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42

: 264 بنسبة 55%， وفي كتاب الصف الثامن: 319 بنسبة 78,5%， وفي كتاب الصف التاسع 205 بنسبة 65,4%  
كتاب و هي نسب متدنية، أما نمط القراءة الرياضية فكانت درجة توافرها متدنية جدا في الكتب  
الثلاثة، حيث بلغت 2%  
بنسبة 25%， وفي كتاب الصف التاسع: 87

: 88 بنسبة 18%， 46 بنسبة 11% من إجمالي الأنماط في كل  
كتاب وهي نسب متدنية، أما نمط القراءة الرياضية فكانت درجة توافرها متدنية جدا في الكتب  
الثلاثة، حيث بلغت 2%.

### Abstract

#### The availability of the mathematical communication types in the mathematics textbooks of the 7th, 8th and 9th grades in Palestine

This research aimed at analyzing the mathematical communication types in the mathematics textbooks of the 7th, 8th and 9th grades in Palestine State . To achieve this purpose, the researcher prepared an content analysis card involved four types of mathematical communication: Mathematical Reading, Mathematical Writing, Mathematical Discussion and Listening and Mathematical Representation. This card involved 42 items. The results

## **2015**

showed that most frequencies of mathematical communication types in the three books was for Mathematical Representation, reached 264-55% in 7<sup>th</sup> textbook, 319-78.5% in 8<sup>th</sup> textbook, 205-65.4% in 9<sup>th</sup> textbook, these percentages are intermediary, followed by Mathematical Writing for the mathematics textbooks of the 7th and 9th grades, reached at succession: 122-25%, 87-28%, followed by Mathematical Discussion and Listening for the mathematics textbooks of the 7th and 8th grades, reached at succession: 88-18%, 46-11% from total types in each textbook, these percentages are low. The frequencies of mathematical reading in three textbooks were very low. In light of the study findings, the researcher recommended developing of the mathematics textbooks involving types of mathematical communication.

.(Baroody, 1993)

.....  
.(NCTM, 2000\*)

.(NCTM, 2000)

.(Qi, 2001)

(Wadlington, Bitner, Partridge, and Austin, 2002)

.(2009 )

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NCTM: National Council Of Teachers Of Mathematics \*

**2015**

(2008 ) .(2011 )

(TRIZ )

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(2007 )

(%28-10)

(%55)

(%30)

(David, Barbara, Corey,&

.Patricia, 2003)

.(2007 )

(2007 )

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لقد أشارت بعض البحوث (David, & et all, 2003) إلى أن اهتمام الكتب المدرسية في

(2007 )

2002 /2001

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(NCTM, 2000)

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في مدارس وزارة التربية والتعليم الفلسطينية

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11-1	:
22-12	:
32-23	:
42-33	:

) (Holsti )

(78 1987

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232

**2015**

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0,93	43	20	<b>21</b>	22	
0,86	28	12	<b>15</b>	<b>13</b>	
0,87	69	30	<b>36</b>	<b>33</b>	
0,91	139	63	<b>71</b>	<b>68</b>	

(0,70)

(NCTM,1989)

Mathematical Power

.(Cantlon, 1998)

:(69 :2003 )

### **Mathematical Communication :**

Language of

Mathematics

(Baroody, 1993, 3)

.(NCTM, 1989, 214)

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**Mathematical Reading**

.(2005 ) (Balas, 1997)

.(1994 )

:(NCTM, 2000)

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**Mathematical Writing**

:(Baroody,1993)

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## Mathematical Discussion

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### **Mathematical Listening :**

### **Mathematical Representation :**

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.(Baroody,1993)

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:(2005  
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:Graphs .2

:Symbol Manipulation .3

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(2011)

(12-6)              (NCTM)  
(NCTM)              (% 40.6)              (8-6)  
(NCTM)              (% 29.4)              (12-9)

(8-6)              (% 39)              (8-6)  
                    . (%36.2) (12-9)  
                    (2010)

(8-6)              (NCTM)  
                    :              (NCTM)

(NCTM)              :

(% 83 )

....

(% 64.9)

(NCTM)

(2009)

(6-1)

(NCTM)

(NCTM)

(NCTM)

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(NCTM 2000)

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(NCTM)

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(9 8 7)

2015

(80)	(NCTM)
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	(% 78)
	(NCTM)
	(% 23 )
	(% 77 )
	(2007)
(10-6 )	
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	(% 42)
( )	
( )	(%67,5)
( )	(%19,5)
	(%73)
(%10)	(10-6)
(%52)	(%7)
	(%15)
	(%23)
	(2006)

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(%16,37)                  (175)  
(      )  
(%6,36)                  (68)  
(2009)

•(NCTM 2000)

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**2015**

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(2004)

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(2004/2003)

(NCTM)

NCTM

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(0.05  $\geq \alpha$ )

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(TRIZ )  
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$\alpha < 0.05$   
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وفي بحث ليه (2007)

