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Effectiveness of A+ Learning Software in Assisting Students with Learning and Reducing Behavior Problems

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The Effectiveness of A+ Learning Software in Assisting Students with Learning
and Reducing Behavior Problems

This Research Paper is Presented to the Graduate
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Master of Science in Occupational and Technical Studies
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By
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APPROVAL PAGE

This research was prepared by Jason R. Buchanan under the direction of

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Studies with a concentration in Community College Teaching.

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ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

A+nyWhere Learning System (A+LS) is a program implemented by the American Education Corporation (AEC). AEC is a leading provider of research-based core curriculum instructional software for kindergarten through adult learners. Meeting federal, state, district, or even local mandates while addressing the individual needs of students is a challenge to educators everywhere. The A+nyWhere Learning System (A+LS) is a courseware program that not only provides core curriculum content, but it also provides assessment tools to match skill levels of all students, whether on a developmental, remedial, or enhanced learning track (AEC, 2009, ¶ 1).

Computer-based instruction programs such as A+LS are used to provide high interest drill and practice programs to support learning, especially for students requiring skill remediation. A+LS also provides instructional activities for chronically misbehaving students and students with negative attitudes toward traditional learning (Klemp, n.d.).

The Standard's of Learning (SOL's) have become the defining factor of instructional time in Virginia public schools (Herdman, 2008). A+LS, which incorporates the Virginia SOL's, was implemented at Piedmont Alternative School in Jetersville, Virginia, with the hopes of benefiting learning disabilities and reducing behavior problems.

Statement of Problem

The problem of this study was to determine the effectiveness of the A+ Learning Software in assisting students with learning and reducing behavioral problems at Piedmont Alternative School.

Research Goals

The goals of this study were to answer the following questions:

Behavioral Management Goals

1. Does the student behave differently after succeeding using A+ software?

2. Does the list of lessons incorporated within A+ keep students on track behaviorally?

3. Does the A+ Learning software provide a more structured environment for learning disabled students with IEP's?

Learning Goals

1. Does a student learn better test taking skills with the use of A+ Learning Software?

2. Does the format and non-lecture techniques of the A+ Learning Software lessons benefit student success?

3. Does the list of lessons incorporated within A+LS keep students on track academically?

4. Does notetaking effect the success of students who take A+LS lessons?

Background and Significance

The use of A+LS in school systems across the U.S. is nothing new to the classroom environment. Technology has become an integral part of learning in

U.S. classrooms. The use of A+LS most of the time is to supplement SOL lessons and give help to students in a particular subject area. At Piedmont Alternative School, A+LS is used as the backbone of the curriculum and teaching process. With classes ranging from grade levels of fifth to eleventh grade, the lessons presented by the A+LS curriculums provide the variety that is needed to help with the melting pot of students at Piedmont Alternative School.

A research study performed by Klemp (n.d.) depicts some interesting views of computer-based instruction using A+LS. Computer-based instruction provides high-interest drill and practice programs to support learning, especially for students requiring skill remediation. It also provides computer-assisted instructional activities for chronically misbehaving students and students with negative attitudes toward traditional learning. For Piedmont Alternative School to consider A+LS as a backbone for the student learning process there must be some evidence found or research done to help demonstrate learning and behavior improvements for its student body. This is the significance of this study.

Limitations

This study was confined to the science and mathematics A+nywhere Learning Software used by fifth to eleventh graders at Piedmont Alternative School in Jetersville, Virginia, in Nottoway County. A+nywhere Learning Software curriculum guides were used to provide Virginia SOL related lessons and activities on grade level.   The study was also confined to the effects of mathematics and science note taking. Student test scores and behavior reports were compared for the school years of 2006-2007 and 2008-2009.

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Assumptions

The assumptions made in this research were:

1. A+nywhere Learning Software lesson materials are aligned with the Virginia SOLs and provide instruction developed by professionals.

2. A+LS software benefits lower level students academically.

3. Student A+LS test scores are directly related to behavior patterns.

4. The A+LS scores were representative of middle school grade levels.

5. Notetaking benefits student A+LS test scores.

Procedures

This study will center on the academic achievement and behavior management effects of the A+nywhere Learning Software being used at Piedmont Alternative School. A+ software test scores and referral rates from the year of installation will be compared to a year when A+ software was more familiar to the student body as a means of instruction. Surveys will be given out to teachers, administrators, and students to help interpret the impact or social standing presently occurring at Piedmont Alternative School. A t-test will be performed to test the effect of notetaking and student A+LS test scores. Mathematics and science scores from the 06-07 school year will be compared with the 08-09 school year to measure the significance of notetaking practices.

