

FINDINGS  
of the  
COMPREHENSIVE SUMMATIVE  
EVALUATION  
OF *THE ECONOMICS OF STAYING IN  
SCHOOL* AND *JA TITAN* PROGRAMS

Submitted to:

*JUNIOR ACHIEVEMENT INC.*

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by:

Lani M. Van Dusen



*for:*

WESTERN INSTITUTE FOR RESEARCH AND  
EVALUATION

in conjunction with

VAN DUSEN CONSULTING

**MK 411**

# 1.0 INTRODUCTION

In education, considerably more resources are devoted to developing and launching new programs than evaluating the success of those efforts.<sup>1</sup> Without evaluation, however, it is impossible to know if the program is having the desired effects. Summative evaluation, conducted by skilled external evaluators, provides the key to determining the worth or merit of a program. Educational organizations that possess the results of a scientifically designed, external<sup>2</sup> summative evaluation are in a much better position to market their programs to potential consumers (students, teachers, and other professionals), as well as funding agencies.<sup>3</sup> In this regard, Junior Achievement Inc. (JA) is to be commended for recognizing the importance of conducting a comprehensive summative evaluation of its programs.

During the 2001-02 school year, JA commissioned the Western Institute for Research and Evaluation (WIRE), in conjunction with Van Dusen Consulting, Inc. (VDC), to conduct an extensive, scientifically designed, external national summative evaluation of the JA TITAN and Economics of Staying in School (ESIS) programs. The purpose of this study was to determine the impact of these programs on student learning and attitudes. Specifically, the study answered the following evaluation questions:

- Do students understand economics and business better after participating in JA TITAN?

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<sup>1</sup> Alberg, M., & Ross, S.M. (1999). *Orientation to Evaluation Studies in Schools*. Memphis, NT: Center for Research in Educational Policy.

<sup>2</sup> External evaluations are conducted by individuals who are external to the organization and have no stake in program outcomes.

<sup>3</sup> Worthen, B.R., Sanders, J.R., & Fitzpatrick, J.L. (1997). *Program Evaluation: Alternative Approaches and Practical Guidelines*. New York: Longman.

- Do students understand the relationship of school to economic and business success better after participating in ESIS?
- Does participation in the JA programs<sup>4</sup> improve critical thinking and problem solving behavior of students?
- Are there differences in learning impact between JA TITAN and ESIS?
- Do various types of students (e.g., students with different ethnic backgrounds, students from different grade levels) differentially benefit from the JA programs?
- Are students more prepared for the workplace after participating in the JA programs?
- Do students value school differently after participating in the JA programs?
- Have students' attitudes toward the community changed as a result of participating in the JA programs?
- Have students' goals/aspirations changed after participating in the JA programs?
- Has students' confidence in their abilities changed after participating in the JA programs?
- What do students perceive as the benefits of participating in the JA programs?
- What do teachers perceive as the benefits of participating in the JA programs?
- What do consultants perceive as the benefits of participating in the JA programs?

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<sup>4</sup> From this point forward in the document, the phrase "the JA programs" refers to JA TITAN and ESIS.

This introduction provides a brief description of each program being evaluated. This section concludes with an overview of the design of the report.

## **1.1 BRIEF DESCRIPTION OF PROGRAMS INCLUDED IN THIS STUDY**

### **1.1.1 Economics of Staying in School (ESIS)**

ESIS was designed to provide at-risk students with a real world understanding of the consequences of dropping out of school. The program is designed to be utilized in a number of instructional environments. The curriculum focuses on the benefits of continued education and the drawbacks of leaving school early. It emphasizes making decisions that are critical to staying in school, assuming responsibility for these decisions, and understanding the relationship between decision and consequence. Specifically, the lessons in the curriculum focus on:

- Revealing the relationships among education, career, and earnings
- Illustrating the relationship between education and achieving personal goals
- Discovering the financial and opportunity costs of education
- Preparing monthly budgets
- Assessing personal workforce skills and aptitudes
- Developing personal definitions of success

Volunteers, who are encouraged to use their own personal experiences to relate the curriculum to students' lives, present these lessons.

### **1.1.2 JA TITAN**

JA TITAN places students at the helm of a fictitious company that manufactures an innovative product called a “cyberpen.” Learning unfolds through 10 lessons comprising a Web-based competition in which student teams compete in the cyberpen market. Teams must make important decisions about prices, production levels, marketing strategies, finance and capital as well as continued research and development of the product. Success depends on students working together to develop a cohesive strategy for their company that addresses the needs of the competitive market and the changing strategies of their competitors.

JA TITAN is unique for several reasons. First, the program is almost entirely Web-based. Even the training that students receive is driven by cyber characters that provide advice about important economic variables. Second, the Internet infrastructure of the program allows JA volunteers to assume more on-line presence. Finally, the program can be implemented as part of JA Economics or as a stand-alone class.

## **1.2 DESIGN OF THIS REPORT**

Following this Introduction, the report contains seven major sections:

- Section 2: Executive Summary
- Section 3: Evaluation Procedures
- Section 4: Impact on Student Understanding of Economic and Business Concepts

- Section 5: Impact on Student Critical Thinking and Problem Solving
- Section 6: Impact on Student Quality of Life
- Section 7: Teacher and Consultant Perceptions of Impact
- Section 8: Program Satisfaction and Suggested Improvements

Section 2 summarizes the evaluation procedures utilized in this study and the important findings of the data analyses. Section 3 details the design of the study, the instruments employed and the data analyses used. Section 4 presents findings based on student objective-referenced testing performance and provides comparisons between performance of students before participating in the JA programs with performance after participating. Findings are also presented for various subgroups (sites, genders, ethnicities, etc.). Section 5 details the impact of the JA programs as measured by alternative assessment techniques. All findings in Sections 4 and 5 are presented for each program being studied.

Section 6 details the impact of the programs on student attitudes toward work, school, and the community, their goals and values, and their beliefs about their own capabilities. These findings are based both on student perceptions before and after participating in the programs and direct perceptions of program impact. Section 7 provides consultant and teacher perceptions of how the JA programs impact students from both learning and quality of life perspectives. Section 8 includes student, teacher, and consultant perceptions of overall program effectiveness and suggestions for improvements.

## **2.0 EXECUTIVE SUMMARY**

The Western Institute for Research and Evaluation (WIRE), in conjunction with Van Dusen Consulting, Inc. (VDC), conducted an extensive summative evaluation for Junior Achievement Inc. (JA) during the 2001-02 school year. The purpose of this evaluation was to assess the impact of JA TITAN and ESIS on student learning and quality of life. Specifically, we obtained information about the following:

- Impact on student understanding of economic and business concepts and their relationships to education
- Impact on student critical thinking and problem solving skills
- Impact on students' attitudes, beliefs, goals and values
- Impact as perceived by teachers and consultants
- Stakeholder satisfaction with the programs

This section summarizes the procedures used to conduct this evaluation. It provides the most significant findings for each of the areas addressed. More details can be found in later sections.

### **2.1 OVERVIEW OF EVALUATION PROCEDURES**

The summative evaluation comprised two research studies. The first employed a quasi-experimental, pre/post design in which student performances and attitudes were assessed before and after their participation in the JA programs. The

second study employed survey research in which questionnaires were administered to students, teachers and consultants to assess perceived impact.

Twelve Local Areas were selected to participate in these studies. Two site visits were made to each. While on site the external evaluators administered objective-referenced tests (ORTs) and alternative assessments to just over 50 classes in each program. When students finished taking the tests, they were administered a Quality of Life survey. Teachers of these classes were given a questionnaire to assess the impact of the programs as perceived by teachers. A sample of consultants working with these programs also received questionnaires targeting their perceptions.<sup>5</sup>

Once all student response data were collected and returned to the evaluation offices, appropriate analyses were conducted to determine if there were significant changes between students' pretest and posttest scores. In addition, frequency counts and qualitative analyses were performed on all questionnaire data to determine general themes and perceived impacts of the programs.

Additional details about the design of the evaluation, participants, instruments, data collection techniques, and analyses employed in this study can be found in Section 3.0.

## **2.2 SUMMARY OF PROGRAM IMPACT ON STUDENT LEARNING**

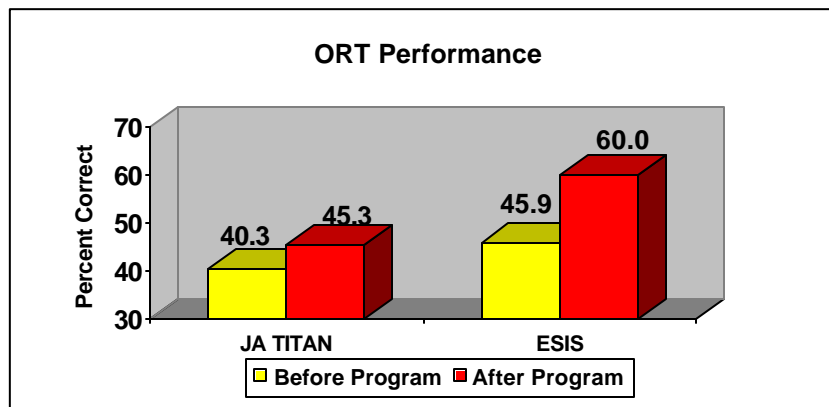
In this section, only the most significant findings are presented. A more detailed report of all findings is presented in Section 4.0.

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<sup>5</sup> Details about the sample used in this study can be found in Section 3.2.

## 2.2.1 JA Programs Have Significant Impact on Student Learning

Students' understanding and retention of economics and related concepts improved after participating in JA TITAN and ESIS. The figure illustrates the change in student learning performance on the ORTs.



The learning illustrated in this figure represents educationally meaningful gains at or beyond<sup>6</sup> the level observed in typical educational studies. (Information on typical learning impact can be found in Section 3.4.5.) The majority of sites exhibited the same pattern of results, some with even greater gains than the overall national findings.<sup>7</sup>

**What concepts have JA students mastered?** After participating in JA TITAN, students had mastered the following concepts:

- **Marketing**
- **Research and Development**
- **Capacity Utilization**
- **Interest**
- **Capital Investment**
- **E-commerce**
- **Production**
- **Cash Flow**

<sup>6</sup> The learning gain for ESIS was at a phenomenal level, representing nearly twice the impact of traditional educational interventions.

<sup>7</sup> See Sections 4.1.2 and 4.2.2 for further information on impact at specific sites.

The conceptual areas underlined in red were virtually unknown to students before the JA TITAN experience.

After participating in ESIS, students had mastered the following concepts:

- Tuition
- Balancing a Budget
- Determining Careers
- Graphing
- Relationship between Education and Economic Indicators
- Factors Affecting Entrance into College
- Gaining Job Experience
- Monthly Expenses
- Setting Goals
- Financial Aid Sources
- Factors Affecting Success in School

The conceptual areas underlined in red represent areas of knowledge that were unknown to students before participating in ESIS.

## 2.2.2 JA Programs Impact Learning of All Types of Students

An important aspect of JA programs is that they aspire to be effective with all students. The data for JA TITAN and ESIS were analyzed to determine whether all students were making learning gains. The results of these analyses are presented in full in Sections 4.1.3 – 4.1.5 and 4.2.3– 4.2.5. Summaries of these findings are presented below.

**JA programs are effective at multiple grade levels.** Results from the analysis on grade level revealed that JA TITAN and ESIS are effective at several grades. JA TITAN had a significant impact on student learning at the 9<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup>

grade levels. Only 11<sup>th</sup> graders did not significantly add to their knowledge. Further evaluation is needed to understand why.

ESIS is more widely implemented at various grades in the field. The results from this study suggest that it is effective from the 6<sup>th</sup> grade through the 10<sup>th</sup> grade; however, the older the student, the greater the gains. It appears that the older students may have had more relevant experiences that they could relate to the ESIS curriculum.

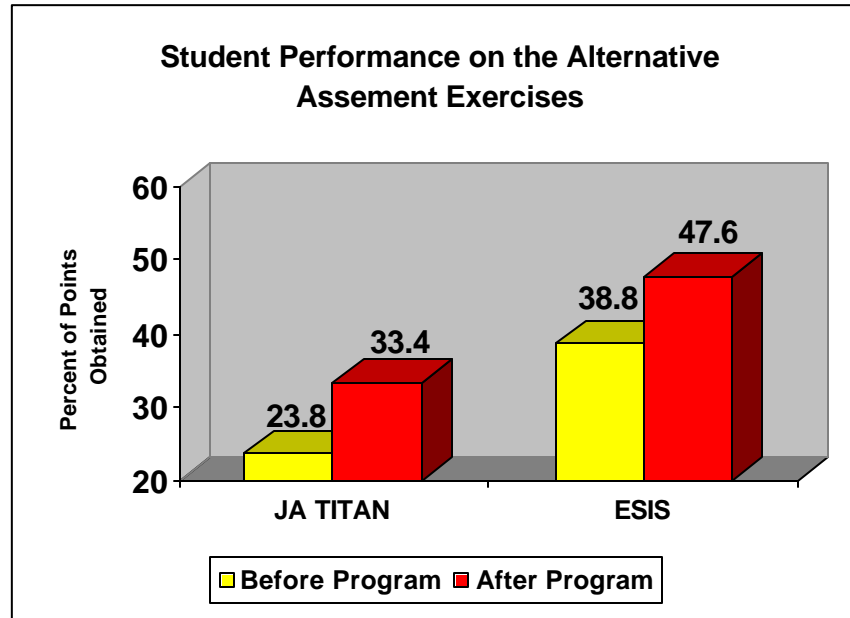
**JA programs are effective for all ethnicities.** While there were some differences in the levels of learning gained by various ethnic groups in both programs, across programs all ethnicities achieved higher ORT scores after participation.

**JA programs are equally effective with males and females.** In this set of analyses, the impact of the programs based on the gender of the students was conducted. JA TITAN and ESIS were equally effective with both male and female students. Boys and girls both gained significant knowledge after participating in the JA programs.

## **2.3 SUMMARY OF PROGRAM IMPACT ON STUDENT CRITICAL THINKING**

In the previous section the findings showed that JA TITAN and ESIS had significant impacts on student understanding of economic concepts and their relation to education. In this section, the findings address whether students use this understanding to synthesize their knowledge and to make business and educational decisions.

Student performance on the alternative assessment exercises was measured both before and again after participation in the JA programs. The results of these analyses are provided in the graph.



Students performed significantly better after participating in JA regardless of program. The alternative assessment results suggest that JA TITAN effectively encourages students to achieve a higher level of learning, including synthesizing and integrating information in a way that allows them to make sound business decisions. In addition, after participating in ESIS students made better, critically sophisticated educational decisions. Additional details about these findings can be found in Section 5.0.

## **2.4 SUMMARY OF PROGRAM IMPACT ON STUDENTS' QUALITY OF LIFE**

In addition to learning impact, the study assessed whether students' lives changed, and if so how, as a result of participating in the JA programs. In particular, the study focused on the following five areas:

- Attitudes toward working
- Attitudes toward school
- Attitudes toward community service
- Goals and values
- Beliefs in personal capabilities

The initial analysis assessed students' beliefs and attitudes within each of these areas before and after participating in the JA programs. While several positive changes in student perceptions were found, most of these changes were small and not statistically significant.

The lack of statistical significance is due in part to the finding that many students already held positive attitudes toward work and schooling and felt prepared to take on employment and general life challenges even before participating in the JA programs. With such high regard, there was little room for growth as a result of participating in the programs.

Specific areas where changes were meaningful are provided in the table. A checkmark indicates that significantly more students held that attitude after participating in the JA programs.<sup>8</sup> Some changes in attitude occurred only after participating in JA TITAN and others occurred only after participating in ESIS.

<b>Improved Attitudes/ Beliefs</b>	<b>JA TITAN</b>	<b>ESIS</b>
I have the skills employers seek		✓
I know how to find jobs	✓	✓
Having a profession is important	✓	✓
Enjoying my profession is important		✓
Living the lifestyle I want is important	✓	✓
I have a role in the community	✓	
I can perform well at a job		✓
I know how to effectively interview	✓	✓
I know how to construct a resume	✓	✓

Although students' attitudes about many of the aspects of their lives did not significantly change after participating in the JA programs, students did indicate that the JA programs were having an impact. The percentages of students indicating that JA made "a lot" or "made all the difference" within certain areas of their lives are presented in the table on the next page.

The majority of students in both programs reported that JA had an influence in their lives. However, this perceived impact was greatest for ESIS.

<sup>8</sup> Additional details about the percentage of students that held a particular attitude before participating in the JA programs and the percentage that held that belief after participating in the JA programs are provided in Section 6.0.

<b>Area of Perceived Impact</b>	<b>JA TITAN</b>	<b>ESIS</b>
Ability to get a job	60%	86%
Ability to be successful	61%	84%
Ability to get along with other people	56%	74%
Desire to stay in school	54%	83%
Desire to go to college	57%	84%
Desire to help others improve their lives	50%	72%
Ability to handle major life events	51%	70%
Ability to make major life decisions	52%	74%
Desire to own a business	31%	43%

The finding that more students perceived ESIS as having an impact on their lives, as compared to JA TITAN, may in large part be due to the age of the ESIS students. Typically, students participating in ESIS are younger than students participating in JA TITAN (who are

usually 11<sup>th</sup> and 12<sup>th</sup> graders). Many juniors and seniors have already formed beliefs about their abilities and it is less likely that any one program, such as JA TITAN, is going to influence their attitudes. However, during the more formative middle grade years, students may still be questioning their abilities, and it is possible that ESIS encouraged these students to believe in themselves.

In addition, ESIS presents practical content using hands-on activities that are engaging and easily grasped by most students. The approach used by ESIS may be helping students to develop life skills that can be used to make major life decisions.

Finally, most students, regardless of program, indicated that they were more positive about working and going to school after participating in the JA programs. So while the perceived impact for ESIS may be greater, students still report that JA TITAN has an impact as well.

Additional findings on the changes in students' quality of life and perceived impact of participating in the JA programs can be found in Section 6.0.

## **2.5 SUMMARY OF PERCEIVED IMPACT ACCORDING TO TEACHERS AND CONSULTANTS**

Impacts on student learning, critical thinking and quality of life were also measured based on the perspectives of teachers and consultants. The perceptions of the consultants closely paralleled those of the teachers; however, there were significant differences in the perceived impacts of the two programs.

### **2.5.1 Perceived Impact of JA TITAN**

Teachers and consultants reported that students learned many business and economic concepts and skills from participating in JA TITAN. In addition, they also suggest that the JA TITAN simulation encouraged students to think critically and solve problems.

Both teachers and consultants suggested that after participating in JA TITAN students were better at or more likely to:

- Act professionally
- Solve problems
- Resolve conflicts in a positive way
- Communicate their ideas to others
- Get along with different people
- Take leadership positions

According to teachers and consultants, JA TITAN had an impact on those areas of a student's life that are directly related to success in the business world.

Additional details on teacher and consultant perceptions and the breakdown by program are provided in Section 7.0.

### **2.5.2 Perceived Impact of ESIS**

Both teachers and consultants agreed that students gained basic economics knowledge from participating in ESIS. However, the real learning value from participating in ESIS, according to teachers and consultants, is that students also gained a work ethic and related work skills.

Teachers and consultants noted a lesser but still significant impact of the JA programs on students' quality of life. Teachers and consultants suggested that after participating in ESIS students were better at or more likely to:

- Make major life decisions
- Get a job
- Stay in school
- Attend class

According to teachers and consultants, ESIS has an impact in areas that reflect general life skills and the ability to be successful in school.

## **2.6 SUMMARY OF PROGRAM EFFECTIVENESS**

All stakeholder groups (students, teachers, and consultants) saw value in JA TITAN and ESIS. Teachers were more positive about the effectiveness of the

programs than consultants, and both teachers and consultants saw room for improving the effectiveness of the programs.

Ninety-five percent of the students, regardless of program, were able to relate how they had directly benefited from participating in JA. In addition, a majority of the teachers in ESIS (86%) and JA TITAN (90%) indicated that the programs had also influenced their own learning. Finally, all consultants suggested that participating in JA, regardless of program, had fulfilled personal and professional needs. A description of the benefits each group received as a result of participating in ESIS and JA TITAN can be found in Section 8.2.

While stakeholders were positive about the programs, they also provided suggestions for improvements. The most frequently suggested improvement for ESIS was to add more hands-on activities to the curriculum. While this suggestion was also made for JA TITAN, the greatest challenge for this program appears to be the problems with the Web site.

Additional details about suggestions for program improvements can be found in Section 8.3.

## 3.0 EVALUATION PROCEDURES

WIRE conducted the national summative evaluations of JA TITAN and ESIS using similar procedures for both studies. The evaluators assessed the impact of both programs on student knowledge and critical thinking. In the JA TITAN evaluation, knowledge and critical thinking were assessed with tests of economic and business concepts. The tests used in the ESIS evaluation emphasized the relationship of education and educational decisions to economic success. In addition to the objective measures, perceived impact was assessed using similar surveys<sup>9</sup> administered to students, teachers and consultants participating in JA TITAN and ESIS. Finally, impact on student quality of life was assessed for both programs using an attitude survey developed specifically to target quality of life predictors.

