



Research article

The representation of multiple intelligences in an intermediate Arabic-language textbook, and teachers' awareness of them in Jordanian schools



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ABSTRACT

The theory of Multiple Intelligences (MI) states that human intelligence is composed of different types of intelligences and that each individual possesses all of them but to a different degree. The main objective of this research was to examine how the Theory of Multiple Intelligences was addressed in a seventh-grade Arabic-language textbook at the intermediate-level in Jordan and determine Arabic-language teachers' level of knowledge of applying the Theory of Multiple Intelligences in textbooks. The study used the survey method and analytical descriptive approach via content analysis and coding MI indicators in the textbook to examine the representation of MI in the textbook examined. The sample was composed of all units of a seventh-grade Arabic-language textbook. A questionnaire was distributed to 130 Arabic-language teachers. The study includes eight of the Intelligences from Howard Gardner's Multiple Intelligences (MI) Theory. The analysis found that the intelligences represented in the texts, activities, and exercises of the Arabic-language textbook were mostly Verbal/Linguistic, Visual/Spatial and Interpersonal intelligences, with a combined percentage of 73%. The other 27% was shared between the other intelligence types: Intrapersonal, Naturalist, Logical/Mathematical, Bodily/Kinesthetic, and Musical intelligences. A moderated awareness on how to incorporate the theory of MI in Arabic-language textbooks was found among Arabic-language teachers, which means that teachers' understanding of the importance of including MI theory in the textbook needs reinforcement and improvement. The study suggests that further research on incorporating the Theory of MI in textbooks is needed.

1. Introduction

Through the early 1980s, Howard Gardner introduced the Multiple Intelligences (MI) Theory. He defines intelligence as the capacity to solve problems or to fashion products that are valued in one or more cultural setting (Gardner and Moran, 2006). MI theory has significance in education insofar as Gardner believes that learners have individual characteristics and independent talents, as well as different preferences for how they learn and how they respond to learning situations, and they thus differ in their preferences for learning strategies and methods (Fasko, 2001). He stipulated that the cognitive competence of an individual can be clearly and more accurately described as the expression of a group of various capacities called intelligence. He also stated that people possess

each of these capabilities to a certain level, but that individuals vary in their skill level within each intelligence (Kırkgöz, 2010; Masoomeh and Mahdieh, 2014; Taaseh et al., 2014). Gardner (1999) suggested seven basic intelligences, which represent seven different ways of showing intellectual abilities: Verbal/Linguistic, Visual/Spatial, Musical, Logical/Mathematical, Interpersonal, Intrapersonal, and Bodily/Kinesthetic. Later, three other intelligences were suggested: Naturalistic, Spiritual and Existential. Mindy (2005) and Osmon and Jackson (2002) note that according to MI theory, all people have all the intelligences, and that every person has a unique combination.

According to Taase (2012), the development and growth of human minds are linked to the curricula taught to students in their classes, as these are an essential and important pillar of the educational system, as

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well as reflecting the reality of the community, its philosophy, and its needs. Textbooks have become the most used resource that instructors utilize in language classrooms every day. Therefore, textbooks serve as a go-between feature in communicating students' learning goals with the aid of instructors. As such, it is important to conduct research and investigate these textbooks (Taase, 2012).

1.1. Theory of multiple intelligences

The Theory of Multiple Intelligences was established in the late 1970s and early '80s by psychologist Howard Gardner, who pointed out that humans possess eight or more fairly independent intelligences. Gardner and Moran (2006) noted that individuals rely on these intelligences independently and collectively to make things, produce behaviors, and resolve issues that apply to the communities where they live. According to Taase (2012), have been identified as follows:

- **Linguistic intelligence:** Involves well-developed verbal skills in verbal and nonverbal language.
- **Logical-mathematical intelligence:** Points out to the capacity to solve problems, use numbers effectively, understand cause and effect relationships, and recognize patterns.
- **Visual/Spatial intelligence:** Refers to all forms of spatial and graphical knowledge, as well as for drawing, painting, visual arts, architecture, navigation, and well-developed mental images.
- **Musical intelligence:** Includes the ability to recognize composition and performance in rhythm, pitch, melody, and music.
- **Body-kinesthetic intelligence:** Expertise in using one's whole body to express ideas and feelings and facility in using one's hands to produce or transform things.
- **Naturalistic intelligence:** Transacts with the awareness of nature and the environment; this is the ability to recognize and categorize different types of living species.
- **Interpersonal intelligence:** Opportunity to effectively recognize and respond to other people's beliefs, impulses, perceptions, and actions.
- **Intrapersonal intelligence:** Ability to identify one's feelings, fears, and motivations; i.e., self-awareness.

