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The Power of 4-H Judging, Skillathon, and Bowl Events to Support Youth Thriving

Abstract

4-H Judging Teams, Skillathons, and Quiz Bowls are longstanding, competitive educational programs that form a cornerstone of many 4-H initiatives nationwide. This study examines the developmental impact of participation in these programs, with a particular focus on assessing the developmental context of these programs along with their impact on life skills development. Using quantitative and qualitative data collected from current 4-H participants in Maryland, findings indicate that competitive event experiences foster the essential elements of the developmental context, while also cultivating critical life skills such as communication, decision-making, and confidence. These experiences not only promote individual growth but also prepare youth for future leadership and workforce roles within the agricultural sector. By equipping participants with both technical knowledge and transferable skills, 4-H competitive events strengthen the pipeline of informed, capable, and engaged contributors to the agriculture industry. Implications for 4-H programming and youth development volunteers are discussed, emphasizing the continued need for training and the relevance of these experiential learning models in today's agricultural education landscape.

Keywords: Positive Youth Development, 4-H Youth Development, 4-H Judging, 4-H Skillathons, 4-H Quiz Bowls, Life Skills

Introduction

Youth represent a critical component of the nation's future agricultural workforce, particularly as the average age of farmers continues to rise and the industry faces mounting challenges related to food security and sustainability. Preparing the next generation to step into these roles is essential for the long-term viability of agriculture. The 4-H youth development program plays a pivotal role in this effort by cultivating essential life and leadership skills in young people. Through research-based programming, 4-H empowers youth to become civically engaged, solution-oriented leaders who are well-prepared to contribute to the future of agriculture while addressing complex issues facing rural populations and food systems.

The 4-H Thriving Model

Over the past several decades, there have been many different positive youth development models proposed and utilized by 4-H programs to serve as the foundation for designing and evaluating their programs. In 2018, Dr. Mary Arnold introduced the 4-H Thriving model of positive youth development (PYD) to outline the critical components of high-quality youth development programs and help researchers and practitioners alike to better demonstrate the impact of 4-H programs.

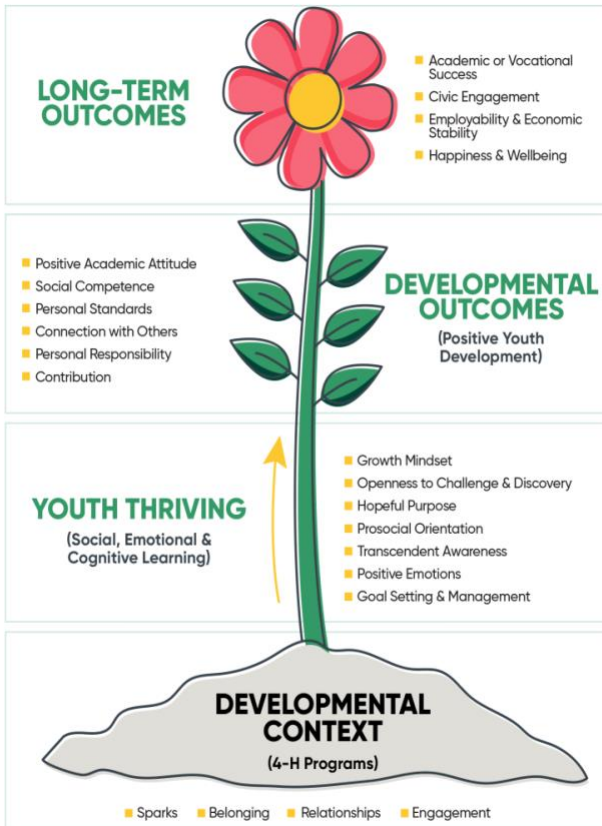


Figure 1. The 4-H Thriving Model (National 4-H Council, 2022; Arnold, 2018).

