V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Youth Development

☑ Reporting on this Program

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%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	47.0	0.0	0.0	0.0
Actual Paid Professional	4.8	0.0	0.0	0.0
Actual Volunteer	360.0	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
413965	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
413965	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
3344796	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Broaden youths' short-term and long-term learning opportunities in the program priorities of healthy living (including childhood obesity), STEM (including food safety), citizenship and leadership, and

communication and the arts.
- Strengthen statewide volunteer management infrastructure.
- Organize staffing structure based on priority programs.
- Improve communications with staff, stakeholders, parents, and youth.
- Improve engagement with ISU colleges and faculty to increase youth offerings consistent with current research and educational design.
- Transition staff time from activity management to program design, delivery, and evaluation.
- Increase community partnerships to leverage resources for improved client access to programs.
- Design learning experiences and conduct training for and with Extension and Outreach staff, volunteers, ISU faculty, and community and state partners that contribute to the life skill outcomes of leadership, citizenship, communication, and learning in environments that meet youths' needs.
- Build state and community level capacity to ensure policies and educational opportunities are based on positive youth development principles and practices.
- Train staff, faculty, and volunteers on how to create positive youth development learning environments in after school programs, camps, clubs, events, and school and other out-of-school time settings.
- Analyze county enrollment trends and identify barriers that limit youth enrollment, retention, and participation in 4-H after school, camp, club, special event, and school delivery modes.
- Implement multi-faceted marketing infrastructure to communicate positive youth development principles, practices, and programming successes via news releases, brochures, on-line training, webinars, etc. with volunteers, Extension and Outreach staff, community partners, and Iowa State University faculty.
- Partner with state and national entities to collect and report impact data.
- Work with other states' 4-H Youth Development staff to evaluate/research positive impact of 4-H participation in the lives of young people.

2. Brief description of the target audience

K - 12 Youth

- State Council: 36 high school youth are members of the State 4-H Council; youth participate in leadership and communication training and serve as 4-H ambassadors across the state.
- Schools: There were 50,651 participants in school-based educational experiences through partnerships with local school districts.
- Camping: 3,292 youth participated in day and overnight camping experiences.
- Clubs: There were 23,777 4-H community club members.
- Special Interest: There were 22,282 participants in special interest/short-term educational experiences.
- Afterschool: 3,852 youth participated in afterschool programs utilizing 4-H curricula.

K - 12 Teachers

- K-12 educators: 1,240 participated in ISU supported STEM workshops focused on argument-based inquiry.
- 4-H Educators: 44 state and county 4-H staff participated in STEM training to shift 4-H programming to a stronger STEM focus

Extension and Outreach Educators

- 4hOnline: 47 county and 28 4-H state staff were trained in accurate 4-H enrollment data collection and data management procedures.
- November All Youth Staff Conference: 160 county, regional, and state 4-H staff participated in 3 days of professional development focused on the Iowa 4-H's program priorities of healthy living, STEM, citizenship and leadership, and communication and the arts.

• Spring & Fall YPS: 40 regional and state 4-H staff met to collaborate on the implementation of the Iowa 4-H Strategic Plan.
• STEM webinar/workshops: 61 STEM workshops focused on STEM and STEM practices to enable educators to better assist youth in STEM learning.
• Grow 4-H: 27 4-H staff representing multiple states enrolled in the on- line course Grow 4-H - Building Partnerships to Benefit Youth.

4-H Volunteers

• 1,648 volunteers participated in state designed training on youth development principles and practices
• 1,498 volunteers participated in risk management training
• 256 volunteers and 4-H staff participated in New Volunteer Training
• 65 volunteers participated in Safety Education in Shooting Sports training
• 7,194 adult volunteers and 3,337 youth volunteers assisted in the implementation of youth development programs
• 85 volunteers and 4-H staff attended state level training planned and implemented by volunteers

Federal, State, and ISU Partners

• 4-H state staff serve on the National 4-H GPS/GIS task force and NAE4-HA task forces for Animal Science, Communication/Arts, and 4-H Hall of Fame.
• People's Garden Grant included work with USDA and three other land grant universities.
• 4-H staff represent Iowa 4-H as Iowa Collaboration for Youth Development Council members.
• 32 youth participated in the Immersion and Wellness summer camp (ISU Departments of Food & Nutrition and Food Science).
• 24 youth participated in the Design Innovation summer camp (ISU College of Design).
• 4-H staff serve on the ISU K-12 Working Group.
• 148 ISU faculty and staff received training on Youth Activities Program (YAP) policies (in partnership with Office of Risk Management and Office of University Counsel).
• 3 online training modules were developed for ISU faculty and staff use for compliance with YAP training requirements.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7194	54110	100168	13355

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of volunteers completing one training per year.