In his MI theory, Gardner stated that an individual who has a particular capacity in one intelligence maybe not automatically have the equivalent capacity in another intelligence (Gardner and Moran, 2006). Further, some contemporary academics such as Diamond and Hopson (1998), Lucas et al. (1998), and Nisbett (2009) have shown that intelligence is affected by environmental conditions.

In contrast, several researchers argue that intelligence has a fixed characteristic, whereby a person is born with a fixed intelligence, and nothing can be done to change that (for example, Eysenck, 1994; Jensen, 1998). Gardner (1983) explains that in MI theory, intelligence is seen as a blend of hereditary potentials and abilities that may evolve in a variety of ways, through relevant expertise. Tahriri and Divsar (2011) show that studies on the theory of MI gained popularity and momentum because of Gardner's works, which they attribute to the theory having a philosophy based on the learner.

1.2. Integrating Multiple Intelligences Theory in TESOL and ESL

Christison (1998) referred to the importance of integrating Multiple Intelligences Theory into Teaching English as a Foreign Language (TEFL) and Teaching English to Speakers of Other Languages (TESOL). MI theory could provide teaching methods that promote learning differences between individuals according to their intelligence and improve the English language skills and capabilities of learners across the curriculum. Furthermore, according to Campbell (1997), MI learning allows educators to promote a wide variety of

cultures and languages that learners carry into the classroom. It enhances a variety of teaching methods and abilities that are tailored to each individual learner and, to a certain level, their social context. Spirovskaja (2013) and Christison and Kennedy (1999) suggest that instructors should concentrate on suitable strategies in order to apply MI theory in the TEFL/English as a Second Language (ESL) school-room. They suggest that MI theory can be used as follows in language classrooms:

- as an instrument to help students gain a deeper understanding of their own abilities and learning preferences;
- as an instrument to improve the best comprehension of students' intelligence, and attention to varieties of intelligence in the classroom;
- as a guide to give learners a broader variety of study methods, and to promote their comprehension and learning;
- as a guide to designing and writing lesson plans that address the full range of student needs.

1.3. School textbooks and multiple intelligences

MI theory has been adopted in the curriculum at the elementary, middle-school and even college levels (Botelho, 2003; Sinder, 2001). According to Sinder (2001), utilizing MI in schoolbooks and teaching means that learners are taught and can demonstrate their comprehension in several different ways. As we know, textbooks are among the most commonly utilized academic resources and supply high-quality variables for the successful delivery of education in any part of the world (Cocking et al., 2000). Many schools began to center their curricula on the theory of MI after the publication of Gardner's *Frames of Mind* in 1983 (Weiner, 2001). An MI theory perspective has motivated teachers to find new ways to help all students in their classes. Checkley et al. (1997) describe five approaches to curriculum change according to teaching for MI, as follows:

1. Design of lesson: Using all or several of the intelligences in lessons or asking student views about the best way to teach and learn certain subjects.
2. Interdisciplinary units: Secondary schools usually involve interdisciplinary units.
3. Projects for students: Students have the ability to learn to initiate and manage complex projects.
4. Evaluations: Evaluations are designed to let students explain what they have learned. Sometimes this takes the form of enabling each student to devise how they will be assessed while meeting the quality criteria of the teacher.
5. Apprenticeships: Apprenticeships may allow students to gradually gain a valued skill with effort and discipline over time.

Boulmaiz (2017) states that the needs and potential of learners should be taken into account when designing textbooks. MI theory can perfectly serve this purpose and make a great contribution to language teaching and learning, as it allows for the involvement and consideration of the needs, potentials, styles, and intelligences of the learners. According to Chen et al. (2009), several schools around the world have integrated MI theory into their mission, education system, education content, and teaching methods. In addition, multiple books have indeed been written (from different perspectives) about the importance of MI theory to learners and educational institutions, such as *Multiple Intelligences in the Classroom*, written by Thomas Armstrong (1994). The government of Jordan is currently giving considerable attention to improving the textbooks of all educational levels (K to 12th grade), which it is one of their main goals for the schoolbook improvement program (Jordanian Ministry of Education, 2018).

