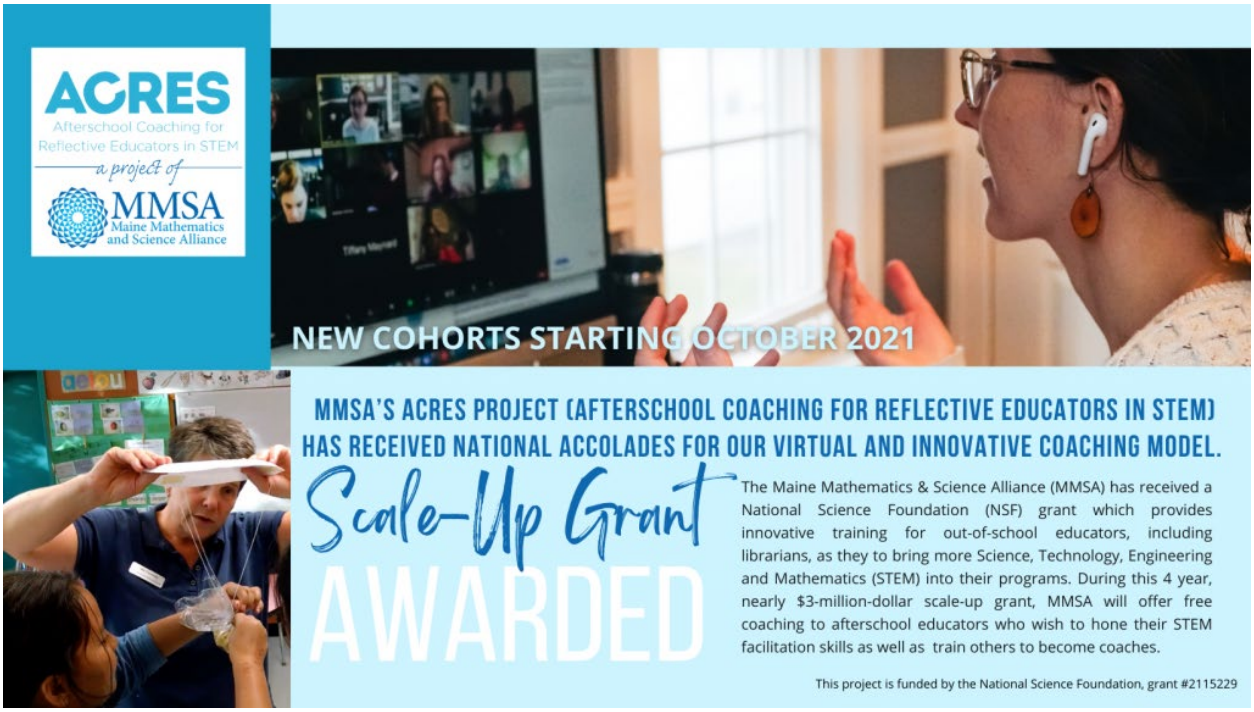
Broad Implementation: Expanding a Successful Model of Fully Virtual Professional Learning for Afterschool Educators

Summative Evaluation Report 2025



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EXECUTIVE SUMMARY

ACRES, National Science Foundation-funded Broad Implementation After-school and Informal Science Learning (AISL) project, aimed at scaling up a highly successful and award-winning model of fully virtual professional learning to engage large numbers of afterschool educators in both urban and rural settings. The initiative was launched in September 2021.

This report details summative external evaluation findings compiled from annual reports submitted in Year 1 – 3, and presents lessons learned for the informal science learning community. Specific evaluation questions that guided the study are detailed in the ACRES' evaluation crosswalk (appended).

Key ACRES Accomplishments:

- ACRES scaled to train ***41 coaches*** and served ***1,878 educators*** since 2021 using ***21 scaling strategies*** aligned to Colburn's (2003) Scaling Dimensions
- As the project scaled, it was ***implemented with high fidelity*** across all project goals as measured by 12 Annual Measurable Objectives.
- Research and evaluation studies documented ***evidence of impact*** on ACRES-trained coaches and afterschool educators, along with evidence of sustainability of the ACRES model using various strategies including adaptations of the model to local contexts.

