

THE CENTER FOR  
**COMMUNITY & ECONOMIC  
DEVELOPMENT**  
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# **Estimating the Economic Impact of EAST Projects in Arkansas**

**February 2011**

**Prepared for:**

**EAST**initiative



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University of  
Central Arkansas™

## Executive Summary

For the past two years, the Center for Community and Economic Development (CCED) at the University of Central Arkansas has been actively conducting research to estimate the economic impact of the EAST Initiative in Arkansas. This research began with a beta test survey in 2008 to gauge the ability of the survey to estimate the economic impact of EAST projects in Arkansas. After a successful beta test, the research concluded with a state-wide survey in 2010. Through extensive data analysis of the information obtained in the state-wide survey, CCED estimated the economic impact of EAST projects in the state of Arkansas.

Survey respondents were comprised solely of EAST facilitators from schools across Arkansas. All respondents were asked to answer a series of questions regarding the EAST program at their respective schools. Most importantly, the EAST facilitators were asked to estimate, using a set of given ranges, the approximate market value of a single representative project in their school's EAST program. Respondents were also asked how many projects were completed by their program in one year. Using this estimate, CCED computed the average number of projects completed per EAST facilitator and the average market value of each project.

Of the 177 facilitators who received the survey, 65 usable responses were obtained for the aforementioned key questions. Using this information, CCED found that the aggregate estimated value of projects facilitated during the 2009-2010 school year was \$5,574,182.

### **Aggregate Estimated Value of Surveyed EAST Projects in Arkansas**

Average Number of Projects per Facilitator/Respondent: 12.19

Average Value of each Project: \$7,035

Number of Facilitators: 65

$$12.19 \times \$7,035 \times 65 = \textbf{\$5,574,182}$$

The estimated economic impact of all EAST projects in Arkansas was found using a gross up of the percentage of facilitators surveyed that provided usable responses to the key questions.

The estimated total economic impact of all EAST projects in Arkansas was **\$15,161,775**.

To gross up a number to find the estimated economic value, CCED multiplied the inverse of the percentage of facilitators responding with usable answers (inverse: 1 divided by facilitators responding) by the sample value. For example, in this study the percentage of facilitators responding was 36.7 percent and the inverse was 2.72; therefore, CCED multiplied the survey responses for the estimated total value of the projects facilitated by 2.72 to obtain the estimated economic impact for all EAST projects in Arkansas.

#### **Estimated Economic Impact of EAST Projects in Arkansas**

65 Usable Responses ÷ 177 Facilitators Surveyed = 36.7% of Facilitators Responding

inverse of 36.7% ( $1 \div .367$ ) \* 100 = 2.72 (gross up value)

\$5,574,182 (estimated total value of projects) x 2.72 = **\$15,161,775**

An estimated value of over \$15.1 million indicates that EAST programs are having a significant economic impact upon the state of Arkansas.

This study shows how EAST programs are serving to enrich students and communities across Arkansas. CCED believes this research data could be benchmarked, and the research method repeated, to show how EAST programs in Arkansas have increased the overall EAST economic impact upon the state over a period of time. This study also has the potential to be conducted nationally.

## Introduction

Each year, thousands of students in Arkansas participate in the Environmental and Spatial Technology (EAST) program offered in their local public schools. The EAST program is self-directed, with students defining projects that provide learning opportunities through the utilization of the technology available to them. Service-based projects are a foundational piece of the EAST model; so many times students work on community projects that result in some type of impact outside of the classroom. These projects may impact the larger school body or even the local community. Community partners will work with the EAST student(s) and facilitator on the project, with the community partner usually having some need that the EAST student(s) can meet using the skills they have learned in the program. Therefore, these projects have an impact on the community and the student.

From the student's perspective, his/her skills and knowledge are reinforced through community "service learning" activities. Applying those skills through experiential projects can build the self-efficacy of the student and provide them new opportunities to interact within the community context. In the past, EAST has commissioned research to prove the positive educational impact of participation in EAST programs on the student. Because these student-level impacts are clearly documented elsewhere, this study sought to show the impacts of EAST on the community.

EAST projects impact the community because community needs are being met with little to no additional public resources being expended. If a community had to pay a contractor or consultant to provide these same services at the market rate, the projects could often become cost prohibitive. Therefore, EAST projects are not meant to take the place of private sector work that would have occurred in the absence of EAST, but rather meet a need where no community resources are available to do so otherwise. This research seeks to answer the question, "If EAST's community projects were assigned a market value, what is the economic impact of these projects on the state of Arkansas?" Anecdotal evidence suggested that these projects were saving community resources and having a positive impact. The data collected in this project seeks to quantify those positive impacts.

