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(288) (219)

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(χ^2)

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Least Significant Difference (LSD)

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The level of scientific thinking and learning styles of ninth grade students at the Hebron Educational Governorate

Abstract

This study aimed at exploring the level of scientific thinking and learning styles of students in the 9th grade at the Hebron Directorate of Basic Education.

This study was conducted during the second semester of the school year 2007 / 2008. The population of the study was composed of all students of 9th grade in the governmental and U.N schools in Hebron governorate, whose number is (2757) male students and (3144) female students, the sample of this study was selected according cluster random which was composed of (219) male students and (288) female students, the researcher used two instruments, the first one is scientific thinking test, and the second is the environmental learning styles. Validity and reliability of study instruments have been proved.

The researcher has used statistical methods represented in calculating means, percentages, standard deviations, using (t-test), (ANOVA), Least Significant Difference (LSD) for differences and Chi Square. after processing the data, the study has concluded that the students level for possession of scientific thinking was average, there were statistically significant differences in scientific thinking test due to gender in favor of the female students, and there were statistically significant differences in the scientific thinking test due to science achievement level in favor of the high-level students, the study has also concluded that there were statistically significant differences in learning styles among students due to science achievement level in favor of the low- level students in the imaginative style, and in favor of the middle-level students of executive style, and in favor of the high- level students of logical and practical style. The result have shown that there were statistically significant differences in scientific thinking test due to learning style among students, between the imaginative style and (logical and practical styles) in favor of the logical and practical types, and between (logical and imaginative styles) in favor of the of imaginative style.

In light of the previous results, the researcher recommends that educators should take into account learning styles, and to employ scientific thinking skills strategies in the teaching of all subjects, particularly in science, and teachers should be trained up on how to use it.

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."American Association for the Advancement of Science"

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(Fanicone, 1996)

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(Watson& Glaser)

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:Creative Thinking

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:Fluency -

:Flexibility -

:Originality -

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.(2005)

: Elaboration

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.(Small, 1990)

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(Yurumezoglu & Oguz, 2007)

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(Unutkan, 2007)

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(Kral, 1997)

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(Lawson)

(combinatorial)

(Strikotr, 1997)

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(Collings, 1994)

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(Lee, 1993)

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(Strikotr, 1997)

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(Collings, 1994)

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" (Sternberg, 1997)
(1992)

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(AASA, 1991, p12)

(Dunn, Dunn & Price, 1987)

(Kolb, 1984)

(Gregorc, & Butlen, 1984)

(1984)

.(Entwistle, 1981 P:3-4)

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(Carl Jung)

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Thinker :

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Sensor:

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Intuitor :

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(Biggs, 1993)

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Kolb

3.3.2

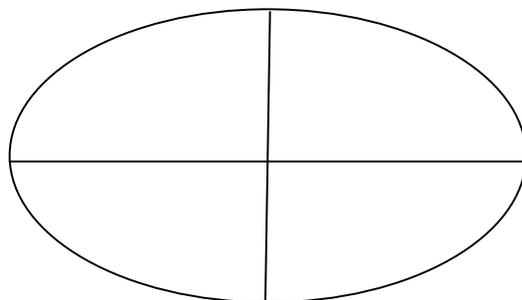
(David Kolb)

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(1)

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:(Kolb, 1984)

Divergent

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Convergent

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(McCarthy, 1987)

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.(38 2004) (1.2)

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:1.2

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4.2

1932

1890

1883

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. (He, 2000)

(Snyder, 2000)

.(Cano & Hewitt, 2000)

(Grigorenko & Sternberg, 1993)

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(Hsieh, 2003)

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1981 David Kolb

Actual-) :

(Actual-Routine Learning)

(Spontaneous Learning

(Conceptual Specific Learning)

(Conceptual-Global Learning)

(290)	(%4,4)	(33)	:	
(298)		(% 18)	(136)	(%38,8)
				.(%39,3)

(2001)

(54)

Honey & Mumford

(0.05 = α)

(McCollin, 2000)

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(585)

(84)

(324 243)

() :

) : (Busto, 1998)

(

(Dreher, 1997)