The 4-H Thriving Model is demonstrated by the flower image above in Figure 1. The model asserts that youth flourish when supported by knowledgeable adults in high-quality developmental settings. The 4-H program provides the “soil” where youth can grow and thrive, built on four key elements: sparks, belonging, developmental relationships, and engagement (Arnold & Gagnon, 2018). Sparks are a young person’s passions, which 4-H helps nurture through diverse programs. For sparks to grow, youth need a strong sense of belonging, created through positive relationships with caring adults—like 4-H volunteers—who guide, support, and challenge them. When youth feel connected and supported, they become more engaged, leading to growth both now and in the future.

Research shows that these kinds of experiences help youth develop important skills such as a growth mindset, positive behavior, and personal responsibility. These gains

support academic success and life skill development, preparing youth to become capable and engaged adults (Lang, 2024; Holstead et al., 2015).

The 4-H Life Skills Wheel

While the 4-H Thriving Model is used to help assess the developmental context of the 4-H Competitive Events, the 4-H Life Skills wheel is used to help evaluate the impact of these programs (Purdue University, 2025). A primary goal of 4-H programs is to help youth master life skills (National 4-H Council, 2024a). Often referred to as “soft skills”, these are abilities that can be used in a variety of personal and professional settings throughout one’s lifetime. Employers consistently rank life skills such as communication, problem-solving, leadership, project management, and teamwork as the most critical indicators of success in employees (Harvard University, 2024; Tushar & Soorasksa, 2023).

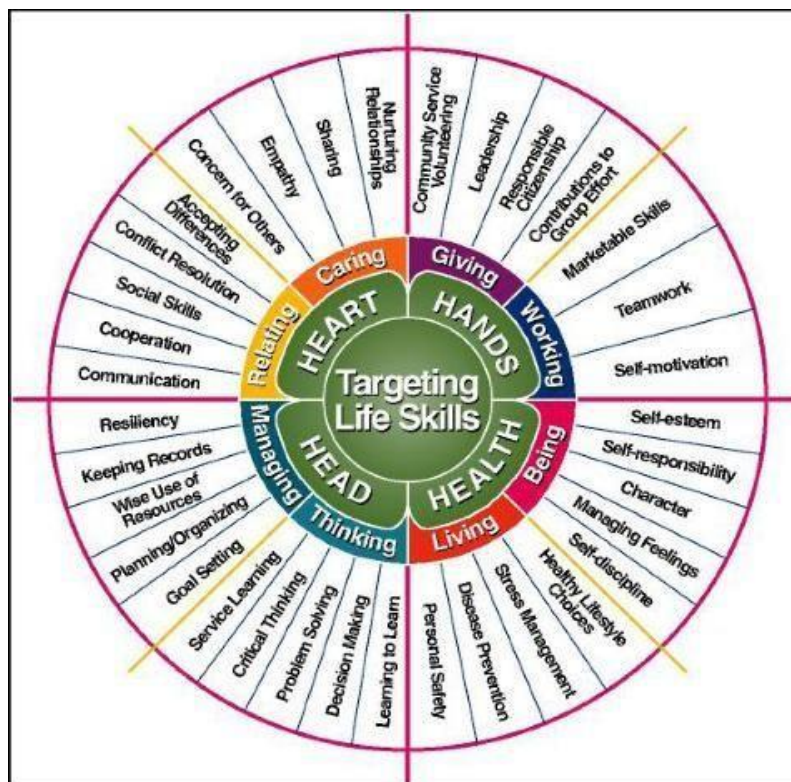


Figure 2. Developing Youth Curriculum Using the Targeting Life Skills Model (Hendricks, 1998)

4-H Competitive Events

While the foundation for all 4-H programs is positive youth development, the 4-H experience for each youth is unique, as there is a wide range of different project areas to explore and many different methods of participating, ranging from after-school programs to community clubs, fairs, camps, competitive teams, and national trips.

4-H competitive events are the focus of this article. 4-H Judging, Skillathons, and Quiz Bowls are long-standing competitive programs that allow youth the opportunity to compete in knowledge-based competitions and become experts in a project area that they are interested in, such as livestock, rabbits, or horticulture.