Lessons for the Informal Science Learning Field:

- **Spread** (Colburn, 2003) – reaching more people through innovation – was attributed to empowering coaches to make adaptations to the model to suit their local context, while emphasizing core principles. Additionally, allowing flexibility in supporting coaches through a variety of real-world circumstances can reposition staff turnover as a vehicle for spread, whereby coaches bring knowledge and practice to new settings and roles.

Evaluation Process

Karyl Askew Consulting, LLC, a Black women-owned program evaluation enterprise, is conducting a multiyear evaluation study to (1) support iterative cycles of improvement through formative evaluation, (2) promote accountability through summative evaluation, and (3) advance knowledge building through research-evaluation data sharing.

Formative Evaluation: The aim of the formative evaluation process was to determine how well the project was scaled along Coburn's (2003) dimensions, and to what extent the project met its annual measurable objects.

Summative Evaluation: The aim of the summative evaluation was to determine the short-term impacts of the ACRES model on Hubs and Hub partners.

The evaluation leveraged ***four strategies:*** (1) collaborative evaluation planning and management, (2) formative evaluation and performance monitoring based on secondary analysis of data collected and reported by the research team, and (3) interviews as part of a longitudinal case study of coaches in State Hub and city cohorts.

- **Shift and sustainability** (Colburn, 2023) – supporting coaches to assume responsibility towards longevity – was advanced by centering and explicitly framing ACRES as a transition from "ACRES as leader" to "Coach as leader." This shift is more readily achieved when ACRES-trained coaches have higher levels of positional influence within their organization.
    - Embedding the intervention within existing on-boarding and on-the-job training structures/materials, and allowing for adaptations, supported scaling and increased the potential for sustainability after formal grant-funding and potential organizational turnover.
- **Depth** (Colburn, 2003) – seeking deeper understanding of principles underlying the innovation – was supported by capacity building. We learned from coaches that culturally responsive approaches and human centered design were complimentary rather than interchangeable in the afterschool context, despite hurdles to securing buy-in for cultural responsiveness.
    - Informal educators require supportive networks that foster community, sustain skill development, offer resources for on-going professional learning, and advocate for the supports needed to remain responsive to the evolving afterschool landscape and diversity of learners.

1. ACRES Project Scaled along Coburn's (2003) Dimensions

Coburn's (2003) scaling framework, consisting of four interrelated dimensions - *Depth, Sustainability, Spread, and Shift* – guided implementation, research, and evaluation of ACRES.

Project Goal: Advance Research on Adaptation, Scale-up, and Innovative Assessments

Key Findings: At least one new scaling strategy in each dimension was added or refined each project year, reflecting coaches at various stages of development, a deeper understanding of community needs, and a continued focus on sustainability.

- In Y1, 9 scaling strategies were implemented.
- In Y2, 12 scaling strategies emphasized supporting coaches who were new to coaching or facilitation of professional learning.
- In Y3, 16 scaling strategies focused on sustaining coaches amid staff and organizational changes.
- In Y4, 5 new strategies (*) were added to support shift and sustainability. Overall, **21 scaling strategies** were implemented that spanned all four dimensions.

Figure 1 presents ACRES scaling strategies along with the year each strategy first appeared.

Sustainability: Longevity of the innovation over time, including beyond the grant period

- Considered who is trained; when possible, train those in positions of low turnover alongside frontline educators to avoid persisting inequities of underinvestment. (Y1)
- Involved Hub Leaders, Coaches, as well as their supervisors (if applicable), to generate buy-in toward longevity over time. (Y1)
- Used potential for local sustainability as one of the criteria for choosing applicants, for more buy-in and developing plans for sustainability early on. (Y1)
- Invested in relationship-building with leaders and coaches to mitigate threats of staff turnover and attrition with State Hubs. (Y2)
- Considered differential supports for coaches depending on characteristics of their organization (Y3)
- Focused sessions on sustainability beyond the funding period* (Y4)

Depth: Understanding deeper principles underlying the innovation

- Focused on the underlying pedagogical principles to support deep change. (Y1)
- Focused on building awareness, language, and capacity for human-centered responsiveness among coaches (Y3)
- To ensure fidelity of implementation during scale-up, supported Coaches to identify and hold to the essential elements, while allowing other elements to be customized (Y1)
- Published Guidebook and reflective journal for Coaches* (Y4)