Year	Actual
2013	1713

Output #2

Output Measure

- Number of children and youth who participate in 4-H Afterschool.

Year	Actual
2013	23282

Output #3

Output Measure

- Number of local 4-H partnerships initiated or strengthened.

Year	Actual
2013	3484

Output #4

Output Measure

- Number of new clubs developed using innovative and emerging 4-H club models.
  Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of 4-H livestock exhibitors certified in Food Safety and Quality Assurance (FSQA).

Year	Actual
2013	6780

Output #6

Output Measure

- Number of 4-H'ers enrolled in Foods, Nutrition, Physical Health, and Fitness project areas.

Year	Actual
2013	34061

Output #7

Output Measure

- Number of 4-H'ers enrolled in Science, Engineering, and Technology (SET) project areas.

Year	Actual
2013	42083

Output #8

Output Measure

- Number of 4-H'ers enrolled in Citizenship, Communication, and Leadership project areas.

Year	Actual
2013	9702

Output #9

Output Measure

- Number of pre-service teachers and educators trained in Connecting Learning & Living Curricula on connecting youth with MyPyramid concepts and understanding the origins of food.
  Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Number of youth reached by educators trained in Connecting Learning & Living Curricula (agriculture, environmental, food, and nutrition emphasis).
  Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Number of unduplicated youth engaged in 4-H learning opportunities.

Year	Actual
2013	100168

Output #12

Output Measure

- Percent of 4-H club members in their senior year of high school who will be attending a college/university/professional school/trade school/institute of higher education within 12 months of their high school graduation.

Year	Actual
2013	88

Output #13

Output Measure

- Enrollments in 4-H Citizenship and Leadership curricula areas.

Year	Actual
2013	45544

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Percentage of pre-service teachers and educators who participate in CLL training will self-report a 1 to 3-point increase in confidence/knowledge in teaching MyPyramid concepts and the origins of food.
2	As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge of the MyPyramid and making healthy food choices.
3	As reported by educators, percentage of youth participating in CLL lessons who made healthy food choices; tried new foods; and made healthier food choices during snacks, lunch, and class parties.
4	As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge regarding growing food from plants.
5	As reported by educators, percentage of youth gardeners participating in CLL lessons who improve their vegetable consumption.
6	Percentage of 4-H'ers in grades 6 - 12 taking the FSQA certification test who self-report improved techniques and practices in livestock record keeping, medications, food product safety, and ethics.
7	Percentage of youth who participated in Iowa 4-H STEM programs who self-reported an increase in STEM process skills necessary to be successful in STEM courses and careers.
8	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate outstanding communication skills in sending and receiving written, visual, and oral messages after being engaged in 4-H club experiences.
9	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate productive citizenship skills by being fair and trustworthy, identifying community needs, organizing service learning projects, and participating in community issues after being engaged in 4-H club experiences.
10	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate effective leadership skills in working with others, listening to others' ideas, sharing one's own ideas, and handling conflict respectfully after being engaged in 4-H club experiences.
11	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate successful learning skills by creating project learning goals, analyzing the strengths and weaknesses of different ideas, using time efficiently, and applying lessons learned to new experiences after being engaged in 4-H club experiences.
12	Percentage of youth who self-report they demonstrate healthy and safe eating, food preparation, and physical activity practices by eating more fruits and vegetables, making healthier food choices, using safe techniques when working in the garden, implementing safe methods when preparing food, becoming more physically active, and helping their family make healthy food choices after engaging in 4-H learning experiences.
13	Percentage of youth who self-report they positively strengthened their experiences in, and attitudes and aspirations toward liking science, feeling they are good at science, hoping to have a job related to STEM, doing STEM activities that are not school assignments, thinking science will be important to their futures, and believing science is useful for solving everyday problems after engaging in 4-H STEM learning experiences.
14	Percentage of youth who self-report they demonstrate effective STEM processing skills by asking questions that can be answered by scientific investigation; designing an investigation to answer a question; explaining to others how to do an investigation; explaining why things

	happen in an investigation; and creating a graph, table, picture, or display to share information with others after engaging in 4-H STEM learning experiences.
15	Percentage of youth who self-report they demonstrate outstanding communication skills by being confident when speaking in front of others, feeling comfortable asking questions, using good listening skills when others are talking, using technology to express ideas, and creating products to share ideas/information after engaging in 4-H learning experiences.
16	Percentage of youth who self-report they demonstrate productive citizenship by making a difference in communities through service learning projects, solving "real-life" community problems through service projects, planning service learning projects that meet a community's needs, and using service learning skills in the future after engaging in 4-H learning experiences.
17	Percentage of youth who self-report they demonstrate effective leadership skills in working with others, listening to others' ideas before making decisions, and handling conflict respectfully after engaging in 4-H learning experiences.
18	Percentage of youth who self-report they demonstrate successful learning skills by creating learning goals, reviewing a variety of resources, analyzing the strengths and weaknesses of different ideas, identifying what needs to change to achieve goals, and applying lessons learned to new experiences after engaging in 4-H educational experiences.

