

BAR-ILAN UNIVERSITY

**Using painting and sculpture in the process of science teaching in
kindergartens and its impact on the degree of spontaneous use of them**

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Abstract

Many researchers agree that the education provided to young children, is related to the success of the learner as an individual and to the compliance objectives of school education. The purpose of this study was to evaluate the effect of the use of symbolic representation (drawing, using modeling dough) spontaneously among kindergarten children who study science: Does participation in a group that uses symbolic representation when enrolled in a scientific study program raise the level of the science-related symbolic representation, as opposed to a control group that was not exposed to symbolic representation during enrollment in a scientific study program? Another objective of the study was to evaluate the effect of the scientific intervention program: Does participation in the scientific program improve children's knowledge? Furthermore, was the increase in knowledge in group exposed to symbolic representation greater than that of the control group?

The study involved 120 children from the central region of the country, aged 5-6 years, who attend kindergartens (municipal kindergartens), which were divided into two groups: the experimental group and the control group. Both groups were tested before and after four scientific sessions on "Solar System," "our planet", "road safety" and "structures" on their scientific knowledge on these issues. When answering the questions the children could use painting or modeling dough to answer. The findings indicated low use (20/120 children) of symbolic representations before the intervention program. We also found an association between the children's initial knowledge and the use of the symbolic representations. In addition, the findings show improvement in symbolic representations used in the experimental group and the control group after the intervention (9 before, 27 after, in the control group, 11 before,

55 after, in the experimental group). The findings indicated a positive effect of exposing children to scientific "Technogan" activities on their knowledge of the subjects studied, especially for the children in the experimental group. The improvement in knowledge was associated with increased use of symbolic representations.

The current study showed that scientific learning experiences combined with symbolic measures promotes scientific knowledge. The novelty in this study is the young age of the participants. It was found that learning with symbolic measures is effective over time (a month after the trial) and affects the spontaneous use of symbolic means.