Spread: Reaching more people, often through making the innovation easier to implement

- Leveraged existing staff and PD structures who understand local context in Hubs instead of relying on external coaches. (Y1)
- Built the technical capacity of coaches to utilize virtual platforms to reach underserved educators across geographies. (Y2)
- Allowed coaches autonomy in choosing virtual, in-person, or hybrid modes of delivery. (Y3)
- Published ACRES resources on open-access forever website* (Y4)

Shift: Supporting leaders to assume responsibility for providing the professional learning

- Invested in the training of small groups of coaches in Hubs – collegial senior staff –to increase buy-in and ownership. (Y1)
- Co-teaching and check-ins used to scaffold the implementation coaching process to build confidence. (Y2)
- Empowered new coaches to integrate what is valuable in the ACRES approach for their own organizational context (Y1) and modify the materials using a human-centered responsiveness. (Y2)
- Encouraged Hubs to co-brand ACRES materials to support utility, flexibility, and equity of program implementation. (Y1)
- Invested resources in bringing coaches together to facilitate networking and encourage peer-to-peer connections sustained through trust and familiarity. (Y3)
- Encouraged ACRES coaches to use their own registration systems to track participants to promote sustainability* (Y4)
- Facilitated "collaboration meet-ups" for coaches to serve as resources for one another in their continued practice* (Y4)

Figure 1 ACRES Practices for each of Colburn's (2003) scaling dimensions. Data sources include ACRES Evaluation meeting notes.

Figure 2 depicts the **ACRES Scale-Up Process** as understood by the external evaluation team and confirmed by the project team. Key lessons learned during the grant are captured in **orange**, reflecting a deeper understanding of strategies needed to sustain trained coaches, broaden educator reach, and adapt and sustain the ACRES model.