The remainder of this section provides details about the design, participants, instruments, data collection techniques, and analyses used with these two evaluation studies.

### 3.1 EVALUATION DESIGN

To assess impact on student knowledge and critical thinking, a quasi-experimental<sup>10</sup>, pre/post research design was utilized. This design provides for a

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<sup>9</sup> The main difference between JA TITAN and ESIS surveys was the use of the different program names.

<sup>10</sup> A design is considered experimental if it controls the sources of extraneous variance and is based on a statistical approach to understanding impact. The experimental approach tests for differences between one or more independent variables on one or more dependent variables. A quasi-experimental design is one that is unable to control every source of extraneous variance, which is typically the most rigorous design possible when conducting evaluation or research studies in classroom or other real-world, non-laboratory settings. The main independent variable in this study was participation in the program (pre or post), and the dependent variable was the student performance score.

comparison of the performance of students before and after they participated in the JA programs. The performance scores obtained from students prior to their participation in JA are referred to as “pretest scores,” and the scores received after participation are referred to as “posttest scores.” This design allows the evaluators to compare pretest and posttest scores, using statistical techniques. Significant differences between the two groups of scores reflect the change in performance that can then be attributed to the impact of the programs.

Most classes selected to participate in this summative evaluation had students who provided both pretest and posttest scores. Some classes participated only in the pretest condition and others only in the posttest condition. Where different classes were used for pretest and posttest scores, great efforts were taken to ensure similarity among the students so that differences between groups could be attributed to the program.<sup>11</sup>

Perceived impact of the JA programs was assessed using a traditional survey research design. Descriptive statistics<sup>12</sup> were calculated for all responses on the student, teacher, and consultant questionnaires.

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<sup>11</sup> A comparison of analyses outcomes was conducted to determine whether there were significant differences between the “matched” sample (where the same students participated in both pre and post conditions) and the general sample (where both the same and different students participated in the two groups). The results of this analysis revealed no statistically significant differences, suggesting that results provided by both sets of analyses yielded similar findings. In addition, the mean performance of the matched groups differed by less than one percentage point from the general groups, also providing evidence that both analyses provide the same information. The general sample was used in all remaining analyses to allow a larger sample size, thereby increasing the sensitivity of the analyses to differences among specific subgroups (e.g., ethnic subgroups) where the numbers may have been too small within the matched group to allow such analyses.

<sup>12</sup> Descriptive statistics include frequencies, ranges, and measures of central tendency, but do not provide inferences from samples to be made at specified probability levels, as is the case with inferential statistics.

Impact on quality of life was determined using the same quasi-experimental pre/post research design that was used with the learning performance data. The only change in the design concerned what was being measured (the dependent variable). Rather than testing performance, student self-reported attitudes, beliefs, goals, and values were assessed both before and after participating in the JA programs.

### **3.2 SELECTION OF STUDY SITES AND PARTICIPANTS**

As with any evaluation, the findings from this study provide the results only for those participating in the study (the sample). However, to the extent that study participants and program implementation are representative of other JA sites, the findings from this evaluation can be generalized to the greater JA population. WIRE employed several techniques to maximize the extent to which the experimentally accessible sample selected was representative of the general population of all JA sites.

WIRE contacted all JA Local Areas at the beginning of the 2001-02 school year to determine the JA programs each area planned to implement, the number of classes targeted at each site, the implementation model employed at each site, and the willingness of each site to participate in the national evaluation study. This information was entered into a matrix and rankings for sites were made according to responses provided. For example, a Local Area that was implementing 200 classes of ESIS was ranked higher than a site that was implementing only 10 classes.<sup>13</sup> Sites that more closely adhered to the national

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<sup>13</sup> Implementation of more classes increased the chances that some classes would have similar characteristics to classes in other JA sites, increased the number of diverse students receiving the programs, and increased the efficiency of the evaluators to collect sufficient data with a minimum of site visits.

implementation guidelines were ranked higher than those that were using the JA programs in an atypical manner (e.g., out of grade level). Local Areas were ranked for each area of interest, and these rankings were categorized into high, medium, and low. Each Local Area was then ordered according to the number of high, medium and low rankings received.<sup>14</sup>

The 20 Local Areas with the highest rankings were then sorted by geographic location, size of Local Area office, and student composition of classes to assess the representativeness of the sample. Occasionally, there were multiple areas that did not contribute uniquely to the sample (i.e., two small Local Areas from the Midwest, implementing in classes composed predominantly of Caucasian students). In these situations, one of the areas was randomly dropped from the sample.<sup>15</sup>

The final sample was composed of the 12 Local Areas depicted in the map.



<sup>14</sup> Note that some sites received all highs, some all lows and the majority some combination of rankings.

<sup>15</sup> The reduction of sample size was required to meet budget constraints.

Most of these sites were implementing both JA TITAN and ESIS; however, for study purposes, JA TITAN was the only program evaluated at Portland, Albuquerque, and Louisville, while ESIS was the only program evaluated at St. Louis and Orlando. Both programs were assessed at the remaining sites.

This selection of sites allowed for a good representative sample of JA sites and students and maximized the amount of data that could be collected with a minimum of site visits. Local Area staff at these sites selected a minimum of five classes implementing the two JA programs. Local Area staff members were requested to select classes that were representative of their area.

One hundred and twenty-five classes were initially identified for inclusion in the study (representing nearly 3,000 students); however, only 107 of these actually implemented the programs. Implementation problems were greatest for the ESIS program, where nearly 17% of the classes did not implement the program (including all classes in the Atlanta site). Three percent of the JA TITAN classes never fully implemented the program. In addition, some students' test scores had to be excluded from the final data analysis because the scores were invalid (due to testing problems, random

<b>Characteristics of Students in Sample</b>		<b>ESIS</b>	<b>JA TITAN</b>
Gender:	Males	50%	45%
	Females	50%	55%
Grade Levels:	6 <sup>th</sup>	33%	0%
	7 <sup>th</sup>	20%	0%
	8 <sup>th</sup>	31%	0%
	9 <sup>th</sup>	13%	13%
	10 <sup>th</sup>	2%	19%
	11 <sup>th</sup>	1%	11%
	12 <sup>th</sup>	0%	57%
Ethnic Subgroups:			
	Caucasian	51%	61%
	African-American	20%	17%
	Asian-American	3%	8%
	Hispanic	17%	8%
	Native-American	5%	1%
	Other	4%	5%

responding, or non completion). Valid data were obtained from 1,059 students participating in ESIS and from 880 students participating in JA TITAN.<sup>16</sup> The specific characteristics of these students are presented in the table on the previous page along with the percentage of those exhibiting these characteristics in each program.

### 3.3 DATA COLLECTION INSTRUMENTS

Data from several sources were collected to increase the sensitivity of the evaluation. The use of multiple methods from multiple sources provided in-depth information and ensured that no one source of data biased the results in a way that was inconsistent with actual practice. The following is a brief description of each of the instruments used to collect the various forms of data.

#### 3.3.1 Objective-Referenced Tests (ORTs)

ORTs are multiple choice, paper and pencil tests that include items developed to determine whether students are meeting the objectives of a curriculum. Items on the ORTs were designed to assess student understanding at the three lower cognitive levels from Bloom's Taxonomy of learning. Some items assessed student **knowledge** – recognition of facts and concepts from the lesson. Other items assessed student **comprehension** – understanding the meaning of concepts. The remaining items assessed students' ability to **apply** their learning – using information to calculate answers.

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<sup>16</sup> This sample size provides sufficient power for detecting statistically significant differences among groups.

A sample application item from the JA TITAN ORT and a sample comprehension item from the ESIS ORT are provided in the box below.

**Sample Items from ORTs**

Based on the information in the marketing report below, what is the margin per unit sold?

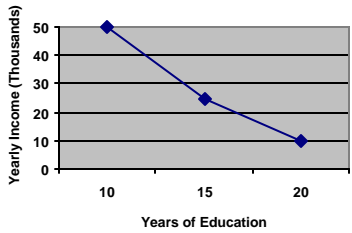
**MARKETING REPORT**

Orders Received	100 units
Total Cost/Unit Sold	\$25.00 Units
Sales Made	50 Units
Unfilled Orders	10 Units
Price/Unit Sold	\$35.00

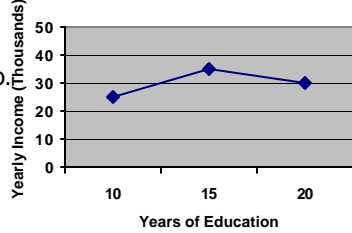
a. 50 units      b. 60 units      c. \$25.00      d. \$60.00

Which of the following correctly shows the relationship between education and income?

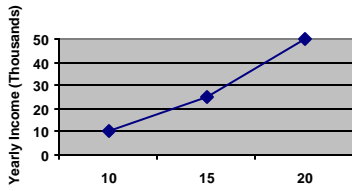
a.



b.



c.



Separate ORTs were created for each JA curriculum to reflect the content and objectives within that specific domain. Because the different curricula were of different lengths, the tests reflect the number of objectives within each. The JA TITAN ORT was composed of 32 items; the ESIS ORT was composed of only 21 items.

Two versions of each ORT were generated. Psychometric analyses of these versions revealed that the versions were valid and equivalent<sup>17</sup> with an alternate form reliability coefficient of .93 (based on 1.00). One version was used for the pretest and the other was used for the posttest. The use of different but equivalent versions ensured that changes in scores were a result of program impact and not an artifact of other factors, including learning from the test.

### **3.3.2 Alternative Assessment**

While ORTs provide a good indication of student *conceptual learning* (the lower three levels of Bloom's taxonomy), they are typically not a very sensitive measure of students' abilities to think critically and solve problems in which multiple skills and facts must be brought to bear (as is true of the upper three levels of Bloom's taxonomy). That is, ORTs generally test students on memory tasks that indicate how well the students can recall their various types of understanding. More sensitive measures of whether students can perform more complex, real-world activities based on integrated knowledge from several concepts have been emphasized in educational assessment in the past few years. These measures are variously referred to as performance assessment, direct assessment, authentic assessment, or alternative assessment; they will be referred to by the latter term hereafter in this report.

Alternative assessment presents students with real-world challenges that require them to synthesize their knowledge across concepts and apply that knowledge to solve problems and think critically in response to new situations. These measures are fairly complex and require students to work individually or in small groups on a task provided by the tester. Examples of alternative assessments include portfolios, oral examinations, multimedia projects, journal entries, role

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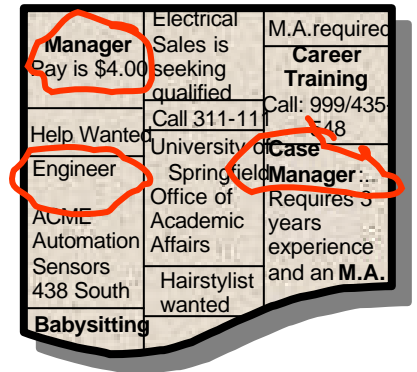
<sup>17</sup> Tests of these versions were completed as part of last year's study.

play, and simulation. The least expensive to administer while providing the closest approximation to real world tasks are role play and simulation.

However, alternative assessment has its limits. Only one or two objectives can be incorporated into any one exercise. Thus, although alternative assessment may provide more in-depth understanding of student performance, it does not provide the breadth of coverage of more traditional ORTs. To fully assess student learning, both types of testing are required.

A team of instrument development specialists<sup>18</sup> created a series of simulation exercises for JA TITAN and ESIS that required students to synthesize their knowledge, apply that knowledge to solve business and educational problems and to make economic decisions. Multiple exercises were developed to assess a variety of concepts within each curriculum. The assessments were constructed so that students could complete the exercises within 50 minutes. Descriptions of the alternative assessments for each program are provided below.

**ESIS assessment.** In this assessment, students played the role of a school guidance counselor. They were required to review the files of a struggling student and make suggestions for his eventual success both in school and in the job market.



The major components of this assessment included the following:

1. The “counselors” gave the student experiencing problems reasons to stay in school. They also told the student where to go to get information about jobs and the education required.

<sup>18</sup> This team was composed of experts in the field of economics, alternative assessment, and educational measurement.

2. During the second phase, the counselors reviewed a student-produced paper focusing on experiences and skills. Using that paper along with their knowledge of business as guides, the counselors helped the student create a résumé that would allow him to successfully obtain summer employment.
3. For the third activity, the counselors pretended that a few months had passed and that the student had found a job and wanted to move out on his own while finishing the last year of school. The counselors were responsible for developing a budget for the student (based on expenses that the student claimed to have) and then deciding whether it was wise for the student to try moving out.
4. In the final activity, the counselors helped the student prepare for college. Specifically, they determined where the student might secure funds for education and what type of job to hold while in college.

**JA TITAN assessment.** Students played the roles of business consultants hired to provide advice to a newly emerging toy company. They analyzed company reports and provided advice on important business decisions, focusing on a new line of living action figures.



The major components of this assessment included the following:

1. Students were provided with mock performance indices which showed the business in comparison with the rest of the market. Students were then asked to make a report on which aspects of the business they would focus on to improve the company's performance index.

2. The second exercise required students to carefully review company reports within the areas identified in the first exercise. These reports provided production, marketing, and finance information for the first three quarters. Students were required to analyze trends and to determine which aspects of the business were working well.
3. In the third phase of the assessment, students were provided with an industry report, which they were asked to use in conjunction with the company reports to compare their business with the industry to determine and analyze favorable trends.
4. The final part of the assessment asked students to use the information they had gleaned about the company's performance to make recommendations to the Board of Directors concerning critical business decisions for the fourth quarter. Specifically, the students were asked to determine the price of manufacturing, the production level, marketing expenditures, capital investment, and the amount that should be spent in research and development for the new toy line.

### 3.3.3 Questionnaires

To assess perceived impact, questionnaires were developed for students, teachers, and consultants participating in JA TITAN and ESIS. The student questionnaire included two types of questions: 1) perceived impact, and 2) assessment of the JA programs. Examples of each type of

#### Sample Items from Student Questionnaire

Rate how much participating in Junior Achievement has influenced your desire to own a business.

- 1 = not at all
- 2 = a little
- 3 = a lot
- 4 = made all the difference

How has the Junior Achievement experience affected your attitude toward school?

What is your favorite thing about Junior Achievement?

question are provided in the box. In the first two examples, perceived impact was measured both through scaled items and open-ended response items.<sup>19</sup> The last sample item provided in the box was one of three open-ended response items focusing on student satisfaction with various aspects of the JA programs. The same questionnaire was used in both the JA TITAN and ESIS evaluations.

The teacher and consultant questionnaires specifically targeted four areas:

- How students' lives changed after participation in the JA programs
- Skills and attitudes students learned from the JA programs
- Rating program effectiveness and need for improvement
- Impact of the program on them personally

To increase the response rate, only nine items were included on the adult questionnaires. One item included a rating scale of 16 student behaviors. Another question focused on a 24-item checklist of possible areas of impact on student lives. The remaining seven questions required open-ended responses.

Both adult questionnaires were identical in content, except that teachers were asked to make comparisons between JA students and other students with whom they had experience, while consultants were asked to compare JA students with other children they knew. The similarity of content between the two questionnaires allowed direct comparisons of the two groups of responses.

The adult questionnaires used in the JA TITAN evaluation were the same as those used in the ESIS evaluation, with the exception that two additional items were added to the JA TITAN questionnaire to specifically target the use of technology.

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<sup>19</sup> Ten scaled items and four open-ended response items targeting perceived impact were included on the student questionnaire.

### 3.3.5 Quality of Life Survey

Quality of life is most often measured by the lifestyle one lives, including the amount of money one earns, the quality of relationships in one's life (most predominantly marriage), and satisfaction with the profession one has selected. These areas are not currently relevant to students' lives. However, the psychological literature suggests that there are several key indicators that predict future success within these areas. For example, a positive attitude toward work enhances the possibility of securing good employment, which in turn improves the quality of one's life. In 2000, WIRE instrument development specialists used these indicators to develop an attitude survey that canvassed numerous attitudes, beliefs, values and goals that might ultimately result in a high-quality lifestyle.

When this instrument was administered during the 2000-01 school year, it was found that within several domains students already held very positive attitudes even before participating in the JA programs. Thus, in previous studies many of the measures included on the survey failed to show the impact of JA programs due to a ceiling effect, in which there was simply no room for growth or impact.

Based on the previous findings, the instrument development team revised the instrument for this year's study. Specifically, the survey was refined to reflect only those attitudes and beliefs that were most likely to show change. The revised instrument focused on the following areas:

- Attitudes toward working
- Attitudes toward school
- Attitudes toward community service
- Goals and values
- Beliefs in personal capabilities

Two types of items were used in the survey: scaled items and forced choice items. Examples of both of these are provided in the box below.

<b>SAMPLE ITEMS FROM QUALITY OF LIFE SURVEY</b>	
<b>Scaled Item</b>	
I make important contributions to the community	
<input type="checkbox"/> never	<input type="checkbox"/> seldom
<input type="checkbox"/> sometimes	<input type="checkbox"/> most of the time
<input type="checkbox"/> always	
<b>Forced choice Item</b>	
<input type="checkbox"/> I know my skills and am capable of doing a variety of jobs	
<input type="checkbox"/> I have specific skills I can offer an employer	
<input type="checkbox"/> I need a lot of advice before I go looking for a job	
<input type="checkbox"/> I'm not sure what skills most employers are looking for	

Thirty-five scaled items and nine forced choice items were included on the survey. The same survey was used in the JA TITAN and ESIS evaluations.

### **3.4 DATA COLLECTION METHODS**

WIRE-trained evaluators collected all data, using the instruments described in the previous section. Evaluators collected the majority of the data during extensive site visits to the Local Areas included in the sample. Evaluators visited each site approximately one week before students began the JA programs and

returned for a second visit<sup>20</sup> once students had completed the program (typically within three weeks of completion of the program).

### **3.4.1 ORT Administration**

WIRE evaluators administered ORTs in the classroom. All students present on the day of testing completed an ORT. The evaluator followed an administration script that informed students about the purpose of the test and provided information on how to complete items. The script was used to ensure that the testing experience was the same for all students and that the results were a function of learning and not test administration.

Both demographic information and answers to the test were completed on computer-scanned bubble sheets. The administration script included information regarding how to use the answer sheet. Students were instructed not to write in the test booklets. During the testing, the evaluator monitored student behavior. The evaluator did not answer student questions during the test, except to read words the students could not decipher. Students were given 50 minutes to complete the ORT. Less than 1% of students were unable to complete the test.

Students were tested before and after participating in the program. Some students present at the second testing session were not there at the first and vice versa. To compensate for attrition in the programs, additional classes were tested during the posttest site visits. Scores were kept separate for those completing tests on both occasions and those completing only the pretest or posttest.<sup>21</sup>

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<sup>20</sup> Occasionally, evaluators had to conduct a third site visit to collect all data.

<sup>21</sup> Once the comparative analyses of these two groups showed that their performance was equivalent, all test scores were merged into one comprehensive dataset for each program.

### **3.4.2 Alternative Assessment Administration**

WIRE evaluators conducted alternative assessment activities with groups of three to five students. The evaluators randomly selected students from the same classes that completed the ORT pretests. Because only one set of alternative assessment exercises existed, posttest administration was conducted with the same measures but with a different group of students. Posttest students were selected from the same class as pretest students and were carefully matched to correspond to the characteristics of the pretest group. For example, if during the pretest two Caucasian boys and one Hispanic girl were selected, then during the posttest two other Caucasian boys and one Hispanic girl were selected.

One or two evaluators led students through the assessment exercises following a standardized script that provided directions and timing for all activities. During the assessment, students worked individually and together to make decisions and provide answers<sup>22</sup> to the assessment scenarios. Students recorded their individual decisions on response forms. Evaluators documented group decisions and responses on record forms. Most of the assessments required 50 minutes to complete.

Because these measures are time intensive, not every class participated. The number of classes that participated in the JA TITAN alternative assessment was 48 and in the ESIS alternative assessment was 52.

### **3.4.3 Student Survey Distribution**

The quality of life survey was distributed to students before they participated in the JA programs. The same survey was combined with the questionnaire of

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<sup>22</sup> "I don't know" responses were recorded when students could not generate answers, particularly for the pretest groups.

perceived impact and distributed to the same students after they participated in the JA programs.

Evaluators distributed the survey to students during the site visits made for ORT administration. If more than five minutes remained in the class once students completed the ORT, the evaluator distributed the survey. Students took an average of eight minutes to complete the survey. Students were permitted to write on but were instructed not to put their names on the survey, preserving their anonymity and increasing the likelihood of candid responses. Ninety-two percent of students who were tested completed the survey.

