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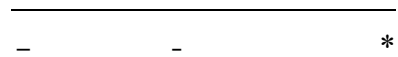
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## **ABSTRACT**

### **The efficiency of using epistemological v-shape to physics lab on first year university students' scientific thinking**

This study aimed at investigating the efficiency of using epistemological v-shape to physics lab on first year university student's scientific thinking. The sample of the study consisted of (48) first year university students from scientific colleges at Al-Quds university: (24) male and (24) female including both high and low pre-achievers in physics. Students were assigned to experimental and control groups. The experimental group was taught the physics lab (030211) using epistemological v-shape method. The control group was taught the same lab using the traditional method. The instrument used in the study was the scientific thinking test. Content validity and reliability were established for test.

The experiment lasted ten weeks. The design of the study was pre-post non-randomized groups. In view of the design the scientific thinking test was administered before and after the experiment. Data was analyzed using (ANCOVA). The findings of the study were:

A significant difference between the mean scores of the experimental and control groups was found in the test of scientific thinking in favour of the experimental group. And a significant difference between the mean scores of high pre-achievers in physics and low pre-achievers in physics was found in favour of the high pre-achievers in physics of experimental group students. The findings also show that, no significant difference in scientific thinking was found due to the (sex, interaction of group and sex, interaction of group and prior achievement in physics, interaction of sex and prior achievement in physics, and the interaction of group and sex and prior achievement in physics)

Based on the finding of this study, incorporating constructivistic teaching approach strategies in science laboratories and curriculum was recommended

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.(Jewett, 1991)

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.(Novak and Gowin, 1984)

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(V) (Focus question) (3)

(Events/ Objects) (4)

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.(Yager, 2000)

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.(Roth, Fraser & RoyChoudhury, 1993 White, 1996)

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(Kuhn et al., 2009)

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(ANCOVA)

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(Hofstein et al., 2005)

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(Tweedy & Hoese, 2005)

(Laboratory Task Analysis Instrument)

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(Roth, 1994)

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(Novak & Gowin, 1984) (v)

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(3-wayANCOVA)

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4.50	82.75	3.82	84.00	5.04	87.14	6.98	81.14	
5.09	68.00	3.72	69.87	8.33	76.00	4.50	72.60	
5.11	76.35	3.66	76.38	6.04	82.27	4.36	76.82	

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(82.75)