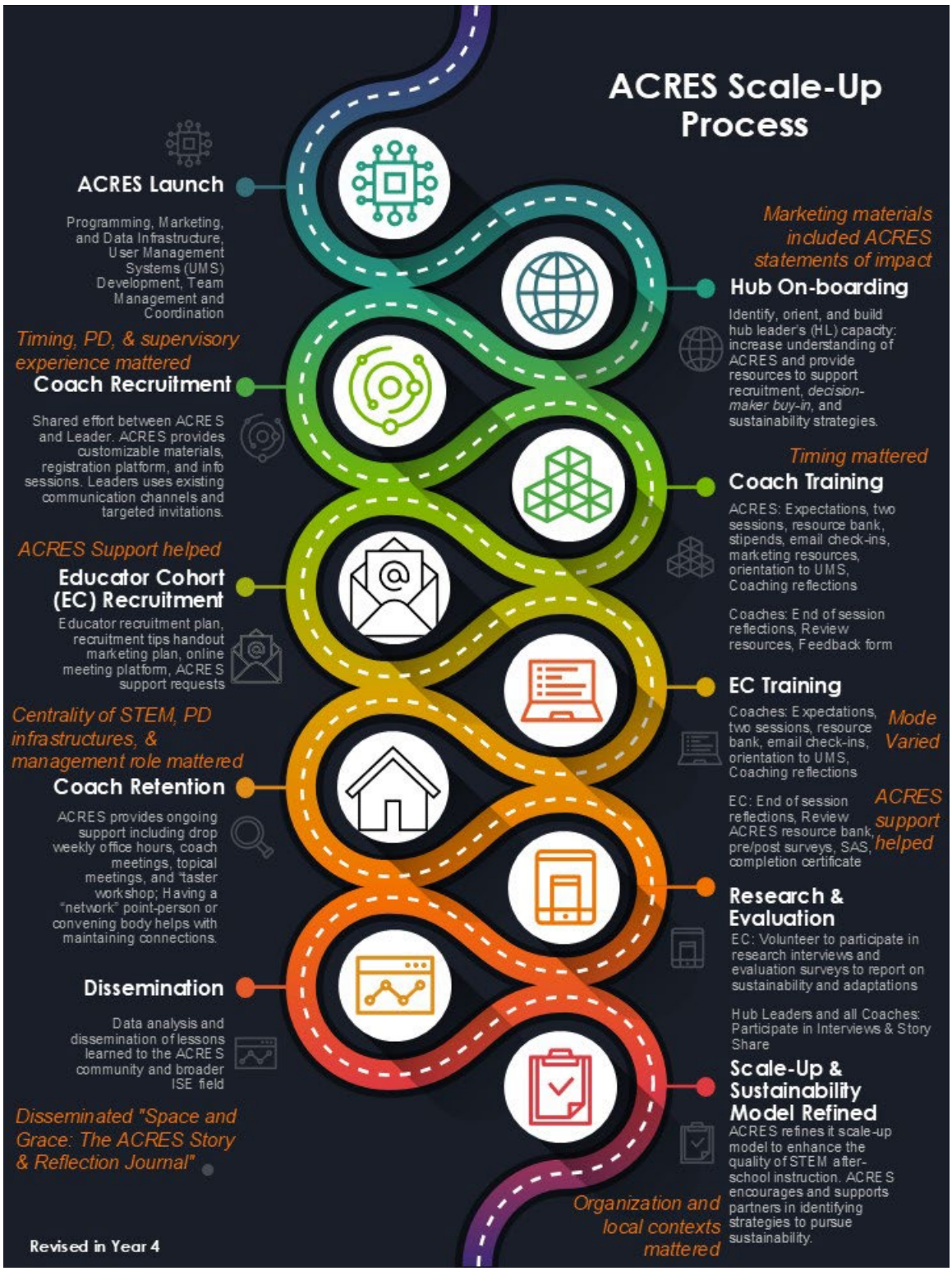

Figure 2 ACRES scaling process from launch to sustainability.

2. Overall Impacts of the ACRES Model

ACRES held a vision to expand its model of fully virtual professional learning for afterschool educators in rural and urban settings, addressing an acute need for high-quality, immediately applicable, highly transferable, low-cost instructional strategies to increase positive impacts of interactive youth programming. This section overviews the findings of two goals for the initiative.

Project Goal: Deliver relevant, dynamic, and impactful Virtual Coaching for Educators

Key Findings:

- ***ACRES'* relevance was grounded in STEM-focused programming and had broad applicability** described by case study respondents as ideal for educators with less experience in teaching and in STEM, and because of the broad applicability of *Purposeful Questions* (the foundational module) to content areas beyond STEM.

> What I've realized is that **we now use purposeful questions across the board**, not just in STEM, but we're using it in art. We're using it in our conversation. Because… now our students are asking, well, what's the real question? … What's the center of all of this? What's the point?
>
> *Case Study Interview, 2025 (City Cohort Coach)*

- **ACRES' dynamism and impact** were evidenced by the following:
  - On-demand online resources (e.g., coaches corner, online modules),
  - Synchronous resources (like online office hours, ACRES support to co-coach in real-time, Story Share convenings),
  - Explicit emphasis on coaches to make adaptations to meet the identified needs and circumstances,
  - Ability and willingness to support coaches along their journey in the context of organizational changes and employment changes,
  - Establishing itself as a learning community committed to growing and changing in partnership with its national coaching community, and
  - Flexibility in the mode of training (virtual and/or in-person), which is based on factors such as being in a rural or urban setting and training educators within/outside of their organization.

> [ACRES is] flexible for sure…every employee is a little bit different. So, they can take these lessons or these training, you know, that we teach them and they can kind of use it. However, they, it applies to them…So **I would say it's adaptable, flexible, you know, it works with everyone**. ACRES works across all different kinds of programs.
>
> *Case Study Interview, 2024 (State Hub Coach)*

> "I think time is money. And I don't even mean like, legit money all the time, just in figurative speech. And so, there's some professional development and cohorts that you can go through that you basically get to the end, and you just wish you had never wasted your time doing it. And so, I feel like this is one of those ones that whether you're paid or not paid for it, I think it is worth its time…you can grow within the actual couple weeks of your cohort."
>
> *– Case Study Interview, 2022, State Hub Coach*

Project Goal: Build the capacity of Hub Leaders and Hub Coaches to advance long-term sustainability

Key Findings

- **ACRES scaling of its coaching model was implemented with high fidelity** as measured by 12 Annual Measurable Objectives (AMOs, See Table 1 and Appendix C) across all project goals that tracked evidence of coach training and support, Hub network leader sustained engagement, Hub sustainability planning, and continued improvement of the user management system based on formative feedback. Particularly, evidence suggested that the project excelled at:

    - [Goal 1] Serving educators across the country and increasing afterschool educators' professionalism;

    - [Goal 2] Building the training capacity of a national set of coaches across two models: (a) State Hubs model and (b) a City Cohort model, sustaining the engagement of afterschool network leadership, and supporting the sustained implementation of the model (in part or whole) beyond grant funding; and

    - [Goal 3] Disseminating lessons learned (both successes and challenges) derived from its research and evaluation on scaling a virtual professional learning model.