(1996)

(545)

()

(%35,6)

.(%15,5)

(% 22,1)

(%26,8)

(Callan, 1996)

(65)

(Whittington & Raven, 1995)

(25 %85 31)

/

(Wallace, 1995)

(450)

(Visual Learners)

(Auditory Learners)

(Kinesthetic Learners)

(Tactual Learners)

(Jackson & Christenberry, 1994)

:

(Convergent) (1993)
 (Assimilation) (Accommodation) (Divergent)
 (512)

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(%28) (%18) (% 20) (%34)

(/) (1993)

(182)

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(GEFT)

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(2006)

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(798)

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26

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(Kolb)

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(% 1.9)

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(%0.1)

(%0.4)

(Lawson & Johnson, 2002)

. (Neo-Piagetian)

(Kolb)

366

(Cano & Hewitt,2000)

Kolb

Sternberg

(168

48)

Sternberg

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(1994)

344)

(330

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(1992)

8 (303)

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(Kolb)

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1.6.2

1.3 منهج الدراسة :

2.3 مجتمع الدراسة :

(1.3) .2008/2007

:1.3

1888	2028	45	
1256	729	20	
3144	2757	65	

(5901)

(1888)

(2028)

(45)

(1256)

(729)

(20)

.2008/2007

3.3 عينة الدراسة :

(16)

(7) (9) (6) (8)
(6) (3) (9)
(2.3)

الجدول 2.3: توزيع أفراد العينة حسب الجنس والجهة المشرفة ومستوى التحصيل في العلوم والمجموع الكلي للعينة

المجموع 507	219	ذكر	الجنس
	288	أنثى	
507	283	حكومة	الجهة المشرفة
	224	وكالة	
507	127	منخفض	مستوى التحصيل
	155	متوسط	
	225	مرتفع	

:

(25)

-

() -

4.3 أدوات الدراسة :

1.4.3 اختبار مستوى التفكير العلمي عند الطلبة :

(1992) (1992) (2002) (2006))
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:3.3

12 2	2		1
18 9 6	3		2
14.16 11 10	4		3
3 1	2		4
13 4	2		5
20 19 8 7	4		6
17 15 5	3		7

: **1.1.4.3**

)
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(20)

: **2.1.4.3**

(test-retest)

(50)

0.70-)

(0.90)

(0.85- 0.25)

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: **2.4.3**

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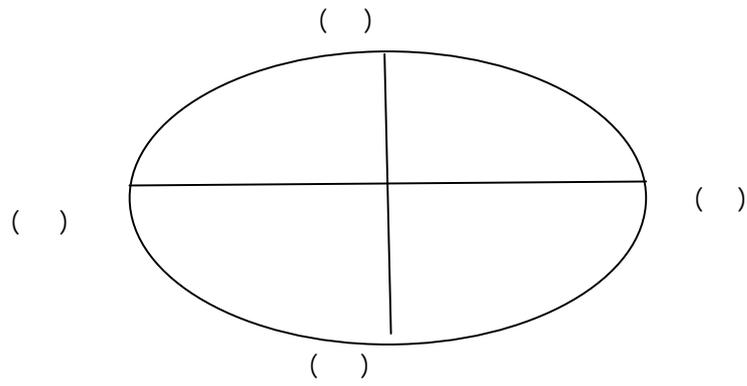
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: **1.2.4.3**

(12)

: **2.2.4.3**

(test-retest)

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5.3

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1.6.3 المتغيرات المستقلة :

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(t-test) " "

Least Significant Difference (LSD)

(ANOVA)

χ^2

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: **1.4**

.(3.4) (2.4) (1.4)

:1.4

13.725	69.22	219	
13.669	71.99	288	
13.75	70.80	507	

:2.4

14.003	58.031	127	
10.521	71.451	155	
10.101	77.555	225	
13.75	70.80	507	

:3.4

13.715	71.84	283	
13.710	69.49	224	
13.75	70.80	507	

(3.4) (2.4) (1.4)

.(13.75)

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:

:
(0.05 = α)

.