## Background

The formative stages of this research began in 2008. At that time, a focus group of facilitators met with UCA's researchers to discuss the research idea and begin to identify the type of information that needed to be collected. Based on this discussion, a survey instrument was developed to facilitate data collection for the research. Previously this survey instrument was beta tested with a group of facilitators, some of whom had participated in the focus group, to verify that the instrument could collect the necessary information to calculate the economic impact. Based on this beta test and the feedback of the participating facilitators, it was determined that with a few revisions, the survey instrument and the research team would be prepared to conduct a full study in the state of Arkansas.

In 2010, the state-wide survey began, with the survey instrument disseminated to all 177 facilitators in Arkansas. The survey instrument was delivered to the facilitators electronically using Survey Monkey, a web-based application.

This research was reviewed and approved by the University of Central Arkansas Institutional Review Board.

## Methodology

The survey instrument used in the state-wide economic impact analysis was developed through a trial run beginning in October of 2008. The beta test of the survey was sent to ten geographically dispersed EAST program facilitators. Seven usable responses to the survey were obtained. The beta test of the survey indicated that the survey instrument was valid. The information obtained through the responses showed that facilitators were able to estimate the market value of representative student projects and that calculations made from a larger pool of facilitators would produce an accurate estimate of EAST's economic impact in Arkansas.

Using the same protocol as the beta test, the full survey was sent to 177 EAST school facilitators in October of 2010 (survey included in appendix). The EAST Initiative's President/CEO informed the facilitators of the survey's purpose by email and provided the survey link, and the Center for Community and Economic Development (CCED) sent follow up emails to facilitators, reminding them to complete the survey. CCED also provided technical assistance to respondents as they completed the survey.

The full economic impact survey asked the facilitators to identify a project completed in their program in the last academic year that was representative of the types of projects completed at their respective schools, and to estimate the market value of that project. The survey provided a list of ranges for the facilitators to pick the estimated market value from, with the ranges beginning at \$0 to \$4,999 and progressing in increments of \$5,000 up to a maximum of over \$50,000.

Research has shown that asking survey respondents to select a range rather than providing a discrete number value for estimations improves survey response rates and improves data integrity by limiting overestimations. During the data analysis stage, the mid-point of these ranges was utilized to determine an average estimation of the projects' values. Selecting a mid-point further improves overall data integrity by balancing large estimations against small estimations.

The final calculation for the economic impact of EAST upon Arkansas was obtained using a "gross up" of the total project value. To gross up a number to find total economic value, CCED multiplied the inverse of the percentage of facilitators responding with usable answers (inverse found by 1 divided by facilitators responding) by the sample value. For example, in this study the percentage of facilitators responding was 36.7 percent and the inverse was 2.72; therefore,

CCED multiplied the survey responses for the estimated total value of the projects facilitated by 2.72 to obtain the estimated economic impact for all EAST projects in Arkansas.

## Analysis

### Response Rate

Of the 177 facilitators that were sent the survey, 100 facilitators responded by answering some or all of the online survey for an overall response rate of 56.4 percent. However, with regard to the crucial questions regarding estimating student participation and the values and expenses associated with EAST project and products, the participation rate dropped to as low as 31 percent for reporting the number of hours of student participation to a high of 39 percent for estimating student participation. For the valuation of all of the projects, 65 responses were utilized for a 36.7 percent response rate

### Facilitator Information

Facilitators responding to this survey represent 52 different counties; therefore data has been collected from 69 percent of all counties in Arkansas.