Table 1 summarizes performance trends on 12 AMOs across the four-year project. The AMOs were time-bound with differing start and end dates depending on the project's planned implementation schedule. AMOs were sometimes discontinued due to consistent performance or shifts in research or implementation priorities.

Table 1. Performance on Annual Measurable Objectives: Trend Across Years 1 - 4

Annual Measurable Objective	Performance Outcomes Y1	Y2	Y3	Y4
Goal 1: Deliver relevant, dynamic, and impactful Virtual Coaching for Educators				
1.1 By Y3, ACRES will serve approx. 1,560 educators.			Exceeded	
1.2. Significant increases in facilitation skills and Self-confidence.		Met	Met	
1.3 At least 10 ACRES educators will apply for the NAA STEM micro-credential.			Exceeded	Exceeded
1.4 At least 75% of ACRES NAA STEM micro-credential applicants are successful			Exceeded	Exceeded
1.5. 90% of educators can articulate examples of their use of target skills.		Exceeded	Exceeded	
Goal 2: Build the capacity of Hub Leaders and Hub Coaches to advance long-term sustainability				
2.1 By Y3, the project will train and support at least 39 Coaches.			Exceeded	
2.2 80% of Hub leaders remain active, annually.		Exceeded	Exceeded	Exceeded
2.3 Each State Hub will create or revise sustainability plans.		Met	Met	Met
2.4 Launch a user management system (UMS) and revised based on user feedback.		Met	Met	Met
2.5 80% of Hubs will report ongoing use of ACRES beyond grant funding.				Exceeded
Goal 3: Advance Research on Adaptation, Scaling, and Innovative Assessments				
3.1 Present at least one national conference and produce at least one research publication		Exceeded	Exceeded	Exceeded
3.2 ACRES will produce legacy materials that incorporate culturally responsive adaptations.				Met

Legend: Exceeded | Met | Not Met | Not Applicable for the Year

Note: See Appendix C for Year 4 data. See Years 1 – 3 Annual Reports, which are available upon request, for Years 1-3 data.

- **Implementation and Sustainability of ACRES coaching was shaped by the structural support available to coaches and the centrality of STEM to the organization's mission and programming.**
    - Coaches with professional-development responsibilities or those that had established afterschool statewide or regional networks were better positioned to initiate and sustain ACRES coaching; while coaches without such supports relied on creative strategies such as integrating ACRES into their existing practices, spreading ACRES by modeling the practice for colleagues and students, and seeking teacher training incentives.
        - State Hubs provided clear illustrations of this finding at the time of reporting.
            - The Illinois Afterschool Network is leading monthly virtual ACRES training sessions with a commitment to making sure afterschool educators have consistent access to the ACRES resources. The ACRES website is included in their conference materials this year and going forward.
            - In New York, an ACRES Hub Coordinator leads all professional development for the New York Network for Youth Success, and a STEM lead was hired. The STEM lead used ACRES' philosophy and resources to train educators across the state.
            - The Missouri afterschool network embedded ACRES resources into its mobile STEM lab.

    - Capacity to sustain ACRES was found to be a function of the degree to which STEM was central to the organization's mission and programming, in comparison to coaches who were focused on infusing STEM into afterschool programs that are not STEM-focused.

Data Source: Case Study interviews conducted in program years 2 – 4 and ACRES program artifacts.

3. Overall Lessons Learned

In Y4, the final project year, three lines of inquiry aligned with Colburn's (2003) Dimensions of Scale, were examined through interviews with ACRES coaches nominated by the ACRES project team for their contexts or the types of adaptations made. This section synthesizes the overall lessons learned emerging from the Y4 case study interviews.

