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(121)

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(44)

(36)

(ANCOVA)

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(1989) (1993) (2002) (2002)
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(Johnson, 2006 1986

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(2003)

2007/ 2006

($\alpha = 0.05$) :

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($\alpha = 0.05$) (:

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(America)

(NCTM) National Council of Teachers of Mathematics

(NCTM, 2000)

/2006

. 2007

.(Mayer, 2001)

.(2005)

(Torrance)

.(.)

(127)

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(2005)

(Visual Basic)

:(UNRWA)

(165)

(Visual Basic)

(United Nations Relief and Works Agency for Palestine Refugees in the Near East).

(Johari, 1998)

(2008)

(98)

(45)

(Clark, 2005)

(2006)

(108)

(2006)

(Miller, 1998) (-) (2003)

(60)

(Logo)

(22)

(Logo)

(Logo)

(2001)

(Tsuei, 1998)

(Logo)

(28)

(117)

(Logo)

(Torrance)

(2000)

Assessment of Artistic Creativity (AAC)

(358)

(Logo)

(Logo)

:

(Wang, 1997)

(CBST) Computer-based self-instruction training program

.(Mayer, 2001)

(Wang, 1997)

(Tsuei, 1998)

(Nash, 1991)

46

(Merickel, 1991)

(23)

(121)

2007 /2006

:

.1

(15)

(Data show)

(21)

(Microsoft Power

.2

(Dream

(Flash Player)

Point)

(Java Script)

weaver)

(Flash

(Java script)

Player)

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(41)

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(Polya)

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(Torrance)

.(30)

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(Java Script)

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(Polya)

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(Power Point, Flash Player, Dream Weaver)

(1)

(0)
(1)

(0.87) (0.91)
(Cronbach's Alpha)

(Torrance) :
" " (40)
(239) (3)

(33) :
(10) (41)
(53) : (4)
(18) (8)
(30) (23)
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2007 /2006

(43) (2005)
(0.77)
(%81.40 -%18.60) (NCTM)
(0.71 -0.16)

.(10) (0.81) (Cronbach's Alpha)
 : () (60)

(3)
 : (1 (1984)
 : () (Torrance)

(2 (15 10 5) : ()
 (5) (10)

(3 (15)

(1) (20) : ((15 10 5)
 (2 1) () (5)

(1) (20) : ((10)
 (2 1) (15)

(1) (20) (2)) ((3 2 1)
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(2) (3)

.(30) (3)

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 -3 (1) : ()
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(40)
(14)

(%34.17)

(ANCOVA)

(2)

(ANCOVA)

(38)

(6)

(2)

(ANCOVA)

(Partial Eta squared)	(sig)	(F)	(Mean Square)	(df)	(Type III Sum of Squares)	(Source)
0.118	0.001	7.862	289.554	2	579.107	
			36.830	118	4345.950	(Error)

.(

(sig)

(2)

(0.05)

(0.001)

= α)

(0.05

.(3)

(Tukey)

)

(3)

(Tukey)

(Sig)	(Std. Error)	(-) (Mean Difference)	×
0.000	1.386	*5.395	×
0.019	1.364	*3.740	×
0.422	1.317	1.655	×

.(0.05 = α)

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(0.05 = α)

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(3)

(0.05 = α)

(0.05 = α)

2006)
Wang, Miller, 1998 2005 Johari, 1998
(1997

(2002)

.(2005)

(Mayer, 2001)

" :
" : (36 :)
" (9 :) "
(26 :) "
" :
(23 :) "
.(171 18 :) "

(Merickel, 1991)

(0.05= α)

(239)
 (33)
 (153) (53) (4)
 (4)

175.306	170.639	183.159	158.977	194.268	171.268	
20.769	25.440	15.140	30.170	13.251	21.298	
%11.847	%14.909	%8.266	%18.978	%6.821	%12.435	
205	199	202	194	225	195	
120	95	131	76	162	99	

.%100 (239) = *

: (4)

(24.182)

(239) (194.268)

(23)

.(4.667)

(183.159)

.(175.306)

(171.268)

.(158.977)

.(%18.978)

.(7.853)

(18.962)

.(11.109)

...

(120) (199) •
 (76)
 (5) (ANCOVA)
 (ANCOVA) (225) •

(5)

(ANCOVA)

(Partial Eta squared)	(sig)	(F)	(Mean Square)	(df)	(Type III Sum of Squares)	(Source)
0.180	0.000	12.978	3516.882	2	7033.765	
			270.996	118	31977.574	(Error)

(sig) (5) (0.05) (0.001)
 (0.05 = α)

(6) (Tukey)

(6)

(Tukey)

(Sig)	(Std..Error)	(-) (Mean Difference)	×
0.000	3.760	*18.963	×
0.036	3.700	*7.854	×
0.002	3.573	*11.109	×

(0.05 = α) *

(0.05 = α)

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(0.05 = α)

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(Tsuei, 1998 Miller, 1998 2000 2008)

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The Effect of Using Two Strategies of Computerized Multimedia on Mathematical Problem Solving and Creative Thinking Abilities among Basic Stage Female Students in Unrwa North Amman Schools

*Heba Abdallah and Hala Al-Shawa**

ABSTRACT

This study aimed at investigating the effectiveness of using two strategies of computerized multimedia on mathematical problem solving and creative thinking abilities among basic stage female students in UNRWA North Amman schools. The purposive sample of this study consisted of (121) female eighth grade students, and randomly defined to three study groups: two experimental and one control group. There were (41) female students in the first experimental group who were taught 3-dimensions unit of eighth grade mathematical curriculum by heard multimedia strategy, The second experimental group consisted of (44) female students who were taught the same unit by written multimedia strategy, and (36) female students in the control group studied by the traditional strategy without computer. A mathematical problem solving test was developed. Torrance figural creative thinking test was chosen. The Analysis of Covariance (ANCOVA) was applied to answer the questions, with the use of means and standard deviations for the students' scores of mathematical problem solving and creative thinking abilities tests. The results of the study showed that there were significant differences ($\alpha = 0.05$) in the ability of the students to solve mathematical problems and to think creatively due to teaching strategy in behalf of the multimedia groups.

Keywords: Computerized Multimedia, Mathematical Problem Solving, Creative Thinking, Mathematics.

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