

THE EFFECT OF MEDIATING ARTIFACTS
DESIGNED TO PROMOTE METACOGNITIVE REFLECTION
ON TRANSFER IN THE MATHEMATICAL DOMAIN

A Dissertation
by
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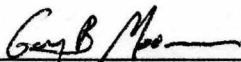
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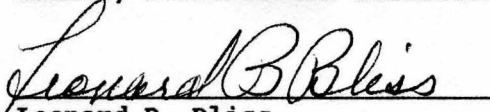
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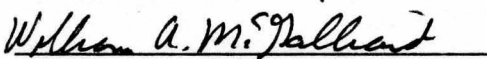
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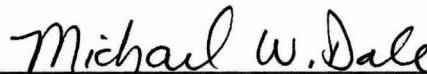
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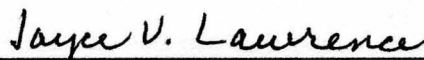
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ABSTRACT

THE EFFECT OF MEDIATING ARTIFACTS

DESIGNED TO PROMOTE METACOGNITIVE REFLECTION
ON TRANSFER IN THE MATHEMATICAL DOMAIN. (August 1996)

Bobbie Ann Hayes, B.S., Appalachian State University

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The purpose of this study was to determine the effect of mediating artifacts designed to promote metacognitive reflection on transfer of knowledge and skills in the domain of mathematics. Cultural historical activity theory (CHAT) served as the theoretical lens for the investigation of transfer. The research study was embedded in The Fifth Dimension, an after-school program for elementary school students. Thirty-seven students, representing grades three through five, served as subjects for the study. Thirty-seven pre-service teachers enrolled in a course requiring lab experience in the activity system were chosen, by subjects, to participate in the study. It was hypothesized, first, that students who used mediating artifacts designed to promote metacognitive reflection would show significantly greater transfer, as measured by a computer quiz on

identifying formulations, than students who did not. Second, it was hypothesized that students who used mediating artifacts designed to promote metacognitive reflection would show significantly greater transfer, as measured by a word problems test, than students who did not. The hypotheses were tested using an analysis of covariance (ANCOVA) for each transfer measure. The hypotheses were not supported by the results of analyses. Delimitations and limitations that may explain results, such as limited treatment time, the distribution of treatment time, the use of a control group within the activity system, and research practices conflicting with cultural practices within The Fifth Dimension, are discussed. Recommendations for researchers interested in carrying out studies of transfer within or across activity systems are: 1) Increase sample size and extend treatment time to allow for an effect to manifest itself; 2) Explore alternative treatment time distribution; 3) Form a control group external to the activity system of the experimental group; and 4) Identify and implement research designs and practices that adhere to cultural practices within the activity system in which the study is embedded.