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

The current study aimed to identify the image semiotics in the textbook our Arabic Language for the third grade in Jordan using human intelligence and artificial intelligence. To achieve the study objectives, the content and semiotic analysis method was adopted using human intelligence and artificial intelligence. The study sample consisted of the entire study population represented in the images of the textbook our Arabic language for the third grade which consisted of (20) images. The most prominent results revealed a male bias in terms of the number of characters, functional roles, social roles, talents and activities, and there was a convergence between the semiotic analysis using human intellence and semiotic analysis using artificial intelligence. The results also showed that there were differences in the results of the semiotic analysis between the analysis using artificial intelligence and the use of artificial intelligence, as the human analysis connects images with social context and other images, while the artificial intelligence deals with every image separately.

Introduction

An image in the school textbooks takes its importance through the importance of meanings and indications they have, as an image has meanings and indications aim to convey certain messages to a recipient (the student), and it is supposed that the school textbooks authors, painters and technical committees supervising their preparation should consider these messages to go with the public and private educational outputs, the lesson content and the student's age.

An image in its simplest meaning is an attempt to convey reality where the communication process is carried out; the image is a discourse of multiple meanings accompanying the text in order to explain the meaning intended to be conveyed, which means that exclusion of all meanings that make ambiguity to the recipient in understanding the theme and meaning of the image (Saed & Sabti, 2011). An image includes marks, symbols, rules and indications that have roots in the prevailed social and intellectual representations in society. The image semiotic lies in our understanding of these symbols, rules and indications in it, and therefore the ability of reading them and know their indication (Suleiman, 2014).

The importance of an image stems from the fact that it attracts the reader's attention, as the sense of sight is very importance regarding human feeling and his understanding degree, as the word is often unable to convey the content to the reader when the image is not present. It can be said that an image provides a text with support, as it explanation easy and clear whether through color, shape, lines or others, and sometimes an image is more eloquent and stronger in meaning than the written word, as it conveys the event and embodies it as it is, and the image often succeeds in confirming information about an event written words are unable to do that (Suleiman, 2014).

An image is considered a document of an important expressive value, and so its semantic function is no less important than any other text.
There are three levels of reading an image as they begin with the enumeration level where a person sees the image in it and so he counts its contents, then the description level where a person describes the elements of an image showing its parts features and characteristics and it ends with interpretation level where a person creates a relationship among the elements of the image, and so he links them together in a concept (Ibn Addin, 2018).

An image has two functions: a communicative function; as the communication semiotics deals with it and a semantic function dealt by the semiotics (Kababseh, 2018). According to structuralism, all phenomena are governed by some invisible rules, where 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, so the

structuralism attempts to reveal the hidden through the rules organizing how people interact in a certain social context, as the structural semiotics pays more attention to the relationship among elements with each other. Semiotics is often used in analyzing the text, where the text does not necessarily mean a written language, as everything that has a message can be defined as a text; the written language, films, image and others are all 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 and attached to educational texts, as they perform the major role in directing the educational message and organizing the knowledge network. The educational image is also a method to introduce educational natural facts, providing the viewer (student) with awareness of the difference between the previous information and comparing it to the new impression emerged from different data (Kababseh, 2018).

Many studies have dealt with the semiotics of image in textbooks, as the study by (Paneru) indicated that textbooks in Nepal concentrate on settings, personal details and using of most 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, and it seems that religious, ethnic and regional minorities and disagreements found in the society are missed in textbooks. The semiotics analysis of 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", and they showed that they are free of bias towards the mother tongue or the target language; as the painter did not pay a private attention to his language when choosing the images (Jam, Khiabani & Hejazi,).

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

Although AI brought many benefits to education and scientific research, there are fears of its influence on higher education institutions. Nowadays, AI is 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. The tool work by AI are also used to analyze large amounts of data in order to define patterns and visions which may benefit in developing new educational strategies and policies.

While there several benefits in using AI in education, but there are also moral considerations that need treatment. One of the biggest fears is that AI may lead to sustain bias and current discrimination in education, in addition to fears of AI influence 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, which could help researchers to accelerate data analysis and interpretation process, automate tedious tasks and define patterns. One of the methods that AI cause a revolution in the research process is acceleration in data analysis and interpretation process, 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 to main points in addition to Chat GPT ability to help researchers in writing and generating a scientific article.

