

EFFECT OF PROBLEM-BASED LEARNING ON KNOWLEDGE ACQUISITION,  
KNOWLEDGE RETENTION, AND CRITICAL THINKING ABILITY OF AGRICULTURE  
STUDENTS IN URBAN SCHOOLS

James C. Anderson II

Dr. Robert M. Torres, Dissertation Supervisor

**ABSTRACT**

The purpose of this study was three-fold: to determine the effectiveness of instructional strategies on improving the acquisition and retention of leadership content by secondary students in urban agriculture programs; to examine the motivational profile of students who have elected to enroll in an urban agricultural program; and to examine the effect of instructional strategies [problem-based learning (PBL) and teacher-guided learning (TGL)] on critical thinking ability which includes the ability to acquire and use information and understand complex systems.

A sample of 110 students from an agricultural magnet school was randomly assigned to learn leadership theories for two weeks using either PBL ( $n = 54$ ) or TGL ( $n = 56$ ). The sample's motivational profile indicated that students who had an influence in the decision to enroll in the agricultural school were more self-determined, more satisfied with the decision to attend, and reported exerting more effort during the study.

Using ANCOVA to account for motivational differences, it was determined that students who had traditional instruction performed better on the knowledge test but retained less of the information they had learned. Furthermore, using ANCOVA to account for prior critical thinking ability, it was determined that no differences existed between the groups after treatment as measured by the WGCTA<sup>®</sup>. However, teacher and student reflection statements indicated an increase in the use of higher-order thinking skills and overall engagement by the students taught using the PBL instructional strategy.