Definition of Terms

The use of computer based learning may be confusing for some readers. Also the setup of Piedmont Alternative School is unlike many schools in

Southside Virginia. To avoid any confusion the following terms were defined.

A+LS: Anywhere Learning Software: The A+nyWhere Learning System (A+LS) is a courseware program that not only provides core curriculum content, but also provides assessment tools to match skill levels of all students, whether on a developmental, remedial, or enhanced learning track.

AEC: American Education Corporation: is a leading provider of research-based core curriculum instructional software for kindergarten through adult learners. AEC courseware is currently in use in over 14,000 public and private K–12 schools, charter schools, colleges, correctional institutions, centers of adult literacy, military education programs, and after-school learning centers (AEC, 2009).

SOL: Standards of Learning: The Standards of Learning for Virginia Public Schools describe the Commonwealth's expectations for student learning and achievement in grades K-12 in English, mathematics, science, history/social science, technology, the fine arts, foreign language, health and physical education, and driver education.

PAS: Piedmont Alternative School: Alternative school located in Jetersville, Virginia, serving Amelia, Nottoway, and Lunenburg Counties. PAS has developed the basic philosophy that all people, regardless of race, sex, color, or national origin should have the advantages of educational opportunities to the extent of their abilities. The school's educational program should prepare and educate students for an ever-changing society (http://www.antc-pas.com, 2008)

IEP: Individualized Education Plan: Key considerations in developing an IEP

include assessing students in all areas related to the suspected disability, considering access to the general curriculum, considering how the disability affects the student's learning, developing goals and objectives that make the biggest difference for the student, and ultimately choosing a placement in the least restrictive environment.

Overview of Chapters

The challenge in this study was to measure the effectiveness of the A+ Learning Software in assisting students with learning and reducing behavioral problems at Piedmont Alternative School. In Chapter I the introduction to the problem and research goals based on behavioral and learning questions were presented. The background and significance explained the use of A+LS on a broader scale and how it is implemented at PAS. It also showed the importance of gaining a measurement of the effectiveness of A+LS at PAS. Limitations were set to help provide a guideline for the progression of the study. The assumptions were presented to help explain the true components of the research study and explain the student body of Piedmont Alternative School. Procedures were presented to explain steps that are used in the research process and show how the investigation of the problem will take place. The terms that may be confusing to the reader were defined in the definition of terms section to help explain their true meaning in regards to the research study.

The next part of the study, Chapter II, will contain a review of literature to show other studies and information regarding the need for more study. Methods and procedures that are used to collect data will be defined in

Chapter III. The information or data found will be detailed in Chapter IV. Chapter

V will bring all the information and data together to help draw a consensus to the

research problem and decide whether A+LS is an effective tool for use in

Piedmont Alternative School.

CHAPTER II

REVIEW OF LITERATURE

To understand the idea that A+ Learning Software is trying to promote

for the American education system, a review of literature was conducted to help

determine if A+ Learning Software is a good learning and behavior management

tool for alternative education. The sub-sections included will cover background,

behavior management, A+LS as a learning tool, and computer based instruction.

Background on A+ Learning Software

The A+ Learning Software is a scientific research-based learning

instructional program. A+LS consists of core curriculum content supported by an

extensive instructional management system. The content addresses reading,

writing, mathematics, science, and social sciences for first through twelfth

grades containing over 6,000 lessons with over 100,000 exercises, and

representing over 6,700 hours of instruction (Trautman, 2002).

A+LS content is focused on essential skills using proven teaching

methods, human voice, and engaging graphic support. The emphasis is on

clear, focused instruction with extensive, frequent feedback containing review

and re-teaching when necessary. The presentation is always concise and direct

with carefully planned sequences of lessons to assure mastery of content.

These design principles are based on scientific research and the basis of the

A+LS instructional programs (Trautman, 2002).

The use of A+ Learning Software fits the main drive of the U.S.

Department of Education. This drive is the need to help decrease the amount of

students who fail to meet the basic competencies of education. The U.S. Department of Education in regards to A+ Learning Software and programs that use lessons based on scientific instruction have two main goals. The first goal is basing instructional programs on practices that have been shown in scientific research to work. The money provided to U.S. schools by the federal government must be spent on programs based on research. The second goal is for published instructional programs to have scientific research that shows they work. The ability to test instructional programs must be based on scientific research, because a proven testing method such as the one used to test FDA approved drugs does not exist yet.