The **4-H Judging Competitions** ask youth to evaluate a group of animals or plants and rank them, after which they are often asked to orally present their reasons to a judge. Team members' scores are tabulated together, and winning individuals and teams are recognized for their accomplishments.

While the **4-H Skillathon Competitions** also include some level of judging (i.e. evaluating a carcass or class of meats), these competitions tend to be more focused on helping youth to dive deeper into broader knowledge about their project area and they are organized more like an interactive "test" in which 4-H'ers visit stations related to breed identification, nutrition, reproduction, and answer written questions. Scores are tabulated for each individual, and individuals are recognized for their accomplishments, with the top individuals often forming a team to represent their state at nationals, though this varies by state.

Lastly, the **4-H Bowl Competitions** are designed in the form of a "quiz off," in which 4-H members rapidly answer questions with a buzzer that are read by a moderator. Questions are typically broad and can touch on any aspect of the 4-H project area. The 4-H'ers typically study, compete, and advance as a team for these events.

Every year, thousands of youth from across the country participate in these competitions on the county, state, and national levels. Leading up to these competitions, 4-H youth typically meet weekly or biweekly with a group of interested peers and 1-2

adult coaches. This small group format of group practices gives coaches an excellent opportunity to support youth with a high-quality program aimed at developing life skills such as teamwork, problem-solving, self-confidence, communication, and critical thinking (Estevez, 2025).

One unique aspect of these competitions is that the focus is on evaluating the youth's knowledge, rather than the physical appearance or presentation of an animal. 4-H youth do not need to have an animal or physical project to exhibit to participate, making the competition more equitable and accessible since anyone has a chance of winning if they study and apply themselves (Glenn, 2025). Due to their increased levels of accessibility and hands-on learning approach, these competitions consistently rank among the most impactful programs offered by 4-H (Dibbs et al., 2025).

Despite this, statewide participation in these events is often much lower than the total number of youth enrolled in a given project area. For example, only 27% percent of youth enrolled in Tennessee livestock projects, signed up to also participate in livestock judging/skillathon. (Harris, 2015). Assessing the quality of the programs leading up to these events provides an opportunity to ensure youth needs are being met so they can thrive fully in these settings. This study examines the developmental context and life skills gained through 4-H competitive events to better understand their unique impact on youth and to better equip educators, coaches, and parents with insights to enhance program quality and increase participation.

Materials and Methods

To assess the developmental context of the 4-H competitive events as well as the impact of these programs on the development of life skills, a survey was developed and given to youth following their participation in the state 4-H judging competitions.

Researchers chose to evaluate the developmental context to determine whether the foundation necessary for thriving indicators to develop was present in the 4-H competitive event environment. The 14 questions for this portion of the survey were

pulled directly from the “Youth Thriving Instrument” developed by Arnold and Gagnon (2018). The survey instrument for this research study included 4 questions assessing “youth sparks” and 4 questions assessing “youth belonging.” The survey instrument also included 6 questions to assess “developmental relationships,” as a main objective of this study was to focus on the coach/youth relationship in this context in order to guide training programs in the future for volunteers who lead these programs. While the original evaluation tool developed by Arnold and Gagnon (2018) uses a range of 1-7 and was designed for youth ages 10 and above, this study opted to use a Likert scale range of 1-5 to simplify responses and make it easier for participants, especially younger ones below the age of 8- 10, to respond. Recognizing the value of engagement over time, the level of “engagement” was measured by a question that asked the youth to share the number of years that they have participated in a 4-H competitive event.

The second half of the survey instrument was designed to assess the impact of 4-H competitive events on the development and growth of life skills. The 4-H Life Skills Wheel has 35 life skills organized into four categories- head, heart, hands, and health (Hendricks, 1998). There were 2-3 skills pulled from each of the four categories and included in the survey instrument. The determination as to which skills to include was based on reviewing other similar studies that assessed life skill development in animal science-related and/or team events (Harrison, 2015; Boone, et. al, 2015; Anderson, 2014; Nash & Sant, 2005; Rose, 1996). Researchers used this model to develop the survey questions, as many 4-H youth in Maryland were already familiar with the model and the terminology. As indicated in Figure 2, the life skills align with the critical components of 4-H- head, heart, hands, and health, making it easy for youth of almost any age to understand the concept. All of the life skills questions on the survey were designed using a Likert scale where 1 = not much growth, 2 = a little growth, 3 = some growth, 4 = a lot of growth, and 5 = extreme growth.