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(free-writing) (Journals) :  
(math autobiography)  
. (portfolio)

**2015**

وأما بحث متولى (2006)

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(305)

(2008/2007)

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بحث (2007) (0.51)  
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/ 2010) ( ومدى توافق 1431  
(2007)  
(8-6)  
(2010) (NCTM)

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(2008) .(2005) (2006)

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(2007) (2009)

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(4) (3)

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%1,6	5	%2	8	%2	8			
%28	87	%8,5	34	%25	122			
%5	16	%11	46	%18	88			
%65,4	205	%78,5	319	%55	264			
%100	313	%100	407	%100	482			

(3)

(%78,5)

(319)

(%55)

(264)

(%65,4)

(205)

( 122)

(%28)

87

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**2015**

(8)	(% 2)	(8)
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(8-6)	(2011 )	(NCTM)
(2010 )		(% 40.6)

(NCTM)	(8-6)
(%83)	
(2009 )	(NCTM)

**(4)**

2		1		2		1		2		1		
%		%		%		%		%		%		
%2	3	%1	2	%1	2	%3	6	%0,8	2	%3	6	
%28	42	%28	45	%4	8	%14	26	%26	65	%24	57	
%9	14	%1	2	%12,5	27	% 10	19	%16	39	%21	49	المناقشة الرياضية والاستماع الرياضي
%61	93	%70	112	%83	179	%73	140	%57,2	143	%52	121	
<b>%100</b>	<b>152</b>	<b>%100</b>	<b>161</b>	<b>%100</b>	<b>216</b>	<b>%100</b>	<b>191</b>	<b>%100</b>	<b>249</b>	<b>%100</b>	<b>233</b>	

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(%83)	(179)
(%73)	(140)
(%70)	(112)
(%61)	(93)
%57,2	(143)
.(%52	121)

(%28 %24)

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(%0,8 %3)

(%1 %3)

(%2 %1)

**2015**

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(5)

(5)

%	%	%	%				
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%0	0	%0	0	%12,5	1		2
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%0	0	%0	0	%50	4		4
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%0	0	%0	0	%0	0	( )	6
%0	0	%0	0	%0	0	.	7
%100	5	%100	8	%37,5	3	.	8
%0	0	%0	0	%0	0	.	9
%0	0	%0	0	%0	0	.	10
%0	0	%0	0	%0	0	.	11
%100	5	%100	8	%100	8	.	

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%	%	%	%	%		
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%9,2	8	%29,8	8	%17	21	2
%0	0	%0	0	%0	0	3
%0	0	%0	0	%0	0	4
%90,8	79	%40,7	11	%63	74	5
%0	0	%0	0	%1,7	2	6
%0	0	%11	3	%2,5	3	7
%0	0	%18,5	5	%10	12	8
%0	0	%0	0	%4,1	5	9

....

<b>%0</b>	<b>0</b>	<b>%0</b>	<b>0</b>	<b>%1,7</b>	<b>2</b>	.	<b>10</b>
<b>%0</b>	<b>0</b>	<b>%0</b>	<b>0</b>	<b>%0</b>	<b>0</b>	.	<b>11</b>
<b>%100</b>	<b>87</b>	<b>%100</b>	<b>27</b>	<b>%100</b>	<b>119</b>	.	

(6)

(87) (119)

(27)

) (%62,2) (74)  
 (%90,8) (79) ( ( ) )  
 (%40,7) (11) ( ( ) )  
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 %9,2 8 ( ( ) )  
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**2015**

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%		%		%		
%0	0	%44	12	%26,5	23	1
%0	0	%0	0	%4,5	4	2

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%12	2	%15	4	%4,5	4		3
%0	0	%0	0	%1	1		4
%0	0	%0	0	%2,5	2		5
%44	7	%41	11	%46	40		7
%44	7	%0	0	%14	12		8
%0	0	%0	0	%1	1	( ) .	9
%0	0	%0	0	%0	0		10
%0	0	%0	0	%0	0		11
%100	16	%100	27	%100	87		

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%		%		%			
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%0	0	%0	0	%2,7	7	.	2
%0	0	%0	0	%3,4	9	)	3
%16,6	34	%4,8	15	%5,3	14	.	4
%6	12	%1,6	5	%4,2	11	.	5
%6,3	13	%0,6	2	%3,4	9	.	6
%17,1	35	%16,6	52	%19,3	51	.	7
%14	29	%0	0	%1,1	3	)	8
%12,2	25	%25	78	%15,5	41	(	9
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%100	205	%100	313	%100	264	.	

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. ( ) (%17,1)  
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- ".(2007). .1
- (NCTM)
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- .(2008). .2
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- .(2011). .4
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**2015**

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.(2005) .13

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<a href="http://www.jeddmath.com/vb/showthread.php?t=4762">http://www.jeddmath.com/vb/showthread.php?t=4762</a>	
(2006).	.21
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