<div align="center">Behavior Management and A+ Learning Software</div>

The use of technology or computer-aided learning such as A+ Learning Software can bring about many concerns for education. Technology can have negative aspects and positive reinforcement at the same time. A dissertation on the factors associated with student ethical decision making using computer-aided instruction by Ramim (2007) introduces a few key points. Issues such as plagiarism, cheating, and falsifying information are a major concern. Moreover students' unethical conduct has intensified due to the use of technology. Although negative behavior is always a possibility, a good classroom manager can enhance classroom instruction using A+ Learning Software programs.

A perfect example of how A+ effects behavior can be expressed by a project presently ongoing in Houston, Texas, called the Zenith Project created by Cain and Davis (2005). The Zenith Project is an alternative program for

<div align="center">9</div>

students that are chronic and serious offenders. Within the program, students

have the opportunity to practice behavior skills that lead to success in the

classroom and in their daily lives. Zenith serves students who are removed from

the traditional educational environment due to mandates and policies requiring

their removal due to behavior issues. A+ Learning Software is the sole program

used by students in the Zenith Project. The main goal of Zenith is to prevent

academic regression while students are enrolled in the program and also focus

efforts on attitude and behavioral change. The Zenith Project has a primary

focus to instill a positive attitude toward school that exemplifies honor,

dignity, and respect for others. A+ Learning Software will not do all the work to

help shape student behavior because teachers must help instill positive attitudes

also. An important aspect of using A+ Learning Software for alternative

education is all activities being done by individual students impact the whole

class. This helps students discover that they must work together as a team to be

successful. Although A+ Learning Software measures academic performance

using standardized testing, the most important aspect is empowering and

motivating students to be effective learners. When dealing with alternative

education students the Zenith Project used a particular mindset. This mindset

must exist to teach good kids how to overcome bad choices, not to teach bad

kids how to be good.

<div align="center">A+ Learning Software as a Learning Tool</div>

In most regular school settings A+ Learning Software is used as an aid for

teachers to help benefit classroom instruction. The case is much different when

talking about alternative education. The grade levels and ages vary when it

comes to the types of students that make up an alternative education classroom.

The ability to have a software program that allows students to stay on their ability

and grade level is a must. A+ Learning Software provided the Zenith Project with

the opportunity to do just that, keep students on task according to their abilities to

help enhance the student learning process.

The format Zenith used for each A+LS lesson consisted of a pre-test,

study guide, practice exercises, and a master test. A+LS provides immediate

feedback to the student during the learning process and students can see their

progress at any time. A study on the Zenith Project provided by Trautman,

Davis, McDonald, and Cain (2005) measured the progress of a group of selected

students who completed the Zenith Project. The study gives a measure of each

student's academic performance before and after his or her enrollment in the

Zenith Project in each of the four content areas of Mathematics, English,

Science, and Social Science. These means were calculated utilizing the

student's unweighted individual test grades for the current school semester pre-

and post-Zenith Project (Trautman, 2005). See Table 2.1.

Table 2.1. Grades based on content area

	Pre-Test		Post-Test		Difference
	Mean	**St. Dev.**	**Mean**	**St. Dev.**	**St. Dev.**
Mathematics	64.41	8.23	70	9.86	8.83
English	68.99	9.07	74.38	8.3	10.46
Science	67.26	8.94	77.85	5.33	11.08
Social Science	66.13	7.71	73.97	9.78	10.91

Although conclusions can be made on the academic improvements of the students measured in the Zenith study, it can also be noted that A+ Learning Software was used as a sole education intervention tool. The main point Trautman (2005) gives at the end of his study states, no direct measure of the impact of A+ Learning Software was assessed in this study. This leaves unanswered questions of what exactly was the size of the effect A+ Learning Software had on the success rate of students completing the Zenith Project. In order to assess the degree to which A+LS contributes to the academic success of Zenith students, additional studies are needed. For example, design groups would be randomly assigned to comparison groups that could vary the amount of A+LS exposure students experience (Trautman, 2005).

The improvement of test scores measured by the pre-test/post-test lend confidence to the effectiveness of A+ Learning Software and programs that support alternative education. Programs like Zenith give inspiration to effective alternative education. But as far as measuring the effectiveness of a learning tool like A+LS, more comparison groups must be formed and measured using controlled data as Trautman (2005) states in his study.

<div align="center">Computer-Based Instruction</div>

Zunker (2008) wrote a dissertation on computer-based instruction and mathematics skills of elementary students with learning disabilities. Zunker (2008) states through her research she has noticed that students with learning disablitlies struggle to overcome the difficulties with learning mathematics. For these students, computers may be a valued learning tool that diminishes the

frustration in mathematics (Zunker, 2008). With the increase of need for

technology in the classroom, programs that are computer based like A+LS

will find their place in many schools across the U.S. A synthesis performed

by the Northwest Regional Education Laboratory concludes that Computer

Aided Instruction has many broad reaching and positive effects on student

learning such as:

* A faster learning rate
* Better retention of learning
* Improved attitudes toward learning

Associated positive effects found through the research were:

* Improved school attendance
* Increased motivation
* Increased time-on-task
* Increase cooperation and collaboration with traditional instruction
  (Trautman, 2002).