#### **3.4.4 Teacher Questionnaire Distribution**

Questionnaires were distributed to teachers while the evaluation teams were conducting the post-testing in classes. The surveys were then collected at the end of the period, thus ensuring a high return rate of 85%.

#### **3.4.5 Consultant Questionnaire Distribution**

Local Area staff provided WIRE with a list of all consultants at their site who had participated in JA TITAN and ESIS. The evaluators then randomly selected consultant names and mailed out approximately 100 questionnaires for each program.

The mailing included information on the purpose of the survey and instructions on how to complete it, as well as self-addressed stamped envelopes for returning completed responses. After two months 33% had been returned (27 ESIS questionnaires and 36 JA TITAN questionnaires). This sample was judged by

the evaluation team as providing as adequate a representation of consultant views as was feasible within the time and budget constraints of this study.

## **3.5 DATA ANALYSIS AND REPORTING**

Nearly 5,000 instruments were returned to the WIRE offices from site visits and mailings. Each was tracked, logged, and encoded into a database. Data analyses were conducted to condense the information into this report, which presents the most significant findings. A brief description of each of these activities follows.

### **3.5.1 Data Encoding**

As data came into the WIRE offices, a senior project assistant logged the Local Area, program and teacher into a file. A teacher code was then assigned to each instrument and used in subsequent analysis for determining specific group differences. Once codes had been placed on all answer sheets and surveys, instruments were turned over to the data analysis coordinator. This process took approximately 89 hours to complete.

The forms containing student responses to the ORTs and demographic data were processed through a computerized scanner. Each answer sheet was fed into the scanning machine and then checked for accuracy against the computer-generated file. The scanning process took approximately 108 hours to complete. Once all answer sheets had been scanned, the file was converted to a SPSS data file that could be analyzed by a statistical program.

An economics expert hand scored responses from all forms (student response forms and evaluator record forms) completed during the alternative assessment, using a scoring rubric that detailed possible answers and corresponding point values.<sup>23</sup> A group score was generated for each assessment conducted that represented a percentage of the total points the 3-5 students obtained. Group scores for both pretests and posttests, as well as each program, were then entered into a spreadsheet. The scoring and encoding of alternative assessment results took approximately 75 hours.

A team of data entry clerks keyed responses into a data spreadsheet from scaled, forced choice, and checklist items found on the returned student surveys, and the teacher and consultant questionnaires. This process took approximately 350 hours.

Finally, open-ended responses from all questionnaires were entered into a document file. Separate files were maintained for each program and Local Area within the program. Recording and categorizing of open-ended data took 144 hours.

### **3.5.2 Analysis of the ORT Data**

To determine program impact on student knowledge, performance on the ORTs before and after participation in the programs was compared using statistical analyses. The SPSS data file containing the ORT responses was scored for accuracy of responses. All questions were recoded as “1” for correct or “0” for incorrect.<sup>24</sup> The total number of correct responses for a test was summed and

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<sup>23</sup> Responses that demonstrated more sophisticated economic thinking were given more points.

<sup>24</sup> Separate correction analyses were conducted for each ORT.

the percent correct calculated for each student. The percent correct scores were used as the dependent variable in all statistical analyses.

Codes for pretest and posttest were inserted into the SPSS files containing the percent correct scores. Demographic information about the student, collected during testing, was also coded into these files. These codes included:

- ethnicity
- grade
- gender
- site where program was implemented.

The demographic codes and pretest/posttest code were used as independent variables in subsequent analyses. An analysis of variance (ANOVA) was conducted to determine differences in performance (percent correct scores) between the independent variable groups. The first set of analyses indicated that there were no significant three-way interactions among the independent variables, thus all remaining analyses focused on comparison of only two combined independent variables (for example comparing pretest and posttest performance of various ethnic groups), as well as main effects (for example the main difference between pretest performance and posttest performance). Across most of the independent variables there was a significant difference in the dependent variable, but seldom did the independent variables interact with each other.<sup>25</sup>

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<sup>25</sup> An interaction denotes that the change in one independent variable is affected by changes in another independent variable. For example, a gender by pretest/posttest interaction would mean that knowledge gains (differences in pretests compared to posttests) made by females is different than for males. However, for nearly all results presented in this report no such interaction existed (i.e., males and females made similar gains).

The outcome of ANOVA is an “F” statistic that is interpreted by probability (p-value) statements. The lower the probability, the more statistically significant the difference between groups and the more likely the impact of the program. Additional information about the interpretation of p-values can be found in Section 3.4.5.

One caution in using ANOVA (or any analysis of statistical significance) concerns the fact that results are affected by sample size: the larger the sample the more likely that even small differences between independent variables will result in significant results. Thus, relying only on these nonparametric measures runs the risk of over-representing the impact of a program. To gain a more accurate interpretation of the magnitude and direction of program impact, WIRE data analysts also conducted Effect Size analyses<sup>26</sup> in conjunction with the ANOVAs.

All analyses were conducted within program. The findings from these analyses are presented in Section 4.0.

### **3.5.3 Analysis of the Alternative Assessment Data**

To determine whether student critical thinking improved after participating in the JA programs, the group scores from the alternative assessments conducted prior to participation in the program were compared to those conducted after participation, using a *t*-test.<sup>27</sup> The results from *t*-tests are interpreted according to probability just as with ANOVAs. Effect size analyses were also conducted on the alternative assessment percentage scores. Separate analyses were

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<sup>26</sup> Effect size analyses are computed based on standard deviations and are not impacted by sample size. Additional information on interpreting effect size analyses results is provided in Section 3.4.5.

<sup>27</sup> A *t*-test is a special case of ANOVA in which only one independent variable with only two levels is used. Because fewer results were obtained for alternative assessment as compared to the ORTs, only the independent variable of pretest/posttest could be analyzed, and thus a *t*-test was required.

conducted for each program. Because of the small sample that participated in the alternative assessment, subsequent breakdown analyses were not possible. The findings from the overall analysis are presented in Section 5.0.

### **3.5.4 Survey/Questionnaire Analyses**

To determine perceived impact of the JA programs, frequencies and other descriptive statistics were calculated for all scaled items on the student, teacher, and consultant questionnaires. Open-ended responses from all surveys were analyzed using a modified form of qualitative data analysis known as matrix analysis. General themes emerged from these analyses and were interpreted according to perceived impact and satisfaction with program. Analyses were conducted separately for each program. Results from these analyses are presented in Sections 6.0, 7.0 and 8.0.

To determine impact of the programs on students' quality of life, means and frequencies for all scaled items and frequency counts for forced choice items were calculated for both pre and post student surveys. Comparisons between the pre and post responses were made, using ANOVAs, to determine the statistical significance of differences. The results from this analysis are reported by program in Section 6.0.

### **3.5.5 Reporting**

Only those findings that are statistically significant, educationally meaningful, or highly relevant to JA TITAN and ESIS are provided in the findings sections of this report. A brief description of what is meant by "statistically significant" and "educationally meaningful" is provided in this section and should be used in interpreting all findings in the following sections of this report.

**Statistical Significance.** A statistically significant finding (from an ANOVA or  $t$ -test) refers to a comparative finding in which the difference between two groups can be considered real. With any study it is possible that the findings concerning differences between groups are due to random fluctuations in the data rather than real differences. The lower the  $p$ -value, the higher the probability that the finding is real.

For example, consider the  $p$ -values and their interpretation in the adjacent box. Most evaluators consider a  $p$ -value of .05 ( $p < .05$ ) to represent a satisfactory probability that their findings are real, because the likelihood that the finding has occurred by chance is less than 5 out of 100. Only findings at a level of  $p < .05$  or

<b><u>P</u>-Value Standards</b>	
$p < .10$	Means that there is less than a one in 10 chance that the finding is not real.
$p < .05$	Means that there is less than a one in 20 chance that the finding is not real.
$p < .01$	Means that there is less than a one in 100 chance that the finding is not real.
$p < .001$	Means that there is less than a one in 1000 chance that the finding is not real.

lower are reported in this document as being statistically significant.

**Educational Meaningfulness.** Another way of interpreting differences in scores is not based on chance or statistical significance, but rather on how educationally meaningful the magnitude of the difference is in practical terms. One might ask, even if the probability is high that the differences are real (i.e., statistically significant), is the difference of any practical significance? Is the difference big enough to be educationally important? Does it justify the cost of the program that created the difference? Are the differences what one would expect of an effective program?

To answer these questions, another statistical analysis can be performed that yields a measure of educational impact called an “effect size.” An effect size (E.S.) is a comparative statistic that determines the magnitude of difference between two groups of scores. This magnitude is then compared to standards for findings to determine how important the finding is for that area of study. Given that the JA programs target improving learning – an educational area of study – scores from this study were compared against normal effect sizes that reflect educational meaningfulness. The adjoining box provides the typical standards used in educational research.

### Effect Size Standards

- E.S. less than .30 means there is little educational meaningfulness.
- E.S. between .30 and .50 means there are meaningful differences. This result can be considered **solid** evidence of educational impact.
- E.S. between .50 and .75 means that there is an educationally meaningful finding that has **strong** practical implications.
- E.S. between .75 and 1.00 means that there is both an educationally meaningful finding and one that will most likely have a **major** impact on education within the area.
- E.S. of more than 1.00 is highly meaningful and indicates **phenomenal** educational learning.

Educational programs that are touted as being successful usually achieve effect sizes between .35 and .70. Effect sizes are reported for all comparisons of groups in the next two sections of this report. The reader should pay special attention to any effect size that is greater than .50 (sometimes connoted as E.S.=.50) as indicating a strong educational impact and one that is consistent with other successful educational programs. However, in Sections 4.0 and 5.0 of this report, the reader will often encounter much larger effect size results, suggesting that the impact of the JA programs in this study surpass typical educational gains.

## **4.0 IMPACT ON STUDENT UNDERSTANDING OF ECONOMIC AND BUSINESS CONCEPTS**

The scores from the ORTs were compared before and after participation to determine the impact of JA TITAN and ESIS on student knowledge, comprehension, and application of economic and business concepts. In this section of the report significant findings from these analyses are reported.

All findings are presented by program. Within each program, several successive analyses were conducted to determine specific group differences, including:

- Overall impact of the program
- Impact within each site
- Impact related to grade level
- Impact related to ethnicity
- Impact related to gender

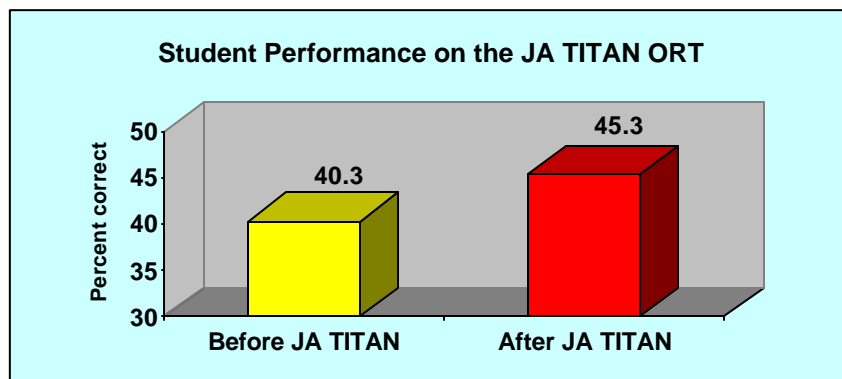
Before interpreting the findings, the reader should bear in mind that while scores are reported in terms of percentage correct, the percentage should NOT be interpreted as a class grade, rather as the percent of information mastered. As an example, on a typical standardized test, someone scoring at the average percentile may get as few as 20% of the items correct. Therefore, the accurate interpretation of these results comes from comparing pretest scores with posttest scores. Across groups, one should look at the change difference in these scores to determine how significant the program's impact was for each group.

## 4.1 IMPACT OF JA TITAN

How much better do students understand economics and business after participating in JA TITAN? This section provides the results of the analyses focused on answering this question.

### 4.1.1 Overall JA TITAN Results

When data were collapsed across all sites, it was found that students' understanding of economic concepts increased significantly after participating in JA TITAN. After participating in JA TITAN, students' proficiency scores increased by five percentage points reflecting a 13% gain in their economics and business knowledge, as illustrated in the figure. This increase represents the type of educational growth seen with many of today's educational interventions, as evidenced by the solid effect size of .45.



Not only is the change in knowledge and skills educationally meaningful, it is also statistically significant ( $p < .001$ ), suggesting that this growth is a real outcome of the program and would be obtained if repeated with other classes.

This finding suggests that the JA TITAN curriculum is effective in stimulating student learning and retention of economic and business concepts. A specific analysis of ORT item performance suggests that the following concepts are well understood by students after participating in JA TITAN:

- **Marketing**
- **Research and Development**
- **Capital Investment**
- **E-commerce**
- **Capacity Utilization**
- **Production**
- **Interest**
- **Cash Flow**

The items underlined in red in the above list indicate those concepts that students not only mastered but had virtually no understanding of before participating in JA TITAN. Before participating in JA TITAN, students had very little understanding of how research and development contribute to the success of a company, what types of capital investment are needed and why, how to optimize capacity, and the processes involved in production.

These findings suggest that JA TITAN provided the students with insights into business and economics that they did not get from any other source. This is a particularly important finding given that many of the students in the sample had other economics-related experiences (e.g., classes, on-the-job experience, etc.) before participating in JA.<sup>28</sup> Even with this economic training, students had not mastered many of the concepts that they achieved after participating in

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<sup>28</sup> Student experiences were recorded for all students in the demographics portion of the ORT.

JA TITAN. This finding suggests that JA TITAN contributed in a unique way to student learning.

**Why the lack of mastery?** Although students participating in JA TITAN added significantly to their knowledge base, it is also obvious from the graph of results that students did not master a significant portion of the curriculum.<sup>29</sup> One might ask why students performed only at the 45% level. The answer is most likely a complex combination of factors.

One possible explanation is that most students participating in JA TITAN are not held accountable for their learning, as is the case in a traditional classroom. Thus, even though students in this sample knew that they would be taking a test at the end of the program, they also knew that the test would not affect their grades in school. Consequently there may have been less intrinsic motivation associated with the JA TITAN program and subsequently less learning and less motivation to take the course and test seriously. There is evidence to support this assertion provided by the 5% of students who were dropped from the final analysis due to problems with their answer forms<sup>30</sup> as recorded by the evaluators while on site.

Another possible explanation for the lack of mastery in the findings is that the JA TITAN curriculum is sufficiently difficult, replete with complex theories and content, requiring students to spend much time and intellectual energy to absorb. This may be particularly true when JA TITAN is used as a stand-alone program rather than in conjunction with the Economics program. Very few classes in this study were combining JA TITAN with Economics, so it was not possible to determine whether the results would have been different with the additional coverage of these concepts. However, interviews with teachers and students

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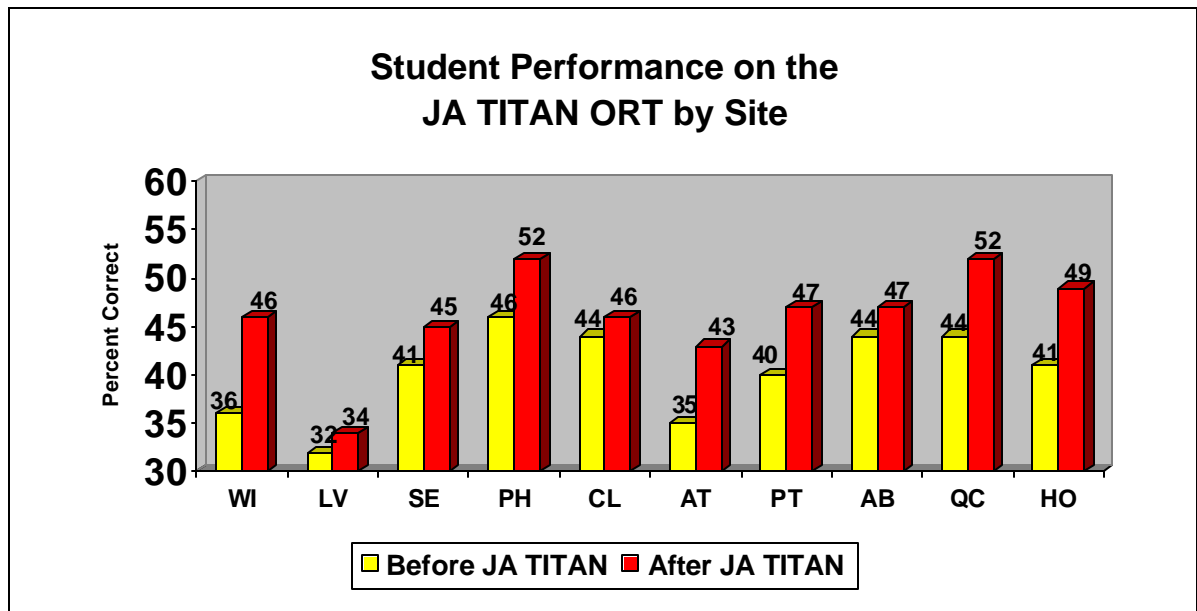
<sup>29</sup> Mastery is judged by most educators to occur when 80% or more of the material is understood.

<sup>30</sup> Evaluators noted that some students were engaged in random responding, completing the test a few minutes after distribution. Other students marked invalid response options such as marking “e” when the question only had “a”, “b”, “c”, and “d” alternatives, or marking 61 responses when the test only had 51 items, etc.

suggest that additional time with the content would add to students' understanding of the concepts.

#### 4.1.2 Site Differences in JA TITAN Performance

To further understand how broad JA TITAN's impact was, a sub-analysis on the results by site<sup>31</sup> was conducted. The findings for each site are illustrated in the figure and suggest that the educational impact of JA TITAN is robust.



As can be seen in the figure, student performance gains were fairly similar across sites (again recall that it is the difference between pretest and posttest scores that is important). At all 10 sites student learning performance improved after participation in JA TITAN. In several of the sites (Wisconsin, Atlanta, Portland, Quad Cities and Houston) the growth in knowledge was around 25%, and represented a substantial educational impact (E.S. = .70 to 1.15).<sup>32</sup> At seven of the sites the gains were statistically significant (p-values ranged from

<sup>31</sup> WI = Wisconsin; LV=Louisville; SE=Seattle; PH=Phoenix; CL=Cleveland; AT=Atlanta; PT=Portland; AB=Albuquerque; QC=Quad Cities; and HO=Houston

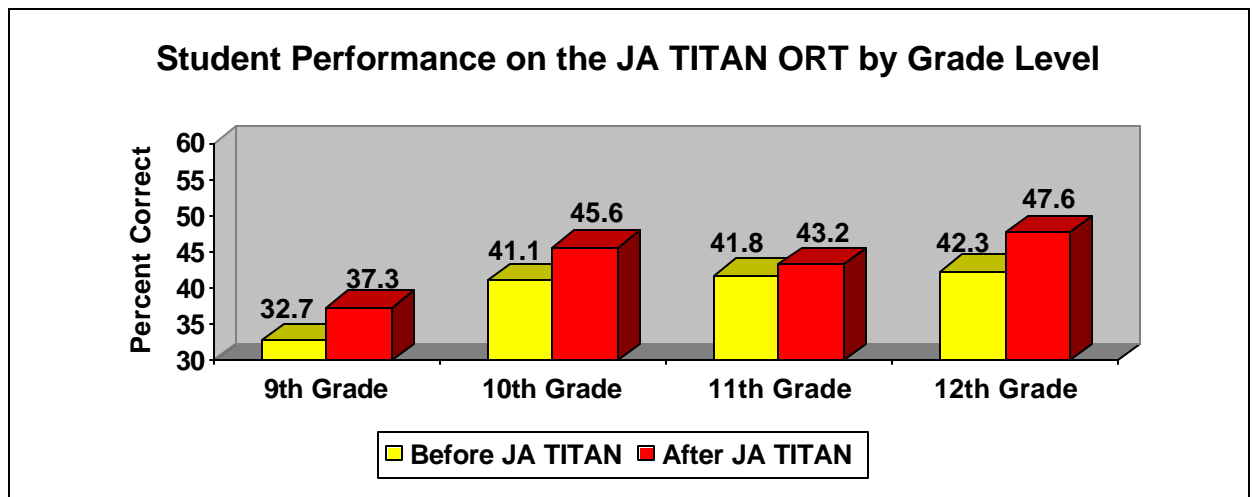
<sup>32</sup> The effect sizes for the other sites were relatively meaningless ranging from .14 to .36

.01 to .001).<sup>33</sup> For Seattle, the difference approached statistical significance but most likely did not achieve it because of the small sample size.<sup>34</sup>

These findings suggest that JA TITAN impacted student learning across the country. In some areas of the country, the gains in understanding were much stronger than are traditionally found in education (e.g., Wisconsin results). However, these gains were not present in all sites. For a few areas, students did not appear to learn as much from the JA TITAN curriculum as in other areas.

### 4.1.3 JA TITAN Impact Related to Grade Level of Student

To determine if the grade level of a student influenced the impact of JA TITAN, an analysis was conducted using grade level of participants as an independent variable. The results of this analysis are presented in the next figure.