Outcome #1

1. **Outcome Measures**

   Percentage of pre-service teachers and educators who participate in CLL training will self-report a 1 to 3-point increase in confidence/knowledge in teaching MyPyramid concepts and the origins of food.

   Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

   As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge of the MyPyramid and making healthy food choices.

   Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

   As reported by educators, percentage of youth participating in CLL lessons who made healthy food choices; tried new foods; and made healthier food choices during snacks, lunch, and class parties.

   Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge regarding growing food from plants.

Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

As reported by educators, percentage of youth gardeners participating in CLL lessons who improve their vegetable consumption.

Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

Percentage of 4-H'ers in grades 6 - 12 taking the FSQA certification test who self-report improved techniques and practices in livestock record keeping, medications, food product safety, and ethics.

2. **Associated Institution Types**

- 1862 Extension

3a. **Outcome Type:**

Change in Action Outcome Measure

3b. **Quantitative Outcome**

Year	Actual
2013	83

3c. **Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)
Providing a safe and healthy food supply has always been a key issue to the American consumer, but in recent years this issue has become even more important to consumers, wholesale distributors, restaurant chains, and foreign export markets with the recall of various foods and the outbreak of food borne illnesses. Not only details on treatments and/or medications given to animals, but also how animals have been raised and treated throughout their lives has become front page news. Consequently, livestock producers continually strive to improve management practices to ensure American citizens have the safest food supply in the world.

What has been done
A comprehensive food safety and quality assurance curriculum program (FSQA) is conducted each year with 4-H'ers. Through the use of a variety of educational materials including video tutorials to hands-on learning, youth learn about animal identification, source verification (when and where the animals are born and raised), biosecurity measures (cleanliness techniques, disease contamination, on-farm disease transmission), drug treatments and injections, quality record keeping, and appropriate animal handling and welfare requirements.

Results
The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on animal science-identified logic model outcomes. In the 2012/2013 program year, youth from 33 randomly selected counties who were enrolled in the Food Safety and Quality Assurance training were asked to complete a post-learning survey based on a 5-point Likert scale. Youth in grades 4 - 6 were administered a survey of eight questions regarding how their FSQA techniques and practices were changed in the areas of communication skills, reading feed labels correctly and thoroughly, observing appropriate feed additives and medication, and biosecurity measures. Of the 1,546 youth who were eligible to receive the survey, 766 youth completed the survey. Of the 766 youth who completed the survey, 81.6% of the youth indicated a 3- to 5-point increase in their communication techniques. 81.7% indicated a 3- to 5-point increase in their safe feeds/feed additives practices and 85% indicated a 3- to 5-point increase in their biosecurity techniques.

Youth indicated being involved in 4-H FSQA training strengthened their techniques and practices in the areas of feeling confident when sharing information with others; washing hands, boots and clothing after working with animals; isolating new animals when first brought to the farm to prevent disease spread; and determining what treatment to administer to animals based on feed and/or drug labels.

4-H'ers and livestock producers are being rewarded for superior meat products and for raising their animals in certain environmental conditions. For example, beef animals with no antibiotic treatments or animals that are raised a certain way can receive a premium anywhere between $.05 -$.10/pound for a 4-H'er. Each year, the meat industry spends over $80 million in meat inspection costs. Much of this cost could be reduced at the producer level by educating youth on how to treat and handle their animals correctly. Commodity beef prices are currently at record highs so youth have an economic incentive to produce healthy and efficient animals. Knowing that a single disease outbreak or a food recall can cause irreversible damage to the U.S. markets, it is imperative to continue to educate youth on the important topics that are covered in this curriculum. Iowa is the top state for both hog production and egg layer production producing more than $10 billion in livestock value across all commodities, and also generates millions of dollars in agriculture jobs to the state economy. Iowa's 4-H youth are the future farmers and livestock producers of this state and are needed to increase job growth and economic development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. **Outcome Measures**

Percentage of youth who participated in Iowa 4-H STEM programs who self-reported an increase in STEM process skills necessary to be successful in STEM courses and careers.

Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate outstanding communication skills in sending and receiving written, visual, and oral messages after being engaged in 4-H club experiences.

Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate productive citizenship skills by being fair and trustworthy, identifying community needs, organizing service learning projects, and participating in community issues after being engaged in 4-H club experiences.

Not Reporting on this Outcome Measure

Outcome #10

1. **Outcome Measures**

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate effective leadership skills in working with others, listening to others' ideas, sharing one's own ideas, and handling conflict respectfully after being engaged in 4-H club experiences.