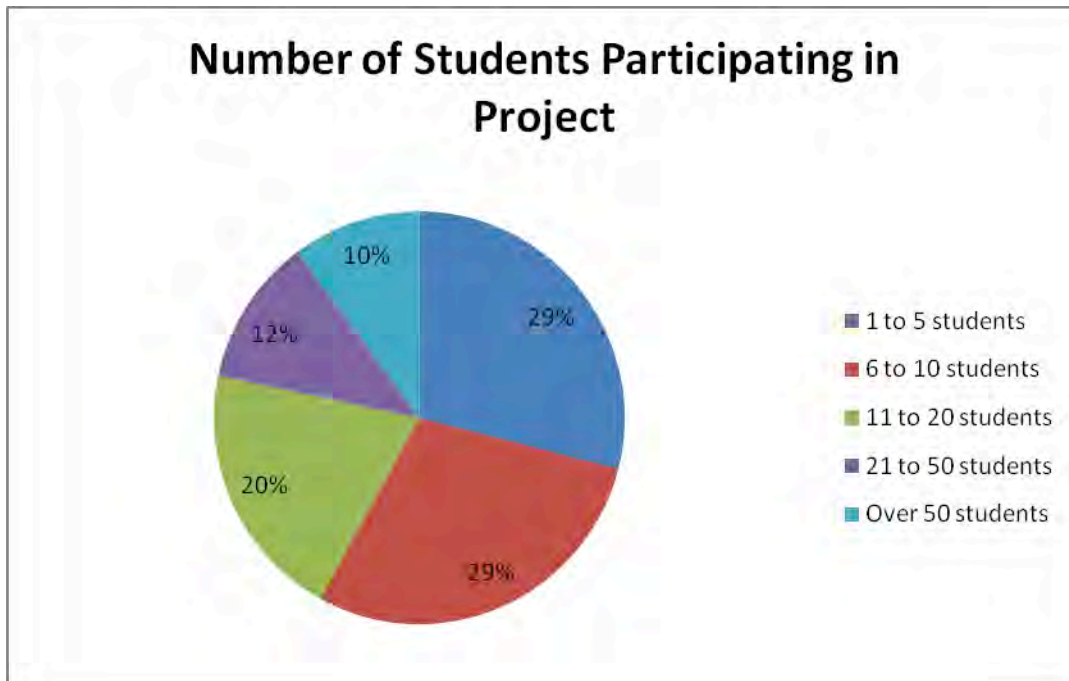
All 100 facilitators responded

Survey respondents were asked how many years they had served as an EAST facilitator. The median number of years as a facilitator was 4.0, and the mean number of years was 4.75.

## **Project Information**

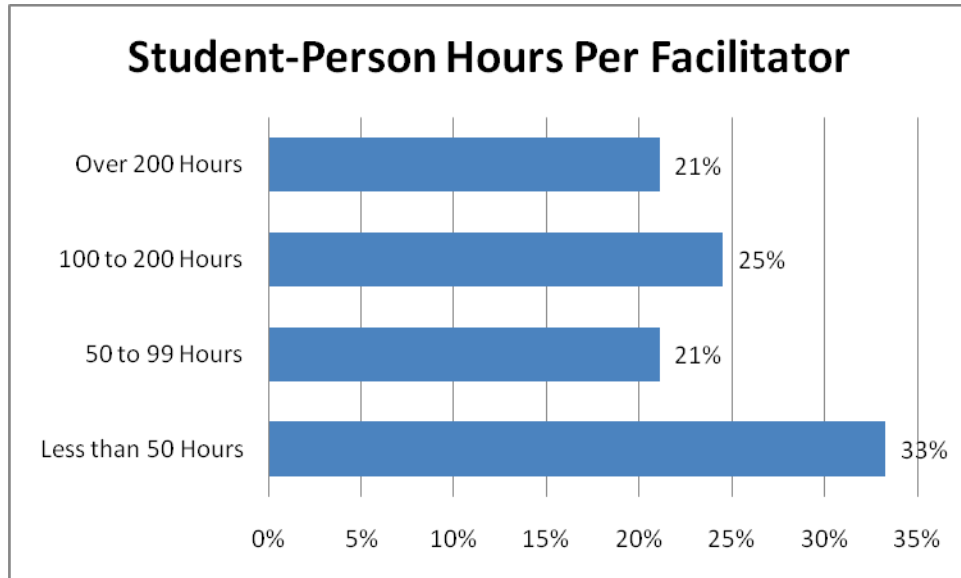
Facilitators were asked to provide a short descriptive name for the project, and provide a narrative description of the project. Some examples of projects used in this survey include:

- National Book Bank give away
- Raising drug awareness via the Internet
- Projects with humane societies
- Knitting hats for babies at hospitals
- Academic competition bowls
- Creating materials for the D.A.R.E. program
- Cleaning up and preserving a cemetery
- School zone mapping plan to facilitate the zoning of 2 new schools
- Tree planting projects
- Using computer analysis to check water elevations and possible dam leakage at Lake Dardanelle
- Production of customized spirit backpacks
- Video promoting the benefits of eating in the school cafeteria
- Student news videos
- Project to raise the awareness of breast cancer
- Mentoring program to increase the high school graduation rate in Arkansas
- Computer maps for a new running trail
- Video tour of a high school
- Bus map routing project
- Arkansas veteran's cemetery mapping
- Geo-maps to facilitate signing up residents for natural gas usage
- Development and awareness of technology for teachers
- Area cleanup and historical documentary
- Census awareness project
- Project to facilitate the use of telemedicine for stroke awareness in Arkansas
- Creation of a city website
- Weekly school news videos featuring sports
- Teaming with the chamber of commerce to facilitate the promotion of area events
- Producing geological maps for a local geologist
- Angel Tree project for an elementary school
- Creating videos to promote recycling
- Bus route maps for county schools
- Making ID cards for students
- Cleaning and maintaining a local nature trail
- Creating videos to facilitate the use of GPS units
- Design and building of an outdoor classroom
- Food drives
- Architectural drafting
- Digital documentary for a city
- High school science website



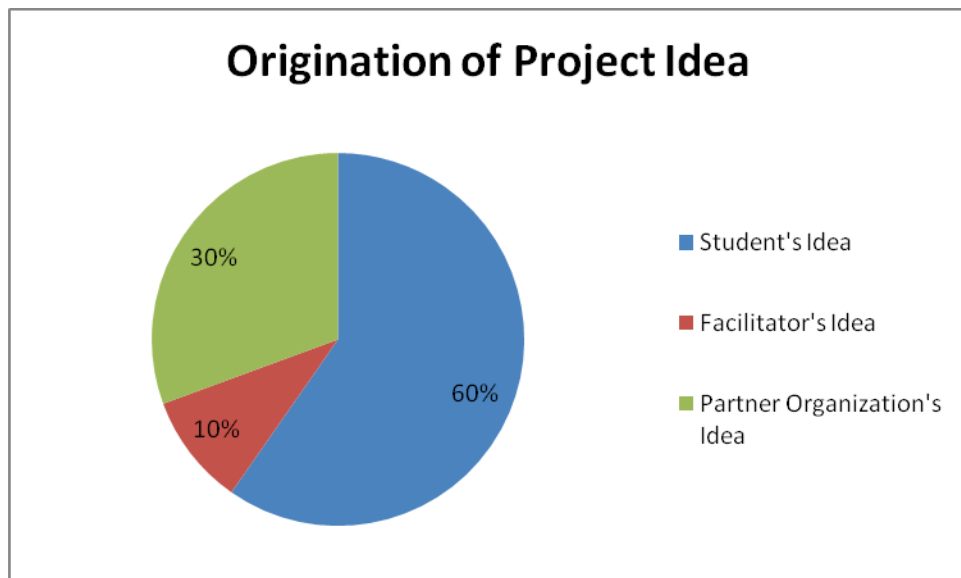
69 of 100 respondents reported the number of students participating in projects; 40 respondents did not answer this question.

Almost 55 percent of the projects identified in this survey had ten or less student participants. In the aggregate, 1,733 students participated in the surveyed projects as reported by 69 facilitators. The mean number of students per project was 25.12, which appears to be skewed due to some projects with a particularly large number of involved students. Because over half of the projects had less than ten students participating, the median number of 10.0 students per project is probably a more accurate reflection of a representative EAST project.



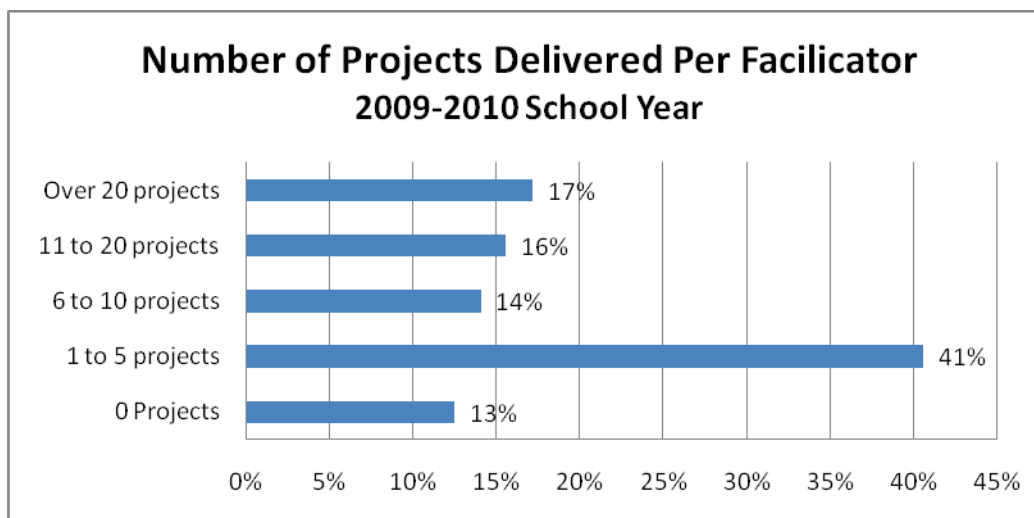
57 of 100 respondents reported the number of student person-hours; 42 respondents did not answer this question.