The gains in knowledge made by the 9<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders were very similar and were both statistically significant ( $p < .005$ ) and highly meaningful, as reflected by the strong effect sizes of .51, .51 and .49, respectively. At the 11<sup>th</sup> grade level

<sup>33</sup> Gains were not statistically significant in Louisville, Seattle, Cleveland and Albuquerque.

<sup>34</sup> Fewer than two full classes of valid data were obtained from Seattle.

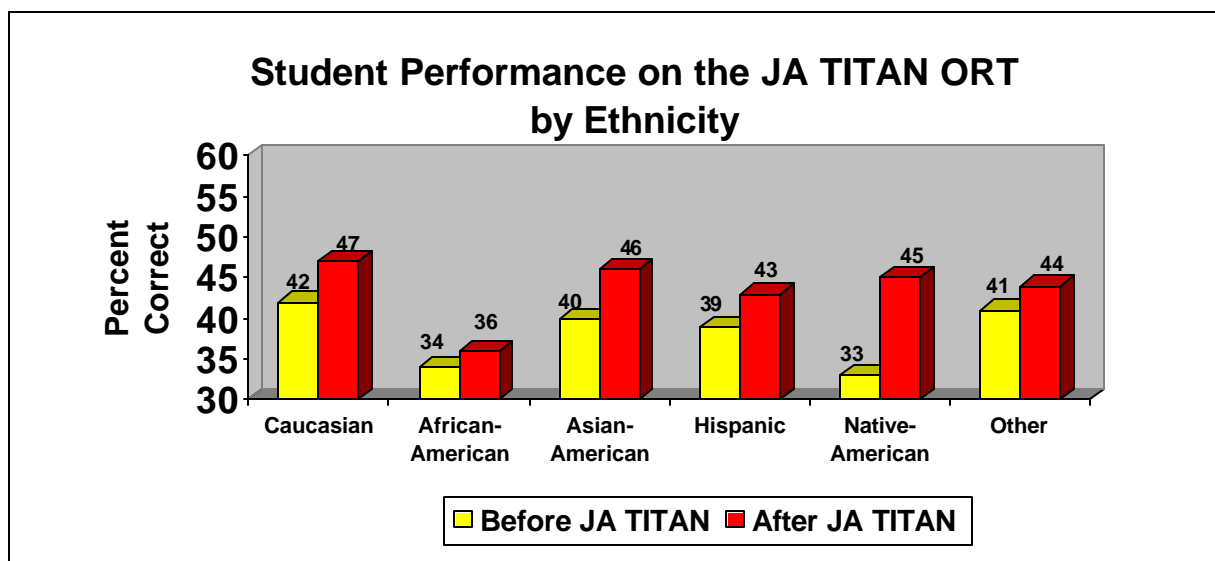
the difference was not statistically significant and did not reflect any meaningful gain.

These findings appear to indicate that JA TITAN had less impact at the 11<sup>th</sup> grade level. Why this should be is perplexing and not easily explainable. Further study is needed to determine if this trend is true when students are also participating in Economics or in other business classes.

One may also note in the findings that 9<sup>th</sup> graders understood significantly fewer JA TITAN concepts compared with the older students after participating in the program. However, it should also be noted that 9<sup>th</sup> graders began the program with significantly less knowledge about economics and business. The amount of information they gained was similar to the older students' gains and suggests that JA TITAN was successful in helping these younger students grasp the complex concepts of this curriculum.

#### **4.1.4 JA TITAN Impact Related to Ethnicity**

One might ask, "Is JA TITAN equally effective with students of all ethnicities?" To answer this question comparisons were made between the pretest and posttest scores of various ethnic groups. The findings for this analysis are presented in the next graph.

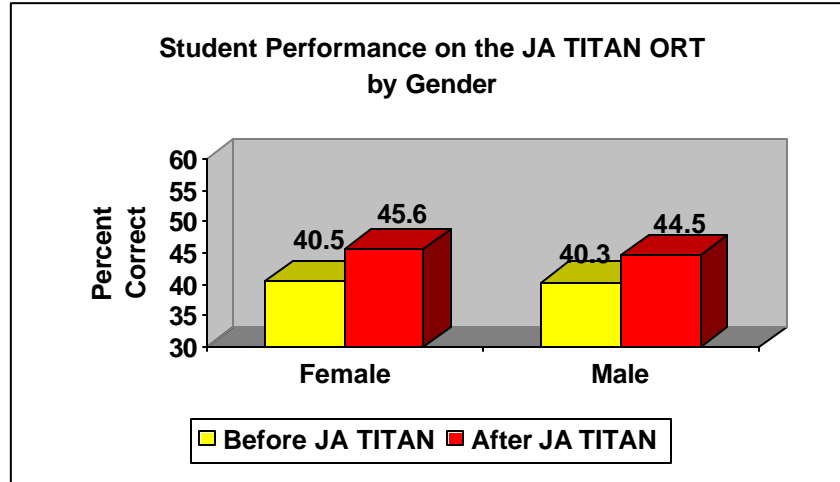


While all groups performed better after participation in JA TITAN, the differences in pretest and posttest performance were statistically significant only for the Caucasian and Asian American groups. The effect sizes for these groups were also strong; .53 and .56, respectively. The differences for the Hispanic and Native American groups approached statistical significance; however, the smaller sample sizes most likely contributed to less sensitivity in the analysis. This is particularly true with the Native American sample in which the effect size analysis demonstrated a large educational gain (E.S. = .89), but because there were fewer than 10 students in this sample it is impossible to know how representative this finding would be in the general JA population.

#### 4.1.5 JA TITAN Impact Related to Gender

One important consideration with JA TITAN, as with all economics-based programs, concerns the performance of females. Given research that shows that females do not typically perform as well as males in math-related fields during high school, an analysis was conducted to ascertain if the sexes might perform differently in response to JA TITAN.

Results from the analysis of gender performance suggest that JA TITAN is equally effective with both sexes (see the figure). Males and females proficiency scores increased by five percentage points and four percentage points,



respectively. Thus, the knowledge gains made by the different genders were similar with a slightly greater rate for females. Males' overall knowledge increased by 10% and females' knowledge by nearly 13%. For both sexes, the gains made were statistically significant ( $p < .001$ ) and with solid effect sizes (E.S. for males = .35 and E.S. for females = .51).

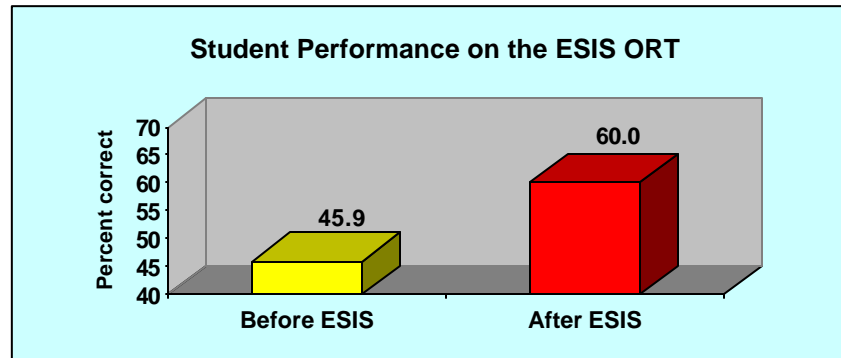
This finding is encouraging and suggests that even though JA TITAN requires problem solving behavior and other skills related to math, concepts are presented in such a way as to stimulate both female and male students' learning.

## 4.2 IMPACT OF ESIS

Do students who participate in ESIS understand the connection between economics and staying in school? This section provides the results of the analyses focused on answering this question.

## 4.2.1 Overall ESIS Results

When collapsing data across all sites, it was found that students' understanding of economic concepts and the benefits of staying in school increases after participation in ESIS, as can be seen in the figure.



After participating in ESIS, students' proficiency scores increased by 14 percentage points reflecting a knowledge gain of 30%. This represents major educational growth, as evidenced by the large effect size of .97. Furthermore, not only is the learning gain educationally meaningful, it is also statistically significant ( $p < .001$ ), suggesting that this growth is a real outcome of the program and would most likely be obtained if repeated with other classes.

This finding suggests that the ESIS curriculum significantly contributes to students' comprehension of the economic consequences of staying in school. This interpretation is further supported by an item analysis of the ORTs, which revealed that the following conceptual areas were understood by most of the students who participated in ESIS:

- **Tuition**
- **Balancing a Budget**
- **Determining Careers**

- Graphing
- Relationship between Education and Economic Indicators
- Gaining Job Experience
- Factors Affecting Entrance into College
- Monthly Expenses
- Factors Affecting Success in School
- Financial Aid Sources
- Setting Goals

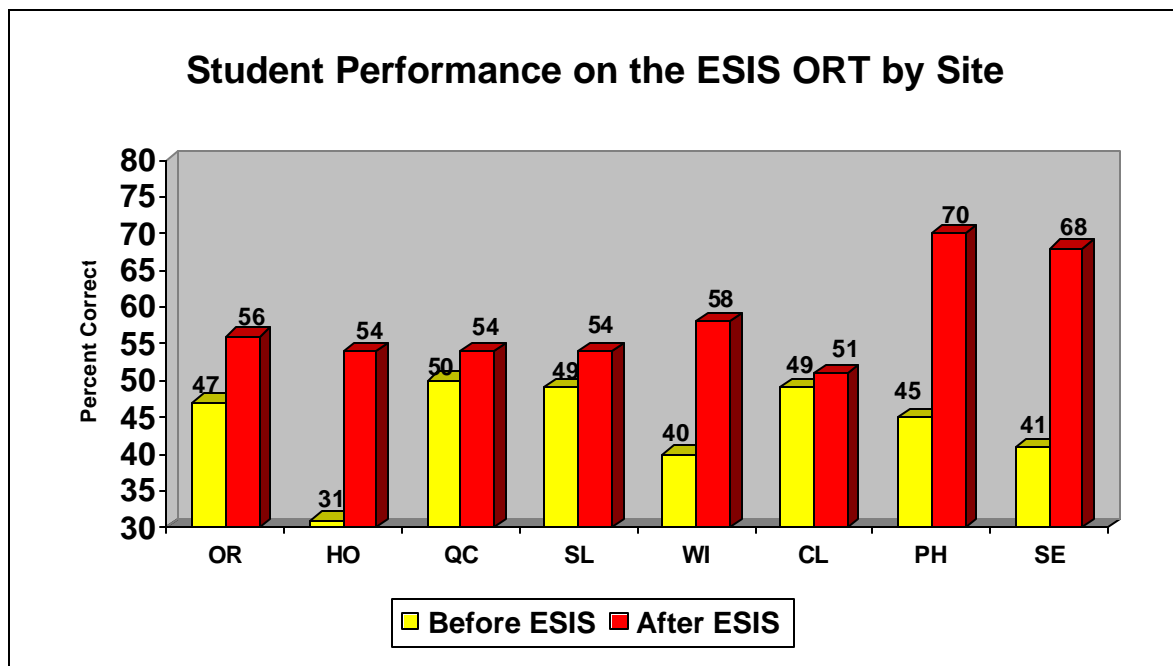
Once again, those items underlined in red are concepts that were not known to the students before participating in ESIS but were well understood after participation. It is in these areas that ESIS is having its greatest impact.

#### **4.2.2 Site Differences in ESIS Performance**

To further understand the breadth of ESIS impact, a sub-analysis of the results by site<sup>35</sup> was conducted. The findings for each site are illustrated in the next figure and suggest that the educational impact of ESIS is wide spread.

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<sup>35</sup> OR = Orlando; HO = Houston; QC = Quad Cities; SL = St. Louis; WI = Wisconsin; CL = Cleveland; PH = Phoenix; and SE = Seattle.

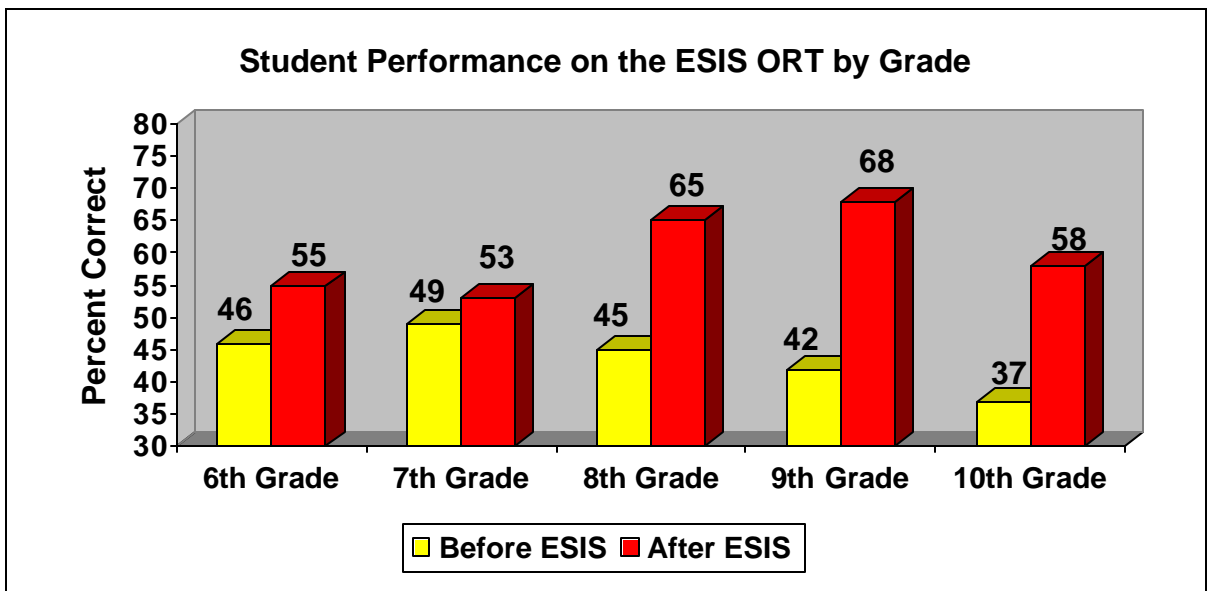


At all sites student performance improved after participating in ESIS. For the majority of sites, participating in ESIS resulted in students making large learning gains. In all but Cleveland, the gains were statistically significant ( $p < .001$ ) with solid to strong effect sizes. In some sites in particular (Houston, Wisconsin, Phoenix, and Seattle) these gains reflected phenomenal educational growth (indicated by effect sizes ranging from 1.51 to an exceptional 2.52 (reflecting a 66% growth in knowledge!)).

The finding that ESIS is so uniformly successful suggests that it has an impact on the learning of students in a variety of settings. The lack of statistically significant impact in Cleveland may be a function of the unique way the curriculum was presented. The evaluators visiting this site reported that the teacher presented the majority of the ESIS activities in all classes tested. Other evaluation results have suggested that the consultant is one of the most important contributing factors to JA program success. Thus, the lack of a role model in the Cleveland classes may have diminished the effects of the ESIS activities.

### 4.2.3 ESIS Impact Related to Grade Level of Student

It is important to note that ESIS was implemented in a wide range of grades (the most of any JA program that WIRE has evaluated). Because so many levels of students were participating in the program, it was particularly important to determine whether grade level influenced the impact of ESIS. An analysis using grade level of participants as an independent variable was conducted. The result of this analysis is presented below.



As can be seen in the graph, student performance improved at every grade level. This finding was both statistically significant ( $p < .03$ ) and educationally meaningful (effect sizes ranged from a marginal .30 to a phenomenal 1.96).

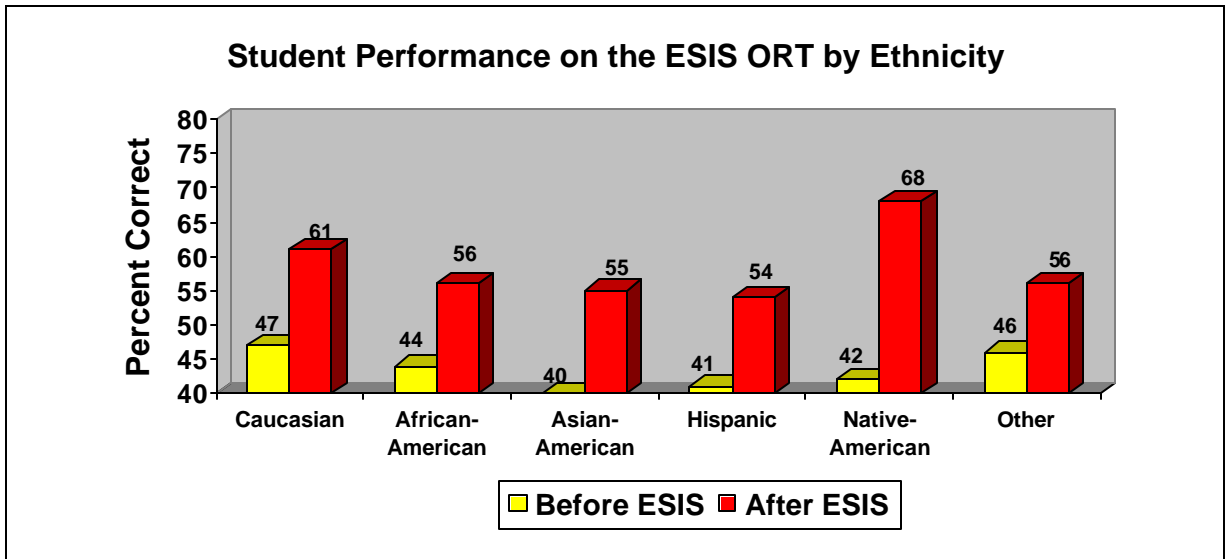
What is interesting in these findings is that the impact was greatest for the older students. The 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> grade students proficiency scores increased by 22 percentage points on average, while the 6<sup>th</sup> and 7<sup>th</sup> grade students proficiency scores increased by 7 percentage points. Thus, the older students' knowledge increased by 55% and the younger students knowledge increased by 18%. It is

possible that the content within ESIS overlapped more with the real world experiences of the older students and thus they could more easily apply the concepts and add to their knowledge. For example, some of the ESIS content focuses on finding a job and creating a résumé. These skills are highly relevant to 15- and 16-year-olds who may be looking for their first jobs; they may have less concrete application with 11- and 12-year-olds who probably will not have this experience for a few more years.

What is not known from in this study is whether being exposed to the ESIS concepts at the younger ages would make a difference in the responses and behavior of students as they moved into the 9<sup>th</sup> and 10<sup>th</sup> grades. That is, the long-term effects of the learning cannot be determined from this data. So, while younger students may learn less initially, that learning may in fact have a greater impact over the long term. The longitudinal study that JA is funding may shed further light on this issue.

#### **4.2.4 ESIS Impact Related to Ethnicity**

Is ESIS equally effective with students of different ethnicities? To answer this question, comparisons were made between the pretest and posttest scores of various ethnic groups. The findings are presented in the next figure.

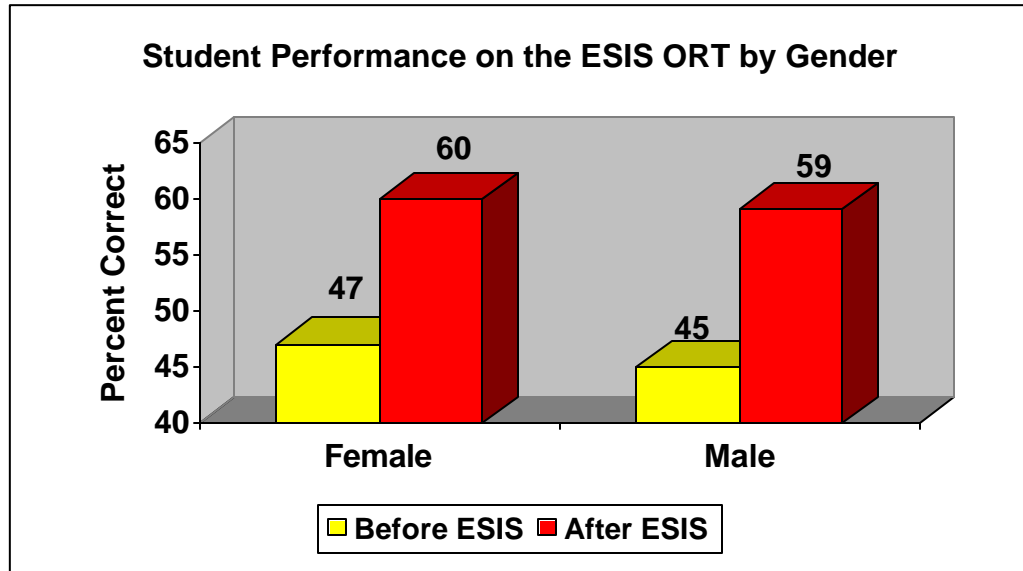


Students from each ethnic group made dramatic learning gains after participation in ESIS. The findings were statistically significant ( $p < .001$ ) as well as educationally meaningful (effect sizes ranged from a strong .45 to a phenomenal 1.93).