Not Reporting on this Outcome Measure

Outcome #11

1. **Outcome Measures**

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate successful learning skills by creating project learning goals, analyzing the strengths and weaknesses of different ideas, using time efficiently, and applying lessons learned to new experiences after being engaged in 4-H club experiences.

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

Percentage of youth who self-report they demonstrate healthy and safe eating, food preparation, and physical activity practices by eating more fruits and vegetables, making healthier food choices, using safe techniques when working in the garden, implementing safe methods when preparing food, becoming more physically active, and helping their family make healthy food choices after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	57

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Iowa ranks 15th highest in obesity/overweight prevalence and is in the bottom 10% of fruit and vegetable consumption in the United States. Youth ages 8 to 18 sit in front of a screen for an average of 7 hours and 23 minutes each day and prefer being indoors rather than going outdoors. Youth and adults are disconnected with the natural environment, where food comes from, and the ability to make good decisions regarding their health and well-being. Together, these situations dramatically increase physical, mental, behavioral, and learning problems.

What has been done
Sixty teachers, Extension 4-H staff, volunteers, and community partners attended Connecting Learning and Living curricula trainings throughout the state of Iowa. In addition, more than 1,000 Iowa youth participated in the USDA People?s Garden (partnership with Washington State University, Cornell University, Iowa State University and the University of Arkansas) and Wellmark Foundation Healthy Gardens, Healthy Youth grant?s school garden project which sought to increase fruit and vegetable consumption, empower youth in their communities, contribute toward a sustainable environment and build a national network of school gardens. A new Iowa 4-H Youth Development "Growing in the Garden: Local Foods and Healthy Living" curriculum was developed to support the development of youth-based gardening programs.

Results
The Iowa 4-H Program uses logic models that act as program development road maps in the

areas of planning, implementation, and evaluation. The results indicated in this section are based on healthy living-identified logic model outcomes. 215 youth enrolled in 4-H healthy living programming completed the Iowa 4-H Healthy Living Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' healthy living behaviors and practices after participating in 4-H as compared to before participating in 4-H. On average, 47% of youth indicated a 1-point increase, 8.2% indicated a 2-point increase, and .6% indicated a 3-point increase in their healthy living behaviors and practices after participating in 4-H.

Youth indicated being involved in 4-H helped them strengthen their healthy living practices of ... 1) eating a variety of fruits and vegetables; 2) making healthy food/snack choices; 3) working safely in gardens; 4) safely and carefully handling and preparing food to eat; 5) participating in physically active events; and 6) helping their family make healthy food choices and meals.

Reliability analysis of the 4-H Youth Healthy Living Self-Assessment Tool indicated that the individual questions within the construct of healthy living represented the conceptual meaning of the given construct. The "Before" construct was also significantly correlated with the "After" construct. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for the construct, as well as for the individual indicators within the construct. For the construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #13

1. Outcome Measures

Percentage of youth who self-report they positively strengthened their experiences in, and attitudes and aspirations toward liking science, feeling they are good at science, hoping to have a job related to STEM, doing STEM activities that are not school assignments, thinking science will be important to their futures, and believing science is useful for solving everyday problems after engaging in 4-H STEM learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	47

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Committee on Prospering in the Global Economy of the 21st Century's report Rising above the Gathering Storm, (The National Academies Press, 2007), the United States faces a critical shortage of young people with the skills and training to meet 21st century workforce needs and make scientifically informed decisions. In 2008 a Congressional Research Service (CRS) report (Kuenzi, 2008) urged the immediate need for STEM-related workforce development. The Iowa Department of Economic Development reports: The state's manufacturing sector contributes the largest share of state gross domestic product (GDP) of any major sector with $23 billion contributed in 2009. In order for Iowa youth to be successful in the 21st century they must be prepared with the skills and meet workforce needs.

What has been done
Throughout the state of Iowa, Extension 4-H programs offer STEM learning opportunities for Iowa youth to increase their STEM process skills and improve their positive attitudes toward STEM education and careers through workshops, school enrichment activities, STEM themed camps, after school programs, and clubs as well as individual project work on STEM related topics. Programming provided during these in- and out-of-school opportunities utilized national 4-H curriculum such The Power of Wind, Iowa State University and other Land Grant University resources such as GEAR Tech 21 and the Governor's Advisory Council STEM Initiative, and other available science education resources such as those available through NASA and NOAA.

Results
The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on STEM-identified logic model outcomes. 315 youth enrolled in 4-H STEM programming completed the Iowa 4-H STEM Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' attitudes, aspirations, and interest in science after participating in 4-H as compared to before participating in 4-H. Regarding attitudes toward science, on average, 29.9% of youth indicated a 1-point increase, 7.3% indicated a 2-point increase, 1.5% indicated a 3-point increase, and .3% indicated a 4-point increase in their attitudes toward science after participating in 4-H. Regarding aspirations in science, on average, 32.6% of youth indicated a 1-point increase, 7.5% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .3% indicated a 4-point increase in their aspirations in science after participating in 4-H. Regarding experiences in science, on average, 40.8% of youth indicated a 1-point increase, 13.8% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .6% indicated a 4-point increase in science experiences after participating in 4-H.