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			13.725	69.22	219	
0.024*	2.258	505	13.669	71.99	288	

. (0.05 = α)

*

(0.024)

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(0.05 = α)

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(0.05 = α)

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14.003	58.031	127	
10.521	71.451	155	
10.101	77.555	225	
13.749	70.798	507	

(ANOVA)

.(6.4)

(ANOVA)

:6.4

0.0001*	121.06	15519.831	2	31039.66	
		128.198	504	64611.82	
			506	95651.48	

. (0.05 = α)

*

(0.0001)

(121.061)

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(6.4)

(0.05 = α)

(L.S.D)

.(7.4)

(L.S.D)

: 7.4

	-		
0.0001*	-13.4201*		
0.0001*	-19.5241*		
0.0001*	13.4201*		
0.0001*	-6.1039*		
0.0001*	19.5241*		
0.0001*	6.1039*		

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(7.4)

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(0.05 = α)

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0.056	1.917	505	13.715	71.84	283	
			13.710	69.49	224	

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17.6	89	
18.5	94	
22.1	112	
41.8	212	
100.0	507	

(9.4)

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(18.5)

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.(17.6)

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(0.05 = α)

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(χ^2)

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.(10.4)

(χ^2)

:10.4

		χ^2			
0.141	3	5.466	43 14.9%	46 21.0%	
			51 19.6%	43 17.7%	
			72 25.0%	40 18.3%	
			122 42.4%	90 41.1%	
			288 100.0%	219 100.0%	

(46)

(10.4)

(14.9%)

(43)

(21.0%)

(17.7%)

(43)

(19.6%)

(51)

(72)

(18.3%)

(40)

(90)

(25.0%)

(42.4%)

(122)

(41.1%)

(0.141)

(3)

(5.466)

(χ^2)

(0.05 = α)

7.4

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(0.05 = α)

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(χ^2)

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. (11.4)

(χ^2)

:11.4

		(χ^2)				
0.0001*	6	24.592	35	19	35	
			15.6%	12.3%	27.6%	
			29	39	26	
			12.9%	25.2%	20.5%	
			51	34	27	
22.7%	21.9%	21.3%				
			110	63	39	
			48.9%	40.6%	30.7%	
			225	155	127	
			100.0%	100.0%	100.0%	

. (0.05 = α)

*

(6)	(24.592)	(χ^2)	(11.4)	
		(0.05 = α)		(0.0001)
(27.6%)			(35)	
	(12.3%)		(19)	
	(15.6%)		(35)	
	(20.5%)		(26)	
	(25.2%)		(39)	
		(12.9%)		(29)
(27)				
(34)		(21.3%)		
	(51)		(21.9%)	
(39)				(22.7%)
(63)		(30.7%)		
	(110)		(40.6%)	
.				(48.9%)

: **8.4**

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(0.05 = α)

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(χ^2)

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.(12.4)

(χ^2)

:12.4

		(χ^2)			
0.937	3	0.416	41 18.3%	48 17.0%	
			39 17.4%	55 19.4%	
			50 22.3%	62 21.9%	
			94 42.0%	118 41.7%	
			224 100.0%	283 100.0%	

(12.4)

(41)

(17.0%)

(48)

(18.3%)

(39)

(19.4%)

(55)

(17.4%)

(50)

(21.9%)

(62)

(22.3%)

(94)

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(0.416)

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.(42.0%)

(0.05 = α)

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(0.05 = α)

.(13.4)

:13.4

16.46	66.97	89	
14.86	69.89	94	
12.30	71.88	112	
12.41	72.24	212	
13.75	70.798	507	

(ANOVA)

.(14.4)

(ANOVA)

: 14.4

*0.015	3.498	651.554	3	1954.663	
		186.276	503	93696.816	
			506	95651.479	

. (0.05 = α)

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(0.05 = α)

(L.S.D)

. (15.4)

(L.S.D)

:15.4

	-		()
0.143	-2.9273		
0.012	-4.9087*		
0.002	-5.2743*		
0.148	2.9273		
0.300	-1.9814		
0.166	-2.3469		
0.012	4.9087*		
0.300	1.9814		
0.819	-0.3656		
0.002	5.2743*		
0.166	2.3469		
0.819	0.3656		

$$\left(\begin{array}{c} \cdot \\ \cdot \end{array} \right) \quad (15.4)$$

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1.5

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(70.80)