Lastly, there was an open-ended question at the bottom of the survey that asked youth to reflect on their favorite part of the program.

The survey took the youth approximately 10 minutes to complete and was administered to 4-H youth competing in the poultry and rabbit judging competitions at the Maryland

State Fair (N = 46). The survey was printed and given to the youth as they were waiting for the competition to begin. The evaluation was conducted in accordance with the guidelines of the University of Maryland Institutional Review Board.

Data was analyzed using Excel to determine Mean, Standard Deviation, percentages, and to examine correlations between data points. TerpAI was used to analyze the qualitative data provided from the surveys and pull out themes from participant responses.

Results

Survey results are presented below. Tables 1–4 provide an analysis of the developmental context of 4-H competitive events, Table 5 highlights outcomes related to life skill development, and Table 6 presents a qualitative analysis of the quotes provided by youth.

Table 1. Measuring Participation and Engagement of 4-H Youth in Competitive Events

Competition	Total # of Participants	Number of Juniors (8-10)	Number of Intermediates (11-14)	Number of Seniors (15-18)	Average # of Years in 4-H Competition	Total # of Unique Counties Represented	Gender	
							M	F
Rabbit Judging & Skillathon	19	5	8	6	5.27	4	8	11
Poultry Judging & Skillathon	27	14	7	6	2.75	5	11	16
Total	46	19	15	12	2.93	8	19	27

Engagement is one of the four elements of the developmental context, and it is measured by participation. The average length of participation in 4-H was around 2.93 years, with answers ranging from 0 to 14 years. Of the 46 youth participating, 44 youth completed the surveys, which was a 96% response rate. Participants represented youth

from at least 8 different counties in Maryland, and there was a fairly even distribution of genders (slightly higher participation by females) and ages.

Table 2. Youth Perceptions of Developmental Context Elements in 4-H Competitive Events: Sparks

	Number of Respondents					Percent	Analysis		
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Strongly Agree or Agree	N	M	SD
This program gives me the opportunity to explore something I really care about	2	0	7	18	12	75%	39	3.97	0.98
I am passionate about the things I do in this program	1	0	10	18	15	78.38%	44	4.05	0.89
I want to learn all I can about the topic of this program	1	1	7	15	17	81.82%	41	4.12	0.95
4-H is an important part of who I am	2	0	5	10	27	82.35%	44	4.36	1.01

Youth responses indicate that over 75% agreed or strongly agreed that the competitive judging experience gave them the chance to explore their passions and invest time and energy in deepening their understanding of topics they are highly interested in and care about.

Table 3. Youth Perceptions of Developmental Context Elements in 4-H Competitive Events: Belonging

	Number of Respondents					Percent	Analysis		
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Strongly Agree or Agree	N	M	SD
I feel safe in this 4-H program	2	0	9	10	17	70.97%	38	4.05	1.09
I feel supported by other kids in this 4-H program	2	0	10	12	15	68.75%	39	3.97	1.06
I feel like I matter in this 4-H program	2	1	6	12	18	75.76%	39	4.10	1.09
I feel welcome in this 4-H program	2	0	3	14	19	87.88%	38	4.26	1.00

In general, youth indicated a sense of belonging in the judging programs. An impressive 87% indicated that they felt welcome in the program, and 75.76% felt like they mattered in the program. A smaller number, roughly 70.97% felt safe and supported in these competitive programs.