These findings provide strong evidence that ESIS has a significant impact on the learning of all students.

#### 4.2.5 ESIS Impact Related to Gender

The impact of ESIS was equivalent for both sexes, as the following graph illustrates. The increase in scores for females was similar to that for males (13 percentage points and 14 percentage points), representing knowledge increases of 30% and 31%, respectively.



This finding suggests that the ESIS curriculum and its corresponding activities motivate the learning of both male and female students. Moreover, this finding adds further evidence that ESIS is successful in increasing the learning of all students.

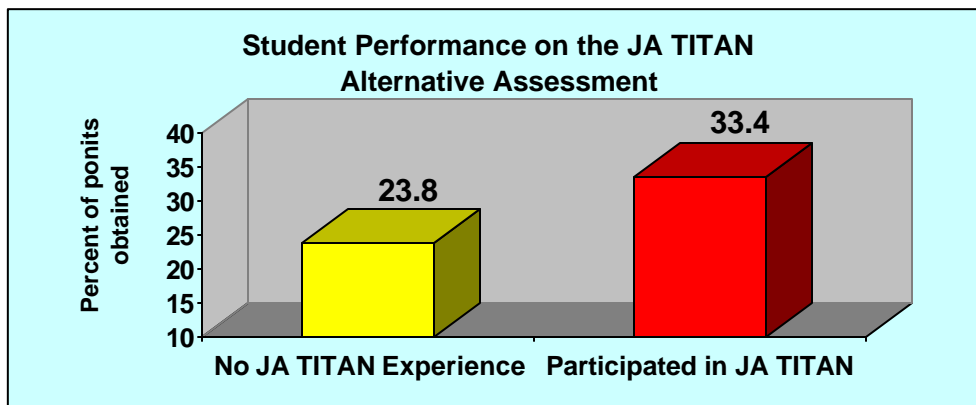
# 5.0 IMPACT ON STUDENT CRITICAL THINKING AND PROBLEM SOLVING

In the previous section it was found that JA TITAN and ESIS had significant impacts on student understanding of economics, business, and educational applications. In this section, the findings concerning whether students can use this understanding to synthesize their knowledge and make business and real world decisions are provided.

The results of the alternative assessment are reported in this section. Scores (reflected as percentage of points obtained during the assessment) of students who had not yet participated in the JA programs were compared to the scores of students who had completed the JA programs. Separate analyses were conducted for each program, and the program findings are reported separately.

## 5.1 IMPACT OF JA TITAN ON CRITICAL THINKING

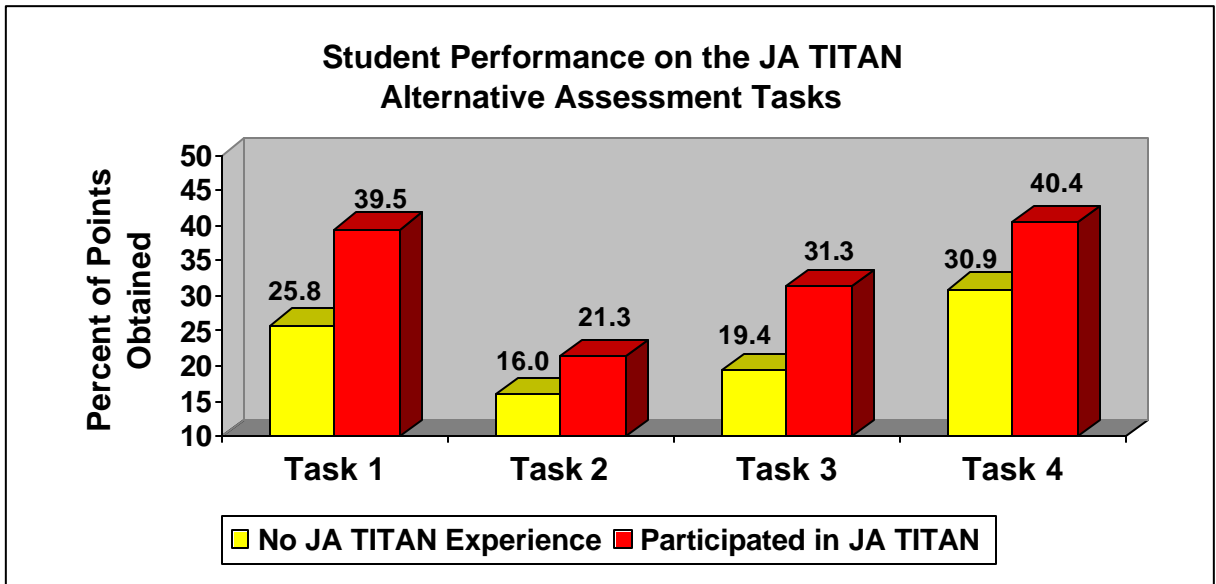
Student performance on the JA TITAN alternative assessment is illustrated in the figure. As can be seen, students who had participated in JA TITAN scored



statistically significantly higher ( $p < .001$ ) than students who had no exposure to the program. This gain is not only statistically significant but reflects phenomenal educational growth (E.S. = 1.29). This finding suggests that students who have participated in JA think more critically about economics and business than students who do not participate in JA. Moreover, the JA TITAN students used the knowledge they obtained in the program to make “sound” business decisions.

While students who participated in JA TITAN demonstrated better thinking, synthesizing, and judgment skills than students who had no JA exposure, they still did not exhibit the most sophisticated thinking or always make the “best” decisions, as indicated by the lower percentage of points they obtained. The assessment was designed to give students points for “correct” answers to problems that required an analysis of the business situation. However, the correct decision could reflect more or less sophisticated thinking. Students obtained more points when they considered more factors in making and justifying their decisions.

Further details about precisely which areas of business problem solving students were more capable of after participating in JA TITAN can be determined from the subanalyses of the specific alternative assessment tasks. Students were required to participate in four tasks associated with this assessment. (A description of each task is provided in Section 3.2.2.) The performance of students on each task is provided in the next figure.



Within every task students who had participated in JA TITAN thought and performed much better than students who had no JA experience. The differences in performance between the two groups for each task were statistically significant, and the effect sizes ranged from strong to phenomenal, as shown in the table.

Task	p-value	E.S.
Task 1	<.001	1.31
Task 2	<.01	.55
Task 3	<.003	.67
Task 4	<.002	.73

### 5.1.1 Analysis of Business Performance

In the first task students were required to identify what aspects of a business they should focus on by analyzing its performance index. Students who had not yet participated in JA TITAN could identify a few aspects, such as price and market share, which are important; however, their answers generally reflected a lack of understanding of how to critically assess the reports. Students who had participated in JA TITAN were able to clearly identify aspects of the business that were important by drawing on information contained in the reports and from what

they had learned in JA TITAN.<sup>36</sup> However, even after participating in JA TITAN students seldom analyzed different indices in conjunction with one another (e.g., capacity utilization in conjunction with inventory).

### **5.1.2 Assessing Favorable Trends**

During the second task students were asked to analyze the company's financial reports and assess favorable trends and provide justification for why these trends were favorable. Students who had not yet participated in JA TITAN could spot some of the trends; however, their explanations for the trends were simplistic and often wrong. The students who had participated in JA TITAN were able to identify more trends and provide better justifications for their assessments. Although students who had participated in JA TITAN demonstrated sound thinking, their thoughts still did not represent sophisticated reasoning based on economic rationales. For example, in identifying that production costs per unit had declined, students were able to explain that this was good because the cost of goods was lower; but they weren't able to specifically tie in the concept of economies of scale.

### **5.1.3 Comparing Company and Industry Performance**

In the third task, students were asked to use an industry report along with the other information to compare company performance to the industry and to provide justification for their findings. The two areas in which company performance was better than the industry included: average production cost and average total cost. Students who had not yet participated in JA TITAN had a difficult time distinguishing individual company performance from the overall

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<sup>36</sup> The specific business areas that students considered included: sales, price, profit, retained earnings, and marketing.

industry performance and when they made correct comparisons their justifications were wrong. Almost all students who had participated in JA TITAN (92%) could correctly identify the favorable industry comparisons, and most (85%) could provide, at least in a general way, the reasons for the trend being favorable. However, very few students (8%) were able to actually use economic language or theory to explain what was occurring.

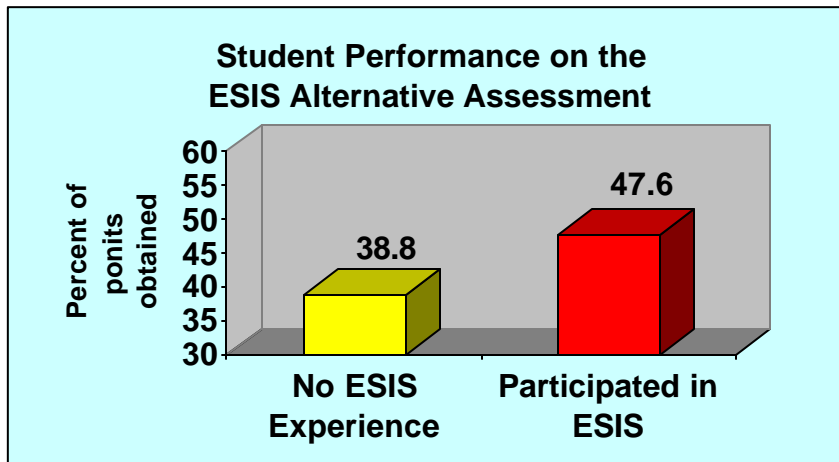
#### **5.1.4 Critical Business Decisions**

In the final task, students were asked to make several critical decisions about what the company should do during its fourth quarter of production. Students were asked to set a unit price, calculate production level, and determine amount spent on marketing, capital investment, and research and development. Students were asked to provide their reasoning in making these decisions. Students who had not yet participated in JA TITAN knew only some of these areas, and they often made decisions that would eventually bankrupt the company. Students who had participated in JA TITAN made much wiser decisions that reflected careful analysis of the trends in the industry and in the company. Most of their answers were feasible, and their justifications were often sound.

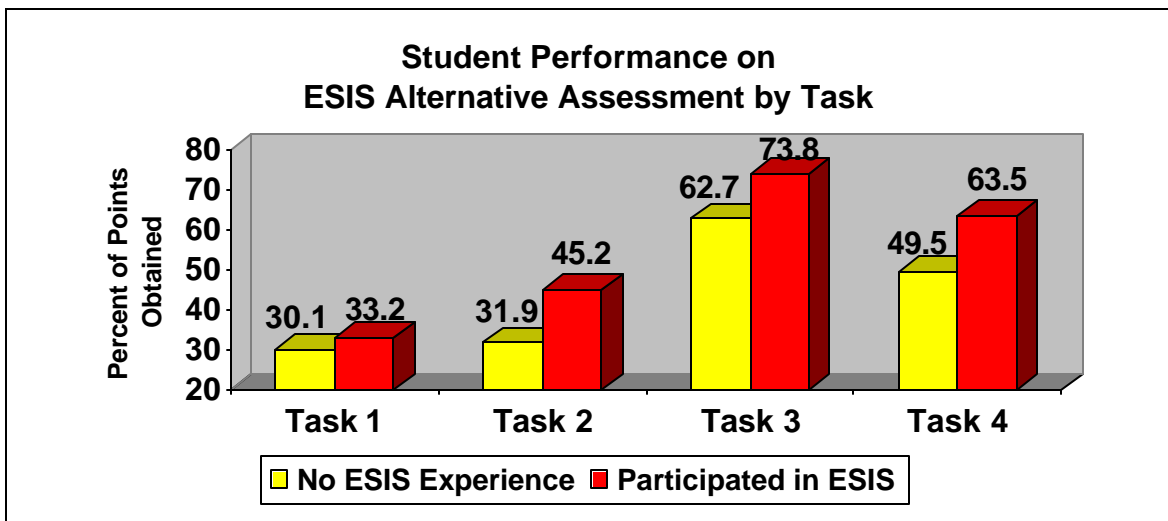
## **5.2 IMPACT OF ESIS ON CRITICAL THINKING**

Student performance on the ESIS alternative assessment is illustrated in the next figure. As can be seen, students who had participated in ESIS scored statistically significantly higher ( $p < .001$ ) than students who had no experience with the program. This gain is not only statistically significant but reflects

phenomenal educational growth (e.g., E.S. = 1.26). This finding suggests that students who have participated in ESIS think more critically about economics and education than students who do not participate in the program. Moreover, the ESIS students used the knowledge they obtained in the program to make informed decisions about educational and business opportunities.



To further understand the impact of ESIS, the performance of students on the specific alternative assessment tasks were analyzed. Students were required to participate in four tasks associated with this assessment. (A description of each task is provided in Section 3.2.2.) The performance of students on each task is provided in the figure below.



Within every task, students who had participated in ESIS thought and performed much better than students who had no ESIS experience. The differences in performance between the two groups for each task were statistically significant; however, the effect sizes ranged from marginal to phenomenal, as shown in the table.

Task	p-value	E.S.
Task 1	<.05	.33
Task 2	<.001	1.04
Task 3	<.001	.75
Task 4	<.008	.55

### 5.2.1 Benefits of Schooling and Career Options

For this task, students were required to identify the benefits of staying in school and possible career information resources. The score reflects their ability to generate many possible answers. Students who had not yet participated in ESIS could provide only one or two answers. Students who had participated in the program provided an additional one or two answers; however, the quality of their answers was much better. Students who had no ESIS experience provided answers that were clichés – *“It’s important to stay in school so that you aren’t dumb,”* etc. Whereas, students who had participated in ESIS provided answers that targeted more specific benefits – *“Many jobs require a high level of education,”* etc.

### 5.2.2 Skill Assessment

During the second task students were asked to assess a student’s skills and decide what information should be included on a résumé. Students with no ESIS experience had very little knowledge of what should go in a résumé and were unable to critically assess skills and experiences that would be important to include. Students who had participated in ESIS were able to effectively analyze

information and synthesize that information into a coherent and well thought out presentation (in the form a compelling résumé). However, even after participating in ESIS, students still did not understand the importance of all experiences, particularly those associated with typical home chores (like babysitting), in making a strong résumé for a high school student. Instead, students focused predominately on school-taught skills, such as mathematical skills, computer skills, etc. So while students had learned to associate schooling with workplace skills, they had not yet transitioned their thinking outside of school.

### **5.2.3 Budgeting**

In the third task, students were asked to utilize several sources of information to create a workable budget. This task required use of problem solving skills. Students with no ESIS experience demonstrated some understanding of budgets, but that knowledge did not translate into a realistic, useable product. Students who had participated in ESIS demonstrated a clear understanding of the important categories to include in a budget, were able to make reasonable estimates of the costs associated with these categories, and then to make informed decisions as to whether certain options were affordable. After participating in ESIS students have mastered this conceptual area at a high level of thinking.

### **5.2.4 Critical Decisions**

In the final task, students were asked to make several critical decisions about possible jobs. Students were required to use information about a person's qualifications and then determine a suitable job. Students without ESIS

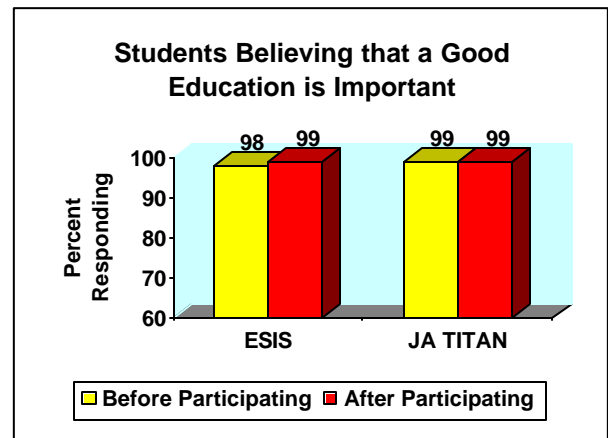
experience could make recommendations based only on the obvious selection criteria (i.e., the individual expressed a desire to work in engineering and therefore selected one of the engineering jobs). However, students with ESIS experience were able to more critically analyze the jobs for important aspects, such as education required. Once again, students who had participated in ESIS were able to master nearly all of the content within this task.

Taken together, these results suggest that ESIS is a powerful program that not only increases students' understanding of education and business, but also encourages students to develop higher levels of understanding. After participating in ESIS students can use the knowledge acquired to critically analyze real life situations, make informed decisions, solve problems, and make judgments about alternatives.

# 6.0 IMPACT ON STUDENT QUALITY OF LIFE

Two types of findings can be gleaned from the Quality of Life survey. First, students reported what they believed to be the impact of the JA programs on lives. Their responses are provided in this section as “perceived impact.” Second, students reported their beliefs and attitudes on several indicators<sup>37</sup> of quality of life both before and again after participation in the JA programs. Comparisons of these perceptions before and after provide another indication of the impact on students’ quality of life. Thus, the findings in this section can be categorized as perceived impact or impact on perceptions. The reader should look for distinctions between these findings when reviewing this section. In addition, all findings are presented by program.

Some comparative findings (those concerning impact of perceptions) did not show substantial differences as a result of participating in the JA programs, due predominately to ceiling effects. For example: When students were asked how important it is to get a good education, nearly all (regardless of program participation) responded that it was important or very important, as indicated in the figure. There was no room for growth within either JA TITAN or ESIS in this domain. Students could not be surer about the importance of a good education, even before beginning the JA programs.



<sup>37</sup> These indicators are described in Section 3.3.5

The remainder of this section provides the most important and/or significant findings. In addition information on the relative impact of JA TITAN and ESIS in contributing to students' quality of life is provided.

## 6.1 ATTITUDES TOWARD WORKING

Students reported that the JA experience had affected their attitudes about working and finding a career. The majority of the students who participated in JA TITAN (64%) reported that their experience had impacted their work attitudes. Eighty-five percent of the students who participated in ESIS reported an impact on their attitudes. The table below and on the next page provides the most frequently perceived impact students reported for each program (percentage of those responding are provided in parentheses).

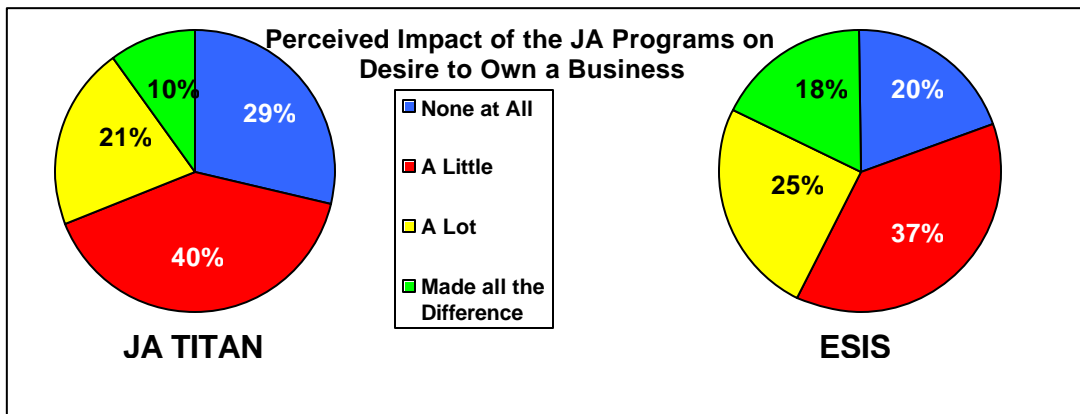
ESIS Impact	JA TITAN Impact
<ul style="list-style-type: none"> <li>It's made me more positive about working (78%)</li> </ul>	<ul style="list-style-type: none"> <li>Motivated me to find a career (62%)</li> </ul>
<ul style="list-style-type: none"> <li>Makes me want a job (39%)</li> </ul>	<ul style="list-style-type: none"> <li>I am more confident in my ability to work (32%)</li> </ul>
<ul style="list-style-type: none"> <li>It helped me find ways to get a job (23%)</li> </ul>	<ul style="list-style-type: none"> <li>Made me more positive about business (32%)</li> </ul>
<ul style="list-style-type: none"> <li>I now believe that it is important to find a job I like (15%)</li> </ul>	<ul style="list-style-type: none"> <li>I don't want to get into big business (25%)</li> </ul>
<ul style="list-style-type: none"> <li>I believe schooling is important to get a good job (15%)</li> </ul>	<ul style="list-style-type: none"> <li>Made me believe that I could start my own business (21%)</li> </ul>

- I'm more confident about working (10%)

- I'm eager to begin a career (10%)
- I now want a career in business (10%)

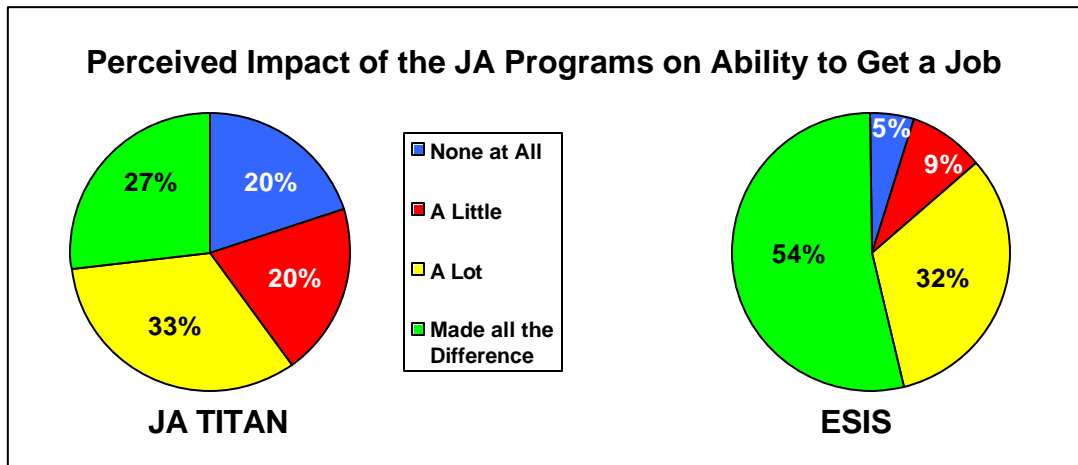
According to many students, both ESIS and JA TITAN have influenced their views of the workplace and their beliefs about their ability to be successful in it.