On Depth – Understanding deeper principles underlying the innovation

The ACRES project team, comprised of implementation and research team members, was intentional in its focus on the underlying pedagogical principles that support meaningful change in mindset. In Y3, ACRES intentionally shifted from a culturally responsive framework to human-centered design principles. Using human-centered design principles, the ACRES project team encouraged coaches to adhere to the essential elements of ACRES, while adapting the model to meet the needs of their unique local context and center their learners.

- Essential elements of ACRES were identified as keeping the focus on purposeful questions, seeking evidence, and creating supportive and brave spaces for learning.
- Adaptions were classified as logistical, accessibility-related, community-responsive, and structural.

To understand how coaches conceptualize and differentiate cultural responsiveness to human-centered design in meeting the needs of diverse audiences, interviews were conducted with 10 coaches. The coaches were nominated by the ACRES project team because of their context or the types of adaptations they were making.

When asked, coaches defined diversity broadly, encompassing differences in identity, levels of (dis)advantage, disciplinary training, geographic location, and roles held. When considering ways to meet the needs of their diverse audiences, respondents provided top-of-mind reflections on cultural responsiveness and human-centered design. Figures 3 and 4 present themes that emerged from a content analysis of respondents' reflections on both terms.

- Several respondents noted that "culturally responsive" was a familiar term, while "human-centered design" felt new or unclear.
- Six of 10 respondents perceived a difference in the two terms.

> "I think human centered design seems much more like a laboratory and much more like engineering technology, [a] modification type of context. And when you say culturally responsive, I feel like you might have people immediately read that [and say] … 'Oh, gosh, you got the word culture in there. I don't want to do this!' So, I feel like, because of the climate, although **I think that they're both important in different ways**."
> *– (Preference for Human Centered Design), Case Study Interview, March 2025, City Cohort Coach*

- **When asked to consider whether one term was more appropriate given their context:**
    - Responses were roughly evenly distributed across either term or seeing both concepts as complementary and helpful.
    - Coaches who reasoned that human centered design was more appropriate either saw the terms as interchangeable or experienced apprehension around use of the term cultural responsiveness, because it "felt difficult" or they anticipated educator resistance (especially in the 2025 political climate).

Human Centered Design as universality vs individuality

…Human Centered Design… is **the most broad stroke term you can use for all of us,** correct? So that just basically means that we are covering all people…But in the same time when I said, like, human centered design, it almost occurred to me that that takes into account nothing that the person has going on for them, right? Because if we're all humans, that also doesn't say that we're really thinking about, what you've got going on, or what I've got going on, or who I am, or who anybody else is…That almost just makes it seem like we all…fit into the same, same grouping"

-Coach Case Study Interview, March 2025

Human Centered Design as a holistic, whole person approach

"…as soon as you say design, I think of engineering, like you're engineering a space because that's where my mind goes to, like you're engineering a space with this person in the middle, **It's the holistic, like whole person that you have to engineer for**, not just one portion of them."

-Coach Case Study Interview, March 2025

Human Centered Design as learner-centered instruction

"it's **keeping the learner very much in mind** over the material."

-Coach Case Study Interview, March 2025

Human Center Design as attending to instruction design

"Human centered design, to me, is **putting the staff members and the hands-on [instruction] before the lecture, focusing on the style of instruction.** Human centered would also be making sure that you're taking into account those SEL prompts, so like the fact that our educators come tired and they may have an experience from the day that could be affecting their learning in the afternoon."

-Coach Case Study Interview, March 2025

Figure 3 Case study interview findings based on content analysis of respondents' reflections on Human Centered Design

Cultural responsiveness as attending to actions educators take

"...you're meeting people where they're at, you're being flexible. You're adapting programs to meet the needs...you're communicating in a way that's clear. You're making sure you're being accommodating if people don't have computers or if life is happening in general, because everybody's got life that affects what you schedule. You know, give people grace to be there or not, you know, things like that...some people didn't have the capacity, you know, with ACRES to take videos...You might not have a smartphone, I mean, all those things. So that's, that's kind of what comes to mind."