Table 4. Youth Perceptions of Developmental Context Elements in 4-H Competitive Events: Developmental Relationships

	Number of Respondents					Percent	Analysis		
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Strongly Agree or Agree	N	M	SD
I feel my adult leaders pay attention to me.	2	1	5	13	17	78.79%	38	4.1	1.09
I feel that my adult leaders show an interest in me	2	1	8	14	14	75.76%	39	3.95	1.07
I feel that my adult leaders help me see future possibilities for myself	1	1	12	11	15	69.70%	40	3.95	1.01
I feel that my adult leaders stretch me and push me in new ways	2	1	11	10	15	69.70%	39	3.90	1.12
I feel that my adult leaders treat me fairly	2	0	4	14	19	84.85%	39	4.23	1.01
I feel that my adult leaders respect me.	2	0	7	13	17	81.82%	39	4.10	1.05

Roughly two-thirds of the youth participants indicate strong developmental relationships in the judging programs. Over 75% agree or strongly agree that the adult leaders show an interest and pay attention to them. Youth indicate a strong sense of youth-adult partnership in the programs, with 81.82% feeling respected by their adult leaders and nearly 85% reporting being treated fairly by the adults. A slightly lower number (69.70%), but still a significant reported feeling challenged by adult leaders.

Table 5. Overall Developmental Context Score for 4-H Competitive Events

Developmental Context Factor	Mean	SD
Sparks	4.13	0.96
Belonging	4.10	1.06
Developmental Relationships	4.04	1.06
Overall Scores	4.08	1.02

When taking the average of all developmental context questions, the average score of Sparks was 4.13, the average score of Belonging was 4.10, and the average score of Developmental Relationships was 4.04. In Arnold and Gagnon’s original Thriving evaluation tool (2018), they proposed a scale of 1-7 in which there were five rankings determined, ranging from very low-quality experience (Score of 1.0 to 2.2) and very high-quality experience (6.1-7.0). Given that this tool utilized a scale of 1-5 to accommodate younger audiences, it can be extrapolated that any score above 4 would indicate a “very high-quality experience.” In each of the 3 areas, a mean score of over 4 was reported, indicating that the Maryland 4-H Judging and Skillathons are indeed providing a very high-quality experience to 4-H participants as determined by the 4-H Thrive model.

Since youth engagement is a moderator of the relationship between developmental context and youth thriving, rather than a sub-factor as the above 3 elements, it is not factored into the analysis in the same way. While Arnold and Gagnon (2018) proposed measuring youth engagement as an index, or a composite sum of individual data points, the authors of this tool themselves and others admit that “duration or dosage alone is not the best measure of engagement” as factors such as duration, intensity, and breadth of experience are equally if not more important (August-Henry et al., 2025; Chaput et al., 2004). Due to the nature of these judging and skillathon competitions, the

elusive nature of determining a factor for measuring engagement, and the wide range of counties in which the 4-H youth participated, the researchers did not decide to assess the full engagement score, but instead chose to focus on only years of participation in competitive events.

Table 6. Youth Perception of Life Skills Development in 4-H Competitive Events

	Number of Respondents					Percent Indicating Growth	Analysis		
	Not much growth (1)	A little growth (2)	Some growth (3)	A lot of growth (4)	Extrem e growth (5)		N	Mean	SD
Head									
Decision-making	0	5	9	16	8	87.88%	38	3.71	0.96
Ability to verbally defend a decision	1	3	15	11	9	91.18%	39	3.62	1.01
Organizational skills	1	3	13	7	9	86.21%	33	3.61	1.09
Industry knowledge	2	3	3	13	13	90.00%	34	3.94	1.18
Heart									
Oral communication	0	5	12	8	12	84.85%	37	3.73	1.06
Teamwork	0	3	5	10	20	90.91%	38	4.24	0.97
Hands									
Problem-solving	1	1	12	11	13	96.97%	38	3.89	1.01
Self-motivation	1	1	14	10	11	96.88%	37	3.78	1.00
Health									
Self-discipline	1	6	11	8	11	84.85%	37	3.59	1.17
Self-confidence	0	4	8	14	12	87.88%	38	3.89	0.98

When responding to the question “As a result of participating in this 4-H program, how did you grow in the following life skills?” youth reported high levels of growth, with over

90% of youth indicating growth in 5 out of the 10 skills and over 80% of youth reporting growth in all 10 of the skills. According to the mean scores, teamwork (4.24) was noted as the life skill in which participants felt they grew the most, with industry knowledge (3.94), problem-solving skills (3.89), self-confidence (3.89), self-motivation (3.78), and oral communication skills (3.73) following closely behind.

