

:

($\alpha = 0.05$)

.1

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($\alpha = 0.05$)

.2

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(

(85)

(41)

2007 /2006

(44)

(Power

point)

(6)

(21)

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(ANCOVA)

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($\alpha = 0.05$)

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($\alpha = 0.05$)

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(2004)

(2007)

(1988)

(1990)

(1993)

(2003)

(2002)

(1989)

(1993)

.(1999)

(2003 2005)

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. 2007 /2006

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.(Mayer, 2001)

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.(2005)
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. " () " (Torrance)
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:(UNRWA)

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

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(2008)

(45)

(2006)

(108)

(2005)

(Visual Basic)

(165)

(Visual Basic)

(Johari, 1998)

(98)

(2000)

(358)

:

(Logo)

(1996)

(72)

(1992)

(Logo)

(140)

(Merickel, 1991)

(23)

| | | | |
|------------|------------|-------------|----|
| (17298) | 2007/2006 | (85) | |
| .2007/2006 | : | | .1 |
| | | (Data show) | |
| - | : | | .2 |
| | | (41) | • |
| | | (44) | • |
| | | | .1 |
| | | | .2 |
| | | | .3 |
| | | | .4 |
| " | (Torrance) | | .5 |
| | | | ." |

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(30)

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.1 :

.3

.2

(21)

(15)

(Dream

(Flash Player)

(Microsoft Power Point)

(Java Script)

weaver)

(Flash Player)

(Java script)

:

(Polya)

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.2

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.1

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.3

.4

.5

(Power Point, Flash Player, Dream Weaver)

.(Java Script)

.6

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(Polya)

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.7

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(4)

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(8)

(41)

(18)

(4)

(23)

2007 /2006

:

(2005)

(NCTM)

(0)

(1)

(1)

(0.91)

.(0.87)

(Cronbach's Alpha)

:

""

(Torrance)

(239)

(3)

(33)

(53)

(10)

(30)

.(153)

(43)

(0.77)

(0.81) (Cronbach's Alpha) (%81.40 -%18.60) .(0.71 -0.16)
 . (60)

(1984)

(Torrance)

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-1

-2

-3

-4

-5

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($\alpha = 0.05$)

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(

(1)

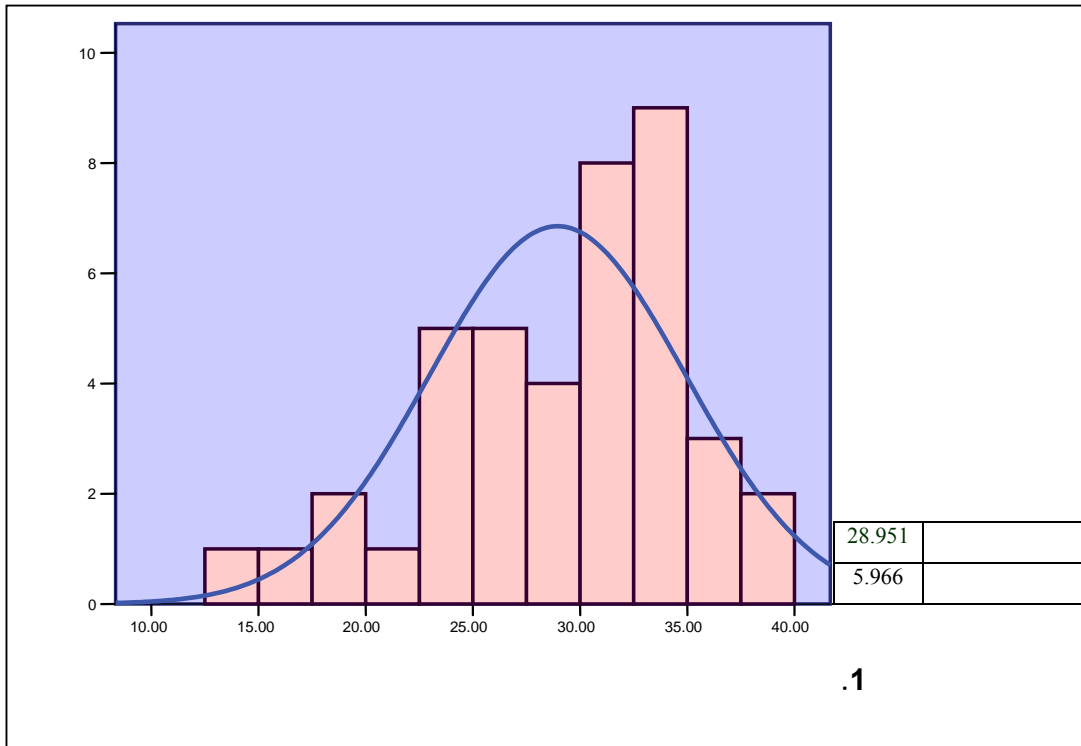
.(41)