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95,0	004,0	15,0	1	15,0	. ×
78,0	08,0	99,2	1	99,2	×
65,0	21,0	36,8	1	36,8	. × ×
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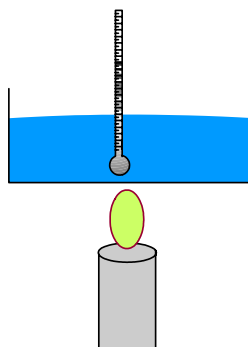
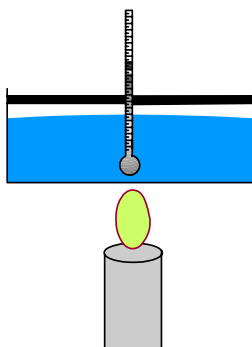
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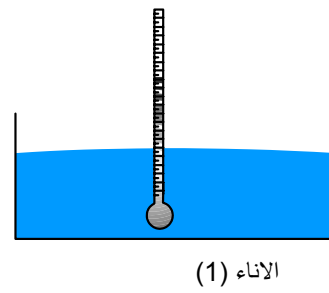
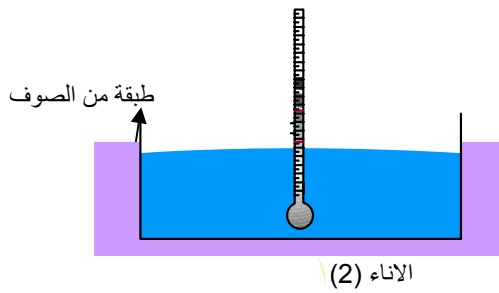
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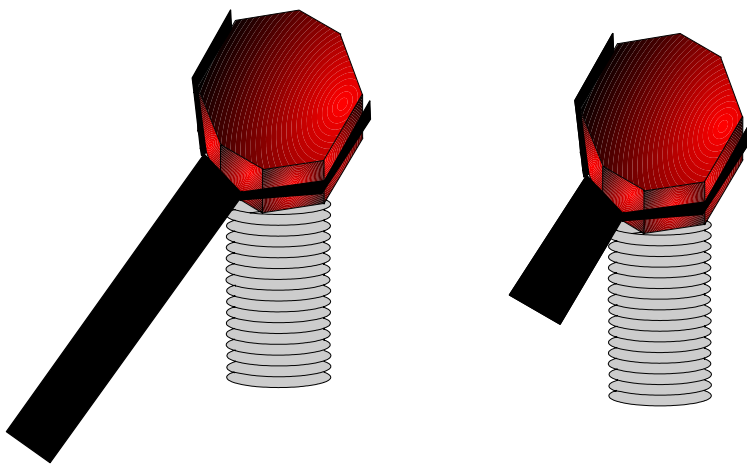
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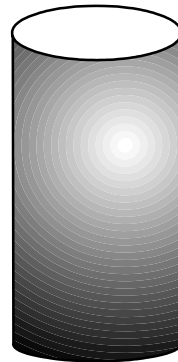
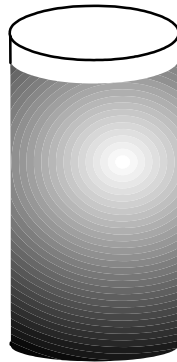
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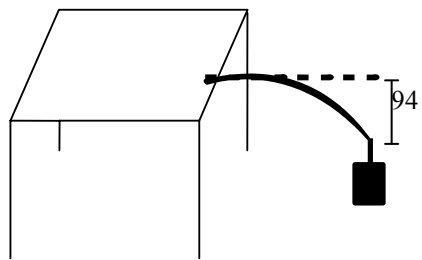
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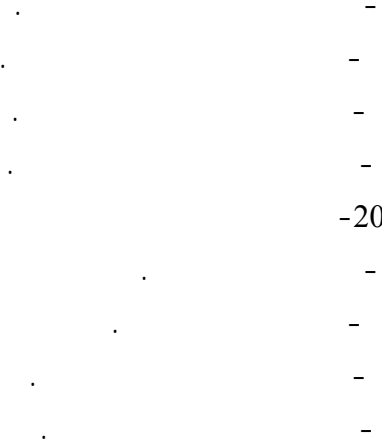
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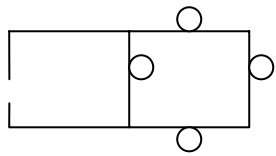
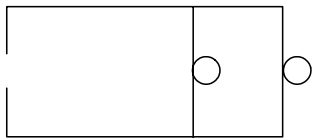
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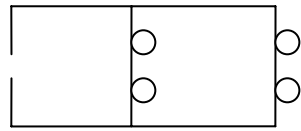


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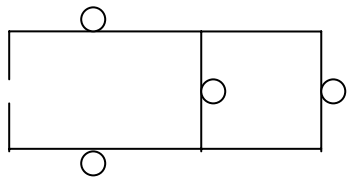
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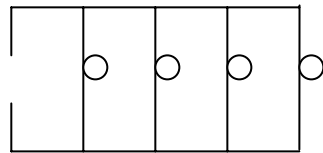
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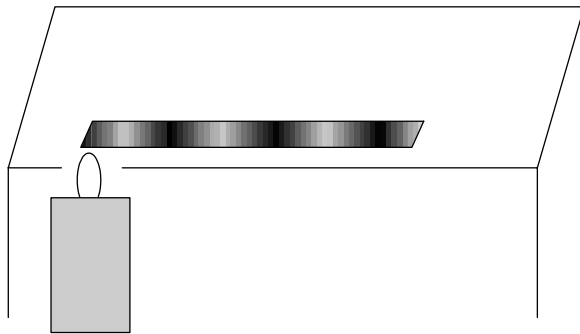
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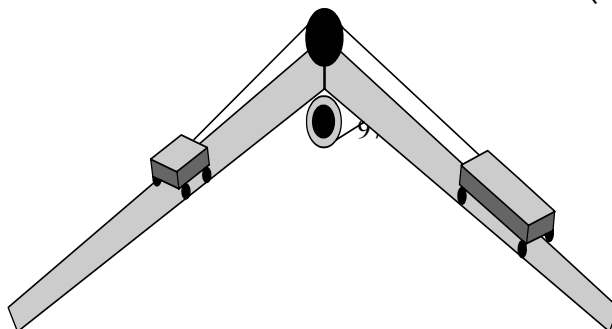
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