The use of computer-aided instruction such as A+LS as a sole

instructional tool is yet to be tested. Trautman (2002) states following a review of

computer aided instruction, Stennett of the London Board of Education

says, "The single best-supported finding in the research literature is that the

use of Computer-Aided Instruction as a supplement to tradition, and teacher

directed instruction produces achievement effects superior to those obtained

with traditional instruction alone. Generally this finding holds true for students

of different ages and abilities and for learning in different curricular areas" (p. 8).

This statement is a great example for the role of A+LS in an alternative school.

Although the lessons incorporated into A+LS include self directed study,

traditional teaching methods must be incorporated to help make sure students

understand the lessons they are taking.

Summary

Chapter II was a literature review of the issues concerning A+ Learning Software and alternative education. Issues concerning A+LS were discovered by conducting the literature review and included academics and behavior in an alternative school setting. The effects of A+LS on behavior and academics were both generalized in the study of the Zenith Project. The results of the Zenith Project study gave insight into the creation of a measuring tool to accurately measure the effects of A+ Learning Software on student learning. The improvement of student test scores while using A+LS during the Zenith Project does give hope to the future of using A+LS as a stand alone education tool. Chapter III will give details about the methods and procedures used in this study to collect the data to explain how effective A+ Learning Software is in an alternative school learning environment.

CHAPTER III

METHODS AND PROCEDURES

This experimental study was conducted to determine if A+ Learning

Software helps students with learning and behavior problems in an alternative

school environment and to measure the opinions of administration and the

student body regarding A+ Learning Software. Chapter III gives an introduction

to the research population and describes the variables of the research study.

The instrument used to collect research data will be described in detail. The

statistical analysis plan is described along with the methods of data collection.

Population

The population of this experimental study was students attending

Piedmont Alternative School in Jetersville, Virginia, in Amelia County in two

different school years, 2006-2007 and 2008-2009. The grade levels ranged

from fifth to eleventh graders. Several students from each year were used to

create an average A+ test score in mathematics and science. The number of

students in 2006-2007 ranged from 60 to 70. The number of students in the

2008-2009 school year range from 30 to 40. Due to the lack of parent feedback

on permission slips to participate in the study, the amount children used to create

an average was 30 random students for each year.

Research Variables

The independent variable in this experimental study was A+ Learning

Software. The dependent variables were the A+ SOL test scores and behavior

reports from each school year. Since the A+ test scores were taken from the

implementation of A+ in 2006 and then again in 2008, two groups of students were compared. The control group was composed of students who just learned how to use A+ for the first time. The experimental group was composed of students who had already seen and used A+ software before to do lessons in their regular schools and alternative school.

Instrument Used

The tests given at the end of each A+ Lesson in mathematics and science help measure the students achievement based on Virginia SOL standards. At the end of each six or nine week period an average was taken in mathematics and science based on the amount of lessons students passed with a score of 80 or above. The tests consisted of ten questions based on the objectives of each mathematics and science lesson. The A+ tests are used to measure the knowledge gained by the early group (2006-2007) and the late group (2008-2009). A t-test was also performed to help determine the effectiveness of note-taking and student performance on A+ lesson tests.

Classroom Procedures

The control group was in the 2006-2007 school year. These students received regular A+ lessons and were not allowed to use their notes to help them on their A+ Tests. These students were the first to be introduced to the A+ Learning Software lessons. All lessons were taken from the Virginia SOL's for each students particular learning level.

The experimental group was in the 2008-2009 school year. These students received extra lessons to help them with passing their A+ lessons in

mathematics and science. Students were also able to take notes during their study time and use their notes during the taking of the A+ achievement tests. Descriptions of the A+LS curriculum and how it covers each grade level can be found in Appendix B and C.

Methods of Data Collection

The mathematics and science A+ test scores for each student were provided by the director of Amelia Nottoway Technical Center and Piedmont Alternative School. Test scores were provided and student identity was protected by using a numbering system to protect each student.

Statistical Analysis

For the students in the year of 2006 and 2008 the A+ scores and behavior reports were compared using averages and total infractions for each school year. The averages were used to show if there was a difference in academics and behavior for students who were just introduced to A+ and students who were using A+ for a longer amount of time. A t-test was also used to compare the scores in mathematics and science in the years of 2006 and 2008.