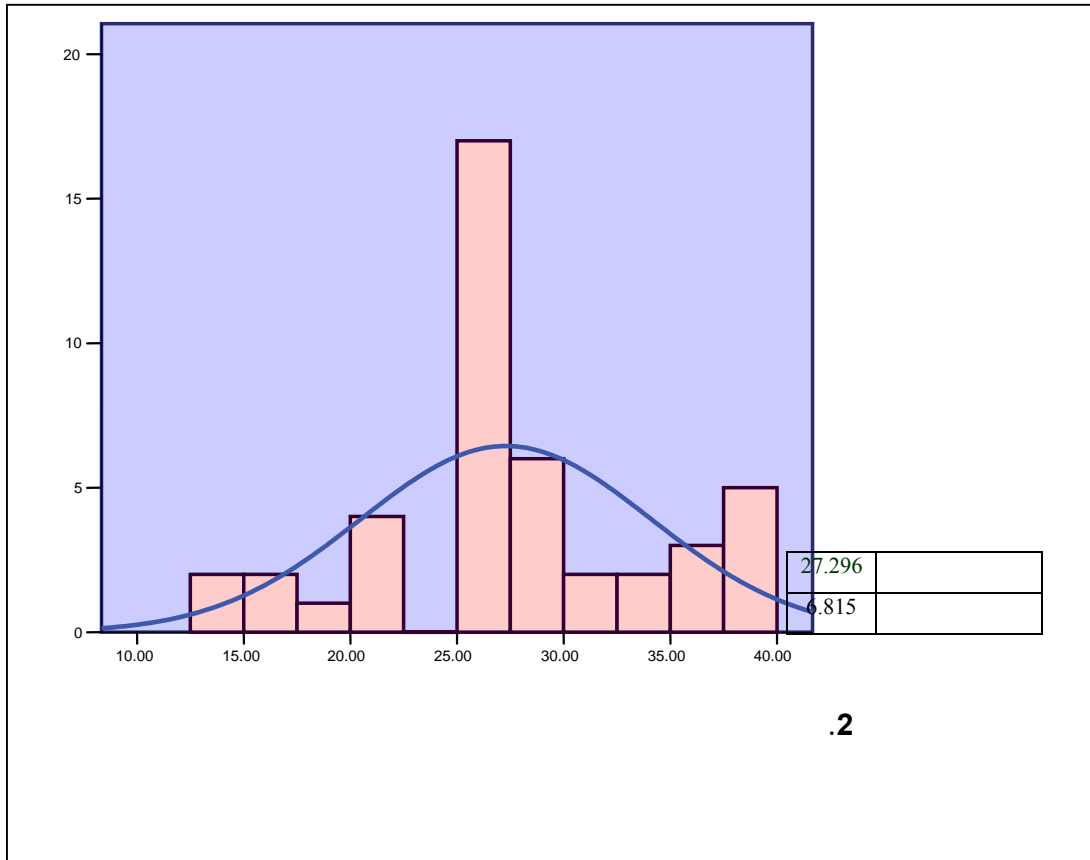
.1

| | | |
|----|----|----------|
| | | |
| 4 | 1 | (16 -12) |
| 4 | 3 | (21 -17) |
| 14 | 10 | (26 -22) |
| 11 | 10 | (31 -27) |
| 4 | 15 | (36 -32) |
| 7 | 2 | (41 -37) |
| 44 | 41 | |