Youth indicated being involved in 4-H positively strengthened their STEM experiences in, and attitudes and aspirations toward STEM in the areas of... 1) liking science, 2) feeling they are good at science 3) hoping to have a job related to STEM, 4) doing STEM activities that are not school assignments, 5) thinking science will be important to their futures, and 6) believing science is useful for solving everyday problems after engaging in 4-H STEM learning experiences.

Reliability analysis of the 4-H STEM Self-Assessment Tool indicated that the individual questions within each of the constructs of aspirations, experiences, and attitudes represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for each of the constructs, as well as for the individual indicators within the constructs. For each construct, and all individual indicators,

the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #14

1. Outcome Measures

Percentage of youth who self-report they demonstrate effective STEM processing skills by asking questions that can be answered by scientific investigation; designing an investigation to answer a question; explaining to others how to do an investigation; explaining why things happen in an investigation; and creating a graph, table, picture, or display to share information with others after engaging in 4-H STEM learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	55

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Committee on Prospering in the Global Economy of the 21st Century's report Rising above the Gathering Storm, (The National Academies Press, 2007), the United States faces a critical shortage of young people with the skills and training to meet 21st century workforce needs and make scientifically informed decisions. In 2008 a Congressional Research Service (CRS) report (Kuenzi, 2008) urged the immediate need for STEM-related workforce development. The Iowa Department of Economic Development reports: The state's manufacturing sector contributes the largest share of state gross domestic product (GDP) of any major sector with $23 billion contributed in 2009. In order for Iowa youth to be successful in the 21st century they must be prepared with the skills and meet workforce needs.

What has been done
Throughout the state of Iowa, Extension 4-H programs offer STEM learning opportunities for Iowa youth to increase their STEM process skills and improve their positive attitudes toward STEM education and careers through workshops, school enrichment activities, STEM themed camps, after school programs, and clubs as well as individual project work on STEM related topics. Programming provided during these in- and out-of-school opportunities utilized national 4-H

curriculum such The Power of Wind, Iowa State University and other Land Grant University resources such as GEAR Tech 21, and other available science education resources such as those available through NASA and NOAA.

Results

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on STEM-identified logic model outcomes. 315 youth enrolled in 4-H STEM programming completed the Iowa 4-H STEM Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' STEM processing skills after participating in 4-H as compared to before participating in 4-H. On average, 45% of youth indicated a 1-point increase, 9.6% indicated a 2-point increase, and .6% indicated a 3-point increase in their science processing skills after participating in 4-H.

Youth indicated being involved in 4-H helped them strengthen their STEM processing skills in the areas of... 1) asking questions that can be answered by scientific investigation; 2) designing an investigation to answer a question; 3) explaining to others how to do an investigation; 4) creating a graph, table, picture, or display to share information with others; 5) explaining why things happen in an investigation; 6) using evidence to defend their ideas; 7) using evidence to evaluate other people's ideas; 8) developing a design or model for solving a problem; 9) developing a way to test a design and use the results to improve the design; 10) sharing responsibilities with team members and letting others do some of the work; 11) using technology in a safe and appropriate manner; and 12) considering ethical implications of technology after engaging in 4-H STEM learning experiences.

Reliability analysis of the 4-H STEM Self-Assessment Tool indicated that the individual questions within the construct of science processing skills represented the conceptual meaning of the given construct. The "Before" construct was also significantly correlated with the "After" construct. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for the science processing skills construct, as well as for the individual indicators within the construct. For the construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #15

1. Outcome Measures

Percentage of youth who self-report they demonstrate outstanding communication skills by being confident when speaking in front of others, feeling comfortable asking questions, using good listening skills when others are talking, using technology to express ideas, and creating products to share ideas/information after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	51

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the study, Are They Really Ready to Work? Employer's Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century Workforce (2006), "the future workforce is here, and it is ill-prepared." Business leaders reported that "while the three 'R's" are still fundamental to every employee?s ability to do the job, applied skills such as team work, critical thinking, and communication are essential for success at work. In fact, at all education levels, these applied skills trump back knowledge skills such as reading and mathematics in importance in the view of employers." High percentages of surveyed employers indicated that high school graduates entering the workforce are deficiently prepared in the most important skills ? written/oral communications (written = 81% and oral = 53%), professionalism/work ethic (70%), critical thinking/problem solving (70%), ethics/social responsibility (44%), and teamwork/collaboration (35%).