Summary

The meaning behind the experiment was summed up in Chapter III. Information was given about the population studied and the research variables. The instruments used to measure student knowledge and behavior were given. The procedures used in the classroom were also given. Methods of data collection and statistical analysis were also described. The next chapter, Chapter IV, will present the specific findings of the study.

CHAPTER IV

FINDINGS

The problem of this study was to determine the effectiveness of the A+

Learning Software in assisting students with learning and reducing behavioral

problems at Piedmont Alternative School. Mathematics and Science A+ test

averages from 2006-2007 school year when students were not able to use their

notes on their tests will be compared to the 2008-2009 school year when

students were allowed to take notes and use them as aids on their tests.

Behavior reports were also compiled for each school year to help compare

behavior with A+ test score results. Surveys were also given to teachers,

administrators, and students to help gain a consensus of the overall opinion of

the A+LS program. A t-test was also performed to help determine the

effectiveness of notetaking on mathematics and science A+LS test scores.

Findings

Data were presented for each grade in each year. The test scores were

an average of 30 random students in that grade for each year. The number of

students in each year was represented as n. Average mathematics and science

A+ test scores for each year are presented in Table 4.1.

Table 4.1. Math and Science A+ Test Scores

School Year	n	Average Math A+ Test scores	Average Science A+ Test Scores
2006-2007	30	78	69
2008-2009	30	67	65

Data were presented from behavioral reports from each school year. The

number of in-classroom discipline infractions were recorded daily. Total

infractions for each school year are presented in Table 4.2

Table 4.2. Behavior Reports for 06-07 and 08-09 School Years

School Year	Total # of behavior reports
2006-2007	88
2008-2009	75

Data were presented from surveys taken by students, administration,

and teachers. The surveys measured the overall opinion of what students,

administration, and teachers thought of the A+ Learning Software. The

outcome of each question on the survey is presented in Tables 4.3 and 4.4.

Table 4.3. Student Survey on A+ Learning Software Results

Question	Yes	Maybe	No	Average
1. Do you prefer A+ Software over normal teacher lectures?	3	3	2	1.375
2. Are A+ Lessons harder than normal book work?	1	2	5	1.125
3. Can you understand the study sections better than listening to a teacher talk about your lesson?	3	2	3	1.375
4. Do you like seeing your progress and grades after completing each lesson?	7	1	0	1.875
5. Do you like the grades you are receiving using A+ software?	8	0	0	2
6. Are your lessons too hard in A+ or are they on your grade level?	2	5	1	1.25

Table 4.4. Administration & Teacher Survey on A+ Learning Software Results

Question	Yes	Maybe	No	Average
1. Do the A+ Learning Software lessons provide standards that support the VA. SOL's?	3	0	0	1
2. Do you think A+ Learning Software is a good tool to help students learning?	3	0	0	1
3. Can you see any academic improvements after students complete A+ lessons?	3	0	0	1
4. Can you see any behavior improvements after students complete A+ lessons?	2	0	1	1.666
5. Do you think A+ Software is a "user-friendly program for students?	3	0	0	1
6. Do you think A+ Software is an appropriate learning tool for our current learning environment?	3	0	0	1

Behavioral Management Goal 1

Results indicated that behavioral infractions decreased after A+ Learning

Software was implemented and students were able to use their notes to take

tests. Teachers and students became used to using the software and discipline

infractions were lower.

Behavioral Management Goal 2

Results in Table 4.2 indicated a lower number of behavior problems from the 06-07 school year to the 08-09 school year. Table 4.1 showed a drop in overall class averages in mathematics and science, but this may be due to the overall demographic of the student body (e.g., learning level). Table 4.4, Question 4, showed a majority of administration and teachers felt students showed behavior improvements after completing A+ lessons.

Behavioral Management Goal 3

Results indicated in Table 4.3 showed that some students who may have learning disabilities favor A+ lessons, but they are still in partial favor of teacher instructed lessons. Table 4.4, Question 2 and 3, showed that administration and teachers both hold A+ Learning Software in high regard to helping students learn and seeing academic improvements.

Learning Goal 1

Results showed that student test scores dropped after they were able to use notes on their A+ tests. Although students scores dropped, the value of note-taking may have been effected by student learning level or behavior.

Learning Goal 2

Results indicated that students were split on using A+ Lessons and listening to a teacher give a lesson. Students also showed appreciation of seeing their progress after completing A+ Lessons and how user friendly the A+ software was.

Learning Goal 3

Results indicated that administrators and teachers felt A+ lessons were helping show academic improvements in student performance and provided support for VA SOL's.