(2) (1)

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.2

(2)

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.2

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| | | |
| 27.296 | 28.951 | |
| 6.815 | 5.966 | |
| %24.967 | %20.607 | |

(41) =

(2)

(41) (28.951)

.(27.296)

.(1.655)

(3)

.3

| | | | | |
|---------|---------|---------|---------|---|
| | | | | / |
| | | | | |
| 27.296 | 22.750 | 28.951 | 22.342 | |
| 6.815 | 7.773 | 5.966 | 6.374 | |
| %24.967 | %34.167 | %20.607 | %28.529 | |
| 40 | 38 | 39 | 34 | |
| 14 | 6 | 14 | 6 | |

(41) =

: .3

•

(41) (22.750)

.(22.342)

•

(6.609)

.(4.546)

•

.(%34.167)

(38)

•

(6)

(40)

•

(14)

(ANCOVA)

 $(0.05 = \alpha)$

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(4)

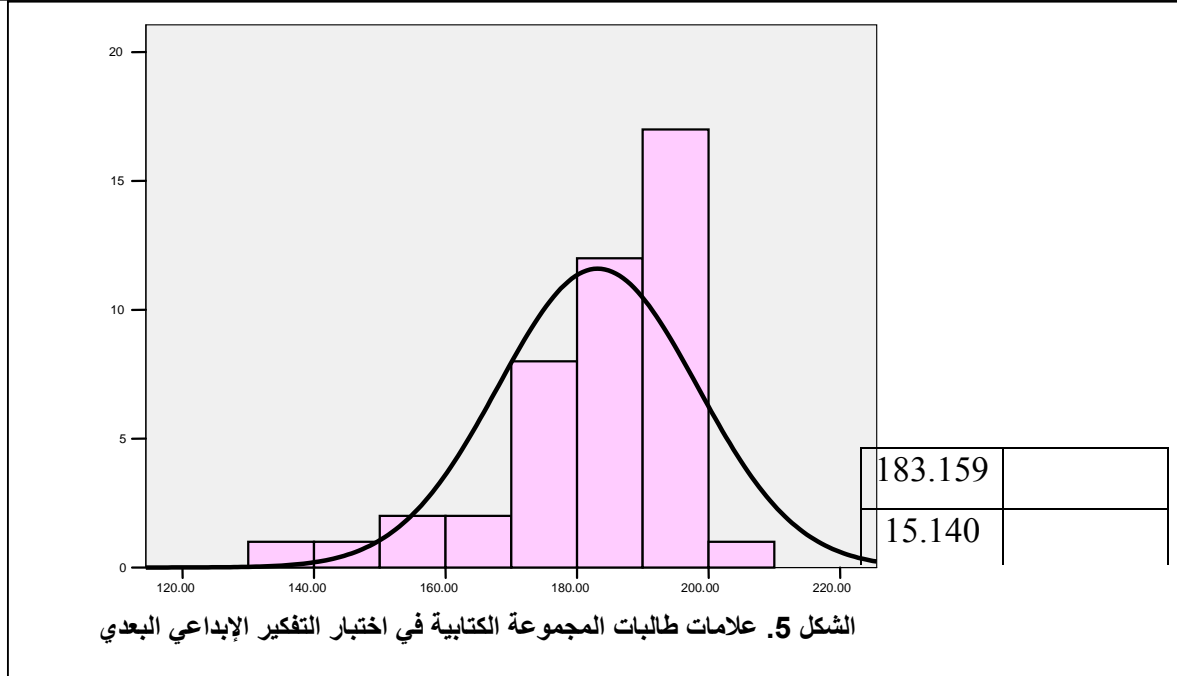
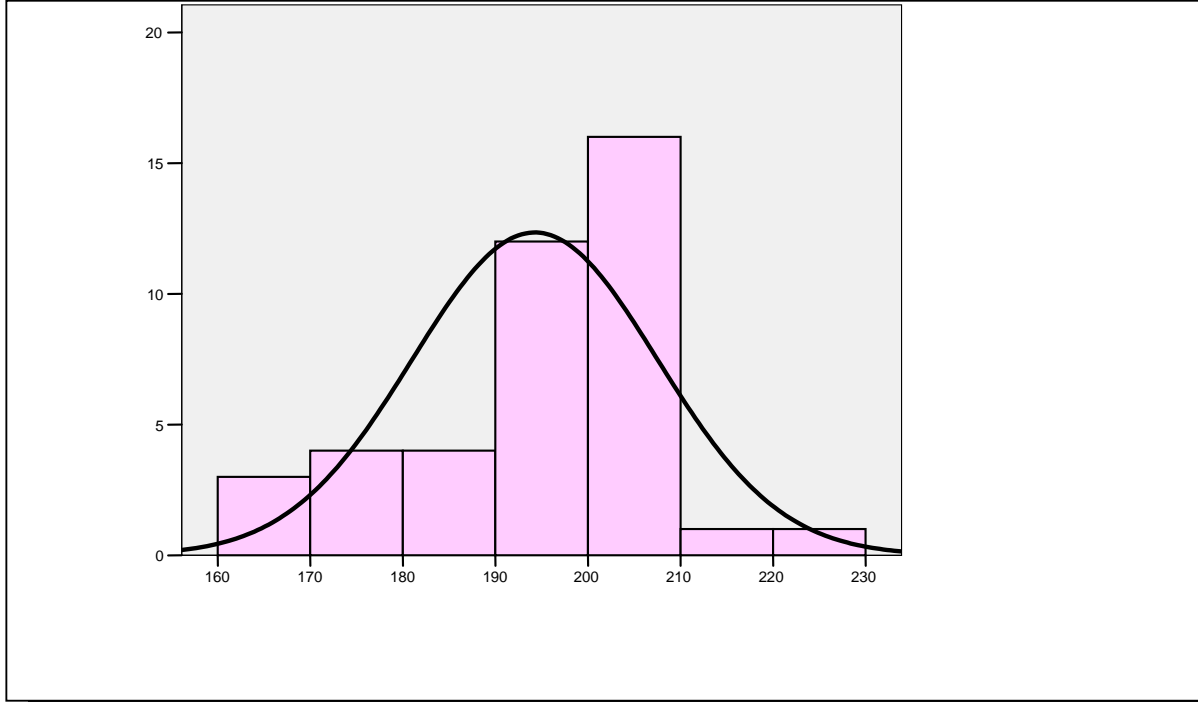
.(239)