1.4. Previous research

Many studies have been carried out on the inclusion of MI in the content of school textbooks (Ashtarian and Ashtarian, 2015; Botelho, 2003; Ebadi et al., 2015; Kirkgöz, 2010; Gürkaynak, 2015; Palmberg, 2001; Masoomeh and Mahdieh, 2014; Taaseh et al., 2014; Taase, 2012; Wattanborwornwong and Klavinitchai, 2016). An analysis of these studies showed that most, if not all eight types of intelligence have been included in the textbook, and that some of the intelligence types predominate in textbooks. Verbal, Linguistic and Intrapersonal intelligence are frequently represented, while Musical and Natural intelligences are sometimes not reflected at all (Ashtarian and Ashtarian, 2015; Kirkgöz, 2010; Palmberg, 2001; Taase, 2012; Taaseh et al., 2014). Other studies such as Gürkaynak (2015) indicate that the intelligence types that dominate school textbooks are the Bodily/Kinesthetic and Interpersonal intelligences. Botelho (2003) shows that the activities examined in the English language textbooks mostly cover four intelligences: Verbal/Linguistic, Intrapersonal, Spatial/Visual and Interpersonal. Moreover, Ebadi et al. (2015) show that Verbal/Linguistic and Spatial/Visual types of intelligence are the most frequently identified types of intelligence in the Touchstone Series Course Books examined. The types less commonly represented in the textbooks were Musical, Body/Kinesthetic, and Natural intelligences. In addition, the study conducted by Wattanborwornwong and Klavinitchai (2016) shows that different language types used in textbooks, such as Chinese and English, lead to a discrepancy in types of intelligences represented.

The current study differs from all previous academic papers on the topic, as it studies the inclusion of multiple intelligences in all textbook content. Previous studies consider only the activities in the textbook, but this current study considers all parts of textbook content, including activities, texts, evaluation questions, images, figures, and projects.

1.5. The importance of the study

This research derives its significance from the value of the topic it deals with, and its objectives. The significance of the research can be summarized in the following points:

- Teachers may benefit from knowing their degree of knowledge of the MI Theory for improving their teaching methods.
- This study will inform educational experts about the degree of incorporation of the theory of MI in textbooks like the Arabic-language textbook of the seventh grade
- This study and its results may be an addition to the educational literature on the inclusion of MI theory in textbooks.
- Students have unique patterns of strengths and weaknesses in different abilities and skills; thus, it is essential to include MI theory in the textbooks in a balanced way.

1.6. Research problems and questions

MI theory accounts for the differences between students in their skills and abilities, based on their specific intelligences. In addition to the importance of including multiple intelligences within the content of textbooks through texts, activities and evaluation exercises. In light of the lack of studies from the Middle East region on the issue of including multiple intelligences in the content of textbooks, and the extent of teachers' awareness of MI theory, this study sought to answer the following specific questions:

1. To what degree is the Theory of Multiple Intelligences incorporated in the seventh-grade Arabic-language textbook?
2. What is the level of knowledge of Arabic-language teachers of an intermediate stage in Jordan about applying the Theory of Multiple Intelligences in textbooks?

2. Methodology

2.1. Analysis sample and participants of the study

2.1.1. Content analysis sample

The content analysis study sample comprises all units of a seventh-grade Arabic-language textbook, which is taught in all schools of the Jordanian Ministry of Education throughout the educational year 2019/2020, as shown in Table 1.

2.1.2. Participants of the study

A total of 130 science teachers (60 male and 70 female) were randomly selected from intermediate-level schools in Karak City, Jordan during the academic year 2018/2019. Table 2 shows the demographic information for the participants in the current study.

2.2. Study method

An analytical descriptive approach (content analysis) was used given the nature of the research objective (to examine the representation of MI in the textbook examined). Sunderland (1994) refers to the fact that content analysis includes an evaluation of the nature and structure of content texts, and gives the basis for subsequent linguistic analysis. The MI checklist designed by Jozaghi and Razmjoo (2010) was applied with great care to evaluate the representation of MI in the Arabic-language textbook.

2.3. Coding

To conduct this analysis, and to answer the first research question, the content was analyzed as outlined in Table 3. The researcher

Table 1. Description of the analysis sample.

Academic year 2018/2019	Topics (Reading/Listening/Speaking/Writing/Grammar)	Page numbers
Book Part I: It is taught in the 1st semester	Unit 1: Cooperative society	5–15
	Unit 2: Birds world	16–31
	Unit 3: Freedom and tolerance	32–45
	Unit 4: The value of work	46–55
	Unit 5: Throughout the country	56–69
	Unit 6: Art and life	70–83
	Unit 7: Great Palestine	84–95
	Unit 8: A journey in the world of beauty	96–109
	Unit 9: Tales and anecdotes	110–119
	Total	119
Book Part II: It is taught in the 2nd semester	Unit 10: The cradle of Ala and civilization	4–21
	Unit 11: Health is crown	21–37
	Unit 12: Jordan is my country	38–51
	Unit 13: They said in proverbs	52–63
	Unit 14: Sports horizons	64–79
	Unit 15: From the fragrant past	80–93
	Unit 16: Science and creativity	94–105
	Unit 17: The friendship	106–118
	Total	118
Total		237

Table 2. Demographic information of participants.

Study variables	Variable levels	Frequency (f)	Percentage (%)
Gender	Female	70	53.85
	Male	60	46.15
	Total	130	100

Table 3. Methods of analysis.