The mean number of student hours spent on the reported projects was 200.12 hours. The median number of student hours per project was 68. About one third of the projects required less than 50 hours of student effort.



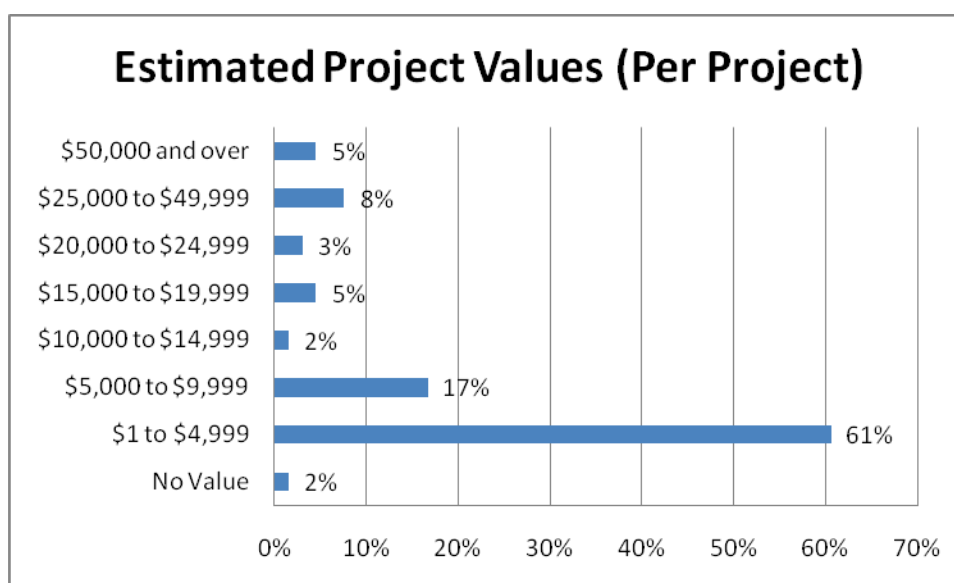
62 of 100 respondents reported the number of students participating in projects; 38 respondents did not answer this question.

The EAST model of student-driven projects is clearly represented in the origination of project ideas, as reported by responding facilitators. Survey data shows that 60 percent of the project ideas came from students, and over 30 percent came from a partner organization. This also supports the rationale for using “Facilitators” as opposed to “Teachers”.



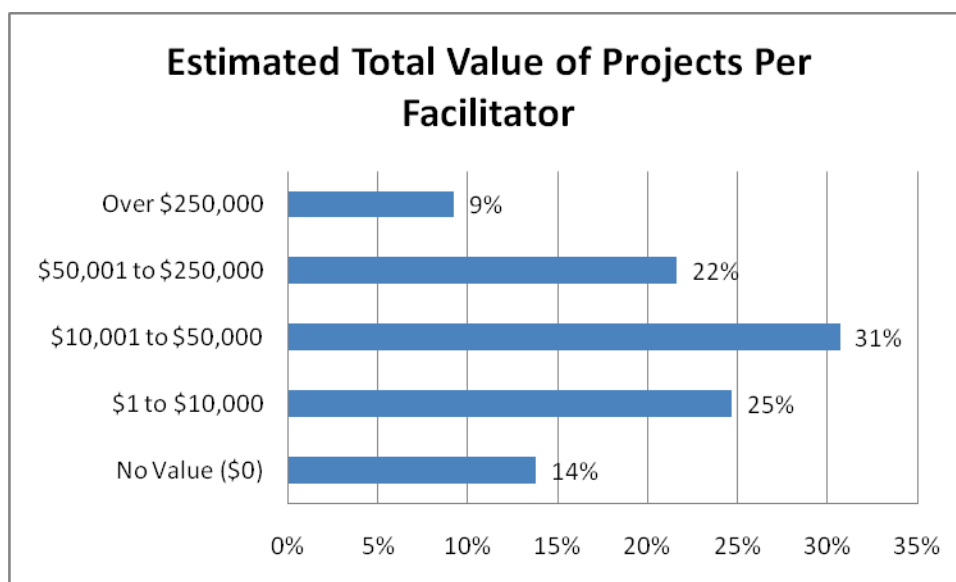
64 of 100 respondents reported the number of products/projects completed; 36 respondents did not answer this question.

