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Educational Reform for Knowledge Economy

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2004   "

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(Pedagogy)   .(   )

(Alexander and Helen, 2004)

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(Abeles, 2002) . Authentic Assessment

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. :(Self-Assessment) (1) : (2003

.(Lipscomb,2003; Pye and Sullinvan, 2001) ( )

(Scheidet, 2003)

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.Cisco Learning Institute (CLI, 2004)

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and Ivers, (NCTM)

(Barron 1996; Faison,1996; Ryder and Wilson, 1996)

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(Schacter and Fagnao, 1999)

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(Bruce,   (Vockell, 1992 1996
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(2003)   (Green, 2000)   .

(101) (60)

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(24) (36) (160)

: (4) (96) (64)

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(Szabo and Poohhay,1995) .

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(Dalton, 1989)   .   (Judson, 1991)

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78   .

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(Akkoyunlu and Soylu, 2006)

64

-2005   .

.2006   (240)

(O'Dwyer,   .

Carey, and Kleiman, 2007)

Louisiana   (1)
(231)
The   (IAEP)   (232)

International Assessment of Educational Progress   .

1991
Testing Service (ETS)   .

Educational

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Study Repeated

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(α=0.05)   :

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(2)

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$(\alpha=0.05)$:

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(1)

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(148)

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(4)   (5)   :

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(0.94)   (8)   (22)   (6)

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0.75	6	(1)
0.74	2	(1)
0.86	4	(3)
0.87	4	(4)
0.90	2	(5)
0.90	4	(6)

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"   "   (ICDL)

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(   )   (30)

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(28)

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(Data Show)   (Laptop)

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(ANCOVA)

(Wireless)

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(1) .

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(MANCOVA)

(Stevens, 1996). and Tabachnick, 1996)

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MANCOVA

ANCOVA   :

(1)   Bartlett's test of Sphericity

(72.741)   (P =.0.000).

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(–

.(Stevens 1996, P330)

-            (   ).

(2)   –

(2)   .   -(0.45)

(Cohen, 1988)

:   (=0.71)   (=0.55)

(=0.32)   .   (Fidell

(2)

		-			-			* -		
40	3.97	28.82	20	3.99	27.70	20	3.95	29.94			
68	3.70	25.45	33	3.74	22.87	35	3.67	27.88			
40	4.00	23.73	20	3.99	21.98	20	4.01	25.47			
148	3.86	25.64	73	3.88	23.95	75	3.84	27.78			
		-			-			* -			
40	8.41	82.13	20	8.43	79.78	20	8.38	86.44			
68	7.84	82.68	33	7.92	78.94	35	7.77	86.21			
40	8.47	82.19	20	8.44	77.94	20	8.49	84.47			
148	8.16	82.40	73	8.20	78.90	75	8.13	85.81			

* - :   :   :   .

(2)   (3.83)

(27.78)

(23.95)

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(2)

(85.81)

MANCOVA   (6.91)   (78.90)

(3)

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(3)

						(MANCOVA)		:
		0.37=		0.02 =		(0.34)	(1.18=) 0.97 =	
	η^2					.		(ANCOVA)
0.38	0.03	0.16	1.84	24.69	2	49.37		
0.16	0.01	0.53	0.63	38.20	2	76.41		
						(MANCOVA)		:
		1.00=		0.28 =		(0.000)	(27.43=) 0.72 =	
	η^2					.		(ANCOVA)
1.00	0.19	0.00	33.07	444.54	1	444.54		
1.00	0.16	0.00	26.76	1611.47	1	1611.47		
						(MANCOVA)		:
		0.99=		0.08 =		(0.000)	(6.06=) 0.85 =	
	η^2					.		
1.00	0.15	0.00	12.53	168.42	2	336.85		
0.06	0.001	0.95	0.05	3.10	2	6.20		

) F   0.025   .   α =0.05   *

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(α=0.05)   "   :

(0.63)   ( )

(0.01 =)   (0.53)

.   (0.16)   "

Wilks' lambda   (4)

-(1.18) =   - (0.97)

effect   (P = 0.34)

(   )   (0.02=   )   size

.(0.37)

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.   (

"   :   .

(α=0.05)   (3)

"

Wilks Lambda   (3)

-(27.43) =   -(0.72)   (0.16)   (1.84)

effect   (P = 0.000)   (0.03 =   )

(0.28=   )   size   (0.38)

.(1.00)   (   )

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(Dalton,1989)

(3)

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(0.000)   (33.07)

(1.00)   (0.19=   )

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(3)

ICDL

2005)   .

2000   2002   2000   .(   )

2003   2002   1994   1996

.(Dalton, 1989; Judson, 1991; Szabo and Pooehky, 1995

(3)   (Schachter and Fagnao, 1999)

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(0.000)   (26.76)   –   –

(0.16=   )

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(0.95)　　　　　　　(0.05)

(0.001=　　　)　　　　　　　　　　　　–

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(α=0.05)

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(6.06) =　　　　　– (0.85)　　lambda

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.144-109 :(2)7

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-190 :(1)14

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Abeles, T. 2002. E-Learning as a Lens to the Future of US Post Secondary Education, The Salon Consortium, Consortium of Institute and Organization Committed to Quality Online Education, available via .www .aln.org/ consulting/ docu/ sc/65/134/.doc. retrieved April, 25th, 2004.