Intelligence type	Indicators	Codes
Verbal/Linguistic intelligence	The textbook provides students with: Listening activities, authentic listening activities (e.g. listening to CDs, TV, radio, etc.), pronunciation activities, games that develop sentence structure, various speaking activities, role-play activities, stories to accomplish certain tasks, riddle activities, activities that help students produce a summary (oral or written), silent reading activities, oral reading activities (reading aloud), a variety of reading activities (such as, group, choral, chain), issues that challenge the reader to think critically, literary passages, syntactical and logical linguistic exercises, activities related to homonyms, synonyms, and antonyms, activities that require students to use new vocabulary communicatively, various writing activities, word-building games.	(VL)
Logical-mathematical intelligence	The textbook provides students with: Activities that encourage students to do mathematical activities, activities that require students to sequence information, activities that require students to collect data, activities that require students to investigate and analyze matters scientifically, predictions or guessing activities, activities that require computing skills, activities that promote critical thinking, activities that require problem-solving, activities that help students classify, activities that require students to respond to cause and effect, matching activities, word order activities, sentence order activities, and grammar activities presented inductively and deductively.	(LM)
Bodily/Kinesthetic intelligence	The textbook provides students with: Activities that require students to respond and express themselves physically, activities that require them to act out (an event for example), activities that require students to mime an event, games that require physical action/s, various kinds of manipulative activities to solve problems or to learn, activities involving total physical response (TPR), hands-on activities, role-play activities, activities for performing skits, drama or characterization, activities to be done outside the classroom (visits, field trip), and language activities.	(BK)
Musical intelligence	The textbook provides students with: Activities that help students express themselves through music and/or rhythm, activities that help students listen to a variety of recordings, activities that help students be sensitive to rhythm, tone, pitch, melody, poetry, phonetics and pronunciation activities, activities that help students create their own songs and jingles, activities that require students to create songs for skits and plays, activities that require students to summarize concepts or ideas from songs or poems, musical cloze activities, activities that encourage students to write and perform their own songs, and activities involving poetic rhythms.	(M)
Interpersonal intelligence	The textbook provides students with: Pair work communicative and group work communicative activities, activities that require students to act out dialogues, activities that enhance the use of interactive software programs, peer tutoring, activities that help students discuss, perceive, interpret and understand each other's intentions, debates, and panels, play activities, activities for peer editing (giving and receiving feedback), group work brainstorming activities, activities that help students respond to non-verbal language (facial expression/body language), and group-writing projects.	(IP)
Intrapersonal intelligence	The textbook provides students with: Activities that help students reflect on their work independently, activities of enhancing self-assessment, activities of thinking strategies, imaginative activities, activities for journal writing, activities for independent readings, activities for reflection time for students, activities that help students understand their inner world of emotions, thoughts, etc.	(IR)
Naturalist intelligence	The textbook provides students with: Activities that help students understand the natural world of plants and animals, activities that help students categorize and classify objects, elements, etc., activities that require collecting objects, studying, and grouping them, activities that help learners know about the world and know how it works, activities that help students discriminate between human artifacts (cars, clothes), activities to be done outside the classroom (zoo visits, museum visits, nature walks, and field trips), activities that require students to perform experiments, activities that require students to use objects from the natural world, activities that help students question natural events, and activities that ask students to describe changes in the local environment.	(N)
Visual/Spatial intelligence	The textbook provides students with: Flashcards and posters, illustrations that add and explain meanings, activities that require students to respond to pictures, paintings, films, videos, slide shows, etc., activities that require students to paint, draw, do sketches or create any artwork, activities that require students to solve jigsaw puzzles, activities that require students to solve mazes or other spatial tasks, activities that require students to create a poster, activities that encourage students to decorate bulletin boards, activities that encourage students to arrange learning corners, activities that encourage students to write descriptive paragraphs, and activities that require students to use or respond to multi-media (such as CD-ROMS, DVDs, video films, etc.).	(VS)

independently studied by means of the indicators given in Table 2, the activities exercises, images, and text in the units of the textbook in order to find the frequency and the percentage of presence of every type of multiple intelligence.

To investigate the research question regarding the degree of representation of MI indicators in the textbook, each type of intelligence that could appear in the textbook was coded and handled separately. For example, for Verbal/Linguistic intelligence (VL), the researcher counted the frequencies for all the Verbal/Linguistic intelligence indicators that were found in the activities, texts, techniques, materials, and descriptions. The same procedure was implemented for other types of intelligences.

2.4. Validity and reliability of the tool

The search tool was tested by submitting it to two faculty members of Arabic-language teaching from three UAE universities (Sharjah University, United Arab Emirates University, and Al Ain University), and textbook design specialists. Nueuendorf (2002) and Wang (2011) pointed out that the percentage of the agreement is the simple percentage of

agreement among all coders' decisions in coding the same units of data. Thus, internal consistency was calculated using the Holste equation, which is formulated as follows:

$$\text{Coefficient of Reliability} = 2M/(N1+N2)$$

where:

M: The number of observed indicators agreed by Coder 1 and Coder 2.