Learning Goal 4

Results indicated that notetaking has a chance of being a factor with the outcome of A+LS test scores. The t-score for mathematics was 2.37 and significant at the .05 level. The t-score for science was 2.20 and significant at the .05 level. See Appendices A and B for details of the t-test involving mathematics and science A+LS test scores.

Summary

This study involved comparing the implementation of A+ Learning Software during the 2006-2007 school year with the 2008-2009 year where students were comfortable using the program. In the 2006-2007 school year, students were allowed to work at their own pace and were not allowed to use notes to take their A+ tests. Teachers were unfamiliar with the program and still getting use to the instructional strategies of A+ Lessons. The 2008-2009 school year was the exact opposite, students were allowed to use their notes on tests and teachers became familiar with the use of A+ Lesson learning strategies. Several experimental treatments were imposed to see if A+ test scores and behavior improved while using A+ Learning Software in an alternative education environment. Student test scores in mathematics and science decreased with the addition of using notes during tests. T-test values determined

a chance that note-taking may have been a factor in lower test scores. They

showed a significance at the .05 level for mathematics and science.

The findings presented in this chapter will be interpreted in Chapter V.

The final chapter will include a summary of the research, conclusions drawn from

the results, and recommendations for implementing the findings and suggestions

for additional research.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter will discuss the problem of this study and the behavioral

management and learning goals. The importance of the study is also

discussed to help emphasize the undertaking. The limitations of the research

and the study population are defined. The instruments used to measure any

difference are explained and the details of data collection are reviewed. The

statistics used to measure any differences are described. Data are then

interpreted, conclusions drawn, and recommendations made.

Summary

The problem of this study was to determine the effectiveness of the A+

Learning Software in assisting students with learning and reducing behavioral

problems at Piedmont Alternative School. A+ software test scores and referral

rates from the year of installation will be compared to a year when A+ software

was more familiar to the student body as a means of instruction. Surveys were

given out to teachers, administrators, and students to help interpret the impact or

social standing presently occurring at Piedmont Alternative School. To guide this

study, the following assumptions were projected:

1. A+ Leaning Software lesson materials are aligned with the Virginia SOLs
   and provide instruction developed by professionals.

2. A+LS software benefits lower level students academically.

3. Student A+LS test scores are directly related to behavior patterns.

4. The A+LS scores were representative of middle and high school grade
   levels.

5. Notetaking benefits student A+LS test scores.

This study was significant because technology has become an integral part of learning in U.S. classrooms. The use of A+LS lessons supplement SOL lessons and give help to students in particular subject areas. With classes ranging from grade levels of fifth to eleventh grade, the lessons presented by A+LS provide the variety that is needed to help with the diversity of students in an alternative school environment.

This study was confined to mathematics and science A+LS instruction of fifth to eleventh graders at Piedmont Alternative School in Jetersville, Virginia, in Nottoway County. A+LS was used to provide mathematics and science instruction based on Virginia Standards of Learning. Mathematics and science A+LS scores were compared for the school years ending in 2007 and 2009. A random sample of thirty members of each school year were used to create an average A+LS test score for that year.

A+LS test scores were used to help measure and compare mathematics and science knowledge gained by the control group and experimental group. The mathematics and science A+LS scores were provided by the faculty of Piedmont Alternative School. Test scores were provided without student identification to protect the identity of the students. Average test results of mathematics and science were presented.

For each school year, the A+LS scores for mathematics and science from the control group and experimental group were compared using an average. The t-test was used to determine if there was a significant difference from

students who did not use their notes on tests and students who were allowed to use their notes on tests. Teachers, administration, and students were also measured using surveys to gain their opinions of what they thought of A+LS.

<div align="center">Conclusions</div>

The behavioral management and learning goals of this study were to answer the following questions:

Behavioral Management Goal 1: Does the student behave differently after succeeding using A+ software?

Results indicated that behavioral infractions decreased after A+ Learning Software was implemented and students were able to use their notes to take tests. Teachers and administrators surveyed felt they could see behavior improvements after students completed A+ lesson. Teachers and students became used to using the software and discipline infractions were lower.

Behavioral Management Goal 2: Does the list of lessons incorporated with A+ keep students on track behaviorally?

Results indicated 88 behavior problems from the 06-07 school year and 75 during the 08-09 school year. There was a drop in overall class averages in mathematics and science, but this may be due to the overall demographic of the student body, (e.g., learning level). The 06-07 average in mathematics was 78 and fell to 69 for the 08-09 school year. The 06-07 average in science was 67 and fell to 65 for the 08-09 school year. Administration and teachers felt students showed behavior improvements after completing A+ lessons (2 out of 3

surveyed).

Administration and faculty felt they could see academic improvements for students who complete A+ Lessons (3 out of 3 surveyed).