The use of AI accelerated in the scientific research to help scientists on innovations, discoveries, data analysis and improve experiments. AI is used in scientific writing of research papers by several ways such as text generation, text summary, grammar checking and literature review and AI can be used to help researchers in identifying related studies. It is important to note that AI models are not perfect, where 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, and however, when AI issued in conjunction with human supervision and editing, it could be 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, and the highly capable chat bot uses auto-learning algorithms to process and analyze large amounts of data to generate responses to user inquiries. This language-processing program can understand human language as it is spoken and written, which allows it to understand what information is being fed, what should be said, as a student can write a question, and Chat GPT prepares an easy answer (Bowman, 2022).

Study problem and questions

Images in textbooks are considered a major component contributing with a text in conveying the desired meanings and semantics to the recipient (student), and it is supposed when setting these images 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), and the evaluated textbooks have no specific "ethnic-racial" approach and choice of "location", as the person who sets images did not pay special attention to his language when selecting the images (Jam, Khiabani & Hejazi).

The results of a study by Bani Omar (2018) about the reality of type in the 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 comparing to the one practiced by males. This study came to analyze the images of the book of Our Arabic Language for the third grade in Jordan to identify their components, and the semiotic of these images is defined using HI and AI in light of the increasing talk about the possibility of using (AI) the Chat GPT program in scientific research because of the great capacities that is able to provide through processing and analyzing great amounts of data, and specifically, the study seeks to answer the following questions:

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

Methodology

The study adopted the descriptive method based on content analysis, as images of the Arabic language book for the third in Jordan grade were analyzed, where 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 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).

Study population and sample

The study population consisted of all main images at the beginning of every lesson of the book of Our Arabic Language for the third grade approved by the Ministry of Education to be taught at the beginning of the year 2019 and the number is (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, as they were developed after the preliminary analysis of the images of the book, then presented to a group of arbitrators to benefit from their opinions in developing the tool.

Procedures of analysis reliability

To verify the reliability of content analysis, the researcher's analysis with herself was adopted with a time difference and the researcher's reliability with another researcher, and calculated the percentage of the agreement between the two analysis using the method and equation of (Azaroff & Mayer, 1977), which is called the percentage of agreement between the two analyses. The percentage of the researcher's analysis with herself was (94%), and the researcher's with another one was (92%), as they are accepted percentages for the purposes of analysis reliability.

Results and Discussion

Results of the first question and their discussion: What are the main categories in the images of the book of 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 these following main 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. 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 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 behind him 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	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

		mother carry a plate of food	
	Two aunts: the first doing volunteer works , the other using a smart application to contact her niece in 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), the sub-category consisted of (16) categories, as the first category included characters in the images the following sub-categories (according to sex, images included males and females together, images included males or females only), the second category included the functional roles the following sub-categories (students, sailor, assistant sailor, doctor, teacher), the third category included social roles the following sub-categories (parents, children, two aunts), the fourth category included the talents and activities the following sub-categories (athletes, volunteer work practitioners, children drawing) and the fifth category included the following sub-categories (a child sleeping in her room and dreaming, a child eating healthy food).

Results of the second question and their discussion: What is the semiotics of images in the book of Our Arabic Language for the third grade in Jordan using (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 including males and females together, as the number of males was (31) and females (23), while the images that included males or females only, as the number of images including males was (9) and the females only 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, as 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, as this is 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, but it is still a direction depends on the subjectivity of the authorship teams, and is not governed by matrix controls or weight tables, so 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, once again it confirms the repercussions of male bias among the authoring teams, whether this repercussion was intentional or unconscious, although 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, although the population of Jordan was (11) million and (302) thousand people, of whom (5) million and (984) thousand people are males, with a rate of (52.95%), and (5) million and (318) females, with a percentage of (47.05%), with a difference of (666) thousand for males, at a percentage of (5.9%) (Department of Statistics, 2023), as these figures indicate that the difference in the number between males and females in society Jordanian does not exceed (5.9%) and 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) and 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, although the social reality indicates the presence of women in all functional roles (doctor, nurse, engineer, airline captain, judge, policewoman, ...) 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 , as 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, where one of them

is standing in front of him, and he reads to another, and his other role indicates to the shift towards benefiting from technology in researching, as it is a required 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 holding birthday celebrations for her children, which 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.