N1: The number of observed indicators in Coder 1.

N2: The number of observed indicators in Coder 2.

The result for the Holste equation was 0.91, which the results ranged from 0.639 to 1.0, as shown in Table 4.

2.5. Questionnaire

The purpose of the questionnaire is to explore the level of knowledge of Arabic-language teachers of an intermediate stage in Jordan about applying the Theory of Multiple Intelligences in textbooks. Where the first part of the questionnaire consisted of general information from Arabic-language teachers (n = 130), the second part consisted of 20

Table 4. Interrater reliability.

Items	Coder 1	Coder 2	Agreement between Coder 1 & Coder 2	Coefficient of Reliability
Verbal/Linguistic intelligence (VL)	14	12	12	0.92
Logical/Mathematical intelligence (LM)	9	7	7	0.87
Bodily/Kinesthetic intelligence (BK)	7	6	6	0.92
Musical intelligence (M)	6	6	6	1.00
Interpersonal intelligence (IP)	11	8	8	0.84
Intrapersonal intelligence (IR)	7	6	6	0.92
Naturalist intelligence (N)	8	7	7	0.93
Visual/Spatial intelligence (VS)	5	4	4	0.89
Total	67	56	56	
Mean of Coefficient of Reliability			0.91	

statements related to the aim of the study. The investigator used for the closed-statement a 5-point Likert scale to assess agreement to a series of statements (score intervals: *Very little* = 1.00–1.80, *little* = 1.81–2.60, *Moderate* = 2.61–3.40, *High* = 3.41–4.20, *Very high* = 4.21–5.00) to collect data, which indicates that quantitative analysis was applied in this study. To ensure that the questionnaire was valid, it was sent to eight specialists from different academic institutions who gave written comments and suggestions, then the investigator modified certain statements to ensure that the purpose of the study was met. Similarly, the internal consistency was measured utilizing Cronbach's Alpha. Table 5 shows the Cronbach's Alpha reliability coefficients for each of the questionnaire items, in addition to the total Cronbach's Alpha reliability coefficient (0.832), signifying a good level of reliability (Taber, 2018).

2.6. Statistical processing methods

The investigator used the SPSS software program to analyze the data by performing a descriptive analysis, including a frequency calculation, average, and standard deviation (SD), in addition to Chi-Square.

3. Results

Research Question 1: To what degree is the Theory of Multiple Intelligences incorporated in the seventh-grade Arabic-language textbook?

In order to find out the degree to which MI indicators are represented in the studied textbook, the researcher counted the frequency of appearance of MI indicators in the textbook, and Chi-Square analysis was used. Tables 6 and 7 below show the observed frequency and percentage of appearance of each intelligence type in the studied textbook, showing results for Part I and Part II respectively.

Table 6 reveals that from among 280 instances of all types of intelligence, Verbal/Linguistic intelligence (VL) showed the highest

Table 5. Cronbach's Alpha Reliability Coefficients for each of the Questionnaire Items.

No.	Item	Cronbach's Alpha	No.	Item	Cronbach's Alpha
1	Item 1	.818	11	Item 11	.821
2	Item 2	.810	12	Item 12	.818
3	Item 3	.813	13	Item 13	.840
4	Item 4	.828	14	Item 14	.819
5	Item 5	.819	15	Item 15	.825
6	Item 6	.817	16	Item 16	.825
7	Item 7	.815	17	Item 17	.817
8	Item 8	.854	18	Item 18	.817
9	Item 9	.839	19	Item 19	.822
10	Item 10	.828	20	Item 20	.832
Total		0.832			

frequency (121) and percentage (43.2%) in the textbook in general, followed by Visual/Spatial intelligence (VS), with an observed frequency of 50 and 17.9%. The other types of intelligence appeared in the content of the textbook as follows according to the observed frequency and percentage respectively: Interpersonal intelligence (IP) 32 (11.4%), Intrapersonal intelligence (IR) 28 (10.0%), Naturalist intelligence (N) 18 (6.4%), Bodily/Kinesthetic intelligence (BK) 13 (4.6%), Logical/Mathematical intelligence (LM) 27 (4.8%). Meanwhile, Musical intelligence (M) had the lowest observed frequency of all of the intelligence types, with an observed frequency of 6 and percentage of 2.1%. Table 6 shows that the Chi-Square value was 280.629 with a significance level of 0.000, which means that there is no balance between the multiple intelligence types in the Arabic-language textbook (Part I) for the seventh grade.

