and predation, while the second image is linked to body growth.

6. Analysis using HI: It adopted a comprehensive method linking the images together, and it linked the images with the social context of the Jordanian society.

7. Analysis using AI: It dealt with every image separately from the rest of the images. It also adopted a detailed method to every image including the analysis sub-elements such as sexual balance, sexual representation, positive representation, educational pattern, family ties and the imaginary world, etc.

8. The semiotic analysis employing Artificial Intelligence (AI) can serve as a valuable support and monitoring tool for Human Intelligence (HI) in

interpreting images. The analysis using AI might offer directions or insights that could influence the human analysis.

Recommendations

- The need for curriculum authors and images painters to depend on a matrix including certain criteria of the images that go with the strategic directions of education and public and private outputs of the curriculum.
- Setting a public framework to the images ensures sexual balance, cultural diversity and reinforcing positive values in the society, and getting rid of negative values.
- Utilizing Artificial Intelligence (AI) alongside Human Intelligence (HI) in analyzing textbook images ensures a balanced approach. This allows for the analysis of images within their social context and facilitates linking images together for a comprehensive understanding.
- Conducting more scientific studies to analyze images using AI to increase the accuracy of this analysis in the context of the various societies.

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