A for the role of parents and children, predominance of the male role remains clear except for (the son's help to his mother in carrying the dishes, where it is considered 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 in 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, and this may refer to a social fact 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, and this is an indicator that the authors of the curriculum do not work according to controls seeking to create a type of balance among relatives on the mother and father's side , and establish a new relationship by the student to both sides for both parties, the father's relatives and the mother's relatives.

Talents and activities

There were (12) athletes including (10) males (83%) and (2) females (17%), where (5) 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 relating to practicing various sports confirms the predominance of mental assumptions that are not supported by scientific reference but with a cultural and social one stating that a woman is weak and there is a lack of confidence in her abilities, which affected the distribution of the sports roles of the difficult sports to males such as basketball, football, scooter and jogging, and the females' role is limited to simple and traditional sports such as playing with loop and a rope, although the social fact in Jordan reveals the woman's participation in various sports , as there are women teams of football, basketball and handball, and there are world champions in karate, taekwondo and athletics sports. 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

which limit their sports roles to certain games suiting the cultural and social heritage that witnessed a remarkable change in the recent period, but 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, and this is continuity to male bias 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 two boys (50%), and this reflects a balance in distribution of this talent between males and females, and 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

In the textbook, there is an image of a little girl sleeping in her room, dreaming that she is playing with a deer and a bear. The repercussions of the image of a little girl sleeping in her room, dreaming that she is playing with a deer and a bear indicate that there is semiotic contradiction in the semantics of images of the dream between meekness and beauty 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 the child eating healthy food, it reflects a direction to children to pay attention to healthy food in light of the spread of unhealthy food among children and excessive obesity, which requires concentration on targeted healthy messages, and this and this 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 of Our Arabic Language for the third grade in Jordan using (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, as the images were analyzed to identify the main themes and elements in them, then inserting every theme separately in Chat GPT program by addressing the theme in through a question asking about the semiotic of the images including the following elements in Arabic language textbook for the third grade, and receiving answers through Chat GPT program, as 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), as the number of males is (40) with a percentage of (62.5%), and the females (24) with a percentage of (37.5%), where the analysis results showed 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 reinforce the 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, which could be an attempt to encourage students to think about the various gender models, and reinforce the gender equality.
- Symbolism and influence: Characters in the images have certain symbolism that may affect students and encourage them to develop the social skills, reinforce social awareness and interaction between the genders.

B-   Images including males and females

The number of males is (31) and the female (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 the 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 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-   The 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 weakness of reinforcing the power ad 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 male individual male and female images may have certain educational messages related to topics studied in the textbook.

1.   Functional roles:
A- (19) students, (12) of them are males students with a percentage of (63%), and (7) 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 reinforce 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 reinforce equality between both sexes, and 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 and power, and it may symbolize wisdom and exploration.
-   Determination and ability to face challenges, and 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 be 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, he may symbolize collective work and cooperation, and this may reflect the need to assistant tools to achieve goals.
-   The telescope: It is considered a symbol for vision, research and exploration, and symbolizes the ability to see things clearly, challenges and opportunities from afar.

E- A doctor behind him 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, and he may reflect taking care of people health and the doctor's desire in helping and treating them.
-   The heart: It is considered a universal symbol for love, emotions and life, as in the context of the image, the heart may represent good health and care 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. 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, and a symbol for education, counseling and experience. She indicates the important role that the teacher plays in conveying knowledge and directing students in the learning process.

- Male female students: They represent a symbol for education and intellectual and social development. Their presence reflects vitality and dynamism in the classroom, and they represent diversity, interaction among students and cooperation in work.
- Classroom: It symbolizes the formal education environment and study communication. It reflects the required organization and calm for the education 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-(7) parents, as (4) of them are fathers (57%), (3) mothers (43%), (2 fathers +1+1), (a father holds his son's hand and he is behind him, a father where his daughter standing in front of him, a father reading to his daughter, a father searching for information on a tab), mothers 1+1+1 (a mother searching for information on a mobile, a mother celebrates her daughter's birthday, a mother performs a great role in taking care of her family in absence of the father because he is ill):

- Family ties: It is clear from the images that 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 hands of their sons and reading for them, and this reflects the major role that the parents play in communication and education 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 roe in taking care of the family in absence of the father because he is ill, and this reflects the mother's role in taking care, emotional support and contribution 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 may reflect the importance of balance between work and recreation.