Table 6 reveals that from among 279 instances of all types of intelligence, Verbal/Linguistic intelligence (VL) showed the highest frequency (127) and percentage (45.5%) in the textbooks, followed by Visual/Spatial intelligence (VS), with observed frequency of 45 and 16.1%. The other types of intelligence that appeared in the content of the textbook showed the following frequencies and percentages: Interpersonal intelligence (IP) 33 (11.8%), Intrapersonal intelligence (IR) 26 (9.3%), Naturalist intelligence (N) 17 (6.1%). Meanwhile, Bodily/Kinesthetic intelligence (BK) and Musical intelligence (M) showed the lowest frequency of all the intelligence types, both with an observed frequency of 6 and percentage of 2.1%. Table 7 shows that the Chi-Square value was 310.563 with a significance level of 0.000, which means that there is no balance between the multiple intelligence types in the seventh-grade Arabic-language textbook (Part II).

Research Question 2: What is the level of knowledge of Arabic-language teachers of an intermediate stage in Jordan about applying the Theory of Multiple Intelligences in textbooks?

The results shown in Table 8 provide information on Arabic-language teachers' responses to the questionnaire statements related to the level of awareness of the multiple intelligences included in the textbooks.

The findings shown in Table 8 indicate that the mean for responses for all items (1–20) was 3.38 (SD 1.19). This means that Arabic-language teachers' level of awareness of multiple intelligences included in textbooks is moderate. It is also evident from Table 8 that Item 1 ('I encourage students in public debates and discussions') received the highest mean value, at a high level of 4.08, and Item 9 ('I make sure to link math problems and apply them to real examples of everyday life') the second highest, also at a high level with a mean value of 3.96. Moreover, Item 6 ('I encourage students to solve and do problems and exercises mathematical operations') ranked third, at a high level with a mean value of 3.95. Similarly, a high level was also found for Items 2, 7, 10, 12, 16, and 17 with the respective mean values of 3.74, 3.61, 3.78, 3.55, 3.71 and, 3.68.

The lowest mean (2.63) was received for Item 15 ('I use shapes and graphics to activate the memory of students') suggesting a moderate level. In the same way, a moderate level was also obtained for Items 3, 4,

Table 6. Frequency and percentage of types of multiple intelligences in the seventh-grade Arabic-Language textbook (part I): Chi-square analysis.

Intelligence type	Observed	Percent (%)	Expected	Residual	Chi-Square	df	Sig.
(VL)	121	43.2	35.0	86.0	280.629	7	0.000
(LM)	12	4.3	35.0	-23.0			
(BK)	13	4.6	35.0	-22.0			
(M)	6	2.1	35.0	-29.0			
(IP)	32	11.4	35.0	-3.0			
(IR)	28	10.0	35.0	-7.0			
(N)	18	6.4	35.0	-17.0			
(VS)	50	17.9	35.0	15.0			
Total	280	100%	-	-	-	-	-

Table 7. Frequency and percentage of types of multiple intelligences in the seventh-grade Arabic-Language textbook (part II): Chi-square analysis.

Intelligence type	Observed	Percent (%)	Expected	Residual	Chi-Square	df	Sig.
(VL)	127	45.5	34.9	92.1	310.563	7	0.000
(LM)	15	5.4	34.9	-19.9			
(BK)	8	2.9	34.9	-26.9			
(M)	8	2.9	34.9	-26.9			
(IP)	33	11.8	34.9	-1.9			
(IR)	26	9.3	34.9	-8.9			
(N)	17	6.1	34.9	-17.9			
(VS)	45	16.1	34.9	10.1			
Total	279	100%	-	-	-	-	-

5, 8, 11, 13, 14, 18, 19, and 20 with the respective mean values of 3.38, 3.37, 2.80, 2.99, 3.14, 2.66, 2.67, 3.27, 3.33, and 3.24.

4. Discussion

The findings relating to the first research question showed that the studied textbook includes various percentages of representation of the MI types, implying that the representation of the different intelligences was unbalanced in the textbook content topics that were analyzed.

Tables 6 and 7 show the distribution of different types of MIs in the textbook (Part I and Part II) examined. As a language-subject textbook, this textbook obviously focuses predominantly on verbal/linguistic intelligence, which had the highest observed frequency (Part I = 121 and Part II = 127) and percentage (Part I = 43.2% and Part II = 45.5) of all of the intelligence types examined in the textbook, making of 44.36% of all instances of intelligence types observed. This result may be because this book is about language related to communication, explaining a fact so that linguistic intelligence has a higher percentage, whereas linguistic

Table 8. Means and SD of the teachers' responses regarding their awareness of the multiple intelligences included in the textbooks.