What has been done
All 100 counties offered a county communication event program. 1,655 4-H members participated in public speaking and performance events at the 2013 Iowa State Fair. Competitive events including Robotics Challenge, Cook This! and Livestock Judging contests include oral communication opportunities as part of the event. Increasing communication skills and communication opportunities in the local 4-H club continued to be emphasized at 4-H leader trainings. All Iowa 4-H'ers are expected to demonstrate learning by giving a presentation or demonstration before a group, typically at a club or group meeting. More than 20,000 4-H members demonstrated written, oral and visual communication skills as they prepared and presented fair exhibits for evaluation.

Results
The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on communication-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' communication practices after participating in 4-H as compared to before participating in 4-H. On average, 43.2% of youth indicated a 1-point increase, 7.2% indicated a 2-point increase, and .3% indicated a 3-point increase in their communication practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen

communication practices such as... 1) feeling confident when speaking in front of others, 2) feeling comfortable asking questions, 3) using good listening skills when others are talking, 4) using technology to express interests, and 5) creating products to share ideas/information.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for each of the constructs, as well as for the individual indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #16

1. Outcome Measures

Percentage of youth who self-report they demonstrate productive citizenship by making a difference in communities through service learning projects, solving "real-life" community problems through service projects, planning service learning projects that meet a community's needs, and using service learning skills in the future after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	58

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the National League of Cities, an organization dedicated to helping city leaders build better communities, "by participating in local government, youth gain work experience, acquire new skills, learn responsibility and accountability, develop a greater sense of confidence and empowerment, and forge meaningful connections to other youth and adults. Youth involved in positive activities such as service learning are also less likely to pursue risky behaviors. In addition, youth voice in local decision-making can help city officials enact better policies and

programs, especially with regard to youth issues." (National League of Cities ? Youth Civic Engagement http://www.nlc.org/find-city-solutions/iyef/youth-civic-engagement)

What has been done

4,148 Iowa youth are enrolled in the 4-H Citizenship project. 1,236 youth and adults contributed 5,754 volunteer hours to improve their communities through the State 4-H Youth Conference and DuPont Pioneer Community Improvement grants. Twenty-six Iowa 4-H clubs leveraged $7,625 in DuPont Pioneer Community Improvement grants into nearly $28,870 in community improvement projects. Four 4-H members served as delegates to National 4-H Conference; 113 Iowa 4-H'ers participated in the national Citizenship Washington Focus program. Twenty-nine members interviewed for state level Citizenship project awards. Participation in a service activity is an expectation of all Iowa 4-H members and Iowa 4-H clubs.

Results

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on citizenship-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' citizenship practices after participating in 4-H as compared to before participating in 4-H. On average, 41.9% of youth indicated a 1-point increase, 14% indicated a 2-point increase, and 2.6% indicated a 3-point increase in their citizenship practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen citizenship practices such as... 1) making a difference in communities through service learning projects, 2) applying knowledge in ways that solve real-life problems through service learning projects, 3) working on service projects to meet needs in their communities, and 4) gaining skills that will help them in the future through serving their communities.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for each of the constructs, as well as for the individual indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #17

1. Outcome Measures

Percentage of youth who self-report they demonstrate effective leadership skills in working with others, listening to others' ideas before making decisions, and handling conflict respectfully after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	54

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to Wehmeyer, Agran, & Hughes (1998), youth leadership is part of the youth development process and supports youth in developing: (a) the ability to reflect upon his or her strengths and weaknesses; establish personal and occupational goals; and have the self-esteem, confidence, motivation, and ability to carry them out (including the capacity to develop support networks in order to fully participate in community life and effect positive social change); and (b) the competence to point or direct others on a course of action, influence individuals' opinions and behaviors, and serve as a role model. Evaluations of youth development programs have demonstrated that young people who participate in youth leadership and civic engagement activities consistently get the supports and opportunities needed for healthy youth development (Innovation Center for Community and Youth Development, 2003). Additionally, research shows that youth who participate in developmentally appropriate decision making activities and those who have access to meaningful youth development supports and opportunities are better prepared to make a successful transition to adulthood (Gambone, Klem, and Connell 2002).

What has been done
2,626 Iowa youth are enrolled in the 4-H Leadership project. More than 1,466 community and project clubs provide leadership experiences for members. 525 youth and 69 adults received leadership training during the Iowa 4-H Youth Conference; 68 youth and adults completed Youth-Adult Partnerships training; 19 4-H members represented Iowa at the National 4-H Congress. Thirty-eight high school youth provide leadership as members of the State 4-H Council, planning the 4-H Youth Conference and serving as ambassadors for the 4-H program. 114 youth had volunteer leadership positions with 4-H events during the 2013 Iowa State Fair.