The mean number of projects completed per facilitator was 12.19, and the median number of projects completed per facilitator was 5.0. Over 50 percent of the facilitators completed five or less projects, however, almost one third facilitated over ten projects, and 17 percent facilitated over 20 products/projects.



66 of 109 respondents reported the value per product/project completed; 43 respondents did not answer this question.

The estimated mean value of projects completed per facilitator was \$7,035, and the estimated median value of projects completed per facilitator was \$2,500. Over 60 percent of the projects were valued at less than \$5,000. Data shows that 13 percent of the projects were valued worth more than \$25,000.



66 respondents reported the value of products/projects completed; 44 respondents did not answer this question.

Each facilitator reported average value of each project completed, and the number of projects completed in their program in the past year. Nine of the facilitators had projects of no value while six facilitators had projects with an estimated total value of over \$250,000.

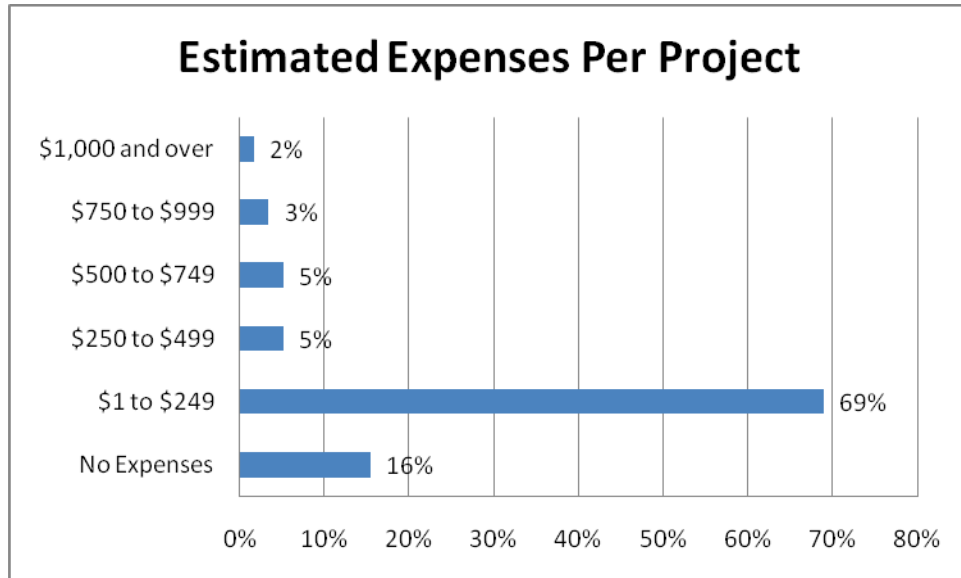
The average total value of projects per facilitator is calculated by multiplying the average value of the projects completed by the average number of projects per facilitator. The average total value of all projects per facilitator is \$85,756.65.

#### Estimated Total Value of Projects Per Facilitator

Average Value of each project completed: \$7,035

Average number of projects per facilitator: 12.19

Average total value of projects per facilitator:  $\$7,035 \times 12.19 = \mathbf{\$85,756.65}$



58 of 100 respondents reported the estimated expenses per products/projects completed; 42 respondents did not answer this question.

Though not included in the calculations for the overall economic impact of EAST projects on the state of Arkansas, the estimated mean expense of projects completed per facilitator was \$186, and the estimated median expense of the projects was \$125. Over 80% of the projects incurred expenses of less than \$250. This demonstrates that for minimal project expenditures, EAST projects appear to show a positive return on investment for the EAST programs and community partners.

### **Estimating the Economic Impact of EAST Projects in Arkansas**

The model for estimating the total economic impact of the EAST Program was as follows:

Average Number of Projects per Respondent-Facilitator X Average Value of Each Project (or product delivered) X Number of Respondents. Then the estimate for the survey respondents is factored by the inverse of proportion of the population sampled. These calculations are outlined in the table below.