Behavioral Management Goal 3: Does the A+ Learning Software provide a more structured environment for learning disabled students with IEP's?

Results indicated that students favor A+ Lessons, but they were still in partial favor of teacher instructed lessons (6 out of 8 surveyed). Questions 2 and 3 of the teacher administration survey showed that they hold A+ Learning Software in high regard to helping students learn and seeing academic improvements with 100% in favor of A+ being an appropriate learning tool.

Learning Goal 1: Does the student learn better test taking skills with the use of A+ Learning Software?

Results showed that student test scores dropped after they were able to use notes on their A+ tests from 78 to 69. Although students scores dropped, the value of note-taking may have been effected by student learning level. Students surveyed say they like the grades they are receiving using A+ software (8 out of 8). T-test values showed significance at the .05 level showing some significance of note-taking being a factor for lower mathematics and science test scores.

Learning Goal 2: Does the format and non-lecture techniques of the A+ Learning Software lessons benefit student success?

Results indicated that students were split on the using of A+ Lessons and listening to a teacher give a lesson (3 said yes and 3 said maybe). Students also showed appreciation of seeing their progress after completing A+ Lessons and

how user friendly the A+ software is. Only 3 out of 8 of students surveyed felt that A+ lessons were harder than regular teacher led lessons.

Learning Goal 3: Does the list of lessons incorporated with A+LS keep students on track academically?

Results indicated that 100% of administrators and teachers surveyed felt A+ lessons were helping show academic improvements in student performance and provided support for VA SOL's.

Learning Goal 4: Does notetaking effect the success of students who take A+LS lessons?

Results indicated that notetaking has a chance of being a factor with the outcome of A+LS test scores. The t-score for mathematics was 2.37 and significant at the .05 level. The t-score for science was 2.20 and significant at the .05 level. See Appendices A and B for details of the t-test involving mathematics and science A+LS test scores.

<div align="center">Recommendations</div>

A+ LS lessons were given to students ranging from grades five through eleven and were implemented in the mathematics and science classes at Piedmont Alternative School. Results of this study indicated that using notes to take A+LS lessons really did not have that much effect on test score results in mathematics and science classes. Results also showed that students were split on using A+LS and teacher directed lessons for classroom instruction. Discipline infractions decreased from 06-07 to 08-09 but more tests are needed to help show if A+LS had an effect on behavior management. Teachers and

administration had high remarks regarding A+LS in relation to academics and behavior management. Although the overall opinion of A+LS at Piedmont Alternative School was positive, more tests are needed to help understand if A+LS is an effective learning tool. Student learning levels and behavior played a big part in the results of test scores.

Comments from the PAS administrators and teachers that should be taken into consideration when interpreting results include: some students who have never received high grades in mathematics and science received them after using A+LS software. Students who never received honor roll also were able to make honor roll and received no discipline infractions during their stay at Piedmont Alternative School.

Based on the test score results and teacher/administration comments, perhaps more tests should be created to help measure the effectiveness of A+LS at Piedmont Alternative School. The results of this study can be used to help build a more detailed look of A+LS in an alternative school setting.

Considerations for further study could include a breakdown of students by grade level and grade point average upon their entry into Piedmont Alternative School. Their grade point average at their home school could be compared to their grade point average at the end of their stay at Piedmont Alternative School using A+LS. Another avenue could be more training for teachers. Training could be implemented to help teachers learn new ways of administering A+LS lessons to students. This could possibly increase student fundamentals and enhance grades using the A+LS program.

This study should serve as a base to build more research involving A+LS programs. For A+LS software to be used in an alternative school setting, more tests need to be undertaken. Although this study did depict some positive results concerning the A+LS program, more information should be gathered to help show it is an effective learning and behavior management tool.

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Appendix A. Piedmont Alternative School Math A+LS Final Grade Scores and T-