Results

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on leadership-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' leadership practices after participating in 4-H as compared to before participating in 4-H. On average, 44.9% of youth indicated a 1-point increase, 8% indicated a 2-point increase, .7% indicated a 3-point increase, and .1% indicated a 4-point increase in their leadership practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen leadership practices such as... 1) working together in a team, 2) listening and talking to others before making decisions, and 3) handling conflict respectfully.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for each of the constructs, as well as for the individual indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #18

1. Outcome Measures

Percentage of youth who self-report they demonstrate successful learning skills by creating learning goals, reviewing a variety of resources, analyzing the strengths and weaknesses of different ideas, identifying what needs to change to achieve goals, and applying lessons learned to new experiences after engaging in 4-H educational experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	64

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the study, Are They Really Ready to Work? Employer's Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century Workforce (2006), "the future workforce is here, and it is ill-prepared." Business leaders reported that "while the three 'R's" are still fundamental to every employee's ability to do the job, applied skills such as team work, critical thinking, and communication are essential for success at work. In fact, at all education levels, these applied skills trump back knowledge skills such as reading and mathematics in importance in the view of employers." High percentages of surveyed employers indicated that high school graduates entering the workforce are deficiently prepared in the most important skills ? written/oral communications (written = 81% and oral = 53%), professionalism/work ethic (70%), critical thinking/problem solving (70%), ethics/social responsibility (44%), and teamwork/collaboration (35%). Additionally, nearly 75% of surveyed business leaders identified creativity/innovation as a top applied skill rising in importance for new entrants in the workforce.

What has been done
23,777 4-H'ers enrolled in one or more of the 38 project areas offered; 76,391 other youth participated in other 4-H educational programs. All curriculum materials available to Iowa 4-H members is selected from the National 4-H Curriculum Directory and/or other peer reviewed resources. The experiential learning and inquiry based learning models are used as the primary instructional methods. All 4-H clubs and members are expected to set goals, evaluate progress towards goals, and keep records of activities and evaluate experiences. 100 counties provide a county fair exhibit opportunity for members to share what they have learned. Participating members share their exhibit goals, what was done, and what was learned as part of exhibit conference judging. Camps, conferences and contests provided additional learning opportunities for selected members to enhance and demonstrate skills learned.

Results
The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on learning-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' learning practices after participating in 4-H as compared to before participating in 4-H. On average, 47.5% of youth indicated a 1-point increase, 14.5% indicated a 2-point increase, and 1.5% indicated a 3-point increase in their learning practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen leadership practices such as... 1) creating learning goals; 2) reviewing a variety of resources related to a topic; 3) identifying the strengths and weaknesses of different ideas, solutions, or approaches; 4) thinking about what is going well and needs to change to achieve goals, and 5) applying what was learned to new experiences.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for each of the constructs, as well as

for the individual indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

52% of Iowa's school-aged youth reside in Iowa's 11 most populous counties compared to 49.5% in 2007. The Iowa 4-H Youth Development Program needs to devote more resources to programs in those counties, but tight budgets have reduced capacity to hire staff or fund programs targeted for those counties. As a result, the number of youth reached (all delivery modes) in urban counties has dropped by 1/3 since 2007 while the number of youth reached in non-urban counties remained static.

Aligning program outcomes with NIFA priorities while maintaining and improving a comprehensive 4-H Youth Development Program remains a challenge. The Iowa 4-H Youth Program emphasizes broader youth development and life skills outcomes while NIFA priorities are typically more narrowly focused. This is especially noticeable in program evaluation efforts of NIFA priorities. The Iowa 4-H Youth Program, however, has increased efforts to measure program participants' knowledge and behavior changes in selected educational programs that match NIFA priority areas (ex: food safety and childhood obesity). Efforts were broadened to identify STEM opportunities within current educational programs and strong partnerships were built with Iowa STEM Hubs and ISU faculty.

Work to align program outcomes often focused attention on specialized innovative program efforts which diluted the amount of resources available to work with more traditional 4-H audiences. While important for overall program success, this also creates conflict with traditional program partners and supporters. Implementation of new and innovative programs to reach new youth audiences depends on both the number of youth residing in the area and staff's ability to develop relationships with potential volunteer citizen pools. Acceptance by current 4-H staff and volunteers of innovative and emerging 4-H club and group delivery models is critical to the success of the programs and has been challenging.

Adoption of the Iowa Core Curriculum by the Iowa Department of Education and local school districts presents challenges in the ability of the Iowa 4-H Youth Program to partner with schools. Staff continues to evaluate 4-H curricula to identify core standards being met, and revise curricula when necessary to meet core standards required by local school

districts. Because local school districts emphasize formal education models as the best way to align local curricula with state and national standards, schools are often hesitant to engage in non-formal youth development educational offerings through Extension and Outreach.