Table 6. Emergent Themes from Student Responses and Frequency of Mentions (N=29)

Theme	Description	Frequency (n)	Percent
Rabbit & Chicken Specific Knowledge	Specific mentions of rabbits, including learning about, judging, or observing them.	9	31%
Learning and Education Skills in General	References to gaining knowledge, studying, or learning new information.	9	31%
Friendship and Social Connection	Mentions of being with friends, meeting new people, or valuing peer relationships.	8	27.5 %
Teamwork and Group Engagement	Mentions of working as a team, participating in group study, or club-based learning.	5	20%
Supportive and Positive Environment	Comments on kindness, respectful interactions, and community support.	4	16%
Unclear or Miscellaneous	Responses lacking clarity or specific relevance (e.g., "I don't know," "Counties").	2	8%

Note: Several student responses referenced more than one theme. Frequencies reflect the number of times a theme was mentioned, not the number of respondents.

Qualitative data from youth surveys in which youth were asked to comment on their favorite part of the competitive event indicates that for many of the youth, learning new

knowledge and skills was one of the key takeaways, with friendship and teamwork following closely behind.

Discussion

Developmental Context

Overall, the survey results suggest that 4-H competitive judging programs provide a strong developmental context that supports positive youth development and long-term thriving. Youth reported that these programs nurture their sparks by giving them opportunities to explore passions, deepen knowledge, and develop a sense of identity through 4-H. It was interesting to see that the statement about 4-H being “an important part of who I am” showed a mean of 4.36, the highest from all the data, suggesting that for many youth, 4-H has become a part of their identity.

High levels of belonging were also noted, with most participants feeling welcome and valued, though the competitive nature of the events may contribute to some anxiety that slightly tempers feelings of safety and support. Given the competitive nature of the events, the authors wonder if youth might feel a bit of anxiety related to performance that leads to these lower numbers. High expectations of peers and adult leaders in this competitive setting may lead some to feel less safe and supported.

Importantly, developmental relationships with adult leaders were consistently strong, as youth felt respected, treated fairly, and supported in ways that balanced encouragement with challenge. Taken together, these findings highlight that 4-H judging programs foster the essential elements of sparks, belonging, and developmental relationships, which research has shown to be foundational for engagement and, ultimately, youth thriving.

Impact of Maryland 4-H Competitive Events on Life Skills

Youth report an overwhelming rate of growth in life skills through participation in the judging and skillathon experience. Most attribute the program to at least some growth in these skills, which is consistent with other studies that have evaluated the impact of 4-H programs on life skill development (Harris, 2015; Boone et al., 2015; Fox et al., 2003; Rose, 1996). Over 90% of survey respondents report at least some growth in being able to defend a decision, problem-solving, working as a team, and being self-motivated. Over 85% report growth in decision making, oral communication, organizational skills, self-confidence, and industry knowledge related to the judging contest. Growth in self-discipline was reported by 81% of respondents. Overall, it is clear that youth feel the program helps them gain valuable life skills.

Favorite Part of Program

Data from the qualitative question where youth were asked about their favorite part of the program indicates that youth in 4-H competitive events really are there to learn, not just because their parents made them go. These 4-H youth are driven to gain new knowledge and skills, and it appears that their coaches and adult volunteers must be making it fun for them along the way. The fact that friendships and social interactions were also named as a favorite part of this experience only solidifies the data from the developmental context and life skills questions on the survey, which indicated that youth are being supported through strong relationships with caring adults and building teamwork skills with other youth their age.