Akkoyunlu, B. and Soylu, M. 2006. A study on students' views on blended learning environment, *Turkish Online Journal of Distance Education*, 7(3): 43-56.

Alexander, H. 2004. Cisco Learning Institute for Blended Learning, http://www. Cisco Learning Institute. http://www.rubicon.com.jo/ em/ pd/html. retrieved Jan, 27th, 2005.

Barron, A., Ivers, K. 1996. *The Internet and Instruction - Activities and Ideas*. Englewood: Libs Unlimited.

Bersin and Associates. Blended Learning: What Works. May 2003. p1-10. http:// www. bersin. com/ tips-techniques/ Breez2.htm. retrieved Jan 4, 2005.

Bruce, H. 1995. Internet and academic teaching in Australia, *Education for information*, 13(3): 177-191.

Cohen, J. 1988. *Power analysis for behavioral sciences*, (2nd. Ed.). Hillsdale, NJ: Lawrence Erlbaum.

Gardner, Donald G, (1993).The measurement of computer Attitudes: an Empirical Comparison of Available Scales, *Journal of Educational Computing Research*, 9(4): 487-507.

Judson, Phoebe T. 1991. Computer Algebra Laboratory for Calculus, *Journal at Computer in Mathematics and science Teaching*, 10(1): 35-38.

Lipscomb, G. 2003. I guess it was pretty fun: using web quests in the middle school classroom, *Clearing House*, 76(3): 152-155.

National Council of Teachers of Mathematics. 2000. *Curriculum and Evaluation Standards for school Mathematics*, Reston, VA.

O' Dwyer, L. M., Carey, R. and Kleiman, G. 2007. A study of the effectiveness of the Louisiana algebra 1 online course, *Journal of Research on technology in education*, 39 (3); 289-306.

Pye, J. and Sullivan, J. 2001. Use of computer-based instruction

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257-256 :(1)4

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.298-284 :(140)31

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.306-292 :(27)7

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.122-110 :(2)11 ( )

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Animation, Mathematics a achievement, and Attitude Toward Computer Assisted Instruction, *Journal of Research on Computing in Education*, 28(3):390-413.

Tabachnick, B. G. and Fidell, L. S. 1996. *Using multivariate statistics*, (3rd.ed.). NY: Harper Collins College Publisher.

United States Department of Agriculture Report, Evaluation Report Learning Pilot Final Report, food Safety and Inspection Service, Washington, DC, at www.fsis.usda.gov/oppde/peis/Reports/OPPDE/Eval htmJune-2002, retrieved, Jan, 21st, 2005.

Vockell, E. L and Schwartz, E. 1992. *The Computer in the classroom*. (2nd ed,)., New York:. McGraw-Hill.

in teaching middle school social studies, *International Journal of Social Education*, 15(2): 92-104.

Schacter J and Fagnano, C. 1999. Does Computer Technology improve student learning and achievement? How, When, and under what condition? *Journal of Educational Computing Research*, 20(4): 329-343.

Scheidet, R. A. 2003. Improving student achievement by infusing a web-based curriculum into global history, *Journal of Research on Technology in Education*, 36(1): 77-94.

Stevens, J. 1996. *Applied multivariate statistics for the social sciences*, (3rd. ed.). NJ: Lawrence Erlbaum Associates.

Szabo, M. and Poohhay, B. 1995. An Experimental Study of

The Effect of Blended Teaching Method on Eighth Grade Students Achievement in the Units of Functions and Equations Solving and their Attitudes towards Mathematics

Fawzi Al-Awadh and Younes Al-Younes*

ABSTRACT

This study aimed at investigating the effect of using a blended teaching method on eighth grade students' achievement in functions and equations solving units, and their attitudes toward mathematics. Two discovery schools in Amman second educational district directorate were chosen. Then two groups were formed: a control, traditional group, (73) students and an experimental, blended teaching, group, (75) students. To achieve the study purpose, three measuring tools were prepared: a test for measuring the prerequisite knowledge of the two units, a measure of students attitudes toward math, and an achievement test on the functions and equations solving units were constructed. Before administering these measures on the experimental and control groups, evidence of reliability and validity were established. The students of both groups took the tests and responded to the questionnaire before conducting the study and after it.

The MANCOVA test was used to answer the research questions. The results showed that there are a statistically significance differences on students achievement on functions and equations solving units and their attitudes toward math in favor of blended teaching. However, the results did not show statistically significant differences in: (1) students attitudes toward math that can be attributed to students academic level; (2) students achievement of the two units and their attitudes toward math can be ascribed to the interaction between methods of teaching and students academic level. Many recommendations were drawn, and the most important of which is to encourage teachers to adapt blended teaching in math instruction.

Keywords: Teaching Methods, Blended Learning and Teaching, Math Instruction, E-Learning.