Significant time was spent developing a new Iowa 4-H Youth Program Strategic plan to address the challenges addressed above, focus priority efforts, and improve efficiency. A priority for ISU Extension and Outreach is to be the leader of K-12 outreach efforts across the university, providing program expertise in youth development for all ISU colleges and departments. Planning efforts for this broadened university role meant less time and resources available for program design and delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Iowa 4-H Program uses logic models as program development road maps in the areas of planning, implementation, and evaluation. Logic models have been created for STEM, healthy living, citizenship and leadership, and communication and the arts constructs.

- 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool and the Iowa 4-H STEM Self-Assessment Tool; 116 females (36.8%) and 199 males (63.2%).
- 215 youth enrolled in 4-H afterschool programs, special events, and school programs completed the Iowa 4-H Healthy Living Self-Assessment Tool; 116 females (54%) and 99 males (46%).
- Self-assessment tools were based on a 5-point Likert scale (where 1 = "not at all" and 5 = "great deal").
- For the healthy living; STEM aspirations, attitudes, and experiences; STEM processing skills; citizenship; leadership; communication; and learning constructs, and all corresponding individual indicators, youth reported statistically higher "After" scores than "Before" scores.
- On average, 47% of youth indicated a 1-point increase, 8.2% indicated a 2-point increase, and .6% indicated a 3-point increase in their healthy living behaviors and practices after participating in a 4-H.
- **Attitudes** toward science, on average, 29.9% of youth indicated a 1-point increase, 7.3% indicated a 2-point increase, 1.5% indicated a 3-point increase, and .3% indicated a 4-point increase in their attitudes toward science after participating in 4-H. **Aspirations** in science, on average, 32.6% of youth indicated a 1-point increase, 7.5% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .3% indicated a 4-point increase in their aspirations in science after participating in 4-H. **Experiences** in science, on average, 40.8% of youth indicated a 1-point increase, 13.8% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .6% indicated a 4-point increase in science experiences after participating in 4-H.
- 45% of youth indicated a 1-point increase, 9.6% indicated a 2-point increase, and .6% indicated a 3-point increase in their science processing skills after participating in 4-H.
- 43.2% of youth indicated a 1-point increase, 7.2% indicated a 2-point increase, and .3% indicated a 3-point increase in their communication practices after participating in 4-H.
- 41.9% of youth indicated a 1-point increase, 14% indicated a 2-point increase, and 2.6% indicated a 3-point increase in their citizenship practices after participating in 4-H.
- 44.9% of youth indicated a 1-point increase, 8% indicated a 2-point increase, .7%

indicated a 3-point increase, and .1% indicated a 4-point increase in their leadership practices after participating in 4-H.

- 47.5% of youth indicated a 1-point increase, 14.5% indicated a 2-point increase, and 1.5% indicated a 3-point increase in their learning practices after participating in 4-H.

Key Items of Evaluation

CHILDHOOD OBESITY

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on healthy living-identified logic model outcomes. 215 youth enrolled in 4-H healthy living programming completed the Iowa 4-H Healthy Living Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' healthy living behaviors and practices after participating in 4-H as compared to before participating in 4-H. On average, 47% of youth indicated a 1-point increase, 8.2% indicated a 2-point increase, and .6% indicated a 3-point increase in their healthy living behaviors and practices after participating in a 4-H. For the healthy living construct and all individual healthy living indicators/items, the respondents reported statistically higher "After" scores than "Before" scores.

Youth indicated being involved in 4-H helped them strengthen their healthy living practices of ... 1) eating a variety of fruits and vegetables; 2) making healthy food/snack choices; 3) working safely in gardens; 4) safely and carefully handling and preparing food to eat; 5) participating in physically active events; and 6) helping their family make healthy food choices and meals.

FOOD SAFETY

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on animal science-identified logic model outcomes. In the 2012/2013 program year, youth from 33 randomly selected counties who were enrolled in the Food Safety and Quality Assurance training were asked to complete a post-learning survey based on a 5-point Likert scale. Youth in grades 4 - 6 were administered a survey of eight questions regarding how their FSQA techniques and practices were changed in the areas of communication skills, reading feed labels correctly and thoroughly, observing appropriate feed additives and medication, and biosecurity measures. Of the 1,546 youth who were eligible to receive the survey, 766 youth completed the survey. Of the 766 youth who completed the survey, 81.6% of the youth indicated a 3- to 5-point increase in their communication techniques. 81.7% indicated a 3- to 5-point increase in their safe feeds/feed additives practices and 85% indicated a 3- to 5-point increase in their biosecurity techniques.

Youth indicated being involved in 4-H FSQA training strengthened their techniques and practices in the areas of feeling confident when sharing information with others; washing hands, boots and clothing after working with animals; isolating new animals when first brought to the farm to prevent disease spread; and determining what treatment to administer to animals based on feed and/or drug labels.