B- (12) sons, including (7) (58%) males and (5) females (42%), (son (7), one standing in the street with his father and two sons, one reading, another searching for information in the book, and two male sons celebrating, a son helps his mother carry a plate of food, five daughters, a daughter looking for information in a book, two daughters, a young daughter celebrating her birthday, a daughter helping her mother carry 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 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 appears helping his mother carry a plate of food for his daughter, and a daughter helps her mother carry 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- Two aunts, an aunt (volunteer works), and another aunt using a smart application to communicate with her niece in 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, and this 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
1. Athletes (12), including (10) males (83%) and (2) males (17%). (3 + 2 basketball players, 2 children playing football, a child-playing scooter, a child playing with a rope, a child playing 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%) do volunteer works 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 indicate that volunteer works include all age categories, and encourage young people to participate

in charitable work, and they may be a source of inspiration and reinforcement of social communication and positive spirit.
- Percentage: The mentioned use of the percentage (67% and 33%) refers to 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: Represents a symbol of children, growth and development, and it may symbolizes health, activity and vitality, and it may be a symbol of taking care of health and encouraging children to eat healthy food and follow a healthy life style.
- Healthy food: It symbolizes food that is useful and nourishing for the body. It represents the interest in proper nutrition and health care. Image is able to reinforce 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 word and dreams: Photographing a girl sleeping and dreaming that she is playing with a deer and a bear may symbolize the imaginary world, and 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, and the image may reinforce the environmental awareness and 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 can reflect the positive and entertainment side in the learning experiment, and encourage children to enjoy the work they do.

- 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 Our Arabic Language for the third grade in Jordan using HI and AI, it can be concluded a group of main points:

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 males only or females only. As for images including males and females, they attempted to reduce the numerical disparity and achieve the distribution justice. It is probably that it is a direction depending on the subjectivity of the painter and it is not governed with 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, and reinforce unbalanced sexual representation. The images including males and females together indicate a balance in sexual representation, which may reinforce sexual awareness.

There is a similarity between the human semiotic analysis and the artificial, with including the human analysis some 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, and limit the female role to a student or a teacher.

AI: It focused on diversity through the presence of male and female students, while the rest of functional roles, it dealt with every functional role separated from the context of the images as a whole, as it indicated that the sailor symbolizes leadership, adventure and power, the sailor assistant symbolizes help and support, the doctor is a symbol of health care and the teacher symbolizes knowledge and guidance.

It is noted from the human semiotic analysis that there is a tie between the functional roles and gender, and connecting that to the society view, while artificial intelligence dealt with every image separately from

other images, and it considered every image expressing a certain symbol regardless the number of those occupying functional roles and their sex.

3.   Social roles

HI: The father's image indicates semantic emotions between the father and brother, which 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 the mobile and celebrating her children's birthdays, and 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 carry a plate of food which may indicate getting out of the familiar role and participating in the roles limited to females, and 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 emerge the role of father in upbringing and the role of mother in care and emotional support. They point to children as a symbol for family communication, education, participation, cooperation and family celebrations, whereas the two aunts symbolize the giving, pay attention to others, joy, love and family communication.
It is noted that human intelligence focused on linking the images to the social context of the Jordanian society in terms of caring for males more than females, revealing new roles for males and focusing 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 unsupported with a scientific evidence but with a cultural and social one indicates the weakness of a woman and lack of trust in her abilities, which influenced the distribution of sports roles concerning the difficult ones, where they were limited to males and the easy sports limited to females, and the male bias appears in volunteer works, as the number of participants has doubled in volunteer works for females.

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, participating in community service, while 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, as the deer indicates gentleness and beauty, the bear indicates predation and brutality and the child eating healthy food indicates a healthy message, which is caring to healthy food after the spread of unhealthy food among children.

AI: The image of the dreaming girl indicates the world of imagination, dreams, nature, wildlife, protection of wildlife and 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 focused on contradiction in the first image between gentleness and predation, and 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 to contradiction between gentleness and predation, and linking the second image to body growth.

6. Analysis using HI: It adopted a comprehensive method linking the images together, and 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, and 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, …).

8. The semiotic analysis can be relied upon of the images using AI as a support and monitor of the semiotic analysis using HI, as the analysis using AI may form directions to 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 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.

- Relying on AI in analyzing the textbook images in balance with analysis using HI to ensure analyzing images in their social context, and ensure linking images together.
- 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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