Quality of Maryland 4-H Competitive Judging & Skillathon Events

Overall, the data points to judging events as providing a high-quality development context where youth can thrive. Most youth report a sense of belonging, where they can explore passions and interests with supportive, caring adults. However, roughly 25% of youth did not have this experience. 4-H adult leaders should consider this data and work to enhance programs with efforts to address these gaps. County and state-based educators can provide training and resources for judging coaches, encouraging them to remember that the purpose of any 4-H program is to support youth development and

that how their 4-H youth perform in contests and competitions is secondary. Strategies such as welcome icebreakers, team-building activities, and specific, actionable, timely feedback can help youth feel welcome, safe, supported, and valued. Providing opportunities for youth to self-direct learning and explore topics of particular interest can support their sparks. Through the intentional incorporation of a few strategies, coaches may help a larger number of youth experience a program that will fully support their growth and development.

Limitations, Future Research

While this study provides encouraging support for 4-H competitive events, several limitations must be noted. The sample size was small and limited to two species-specific contests within one state, and surveys were conducted only at the state contest, where the stressful environment may have influenced responses. Future research should expand to additional species, contests, and counties, and consider surveying youth in practice or home settings rather than at the contest itself, as youth might have felt stressed taking the survey at the contest. Collecting more detailed participation data (e.g., practice attendance, event involvement, club involvement, etc.) could also strengthen analysis of program impacts, as it would further allow researchers to see how the level of participation affects the level of perceived benefits/impact.

In this study, the impact of 4-H competitive event programs was measured using the life skills wheel language. Future studies might consider utilizing the 4-H Thriving Instruments that have been developed to measure the 7 youth thriving indicators (growth mindset, openness to challenge and discovery, hopeful purpose, prosocial orientation, transcendent awareness, positive emotionality, and goal management).

Researchers may also want to consider a survey that targets those choosing not to participate in 4-H competitive events in order to better understand the barriers for

participation so that actions can be taken to help make this program more accessible to more 4-H families.

Finally, including adult coaches and leaders as respondents could provide valuable insights into youth-adult partnerships and effective coaching practices that foster sparks, belonging, and developmental relationships.

Conclusion

Overall, this study underscores the tremendous value of 4-H judging and skillathon programs in delivering high-quality developmental experiences and equipping youth with essential life skills. A recent national study sponsored by National 4-H Council, involving nearly 4,000 youth, found that participation in high-quality positive youth development (PYD) settings—such as those created through competitive event programs—was strongly correlated (PPC coefficient $r = 0.400\text{--}0.700$, $p < 0.001$) with outcomes including leadership, work readiness, college and career preparation, and healthy living (Arnold et al., 2024).

For many, 4-H is more than just another thing that youth do on the occasional weeknight, weekend, and summer break; for many, it is part of their identity and who they are. Likewise, these competitions are more than extracurricular activities—they serve as vital workforce pipelines for the agriculture industry. By engaging youth with more opportunities where they can practice their problem-solving, critical thinking, decision-making, and public speaking skills, 4-H judging and skillathon competitions cultivate foundational competencies aligned with the demands of modern agriculture jobs. Participants in 4-H competitive events gain firsthand experience with technical agricultural content while developing confidence and professionalism, making these events powerful training grounds for the next generation of agriculture producers, agribusiness professionals, educators, and advocates.

To further enhance these outcomes, programs should deepen their alignment with the 4-H Thriving Model. Equipping coaches and adult leaders with strategies to foster youth

sparks, build inclusive environments, and support high-quality mentoring relationships will ensure that all youth experience both support and challenge within these competitive settings. County Extension Educators, along with their volunteer coaches, should also focus on doing everything within their power to make sure that these programs are marketed and presented in a way that more youth and their families will understand and feel the impacts of these types of programs.

Youth who participate in these programs are often on a clear developmental path marked by high engagement, perseverance, a sense of belonging, and the ability to form constructive peer and adult relationships. They demonstrate initiative, set goals, and take deliberate action—traits closely tied to long-term success in both life and career. For agricultural Extension professionals, these findings affirm the critical role of competitive and skills-based competitions in preparing resilient, goal-oriented, and community-focused young people who are ready to lead and innovate within the agriculture industry. Moreover, this research can help Extension professionals better articulate the impact of these programs to stakeholders, enhancing marketing, recruitment, and long-term program sustainability.

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