When students were asked what impact JA had on their desires to own a business, the majority suggested that it had made “a lot” or “all the difference” in their attitudes. The following pie charts show their responses for each program.

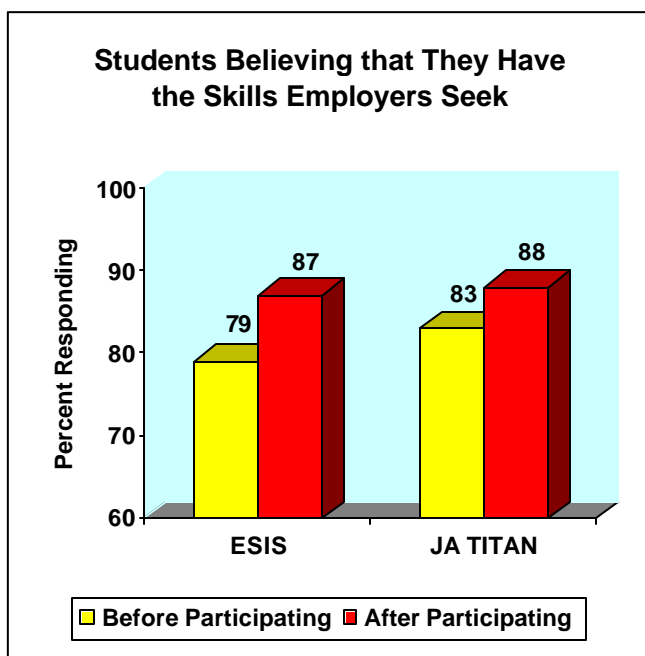


Thirty-one percent of the students who participated in JA TITAN and nearly half (43%) of the students who participated in ESIS reported that the programs had a significant impact on their desires to own a business.

The programs had an even stronger perceived impact on students' beliefs in their abilities to get a job, as the next graphic depicts. A majority of students in both programs felt that the JA programs were making a significant difference in their ability to secure employment, with over half of the students who participated in ESIS indicating that it had made all the difference.



Changes in attitudes toward working were assessed by comparing student beliefs in several areas before and after participating in the JA programs. One of the first areas analyzed was students' beliefs about their skill levels. As the graph indicates, a statistically significantly ( $p < .02$ ) greater proportion of students held the belief that they have the skills employers are looking for, after participating in ESIS as compared to before they participated. While 6% more JA TITAN students also held this belief after participating in JA TITAN, this amount of change was not statistically significant.



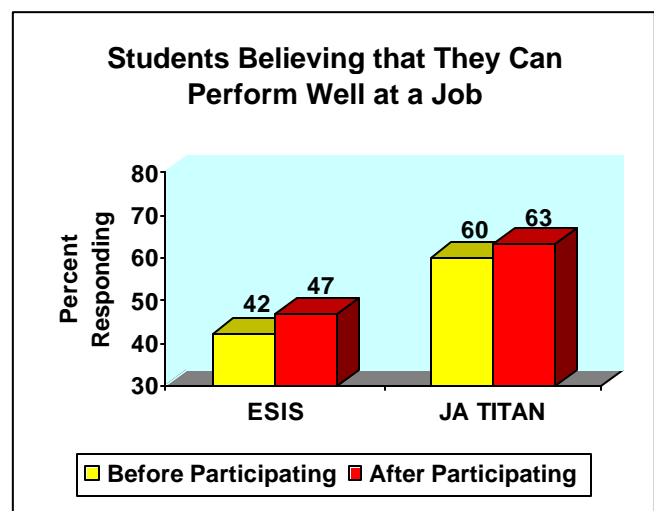
The increased number of students believing in their work skills was accompanied by a corresponding increase in the number of students who possessed relevant work knowledge. Before beginning the programs, 8% of the JA TITAN students and 14% of the ESIS students indicated that they were not sure what skills

employers wanted. After participating in these programs, the number of students that still were not sure had dropped by half.

Other areas in which more students possessed relevant knowledge after participating in the JA programs included:

- Knowing how to find jobs (+7%)
- Knowing how to effectively interview (+6%)
- Understanding what a résumé is and being able to create one (+17%)

Finally, students' beliefs about their ability to perform well at a job were assessed before and after participating in the JA programs. The graph shows the results of this comparison.



Statistically significantly ( $p < .01$ ) more students held the belief that they could perform well after participation in ESIS. While the number of students holding that belief did increase after participation in JA TITAN, the change from before participation only approached significance.

Overall, the findings suggest that more students have a positive attitude toward working after participating in the JA programs. This positive attitude should help them in actually obtaining jobs and being successful at the workplace, which will in turn fundamentally improve their quality of life.

## 6.2 ATTITUDES TOWARD SCHOOL

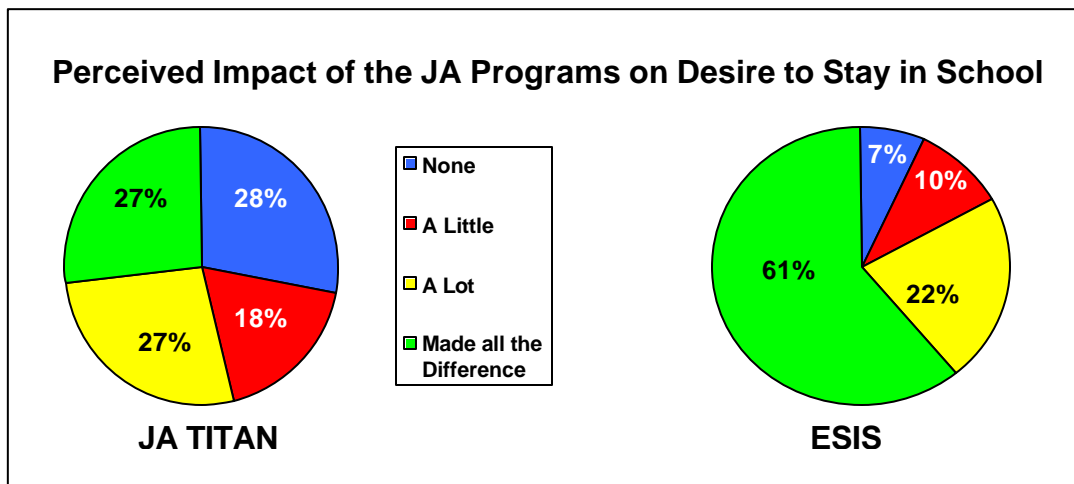
Students were asked how the JA experience had affected their attitudes toward school. As mentioned before, students were already quite positive about schooling and education, so not surprisingly, 52% of the students who had participated in JA TITAN indicated that the program had no impact on their attitudes in this area. However, 83% of the students who had participated in ESIS suggested that this program had influenced their ideas and beliefs about schooling. No doubt the direct emphasis on the importance of school/education in the ESIS curriculum made a difference in the findings between the two programs.

For those who reported that the JA experience was impacting their attitudes toward school, the specific ways in which they perceived impact are provided in the box below.

Perceived Impact of ESIS	Perceived Impact of JA TITAN
<ul style="list-style-type: none"><li>• I want to stay in school (71%)</li></ul>	<ul style="list-style-type: none"><li>• Education is now my top priority (31%)</li></ul>
<ul style="list-style-type: none"><li>• I want to do better in school now (40%)</li></ul>	<ul style="list-style-type: none"><li>• I now want to stay in school and go to college (28%)</li></ul>
<ul style="list-style-type: none"><li>• I'm more positive about school now (29%)</li></ul>	<ul style="list-style-type: none"><li>• I now work harder at school (25%)</li></ul>
<ul style="list-style-type: none"><li>• I now realize the importance of school (21%)</li></ul>	<ul style="list-style-type: none"><li>• I now look forward to coming to school (24%)</li></ul>
<ul style="list-style-type: none"><li>• I'm now going to try harder at school (19%)</li></ul>	<ul style="list-style-type: none"><li>• I'm trying harder to succeed (12%)</li></ul>
<ul style="list-style-type: none"><li>• I've decided to go to college (16%)</li></ul>	<ul style="list-style-type: none"><li>• I hate school a little less (10%)</li></ul>

Based on these findings, it appears that students who have participated in ESIS and JA TITAN have a new appreciation for school and the effort they should expend there.

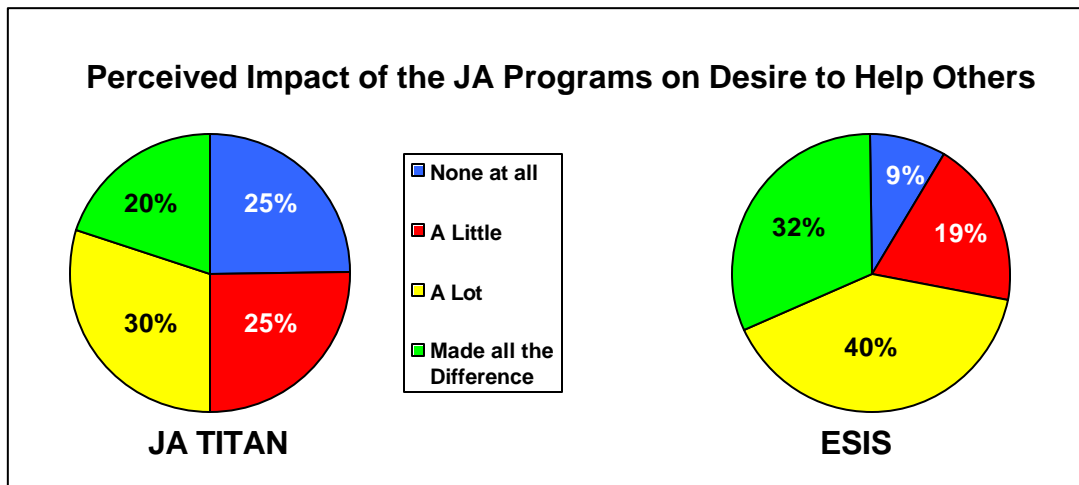
Students were also asked to indicate how much JA had impacted their desire to stay in school. The results from each program are indicated in the pie charts.



Once again, a majority (83%) of students who participated in ESIS suggested that the program had a significant impact on their desire to stay in school. Given the overall objective of the ESIS program, it appears that JA has met and exceeded its target. What is interesting is that slightly more than half (54%) of the students who participated in JA TITAN also reported that their desire to stay in school had been influenced by the program. This finding is particularly important given that most of the students participating in JA TITAN are in the 10<sup>th</sup> and 11<sup>th</sup> grades, and a strong desire to stay in school at these grade levels can make the difference to successful completion and graduation.

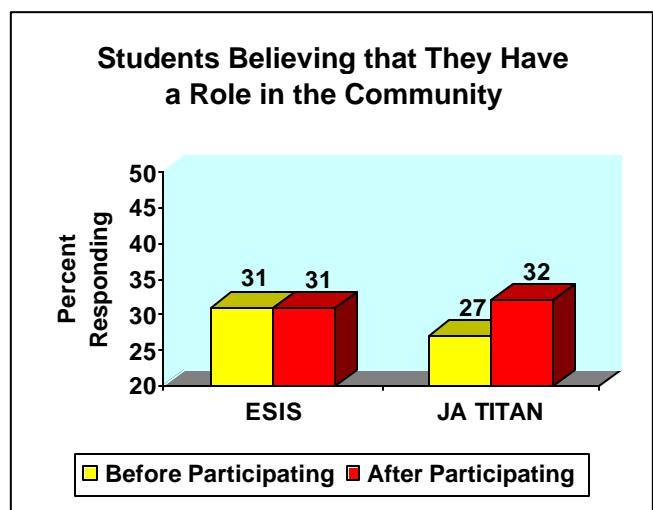
### 6.3 ATTITUDES TOWARD COMMUNITY SERVICE

Given that the JA programs are in themselves service programs provided to the schools by business people, it seemed likely that this modeling of community service might influence students participating in these programs. Therefore, students were asked whether JA had impacted their desire to help others. Student responses are provided in the graph.



Students who participated in both JA TITAN and ESIS reported that these programs had a significant impact on their desires to help others. This perceived impact may have been achieved through the rapport students formed with the volunteer. When the rapport was strong, the volunteer served as a role model, encouraging students to give back to the community.

Students were asked before and again after completing the JA programs if they believed they had a role in the community. Their responses, depicted in the graph, showed that 19% more students believed they had a role in the

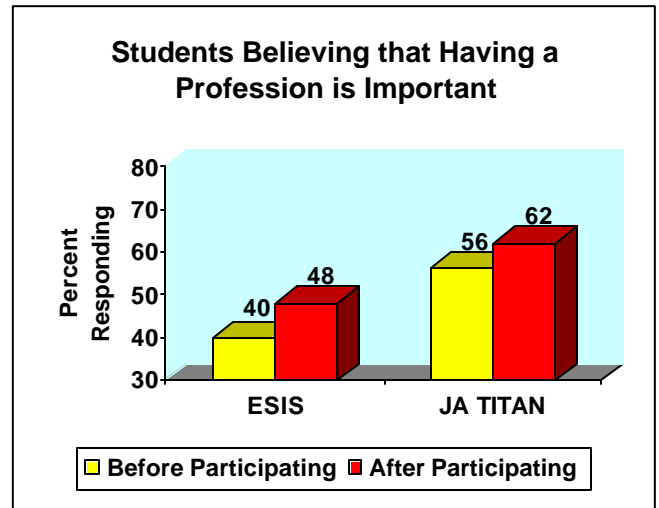


community after as compared to before participating in JA TITAN. However, for both programs, the majority of students still did not believe they had a role to play.

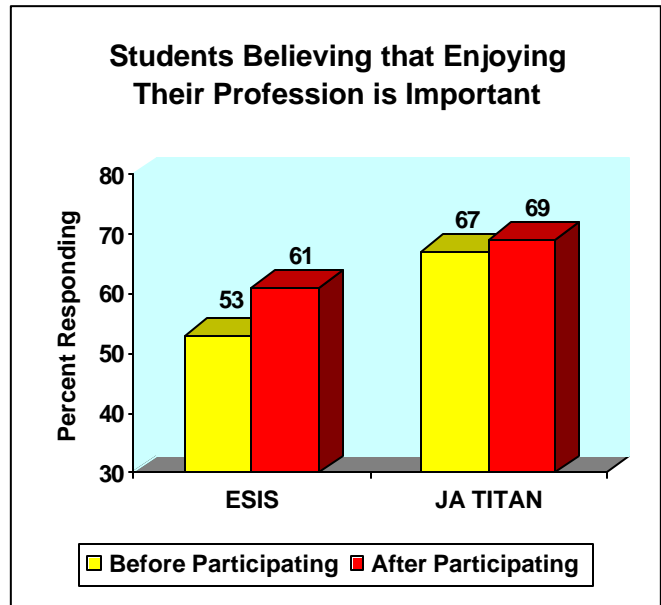
## 6.4 GOALS AND VALUES

When most people refer to quality of life they refer to the lifestyle that allows individuals to achieve what they want and live in comfort and success. Because students have not yet reached the point of providing for their own lifestyles, a measure of quality of life can be obtained by studying their aspirations. What is it they value and are working toward?

An analysis of student goals and values, both before and after participating in the JA programs, revealed three areas in which more students had higher aspirations after participation in the programs. The first of these areas concerned the percentage of students that listed “*having a profession*” as one of their top priorities. As depicted in the graph, more students chose this goal as a highly valued aspiration after participating in each of the programs. This increase was statistically significant for ESIS ( $p < .001$ ) and approached statistical significance for JA TITAN.

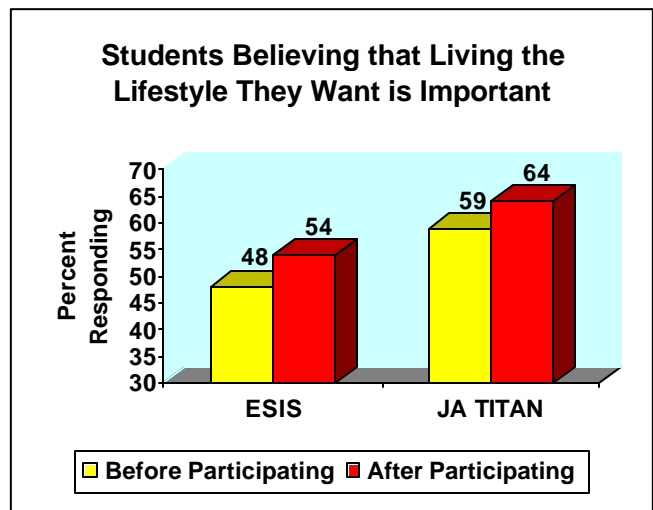


In addition, more students after participating as compared to before participating in ESIS were likely to set “*enjoying their profession*” as a high priority (see accompanying figure). Many students who had not yet participated in JA TITAN had already selected this as a high priority and only 2% added this to their priorities after participation.

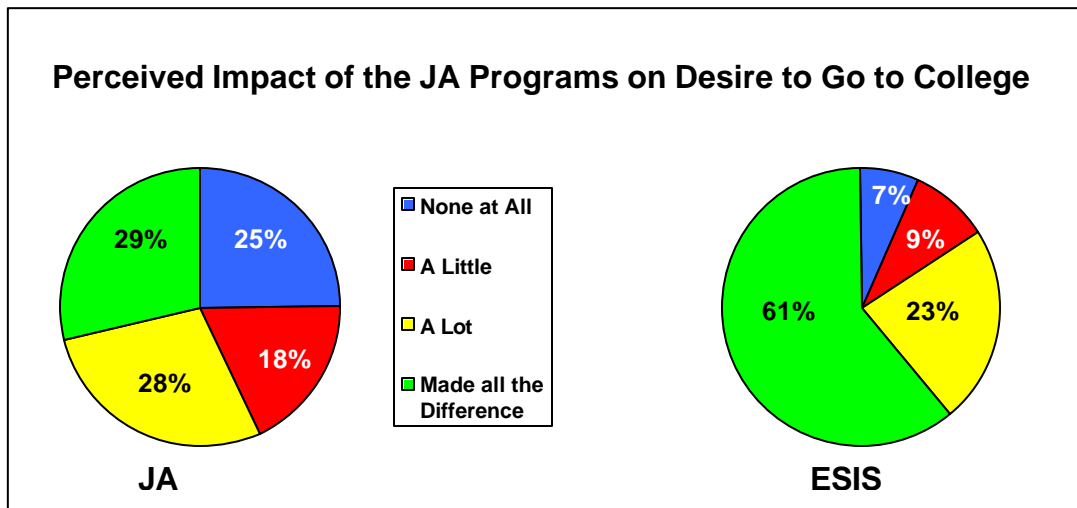


Students in both programs were likely to value living the lifestyle they wanted after participating in JA as compared to before they participated.

As the graph illustrates, 6% more students added achieving a valued lifestyle to their aspirations after participating in JA TITAN and ESIS. In both instances, the increase was statistically significant ( $p < .03$  and  $p < .05$ , respectively).



Finally, students were asked how much JA had impacted one very important aspiration, namely the *desire to go to college*. Their responses are provided in the pie charts on the next page. As can be seen, the JA programs had a large perceived impact. The perceived impact was greatest for ESIS. A majority (61%) of the students who had participated in ESIS reported that the program made all the difference in their desires to go to college.