No.	Item	Mean	Standard Deviation	Degree
1	I encourage students in public debates and discussions.	4.08	1.24	High
2	I give students time to express their opinions.	3.74	1.19	High
3	I use a narration style with the students.	3.38	1.25	Moderate
4	I encourage students to solve puzzles and examples.	3.37	1.25	Moderate
5	I take into account the individual differences between students in their ability to express themselves.	2.80	1.27	Moderate
6	I encourage students to solve and do problems and exercises using mathematical operations.	3.95	1.11	High
7	I work to develop students' logical thinking skills.	3.61	1.35	High
8	I encourage students who deal with shapes and encourage them to classify in a logical way.	2.99	1.57	Moderate
9	I make sure to link math problems and apply them to real examples of everyday life.	3.96	1.07	High
10	With students, I use critical thinking.	3.78	.86	High
11	I encourage students to learn through interaction with others.	3.14	1.11	Moderate
12	I focus on student participation in discussions that address community issues.	3.55	.87	High
13	I enhance social relations between students.	2.66	1.16	Moderate
14	I encourage students to consider other people's feelings.	2.67	1.16	Moderate
15	I use shapes and graphics to activate the memory of students.	2.63	1.12	Moderate
16	I'm helping students read maps.	3.71	1.25	High
17	I promote students who have a sense of music.	3.68	1.19	High
18	I encourage students who have the capacity to make decisions in different situations.	3.27	1.26	Moderate
19	I encourage students to reveal their strengths and weaknesses.	3.33	1.24	Moderate
20	I respect individual differences in terms of students' values and attitudes.	3.24	1.22	Moderate
Total		3.38	1.19	

intelligence is the means of communication, understanding, and use of language and information processing, it represents a means of communication between the teacher and their students, or between students. It is the students who possess this kind of intelligence that dominate the minds of designers and curriculum developers. They receive the highest share of teachers' interest and respect in the traditional educational system. The finding is in line with the findings of the similar previous studies (Ashtarian and Ashtarian, 2015; Boulmaiz, 2017; Botelho, 2003; Ebadi et al., 2015; Ebadi and Beigzadeh, 2016; Estaji and Nafisi, 2014; Jado, 2015; Kirkgöz, 2010; Omer, 2017; Palmberg, 2001; Taaseh et al., 2014). This is because it helps students to learn new things, and need to learn the phonetics of the language, syntax, and semantics, in addition, this linguistic intelligence gives students' the ability to use words well, both written and spoken. However, it differs from those of other studies (Nasiri et al., 2012; Al-Shboul and Al-Khawaldeh, 2014). The next most extensively used intelligence type is Visual/Spatial intelligence (VS) in terms of frequency (Part I = 50 and Part II = 45) and percentage (Part I = 17.9% and Part II = 16.1%). This type of intelligence requires students to have the mental and graphical ability to visualize things and ideas in space, color, form, and shape. These findings are compatible with those reported by other authors, such as Ebadi et al. (2015), Ebadi and Beigzadeh (2016), Kirkgöz (2010), and Taaseh et al. (2014), but differ from other studies (Jado, 2015). Interpersonal intelligence (IP) was the third most regularly addressed kind of intelligence, with observed frequencies of 32 (Part I) and 33 (Part II) and percentages of 11.4% (Part I) and 11.8% (Part II). This type of intelligence was discerned during the analysis process in the content activities of the book in forms such as "Discuss with your colleagues" and "Discuss with your teacher." This finding is in line with the findings of similar previous studies (Gürkaynak, 2015).

The results of the current study indicate that Intrapersonal intelligence (IR) was the fourth most regularly addressed kind of intelligence, with observed frequencies in Part I of 28 and Part II of 26, and percentages in Part I of 10.0% and Part II of 9.3%. This type of intelligence encourages students with self-understanding, as well as the ability to recognize one's similarities to and differences from others, and effectively work on one's desired capacities and motivations. In previous studies, this type of intelligence was low in frequency and represented a small percentage (Ebadi and Beigzadeh, 2016; Gürkaynak, 2015; Taaseh et al., 2014). Moreover, it was absent in the results of Ebadi et al. (2015). Naturalist intelligence (N) was the fifth most regularly addressed kind of intelligence, with observed frequencies in Part I of 18 and Part II of 17 and percentages in Part I of 6.4% and Part II of 6.1%. This type of intelligence encourages students with the capacity to perceive the natural world and environment effectively. In one study, this type of intelligence came in with the lowest frequency and percentages (Kirkgöz, 2010). Moreover, it was absent in the results of other studies (Ashtarian and Ashtarian, 2015; Taaseh et al., 2014). The current results revealed that Musical intelligence (M) had the lowest frequency of all of the intelligence types, and is reflected in the smallest percentage of the activities and content in Part I (2.1%) and Part II (2.9%). This may be due to cultural considerations. This finding is in line with previous studies (Ebadi and Beigzadeh, 2016; Gürkaynak, 2015; Jado, 2015). Musical intelligence was absent in the results of other studies (Ashtarian and Ashtarian, 2015; Taaseh et al., 2014).

