V(A). Planned Program (Summary)

Program # 12

1. Name of the Planned Program

Applying Science and Technology

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	7.4	0.0	0.0	0.0
Actual	11.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
288288	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
292736	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Food Science: Show Me Quality Assurance, Pork Quality Assurance, Camp Food and Fitness, Meats Contest & Cured Ham, Growth & Quality of Live Animal Evaluation, Livestock Judging and Grading. Animal Science Food Animal: Beef Project, Judging, Demonstration, Exhibition; Sheep Project, Judging, Demonstration, Exhibition; Swine Project, Judging, Demonstration, Exhibition; Goat Project, Judging, Demonstration, Exhibition; Dairy Project, Judging, Demonstration, Exhibition; Poultry Judging,

Demonstration, Exhibition. Animal Science Companion Animal: Horse Project, Bowl, Hippology, Judging, Demonstration, Exhibition; Dog Project, Judging, Demonstration, Exhibition; Cat Project, Judging, Demonstration, Exhibition. Vet Science: Project, Judging, Demonstration, Exhibition. Embryology. Plant Science: Horticulture Project, Judging, Demonstration, Exhibition; Soybean Project, Judging, Demonstration, Exhibition; Corn Project, Judging, Demonstration, Exhibition; Gardening Judging, Demonstration, Exhibition; Bee Keeping. Environmental/Natural Sciences: Project, Judging, Demonstrations, Exhibition. Community Mapping: Water Quality/Aquatic Education; Sports Fishing; Project WET; Wildlife Habitat and Management; Project WILD; Leopold Education Project; Geology; Forestry Project, Demonstration and Exhibition; Project Learning Tree; Solid Waste Management. Information Sciences: Project, Judging, Demonstration, Exhibition, Community Mapping; Computers; Software-based projects; Geo-Spatial; Internet; Digital Media. Physical Sciences Project, Judging, Demonstration, Exhibition, Community Mapping: Robotics; Design; Bicycle; Built Environments; Home Environment; Design/Manufacturing - Textiles; Aero Space; Woodworking; Welding; Electricity; Small Engines; Energy Use and Conservation.

2. Brief description of the target audience

Adults (youth staff, local leaders, parents, volunteers, teachers, organizational leaders) Youth aged 5 - 19.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	650	3500	28000	8500
Actual	4289	10942	25609	11922

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year:	2010
Plan:	0
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	5	0	
Actual	5	0	30

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Attendance of project leaders at workshops for food science, animal science, plant science, environmental science, informational sciences and physical sciences.

Year	Target	Actual
2010	650	298860

Output #2

Output Measure

- Number of youth enrolled in food science, animal science, plant science, environmental science, informational sciences and physical sciences.

Year	Target	Actual
2010	6500	742

Output #3

Output Measure

- Number of youth enrolled in embryology.

Year	Target	Actual
2010	10000	29540

Output #4

Output Measure

- Number of hits on website.

Year	Target	Actual
2010	22000	17228

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Youth will competently demonstrate knowledge and skills gained through demonstrations and project exhibition.

Outcome #1

1. Outcome Measures

Youth will competently demonstrate knowledge and skills gained through demonstrations and project exhibition.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	13500	16289

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Today's young people must be prepared to live and work in a world that no one can completely envision -- for jobs that do not yet exist, using technologies that have not yet been invented, solving problems that have not yet been identified. Future scientists are critical to our state, national and global economy; three-quarters of Missouri's $9.5 billion in products and services exported in 2009 were Science, Engineering and Technology (SET) based industries.

What has been done
4-H provided 332,090 youth contacts and 19,018 adult contacts in projects related to science, engineering and technology. The Missouri 4-H program annually links thousands of young people, parents, volunteers, and professionals to MU. Last year, 3,659 persons visited the MU campus for educational events and camps and 4-H contests that provided opportunities for young people to demonstrate knowledge and demonstrate their skills.

Results
4-H members report an increased interest in science at a rate 3 times their non-4-H peers. Interest in science is a predictor for young people to choose science related careers. Interest in science is a predictor for young people to choose science related careers. Future scientists are critical to our state, national and global economy.

Recent analysis of Missouri data for Wave 7 of the 4-H Study for Youth Development reveals girls who are active in 4-H after school and summer programs increased their interest in science more than their non 4-H counterparts.

4. Associated Knowledge Areas

KA Code	Knowledge Area

806 Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The ability to provide volunteer training and educational experiences for youth is dependent on having a well educated, motivated local and state faculty and volunteers. Four vacancies in faculty and staff positions reduced the ability to provide program leadership for volunteers who work directly with youth.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- During (during program)
- Other (Demonstration, Judging and Exhib)

Evaluation Results

In 2007, Missouri 4-H joined the national 4-H Study of Positive Youth Development. The longitudinal study has surveyed 4,793 adolescents in 34 states in its first five years. This landmark investigation is helping us better understand the factors that lead to positive growth and decreased risk during adolescence. Between March and August of 2007, 338 adolescents from Missouri participated in Wave 5 of the 4-H Study of Positive Youth Development. In 2008, 296 Missouri adolescents were surveyed. One hundred, sixty-five of those youth were new to the study and 131 were students who had been surveyed in 2007. Another 127 teens were surveyed in 2009 with 23 being new to the study. The students were from 26 sites in Missouri 4-H Youth Development Specialists from the University of Missouri and Lincoln University recruited students in grades 6 to 12 to complete a written survey. Parents could also complete an optional survey.

In addition to contributing to the national study, we particularly wanted to know about the value of Missouri 4-H participation. In order to explore this, we grouped Missouri students based on their self-reported 4-H participation in the past year. Groups were:

- 4-H - Participated in a 4-H club at least once a month

- Active - Participated in a 4-H Club two or more times a month
- Non-4-H - Never participated in a 4-H club

Two findings jump out from the Missouri data:

- Young women in 4-H increased their interest in science significantly over their non-4-H female peers.
- Active 4-H members expect to complete higher levels of education.

Key Items of Evaluation

In addition to contributing to the national study, we particularly wanted to know about the value of Missouri 4-H participation. In order to explore this, we grouped Missouri students based on their self-reported 4-H participation in the past year. Groups were:

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Two findings jump out from the Missouri data:

- Young women in 4-H increased their interest in science significantly over their non-4-H female peers.
- Active 4-H members expect to complete higher levels of education.

These findings were mostly consistent with the national sample and the longitudinal data. These data suggest that young people who are active in 4-H are likely to report more positive behaviors and fewer negative behaviors. Additional information on the 4-H Study of Positive Youth Development can be found at: http://mo4h.missouri.edu/resources/evaluation/pydstudy.htm.