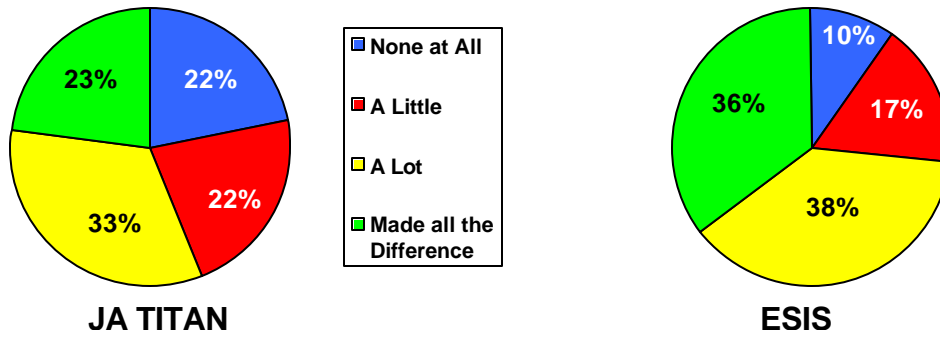


The findings suggest that participation in the JA programs led to more students holding higher aspirations and goals. Because goals are so important to achieving final outcomes, it may be expected that the quality of these students' lives will be impacted by the decisions they will make in alignment with the goals they have set as a result of participating in these programs.

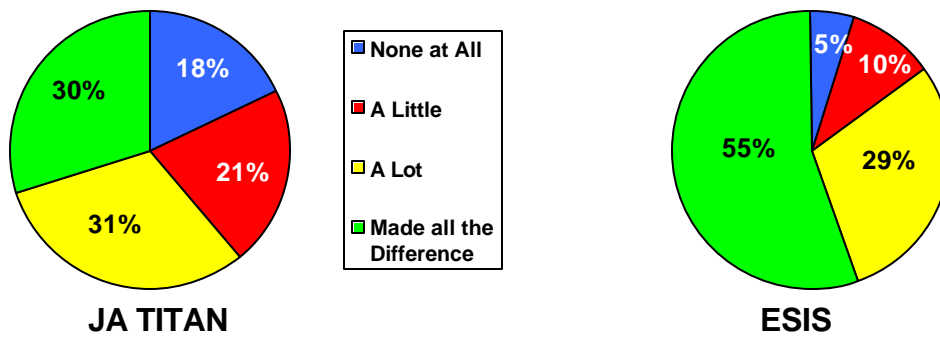
## 6.5 BELIEFS IN PERSONAL CAPABILITIES

The final area that was assessed concerned students' beliefs in their own capabilities, which research has suggested will ultimately control their quality of life. Within each specific ability area, the majority of students, regardless of program, indicated that JA had made "a lot" or "all the difference" in their abilities to deal with life. The next four graphs illustrate the perceived impact of JA TITAN and ESIS within these ability areas.

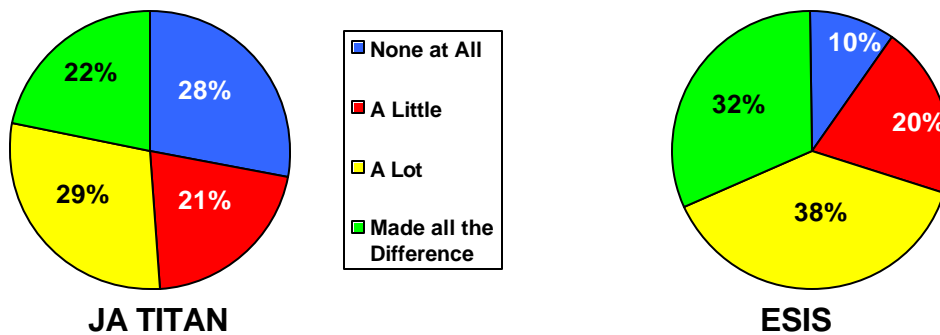
**Perceived Impact of the JA Programs on Ability to Get Along with Others**

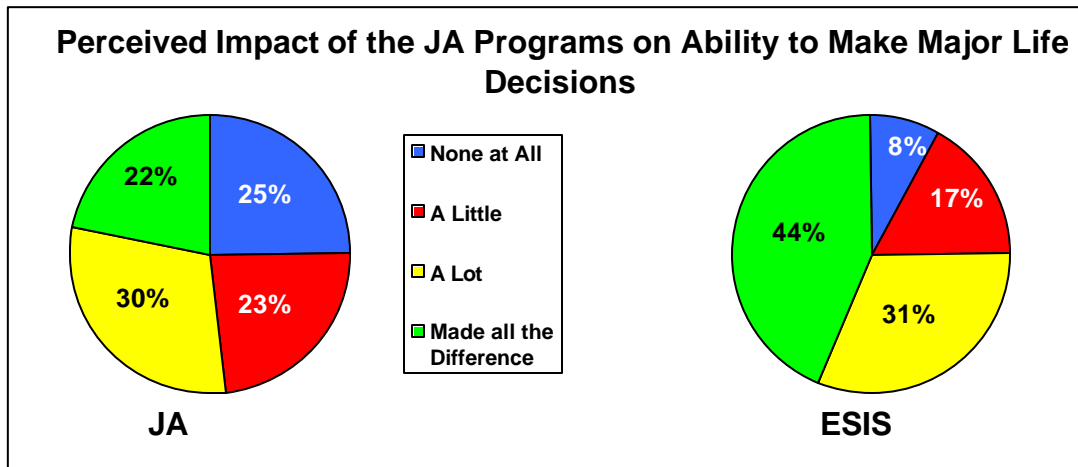


**Perceived Impact of the JA Programs on Ability to Be Successful**



**Perceived Impact of the JA Programs on Ability to Handle Major Life Events**





As can be seen in the figures, the perceived impact of ESIS was a little stronger. This may be due in part to the ages of the students. Many high school students, particularly juniors and seniors (which predominantly comprise the JA TITAN sample), have already formed beliefs about their abilities and it is less likely that any one program, including JA TITAN, is going to influence their beliefs. However, during the more formative middle grade years, students may still be questioning their abilities, and according to these students ESIS has influenced their beliefs in their capabilities.

# 7.0 TEACHER AND CONSULTANT PERCEPTIONS OF PROGRAM IMPACT

Impact on student learning, critical thinking, and quality of life were also measured from the perspectives of teachers and consultants. Results of questionnaires distributed to both groups are presented in this section. Information is presented for the three areas listed above and by respondent group. Findings are presented separately for each program.

## 7.1 PERCEIVED IMPACT ON STUDENT LEARNING

Teachers and consultants were asked, *“What skills and attitudes do Junior Achievement participants have that are not evident in other students who haven’t had the program?”* The most frequent responses (at least 50% endorsement) from those participating in ESIS are shown in the table below and from those participating in JA TITAN are shown in the table on the next page.

Program	Teacher Responses	Consultant Responses
ESIS	<ul style="list-style-type: none"> <li>❑ Business knowledge (68%)</li> <li>❑ Economics knowledge (64%)</li> <li>❑ Work Ethic (50%)</li> <li>❑ Work skills (50%)</li> <li>❑ Priority Setting (50%)</li> </ul>	<ul style="list-style-type: none"> <li>❑ Economics knowledge (69%)</li> <li>❑ Business knowledge (62%)</li> <li>❑ Work Ethic (50%)</li> <li>❑ Work Skills (50%)</li> </ul>

<b>Program</b>	<b>Teacher Responses</b>	<b>Consultant Responses</b>
JA TITAN	<ul style="list-style-type: none"> <li>❑ Business knowledge (95%)</li> <li>❑ Economics knowledge (84%)</li> <li>❑ Problem solving (84%)</li> <li>❑ Critical thinking (68%)</li> <li>❑ Professionalism (63%)</li> <li>❑ Conflict Resolution (58%)</li> </ul>	<ul style="list-style-type: none"> <li>❑ Business knowledge (91%)</li> <li>❑ Economics knowledge (71%)</li> <li>❑ Problem solving (76%)</li> <li>❑ Critical Thinking (71%)</li> <li>❑ Leadership (52%)</li> </ul>

Across both programs and respondents, business and economics knowledge were reported as leading areas of JA impact. Teachers and consultants reported that students were gaining insights into business and adding to their conceptual understanding of economics and its role in students' lives through participation in either ESIS or JA TITAN.

For the remaining items, teachers and consultants felt that the two programs instilled different skills. Teachers and consultants were consistent in their beliefs that ESIS had an impact on students' work ethic and the level of their work skills. Teachers further indicated that students were learning how to set priorities through participation in ESIS and its emphasis on goal setting and planning for the future.

Teachers and consultants participating in JA TITAN suggested that students had been challenged by the simulation to improve their critical thinking and problem-solving skills. Teachers and consultants also reported other skills that students were acquiring through JA TITAN participation, but these differed according to stakeholder group. The differences were associated with the perspective of the respondent, their value system and the level of interaction they had with students. Consultants focused on improvements in workforce readiness skills (e.g., leadership skills), whereas teachers reported improvements in students'

interactions with other students that would help them deal effectively with challenges at school (e.g., conflict resolution).

According to the external perspectives of those most closely working with the students, both JA programs have impacted student learning. However, the perceived impact was different for each program and closely reflected the objectives of each.

## **7.2 PERCEIVED IMPACT ON STUDENT CRITICAL THINKING**

Teachers and consultants were asked to indicate what differences, if any, they had observed in the critical thinking and problem solving skills of the JA participants as compared to other students that had not participated in either JA TITAN or ESIS. Regardless of program, the majority of teachers and consultants reported that the students who participated in JA were better at critical thinking and problem solving than other students.

Teachers and consultants provided specific areas in which students' critical thinking and problem solving skills improved. Teachers and consultants participating in the ESIS program suggested students' general awareness of problem solving and critical thinking strategies had improved after participation. In addition, they suggested that students were more goal oriented after participating in ESIS. However, higher levels of critical thinking, including synthesis and evaluation, were not reported. This may in part be a function of the ages of the students and the lower level skills and content associated with this curriculum.

Teachers and consultants suggested that JA TITAN had a much more profound effect on higher level thinking skills. The specific areas in which they noticed improvement are included in the following table.

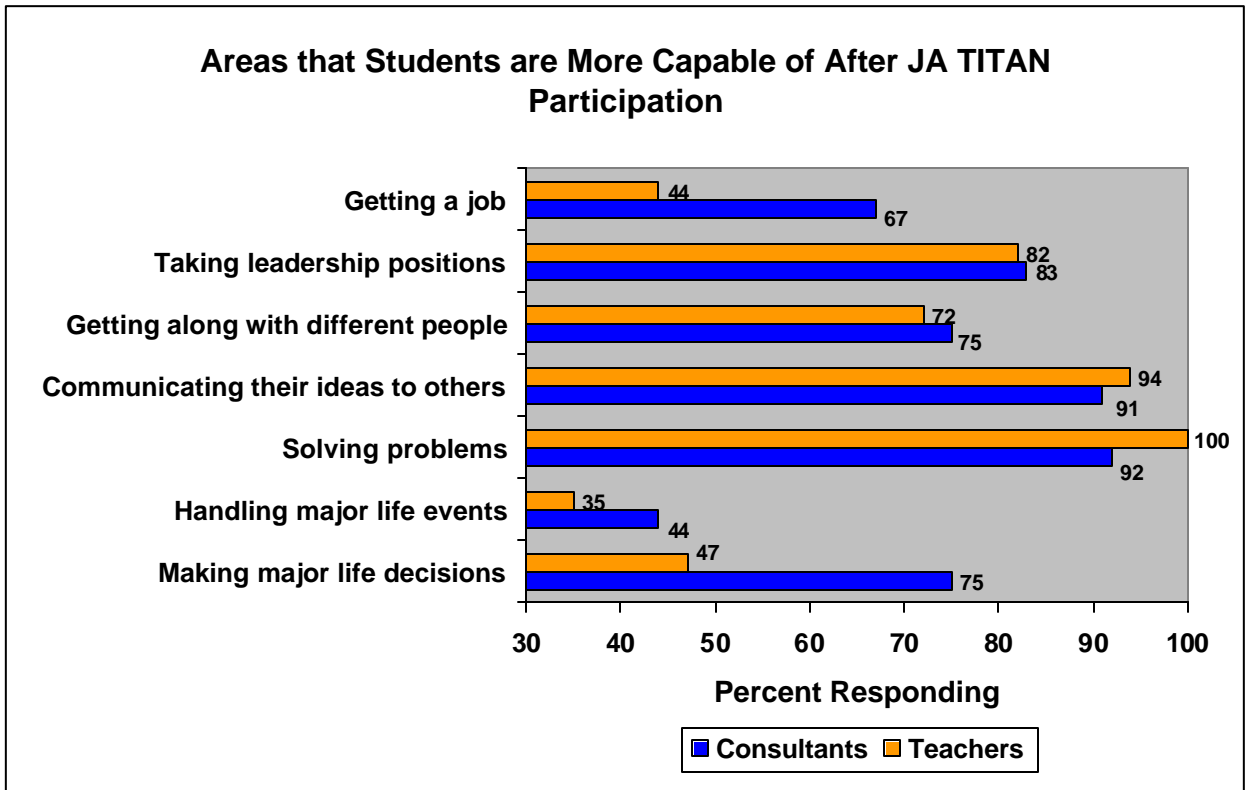
Program	Teacher Responses	Consultant Responses
JA TITAN	<ul style="list-style-type: none"> <li>❑ Evaluative skills (21%)</li> <li>❑ Group problem solving (17%)</li> <li>❑ Considering multiple solutions (11%)</li> <li>❑ Reasoning (11%)</li> <li>❑ Focusing (5%)</li> </ul>	<ul style="list-style-type: none"> <li>❑ Effective decision making (21%)</li> <li>❑ Rational thinking (13%)</li> <li>❑ Ability to “apply” learning (13%)</li> <li>❑ Consensus building (13%)</li> <li>❑ Considering multiple solutions (8%)</li> </ul>

### 7.3 PERCEIVED IMPACT ON STUDENT QUALITY OF LIFE

Teachers and consultants were asked to rate how much impact the JA programs had on various aspects of students’ quality of life. There were very few differences in response patterns between teachers and consultants, although there were significant differences between JA TITAN and ESIS.

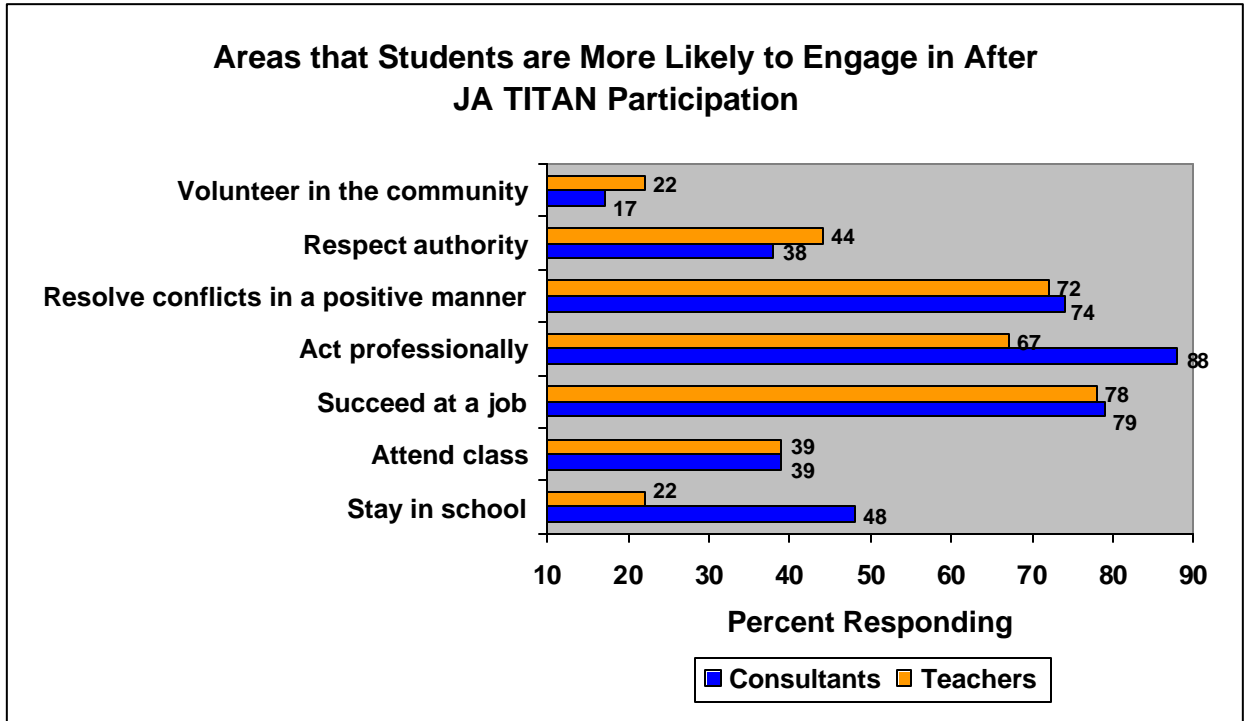
### 7.3.1 Perceived Impact of JA TITAN on Quality of Life

Both teachers and consultants reported that students who participated in JA TITAN were more capable of each of the quality of life characteristics shown in the following graph than students who had not participated.



Overall, most teachers and consultants reported that students who participated in JA TITAN were more capable of solving problems, communicating their ideas to others, taking leadership roles, and getting along with different people than students who did not participate. Consultants also suggested that students improved their abilities to make major life decisions, which would in turn allow them to better secure employment. Although fewer teachers were convinced that JA TITAN was creating change in these areas, they did mention that students' job/career knowledge and decision making skills had improved.

In addition to increasing student capabilities, teachers and consultants also reported that participating in JA TITAN increased students' likelihood of engaging in the activities depicted in the next graph.

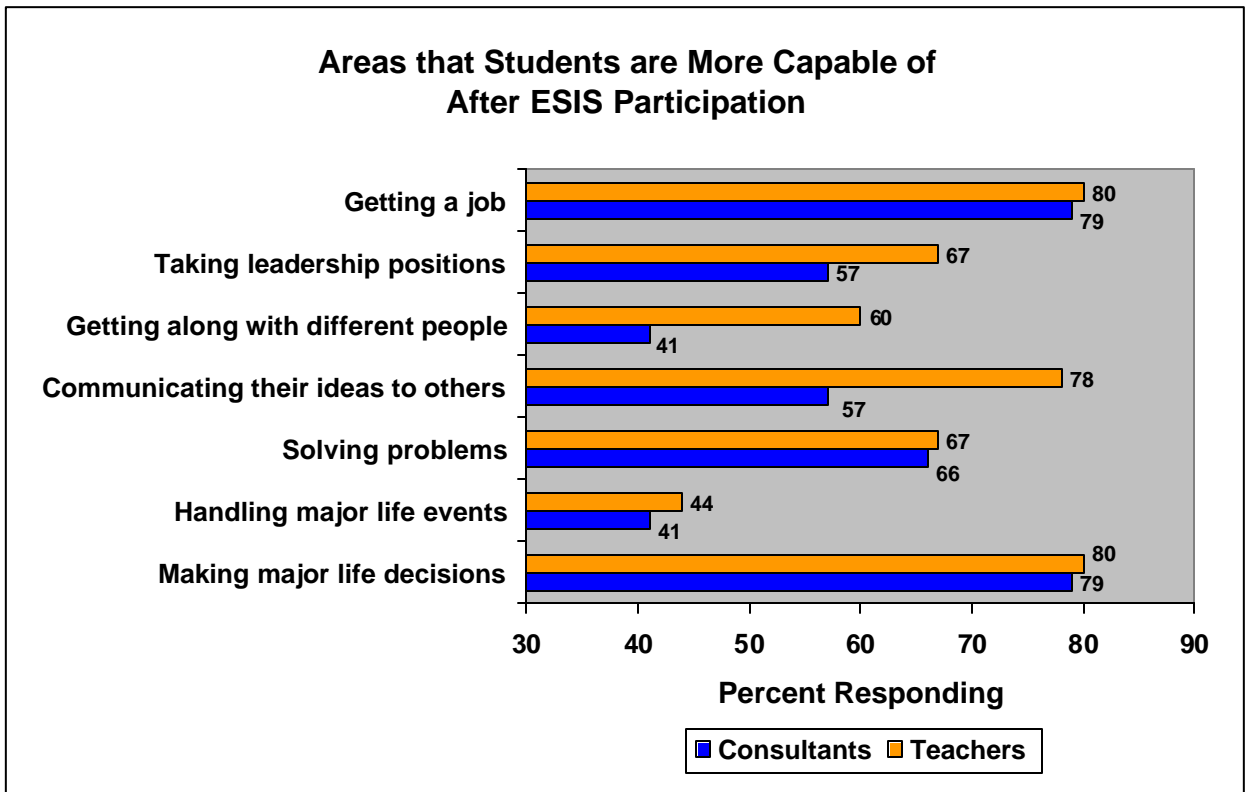


Most teachers and consultants reported that students who participated in JA TITAN were more likely to act professionally, succeed at a job, and resolve conflicts in a positive manner than students who did not participate. Again, teacher and consultant perceptions were in close agreement with one exception, stay in school. One can presume that teachers would know better if the program was having an impact on students' attitudes toward staying in school. It may be that consultants desired this outcome, believing that many high school students do not value education; whereas, teachers were more aware of the high value students placed on education even before beginning the program, as verified in the student responses to preprogram surveys.<sup>38</sup>

<sup>38</sup> More details about student attitudes toward education and staying in school are provided in the previous section of this report.