Logical/Mathematical intelligence (LM) was also found to be represented at a low percentage in Part I (4.3%) and Part II (5.4%). This type of intelligence requires from students the ability to calculate, quantify, consider propositions and hypotheses, and carry out complete mathematical operations. This low percentage may be due to the fact that, in the content of this Arabic textbook, there is no need to do mathematical operations, measurements or calculations. This finding agrees with the studies of Gürkaynak (2015) and Jado (2015). The Bodily/Kinesthetic intelligence (BK) was represented at a percentage of 3.8%. In a previous study (Gürkaynak, 2015), this type of intelligence was found to be one of the most prominent types of intelligence. However, in other studies, Bodily/Kinesthetic intelligence was represented at a more mid-range

level (Estaji and Nafisi, 2014; Kirkgöz, 2010). This type of intelligence suits those who have good coordination, bodily awareness and have a good understanding of the world through the body. According to Armstrong (2000), individuals with Bodily/Kinesthetic intelligence are able to make complicated and sensitive movements. They are successful in using their bodies to express emotions and use their hands to produce things.

As can clearly be seen in Tables 6 and 7, the results of the present study indicate that, while multiple intelligences are represented in the Arabic-language textbook, the predominant intelligences were Verbal/Linguistic (VL), Visual/Spatial (VS), and Interpersonal intelligence (IP), with only a small percentage of distribution for such intelligence types as Intrapersonal intelligence (IR), Naturalist intelligence (N), Logical/Mathematical intelligence (LM), Bodily/Kinesthetic intelligence (BK), and Musical intelligence (M). These results indicate that the authors and designers of the curriculum are not sufficiently incorporating MI theory, and did not give enough attention to the representation of multiple intelligences as a good and correct distribution in the content of the seventh-grade textbook.

On the other hand, for the findings relating to the second research question, the results in Table 8 showed that Arabic-language teachers have a moderate awareness of MI theory included in Arabic-language textbooks, with the general average for their response having been measured as 3.38 (SD 1.19). This finding is consistent with several previous studies on the level of awareness of multiple intelligences among teachers, including in Arabic-language textbooks (Al-Najjar, 2010; Al-Sarayrah, 2006; Cutshall, 2003; Gunst, 2004). In addition to their modest experience in dealing with the content of the textbook, this result could be attributed to a lack of professional training programs for teachers. Moreover, this result means that teachers' awareness of the importance of including the theory of multiple intelligences in the textbook needs to be strengthened and improved by increasing their awareness and understanding of the importance of merging Multiple Intelligences and including them in the textbook. This can be done through teacher training courses as they develop professionally.

5. Conclusions

This study examined a seventh-grade Arabic-language textbook (Part I and Part II) approved by the Ministry of Education for use in schools in Jordan in relation to the representation of MI theory, as reflected through the different topics and activities in the content, in order to identify the extent to which this locally-produced textbook caters to different intelligence types. The results of the analysis of this study indicate that, in terms of the representation of multiple intelligences in the Arabic-language textbook, Verbal/Linguistic, Visual/Spatial, and Interpersonal intelligences predominate, cumulatively making up a total percentage of 72.5% and 73.4% in Part I and Part II respectively. Moreover, the results refer to an unequal distribution for such intelligence types as Intrapersonal, Naturalist, Logical/Mathematical, Bodily/Kinesthetic, and Musical intelligences. Therefore, policies for dealing with the issues pertaining to the representation of multiple intelligences, as they appear in the textbook content, must be a primary concern for textbook authors. In addition, the findings indicate only moderate awareness among Arabic-language teachers about including the multiple intelligences in Arabic-language textbooks.

6. Recommendations

Some recommendations are proposed in light of the study results:

- The necessity for curriculum authors and developers to create a textbook that caters for students with different MI types, by ensuring a more even distribution of the multiple intelligences in the content.
- Similar research on the expression of MIs should be carried out in reference to other Jordanian textbooks.

- Professional training programs in the study of textbook content should be implemented for teachers.

7. Limitations of the study

- Human limitation: The current study is limited to intermediate-level teachers in all Jordanian schools.
- Limitation of time: The second semester of the school year 2019/2020.
- Limitation of location: Arabic-language intermediate-level teachers in Karak City, Jordan.
- Limitation of the textbooks: The current research is limited to analyzing the content of the basic-level seventh-grade Arabic-language textbook (fifth edition), approved by the Jordanian Ministry of Education for the academic year 2019/2020.

Declarations

Author contribution statement

Sami Sulieman Al-Qatawneh: Conceived and designed the experiments; Performed the experiments; Wrote the paper.
 Najeh Rajeh Alsalihi: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.
 Mohd. Elmagzoub Eltahir: Performed the experiments.
 Omar Ahmed Siddig: Contributed reagents, materials, analysis tools or data.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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