Test Values

	M1=2337/30=77.9		M2=2008/30=66.9		
06 scores	d	d2	08 scores	d	d2
30	-47.9	2294.41	10	-56.9	3237.61
54	-23.9	571.21	29	-37.9	1436.41
60	-17.9	320.41	30	-36.9	1361.61
66	-11.9	141.61	30	-36.9	1361.61
70	-7.9	62.41	40	-26.9	723.61
72	-5.9	34.81	50	-16.9	285.61
73	-4.9	24.01	56	-10.9	118.81
73	-4.9	24.01	60	-6.9	47.61
75	-2.9	8.41	60	-6.9	47.61
75	-2.9	8.41	60	-6.9	47.61
78	0.1	0.01	65	-1.9	3.61
79	1.1	1.21	70	3.1	9.61
80	2.1	4.41	70	3.1	9.61
80	2.1	4.41	70	3.1	9.61
80	2.1	4.41	70	3.1	9.61
80	2.1	4.41	70	3.1	9.61
82	4.1	16.81	70	3.1	9.61
82	4.1	16.81	70	3.1	9.61
82	4.1	16.81	71	4.1	16.81
84	6.1	37.21	75	8.1	65.61
84	6.1	37.21	80	13.1	171.61
84	6.1	37.21	80	13.1	171.61
85	7.1	50.41	81	14.1	198.81
86	8.1	65.61	82	15.1	228.01
86	8.1	65.61	84	17.1	292.41
88	10.1	102.01	85	18.1	327.61
90	12.1	146.41	90	23.1	533.61
92	14.1	198.81	100	33.1	1095.61
92	14.1	198.81	100	33.1	1095.61
95	17.1	292.41	100	33.1	1095.61
2337	**0**	**4790.7**	**2008**	**1**	**14031.9**
t=2.37					
p>.05=2.02	Significant at the .05 level				
p>.01=2.70	There is a chance that note-taking was a factor in student grades.				
df=58					

Appendix B. Piedmont Alternative School Science A+LS Final Grade Scores and

T-test Values

	M1=2067/30=68.9		M2=1947/30=64.9		
06 scores	**d**	**d2**	**08 scores**	**d**	**d2**
0	-68.9	4747.21	0	-64.9	4212.01
22	-46.9	2199.61	30	-34.9	1218.01
30	-38.9	1513.21	32	-32.9	1082..41
44	-24.9	620.01	37	-27.9	778.41
45	-23.9	571.21	40	-24.9	620.01
50	-18.9	357.21	43	-21.9	479.61
50	-18.9	357.21	53	-11.9	141.61
60	-8.9	79.21	60	-4.9	24.01
60	-8.9	79.21	60	-4.9	24.01
63	-5.9	34.81	60	-4.9	24.01
65	-3.9	15.21	60	-4.9	24.01
65	-3.9	15.21	60	-4.9	24.01
70	1.1	1.21	60	-4.9	24.01
70	1.1	1.21	63	-1.9	3.61
70	1.1	1.21	70	5.1	26.01
75	6.1	37.21	70	5.1	26.01
76	7.1	50.41	70	5.1	26.01
77	8.1	65.61	70	5.1	26.01
79	10.1	102.01	70	5.1	26.01
80	11.1	123.21	70	5.1	26.01
85	16.1	259.21	70	5.1	26.01
85	16.1	259.21	78	13.1	171.61
88	19.1	364.81	78	13.1	171.61
90	21.1	445.21	83	18.1	327.61
90	21.1	445.21	85	20.1	404.01
92	23.1	533.61	87	22.1	488.41
93	24.1	580.81	93	28.1	789.61
93	24.1	580.81	95	30.1	906.01
100	31.1	967.21	100	35.1	1232.01
100	31.1	967.21	100	35.1	1232.01
2067	**0**	**16374.7**	**1947**	**0**	**13502.29**
t=2.20					
p>.05=2.02	Significant at the .05 level				
p>.01=2.70	There is a chance that note-taking was a factor in student grades.				
df=58					

Appendix C. A+LS Math Curriculum and Lessons by Grade Level

Title Name	# of Lessons	1	2	3	4	5	6	7	8	9	10	11	12
Mathematics I	61	X											
Mathematics II	50		X										
Mathematics III	59			X									
Mathematics IV	36				X								
Mathematics V	44					X							
Mathematics VI	39						X						
Mathematics VII	41							X					
Mathematics VIII	38								X				
Pre-Algebra	34							X	X	X			
Algebra I, Part 1	47								X	X	X		
Algebra I, Part 2	51								X	X	X		
Algebra I, A Function Approach Part 1	37									X	X		
Geometry	32									X	X	X	
Algebra II, Part 1	44										X	X	X
Algebra II, Part 2	33										X	X	X
Trigonometry	29											X	X
Calculus I	30												X
Calculus II	26												X

Appendix D. A+LS Science Curriculum and Lessons by Grade Level

Title Name	Lessons	1	2	3	4	5	6	7	8	9	10	11	12
The Sciences I	42	X											
The Sciences II	44		X										
The Sciences III	49			X									
The Sciences IV	49				X								
The Sciences V	48					X							
The Sciences VI	45						X						
The Sciences VII	47							X					
The Sciences VIII	46								X				
Earth & Space Science	37									X	X	X	
Comprehensive Biology	39									X	X	X	X
Chemistry I	29										X	X	
Chemistry II	28											X	X
Physical Science	31									X	X		
Physics	30											X	X