.4

| | | |
|----|----|------------|
| | | |
| 0 | 0 | (130 -120) |
| 2 | 0 | (141 -131) |
| 0 | 0 | (152 -142) |
| 2 | 1 | (163 -153) |
| 2 | 3 | (174 -164) |
| 15 | 4 | (185 -175) |
| 16 | 12 | (196 -186) |
| 7 | 19 | (207 -197) |
| 0 | 1 | (218 -208) |
| 0 | 1 | (229 -219) |
| 44 | 41 | |

(4) (3)

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.5

| | | |
|---------|---------|--|
| | | |
| 183.159 | 194.268 | |
| 15.140 | 13.251 | |
| %8.266 | %6.821 | |

(5)

(239) (194.268)

.(183.159)

.(11.109)

(6)

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.6

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|---------|---------|---------|---------|--|
| | | | | |
| | | | | |
| 183.159 | 158.977 | 194.268 | 171.268 | |
| 15.140 | 30.170 | 13.251 | 21.298 | |
| %8.266 | %18.978 | %6.821 | %12.435 | |
| 202 | 194 | 225 | 195 | |
| 131 | 76 | 162 | 99 | |

%100 (239) =
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(171.268)

.(158.977)

(24.182)

.(23)

(195)

(76)

(225)

(131)

(sig)

(ANCOVA)

(0.05)

(0.001)

(0.05 = α)

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(0.05 = α)