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(Collings, 1994)

.(Yurumezoglu & Oguz, 2007)

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2.5

($0.05 = \alpha$)

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($0.05 = \alpha$)

(LSD)

(Kral, 1997)

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(Wallace, 1995)

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(χ^2)

(0.05 = α)

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(χ^2)

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(Hsieh,2003)

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110 (22.7% 51)
(48.9%

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(0.05 = α)

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(LSD)

(ANOVA

Lawson &) ()
(1992) (Johnson, 2002

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(2006) (Cano & Hewitt, 2000)

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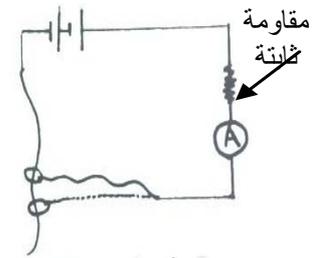
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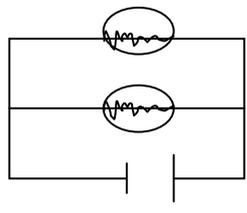
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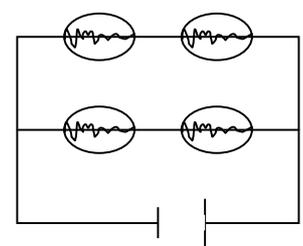
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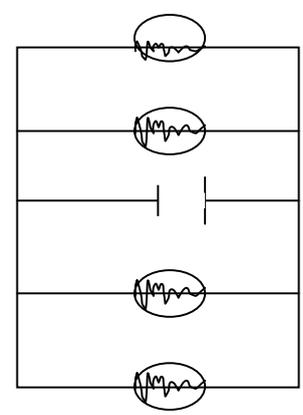
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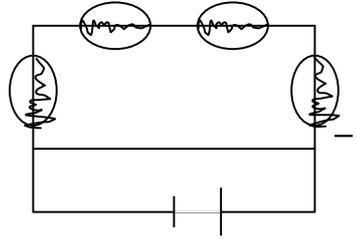
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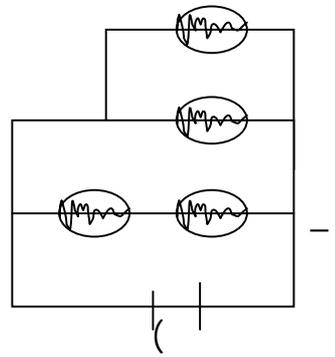
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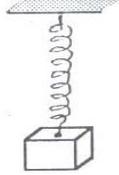
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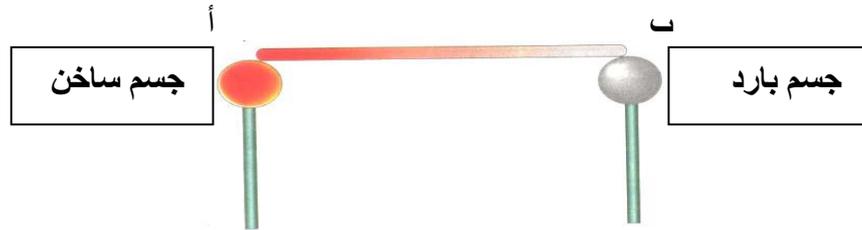
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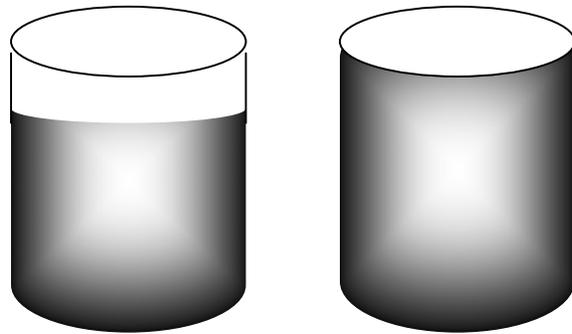
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