	<b>Model Components &amp; Responding Facilitators</b>	<b>Survey of Facilitators</b>	
1	Average # Projects per Facilitator/Respondent	12.19	
2	Average Value of each Project	\$7,035	
3	Number of Facilitators Responding	65	
4	<b>Aggregate Estimated Total Value of Projects Facilitated</b>	<b>\$5,574,182</b>	<b>Lines 1x2x3</b>
5	Number of Arkansas Facilitators	177	
6	% of Facilitators Surveyed	36.7%	
7	Inverse of % Surveyed	2.72	
	<b>Total Economic Impact of EAST Projects in Arkansas (2009-2010)</b>	<b>\$15,161,775</b>	<b>Lines 4x7</b>

The objective of the Beta/Pilot study was to pretest the reliability of the questionnaire and validity of the estimate of the total economic impact of the EAST Program in Arkansas. As might be expected with a very small sample in the Beta Study, the results produced extreme values resulting in a flat rather than normal bell-shape distribution of responses. Such extreme values can also produce extreme estimates when used for that purpose. With a more normal distribution of responses, the values in the full survey produced lower estimates of the true population. A realistic estimate of over **\$15.1 million in economic impact** was produced by

the full survey. An economic impact by the EAST Program in Arkansas of over \$15.1 million during the 2009-2010 year represents a significant infusion into the State's economy.

### **SUMMARY**

A summary of the pertinent data generated by this survey is depicted in the following table:

<b>All Arkansas East Project Facilitators: Additional Estimates from Sample Results</b>		
<b>Item Description</b>	<b>Sample Results (number of responding facilitators)</b>	<b>Sample Results from responding facilitators</b>
Number of Students Participating	69	1,733
Number of Projects Facilitated	64	780
Number of Student Participation Hours	56	11,207
Average Value of Delivered Project/Product	65	\$7,035
Median Value of Delivered Project/Product	65	\$2,500
Average Number of Final Products/Projects Delivered	64	12.19
Median Number of Final Products/Projects Delivered	64	5
Total Value of Products/Projects Delivered per facilitator	65	\$85,756.64
Median Value of Products/Projects Delivered	65	\$15,000

NOTE: A differing number of facilitators responded to the various questions on the survey.

Each facilitator averaged 12.19 projects valued in excess of \$85,000 while the median value was \$15,000, indicating the presence of a small number of very large projects; substantiated by the average value of each project being over \$7,035 but the median value being \$2,500.

## Future Study

This research is only an initial step in documenting the community and economic impact of EAST projects. The opportunity for future study abounds. The survey conducted in this research could serve as a beginning for future data collection that would benchmark the growth over time of EAST's overall economic impact in Arkansas. Also, it is likely that the economic effects of EAST in Arkansas are not an anomaly, but rather a value-added impact of EAST projects, wherever they may occur. This survey could be conducted in all states where EAST has a presence to gauge the impact of EAST on those individual states.

If this survey is conducted again, this initial research has shown that there may be several ways to improve the survey response rate and the data reporting accuracy:

- Provide a clearer way for facilitators to estimate their project's value. If a clearer method for reporting the value were developed, there would be more consistency in reporting across survey respondents, and survey respondents might be more likely to answer the question.
- Define 'representative project' more clearly. A clearly defined, shared definition of representative project might steer survey respondents away from reporting projects that weren't truly representative of the overall types of project conducted in the classroom, and thus reduce the occurrence of data outliers.
- Deliver the survey instrument closer to the time that the projects are actually completed. Asking respondents to report on a project that was recently completed may result in more accurate recall of key project data points that are used to calculate the economic impact.
- Provide smaller ranges for survey respondents to choose from on the questions that dealt with estimated project values and estimated project expenses. On both questions, 69 percent of respondents chose the same range. This demonstrates that providing smaller ranges would have given a more detailed breakdown of those estimates.
- Consider removing "No Value" as a response option for the estimated project value. Most projects should have some value, even if only marginal. It should be made clear to facilitators to only report on a representative project that had some value other than \$0.

Finally, Phase II of the EAST Economic Impact Analysis will involve the use of case studies. These case studies will highlight successful EAST projects that have resulted in a significant community or economic development impact. With these case studies, it will be possible to qualitatively show how EAST community projects promote civic engagement and overall youth leadership while also creating improved outcomes for Arkansas' communities within a community and economic development context. Case studies will allow for best practices and next practices for EAST projects to be identified, resulting in increased student interest in a project's community impact.