(Johari, 1998 1992 2006)

(Merickel, 1991)

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

(0.05 = α)
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(1993)

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(2007)

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(1992)

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|---|-------|-------|---------|---------|---|
| | : | (1) | : | (2002) | - |
| | | | | (2005) | - |
| | | | | (1984) | - |
| | | | | (1990) | - |
| : | (1) | : | (2003) | - | |
| | | | (2000) | - | |
| | | | (2006) | - | |
| | | | (2002) | - | |
| | | | (2004) | - | |
| | | | : (1) | | |
| | | : | (1) | (2005) | - |
| | | | | (1999) | - |
| | | | | (2003) | - |

(1996) -

(1993) -

(1988) -

(2008) -

Johari, A. (1998), Effects of inductive multimedia programs including graphs on creation of linear function and variable conceptualization, Arizona State University, **ED423841**.

Mayer, R. (2001), **Multimedia Learning**, U.K: the Press Syndicate of University of Cambridge.

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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 SCHOOLS**

**Hiba Mahmoud Abdullah
Dr. Hala Mohammad Al-Shawa**

ABSTRACT

This study aimed to investigate 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, by answering these two questions:

1. Are there significant differences ($\alpha = 0.05$) in the ability of eighth grade female students to solve mathematical problems due to teaching strategy (heard multimedia strategy, written multimedia strategy, traditional strategy)
2. Are there significant differences ($\alpha = 0.05$) in the ability of eighth grade female students to think creatively due to teaching strategy (heard multimedia strategy, written multimedia strategy, traditional strategy)

The purposive sample consisted of (121) female eighth grade students in the third preparatory Baqa'a school, was chosen randomly from (6) eighth grade sections, 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 for the year of (2006\ 2007) by heard multimedia strategy that used a computerized multimedia program with only heard words type, The second experimental group consisted of (44) female students who were taught the same unit by written multimedia strategy that used a computerized multimedia program with just written words type, Furthermore, (36) female students in the control group studied the 3-dimensions unit by the traditional strategy without computer.

To achieve the study aims; two computerized multimedia programs were designed by the researcher using Power Point program basically in order to teach the 3-dimensions unit for the two experimental groups that finished after (21) school days by (6) class periods weekly, in addition, a mathematical problem solving test was developed, and Torrance figural creative thinking test "A" was chosen, and these two tools were applied before and after teaching the 3-dimensions unit for the three groups of study.

Because of the difficulty of redistributing the groups before the application of this study 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 :

1. There were significant differences ($\alpha = 0.05$) in the ability of eighth grade female students to solve mathematical problems due to teaching strategy (heard multimedia strategy, written multimedia strategy, traditional strategy)
2. There were significant differences ($\alpha = 0.05$) in the ability of eighth grade female students to think creatively due to teaching strategy (heard multimedia strategy, written multimedia strategy, traditional strategy)

After using Tukey test for the following pairs comparatives between groups it was shown that There were significant differences ($\alpha = 0.05$) in the ability of mathematical problem solving between the heard multimedia group and the control group on behalf of the heard multimedia group, and There were significant

differences ($\alpha = 0.05$) in the ability of mathematical problem solving between the written multimedia group and the control group on behalf of the written multimedia group, and There were not significant differences ($\alpha = 0.05$) in the ability of mathematical problem solving between the heard multimedia group and the written multimedia group on behalf of the heard multimedia group.

The results showed too that There were significant differences ($\alpha = 0.05$) in the ability of creative thinking between the heard multimedia group and the control group on behalf of the heard multimedia group, and There were significant differences ($\alpha = 0.05$) in the ability of creative thinking between the written multimedia group and the control group on behalf of the written multimedia group, and There were significant differences ($\alpha = 0.05$) in the ability of creative thinking between the heard multimedia group and the written multimedia group on behalf of the heard multimedia group.

According to the study results the researcher recommended many things such as using the suitable designed computerized multimedia programs to teach mathematics, and teach teachers the rules of using multimedia, and the behaviors that improve the mathematical problem solving and creative thinking abilities for the students.