### 7.3.2 Perceived Impact of ESIS on Quality of Life

Both teachers and consultants indicated that ESIS had an impact on several areas of students' lives. They reported that ESIS increased students' capabilities in nearly all of the quality of life areas shown in the graph.

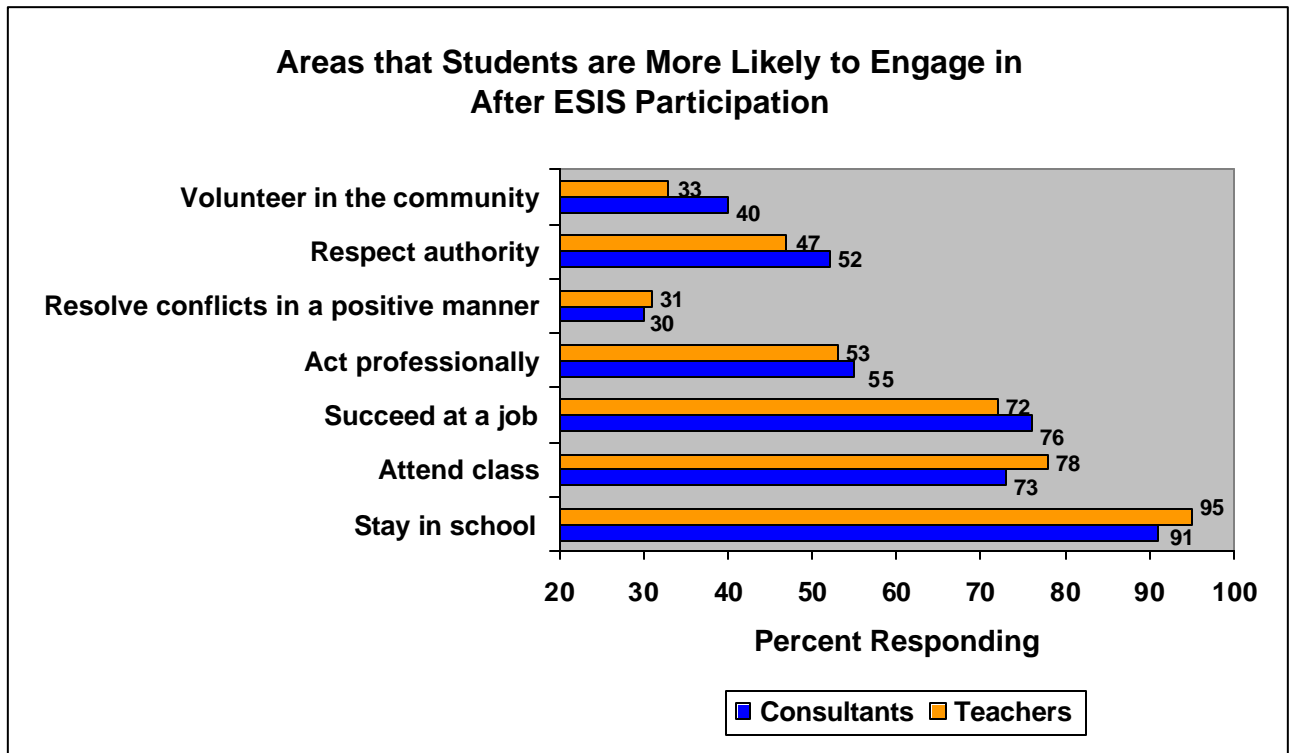


The only area in which there didn't appear to be fairly strong perceived impact (as measured by less than 50% stakeholder endorsement) was students' ability to handle major life events. This may be a function of both the ages of the ESIS student and a lack of emphasis on this area within the curriculum.

Another interesting finding was the disparity between teacher and consultant perceptions with respect to getting along with different people. It is possible that

teachers had noted a change in students' behaviors compared to other students at school. While consultants would have little opportunity to observe these interactions, they may have been basing their ratings on real world experiences with diverse populations and how individuals react to them.

Teachers and consultants also reported that after participating in ESIS, students were more likely to engage in activities that would improve their quality of life. These activities are depicted in the graph below. ESIS had the greatest perceived influence in: encouraging students to act professionally, helping students to succeed at a job, encouraging class attendance, and influencing students' decisions to stay in school.

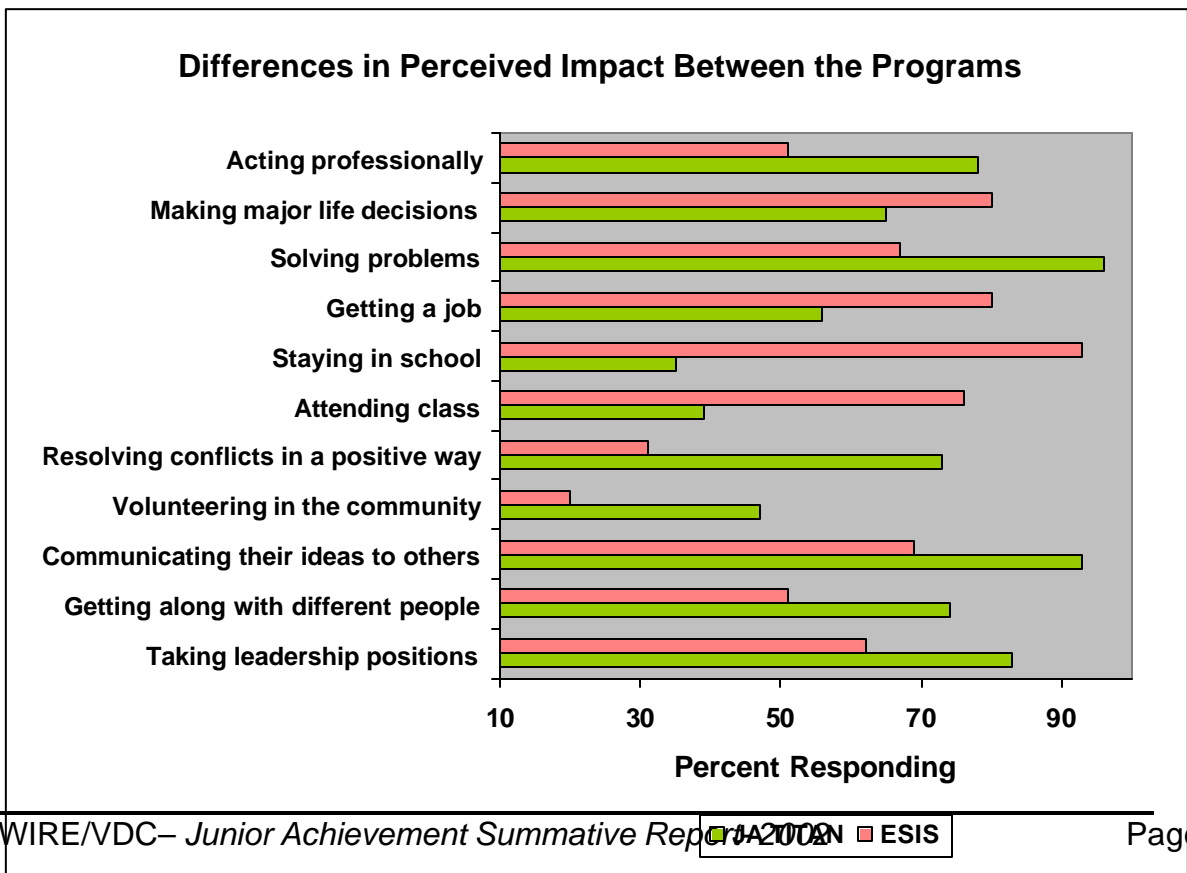


### 7.3.3 Differences Between Programs

There was fairly consistent agreement between consultants and teachers within each program. However, there were differences across programs in perceived impact as measured by frequency of respondents. An analysis for each quality of life area by program was conducted to determine where these differences occurred.

The results of the direct comparison of programs revealed that the majority of teachers and consultants (74%) reported that students' participation in JA, regardless of program, led to their ability to succeed at a job. In addition, most stakeholders (60%), regardless of program, reported that JA did not have a substantial impact on students' respecting authority or handling major life events.

In all remaining areas of students' lives, there were significant differences between the programs. The averaged program response rate by area is depicted in the graph.



The perceived impact of JA TITAN was greater for those areas of a student's life that were directly related to success in the business world. The perceived impact of ESIS was greater for those areas that reflected general life skills and the ability to be successful at school.

These findings should not be surprising given the specific curricula in the two programs. The findings do suggest that each program is meeting its respective objectives. Further, according to teachers and consultants the programs not only impact student learning but also influence student attitudes and belief systems related to program objectives.

# 8.0 PROGRAM SATISFACTION AND SUGGESTED IMPROVEMENTS

In this final section of the report, findings are presented that address stakeholder (student, teacher, and consultant) impressions of the overall effectiveness of JA TITAN and ESIS. The benefits stakeholders gain by participating in the programs are also reported. Finally, stakeholders made suggestions for improvements in each program.

All findings are reported for these three areas. Within each area, findings are further broken down by program and stakeholder group (where differences occur).

## 8.1 RATING OF PROGRAM EFFECTIVENESS

Teachers and consultants were asked to rate how effective ESIS and JA TITAN are on a 10-point scale, with 10 being extremely effective. The results for each program are shown in the following table.

The majority of teachers (68%) and consultants (54%) rated ESIS as highly effective (e.g., 8, 9, or 10). The means for the two groups did not differ substantially (7.8 and 7.1, respectively). While these ratings indicate that stakeholders perceive ESIS to be a solidly successful program, they also suggest room for improving the quality of the program.

Rating	ESIS		JA TITAN	
	Teachers	Consultants	Teachers	Consultants
1	5%	5%	0%	12%
2	0%	0%	0%	4%
3	0%	7%	0%	0%
4	0%	0%	0%	0%
5	9%	7%	10%	0%
6	9%	7%	0%	8%
7	9%	19%	11%	13%
8	27%	36%	21%	33%
9	14%	4%	37%	21%
10	27%	15%	21%	9%

The majority of teachers (79%) and consultants (63%) rated JA TITAN very highly. However, the mean rating for teachers (8.4) was much higher than for consultants (6.9). When interviewing these two groups, it was found that consultants were often much more frustrated with the technological problems they encountered with JA TITAN and reported that it diminished in a significant way the overall quality of the program.

To further investigate the impact of the technology on the perceived effectiveness of JA TITAN, teachers and consultants were asked to rate both the user friendliness of the Web site and the usefulness of the JA TITAN simulation on a 10-point scale. The results of this analysis are presented in the following table.

Technology Area	Teacher Rating	Consultant Rating
User-friendliness of Web site	7.7	6.3
Usefulness of JA TITAN simulation	8.8	6.4

Consultants consistently gave lower ratings than teachers, but both reported that the Web site could and should be improved.

Perhaps the greatest indication of satisfaction with a program is an individual's willingness to continue to participate in the program. The adjacent table provides the frequency of teachers and consultants who reported they would participate in their respective programs again.

Program	Teachers	Consultants
ESIS	90%	90%
JA TITAN	100%	82%

Both teachers and consultants were likely to participate in ESIS again. However, while teachers really liked JA TITAN and suggested that they would use it in their class again, consultants appeared less sure about their experience or willingness to participate again. Further details about why teachers and consultants may have been more or less satisfied with the JA programs can be gleaned from the next two sections of this report.

## 8.2 BENEFITS OF THE PROGRAMS

Analyses of the benefits the various stakeholders received from participating in JA were conducted. In this section the findings of the analyses for each stakeholder group and program are provided.

### 8.2.1 What Do Students Get Out of the Programs?

When asked what was the one most important thing learned from the JA programs, students, teachers, and consultants responded with the answers provided in the table on the next page. Only the most frequent responses are incorporated into the table, with frequencies included in parenthesis after the

response. Responses reported by less than 10% of any stakeholder group were considered nonrepresentative of the JA population and subsequently were not included in the table.

Program	Students' Perceptions	Teachers' Perceptions	Consultants' Perceptions
ESIS	<ul style="list-style-type: none"> <li><input type="checkbox"/> Importance of staying in school and college (58%)</li> <li><input type="checkbox"/> Money management (52%)</li> <li><input type="checkbox"/> Budgeting (50%)</li> <li><input type="checkbox"/> Perseverance (38%)</li> <li><input type="checkbox"/> Job attainment (33%)</li> <li><input type="checkbox"/> Goal setting (15%)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Importance of staying in school (36%)</li> <li><input type="checkbox"/> Work/career information (23%)</li> <li><input type="checkbox"/> Budgeting &amp; money management (14%)</li> <li><input type="checkbox"/> Futuristic thinking (14%)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Relation of school to economic success (40%)</li> <li><input type="checkbox"/> Relation of decisions to consequences (33%)</li> <li><input type="checkbox"/> People &amp; organizations care about students (21%)</li> <li><input type="checkbox"/> Importance of completing school (15%)</li> </ul>
JA TITAN	<ul style="list-style-type: none"> <li><input type="checkbox"/> Economic knowledge (88%)</li> <li><input type="checkbox"/> Business skills (78%)</li> <li><input type="checkbox"/> Teamwork (37%)</li> <li><input type="checkbox"/> Money management (34%)</li> <li><input type="checkbox"/> Effective decision making (30%)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Decision making (29%)</li> <li><input type="checkbox"/> Teamwork (26%)</li> <li><input type="checkbox"/> Economic knowledge (16%)</li> <li><input type="checkbox"/> Problem solving (11%)</li> <li><input type="checkbox"/> Application of classroom learning to real world (11%)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Business operations (21%)</li> <li><input type="checkbox"/> Decision making (13%)</li> <li><input type="checkbox"/> Problem solving (13%)</li> <li><input type="checkbox"/> Teamwork (13%)</li> <li><input type="checkbox"/> Business skills (10%)</li> </ul>

Once again the findings reflect the different natures of these two programs. All stakeholders who participated in ESIS suggested the most important learning gain was students' understanding of how school relates to future success. Whereas, stakeholders who participated in JA TITAN emphasized the economic/business knowledge that students gained as well as the decision making skills they acquired.

Students were also asked to indicate how JA had made a difference in their lives. Responses, by program, are provided in the following table.

ESIS	JA TITAN
<ul style="list-style-type: none"> <li>I learned how to budgeting and handle expenses (40%)</li> </ul>	<ul style="list-style-type: none"> <li>I learned about how business works (36%)</li> </ul>
<ul style="list-style-type: none"> <li>I learned more about the career I want (33%)</li> </ul>	<ul style="list-style-type: none"> <li>I now understand how complex business is (33%)</li> </ul>
<ul style="list-style-type: none"> <li>I now see the importance of money management (20%)</li> </ul>	<ul style="list-style-type: none"> <li>I learned more about economics (23%)</li> </ul>
<ul style="list-style-type: none"> <li>I understand why it is important to stay in school (20%)</li> </ul>	<ul style="list-style-type: none"> <li>I now understand how to manage my money (16%)</li> </ul>
<ul style="list-style-type: none"> <li>I learned relevant job skills (15%)</li> </ul>	<ul style="list-style-type: none"> <li>I now have better people skills (19%)</li> </ul>
<ul style="list-style-type: none"> <li>I learned how important education is to my future career (10%)</li> </ul>	<ul style="list-style-type: none"> <li>I learned about the stock market (12%)</li> </ul>

### 8.2.2 What are the Benefits of the Programs for Teachers?

Teachers were asked why they participated in the program. Their responses, by program, are provided in this next table.

ESIS	JA TITAN
<ul style="list-style-type: none"> <li>It is important for students to meet a business person (32%)</li> </ul>	<ul style="list-style-type: none"> <li>The program has good/strong materials (32%)</li> </ul>
<ul style="list-style-type: none"> <li>My administration wanted me to implement the program (18%)</li> </ul>	<ul style="list-style-type: none"> <li>The program supports my classroom curriculum (21%)</li> </ul>
<ul style="list-style-type: none"> <li>I believe the program is worthwhile (14%)</li> </ul>	<ul style="list-style-type: none"> <li>The simulation engages students (21%)</li> </ul>
<ul style="list-style-type: none"> <li>The program reinforces our curriculum (10%)</li> </ul>	<ul style="list-style-type: none"> <li>The activities create variety and an applied perspective (21%)</li> </ul>
<ul style="list-style-type: none"> <li>I want students to understand the importance of staying in school (10%)</li> </ul>	<ul style="list-style-type: none"> <li>The consultants add a beneficial dimension to learning (11%)</li> </ul>

Most teachers reported participating in JA TITAN or ESIS because the programs had value and impacted students' lives. Teachers from each program suggested that the program curriculum met the objectives of their class. Finally, teachers from both programs pointed to the benefit of having a business volunteer present in their classes.

Perceived impact on teachers' knowledge and understanding was also assessed. Teachers were asked if they had experienced any personal growth as a result of program participation?

The majority of teachers who participated in ESIS (86%) and in JA TITAN (90%) suggested that these programs had an impact on their own learning. In particular, they reported four outcomes of their participation:

- Jogged their memory of economic concepts
- Added to what they knew
- Taught them entirely new concepts
- Corrected their misconceptions

### **8.2.3 What are the Benefits of the Programs for Consultants?**

Consultants were asked why they chose to participate in JA. Their responses, by program, are provided in the table on the next page.

ESIS	JA TITAN
<ul style="list-style-type: none"> <li>• I enjoy being with kids (40%)</li> <li>• It provided an opportunity for me to help (27%)</li> <li>• I believe in the mission of JA (26%)</li> <li>• I can provide a role model (23%)</li> <li>• It is personally fulfilling (20%)</li> </ul>	<ul style="list-style-type: none"> <li>• I enjoy working with the students (25%)</li> <li>• I believe I can change the life of a child (25%)</li> <li>• It is a way that I can give back to the community (13%)</li> <li>• It fulfills a personal need for me (10%)</li> <li>• I can share from my life (10%)</li> </ul>

As the table indicates, most consultants participated because they wanted to make a difference in students' lives and because they enjoyed sharing from their experiences and being with children.

Consultants were also asked to relate how participating in JA had affected their lives. The responses they shared are presented in this next table. Based on these findings, one might conclude that consultants experience personal growth as a result of participating in the JA programs.

ESIS	JA TITAN
<ul style="list-style-type: none"> <li>• I got to know more about students (41%)</li> <li>• I am now more comfortable talking in front of groups (22%)</li> <li>• I feel that I have made a contribution to students' practical skills (18%)</li> </ul>	<ul style="list-style-type: none"> <li>• I now spend more time working/interacting with teenagers (25%)</li> <li>• I find it satisfying/rewarding (17%)</li> <li>• It has allowed me to build relationships (13%)</li> <li>• It gave me a chance to teach (13%)</li> <li>• I now understand educational issues better (13%)</li> </ul>

## 8.3 SUGGESTED IMPROVEMENTS TO PROGRAMS

Although, students, teachers, and consultants were all quite positive about ESIS and JA TITAN, many made suggestions for how these programs could be improved to further enhance their effectiveness. In this section, the improvements offered by each stakeholder group are provided according to program.

### 8.3.1 Improving ESIS

Teachers, consultants and students were asked what they would change about ESIS. While several suggested that no changes were necessary to this program, most offered a specific suggestion. Although suggestions ranged across many topics and elements of the program, some common themes emerged, and these are included in the table below.

<b>Suggested Changes</b>	<b>Students</b>	<b>Teachers</b>	<b>Consultants</b>
Make the program last longer	35%	18%	5%
Improve implementation coordination at the beginning of the program	--	36%	15%
Provide more hands-on activities	46%	14%	68%
Add more grade-appropriate suggestions to materials	9%	18%	7%
Make it more fun, relevant, and interesting	43%	--	3%
Provide more games	30%	4%	--

Across stakeholder groups, the most frequently suggested revision to ESIS focused on adding more hands-on activities to the curriculum.

### 8.3.2 Improving JA TITAN

Suggestions for improvements to JA TITAN from all stakeholders are provided in the table.

<b>Suggested Changes</b>	<b>Students</b>	<b>Teachers</b>	<b>Consultants</b>
Fix Web site problems	10%	16%	13%
Ensure computer lab facilities at school will support the JA TITAN software	4%	11%	13%
Provide better graphics	7%	--	10%
Make it easier for adults to use	--	7%	10%
Increase the number of days it's implemented	9%	10%	3%
Simplify terminology	28%	5%	--
Provide more interactive, hands-on activities	46%	10%	5%
Make it more fun and relevant	43%	2%	--

There was less consistency about changes to be made to JA TITAN and a large number of teachers and consultants felt that no changes were necessary. The improvement that most students wanted to see was to add more interaction and hands-on activities to make the program more interesting/fun. Teachers and consultants focused more heavily on improving the technical aspects of the program.