# Appendix

## Full EAST Survey

### **Informed Consent Cover Letter**

Welcome to the EAST Facilitator Survey. The informed consent letter for this research project can be accessed by copying the hyper link below,

and pasting into a new browser window. To continue on to the survey, please hit the Next button.

<http://www.surveymonkey.com/s/H8DY2HJ>

### **Introduction**

Thank you for agreeing to complete this survey. The purpose of the survey is to gather information on EAST projects and the benefits they provide communities and partner organizations. The survey will also provide useful benchmarking data you can use to gauge your projects and experiences. Please select ONE project you facilitated last academic year (2009-2010) that was satisfactorily delivered to the community partner and is representative of EAST projects you have been involved in. The survey will ask you questions about the approximate "value" of the project, so please select one that will lend itself to dollar value estimation (if the project were completed by paid professionals, what would the cost be?).

We suggest that you print out a copy of the survey first and review it before answering the questions (pdf attached to email you received). It may be easier to make notes on the hard-copy survey form and then complete the survey on-line. If you need to leave the survey before completing it (click "exit survey") you may re-enter through the same hyperlink and pick up where you left off.

For numerical questions, please enter digits (1,2...) not words (one,two...)

### **Background Information**

1. Your last name

2. Your first name

3. Your email address

4. School name

5. School city

6. School county

7. Total number of years as a facilitator-- please enter digits such as 4 or 23

8. Do the researchers have permission to contact you to get further information on your project if necessary?

Yes

No

### **Project Information**

1. Provide a short, descriptive name for the project.

2. Provide a narrative description of the project (please limit your response to 200 words-- about 1/3 of a page).

3. Number of students in your school that participated in the project (please enter digits).

### **Project Information (continued)**

1. List the community partner(s) for which the project was completed (e.g. name of city or county, non-profit organization, etc.). If one partner, enter as primary partner. If other partners involved, list as additional.

Primary partner

Additional partner

Additional partner

Additional partner

Questions 2 and 3 deal with estimating total person-hours on the project. If you can accurately estimate the total person-hours spent on the project, please provide your answer in the space provided in question 2. If you cannot accurately estimate the total person-hours spent on the project, please complete question 3. Answer either question 2 or question 3, but not both.

2. If you have an accurate understanding of the total person-hours spent on the project, please type your answer in the text box below (please enter digits).

3. If you do not have a good feel for the total person-hours spent on the project, please utilize the ranges below to estimate the total project hours of all individuals who participated in the project.

0-24

25-49 hours

50-74 hours

75-99 hours

100-149 hours

150-199 hours

200 or more hours

4. Was the project primarily (pick one)

Student(s) idea

Your idea

Partner organization(s) idea

Other (please specify)

5. Provide a description of the project final product (e.g. report to partner organization, GIS map, etc.).

6. Number of projects you facilitated last academic year (2009-2010) that resulted in a final product or service delivered to the partner organization (please enter digits).

### **Project Value**

To answer the following questions, you may need to consult with the partner organization(s). The idea is to provide an estimate of the value of the project based on its "market value," i.e. what it would cost to have a professional or outside service provider do the project.

1. Using your best judgment and perhaps talking with the partner organization(s), please provide an estimate of the market value of the project (cost of project if it were completed by a paid professional or outside service provider).

\$0

\$1-\$4,999

\$5,000-\$9,999

\$10,000-\$14,999

\$15,000-\$19,999

\$20,000-\$24,999

\$25,000-\$29,999

\$30,000-\$34,999

\$35,000-\$39,999

\$40,000-\$44,999

\$45,000-\$49,999

\$50,000+

2. Total expenses associated with the project paid by the EAST program, plus any out-of-pocket expenses incurred by students and you.

\$0

\$1-\$249

\$250-\$499

\$500-\$749

\$750-\$999

\$1,000+

3. List and describe any other monetary or non-monetary benefits of the project to the partner organization(s) and community (e.g. as a result of project, partner organization received a grant; community services were improved; etc.).

4. To your knowledge, did the project contribute to the start up of a new business or the expansion of an existing business?

No

Yes

Maybe

If yes or maybe, please describe

5. If you have other comments or information you want to provide on the project and/or its value, please enter here.

### **Thank you**

Thank you for your help and participation in the survey. EAST will share the results of the survey with all facilitators as soon as possible.