-Coach Case Study Interview, March 2025

Cultural responsiveness as attending to place

"...for example, doing the water filter...So we try and say, okay, well, what if we were trying to use water from [our local river]? Just **making those cultural references to make the training feel more accessible."**

-Coach Case Study Interview, March 2025

Cultural responsiveness as attending to ethnicity

... we don't judge what you know...We respect and we learn from it, and it's part of different backgrounds...I love every time I go in a meeting, and I say, look it up, where your location is...What tribe were there?... **Be respectful and open to what others are living and feeling and...what is their culture.** We are responsible to understand them and yeah, to not judge...to be able to share their difference."

-Coach Case Study Interview, March 2025

Cultural responsiveness as attending to coach as listener/learner

"...you're meeting people where they're at and then figuring out...I also think it's **being aware that you're not always in the know or the expert, that you have to do more listening to start**...So that's where I always think, like you're not the one initially talking. It's like you're listening and then responding. So that's what I think of when I hear cultural responsiveness."

-Coach Case Study Interview, March 2025

Figure 4 Case Study Interview Findings based on thematic analysis of respondents reflections on Cultural Responsiveness.

Based on coaches' articulated understandings and rationale for implementation, **careful consideration of the explicit or implicit use of a singular approach is warranted,** particularly with respect to addressing opportunity gaps for specific groups of educators, and by extension diverse youth participants, which can go unaddressed by a universalist approach.

On Spread - Reaching more people, often through making the innovation easier to implement

ACRES, The Afterschool Coaching for Reflective Educators in STEM, is passionate and explicit about its focus on *STEM*. While all seek to advance STEM in their work, the STEM centrality by organization varies; that is, STEM varies in terms of how central it is to the organization's mission. **Particularly for organizations with lower levels of STEM centrality, coaches speak to the value and transferability of the core principles of purposeful questions** across subject areas to empower students to take charge of their learning.

We find evidence that spread can be attributed to:

- Empowering coaches to make adaptations to suit their context and audience (e.g., integration into existing training structures by modifying the number/length of sessions, using a hybrid approach, recommending but not requiring video submission in place of ACRES ready-to-use videos)
- Refining existing resources or creating new ones in response to feedback (e.g., ACRES Coaches Corner).

Innovation was made easier through **cross-disciplinary transfer of purposeful questions.** A recurring theme in case study interviews was the broader transferability of purposeful questions from STEM to other areas of instruction, thereby making it easier for coaches and those they train to spread ACRES through their networks and programming.

> "In general, **I think it can be applied to any sort of youth interaction where you're trying to be more facilitative** and getting them to come up with the answer of the problem. So, it doesn't have to be STEM activities. I find myself using it sometimes in conflict resolution-type activities between the youth as well…
>
> *ACRES Research Follow-Up Interviewee*

> …**I have changed my approach to teaching.** I am working harder on, you know, not telling the kids what to do, but making them think about how they need to go about doing me, you know, leading them with questions…Wow. [ACRES is] amazing. I love it. I absolutely love it**.**
>
> *Case Study Interview, 2022, State Hub Coach*

Lastly, **afterschool staff turnover could be reconsidered as a vehicle for spread**, especially given ACRES virtual model that allowed coaches to connect from anywhere. In fact, when trained frontline educators leave, they take and spread their knowledge and experiences. For example, a Hub coach trained in Illinois relocated to Texas and began leading ACRES cohorts in Texas. Sustaining the work within organizations, requires a both-and approach: training leaders *and* educators, and institutionalizing ACRES as part of the organization's standard training package.

On Shift toward Sustainability - Supporting leaders to assume responsibility towards the longevity of the innovation over time

ACRES supported coaches to sustain the ACRES model by empowering them to assume ownership of and lead the work from their own spheres of influence.

Real-world factors that influenced the degree of shift and sustainability include:

- Organizational or job changes that impacted their ability to find time, resources, or support to coach;
- Centrality of STEM to the organizations' mission that had an influence on how ACRES training was prioritized or integrated;
- Presence of a regional or national afterschool network that could be tapped for recruitment, resource sharing, and support for offering ACRES training; and
- Positional influence within organizations or networks that allowed busy afterschool professionals to integrate ACRES efforts into their existing job responsibilities.

ACRES supported Shift by centering and communicating their goal of "ACRES as leader" to "Coach as leader." This messaging was carried forward:

- Formally in gatherings such as Story share agenda setting focused on coach leadership;
- Through encouragement for coaches to adapt the model and resources to fit their instructional style (e.g., coaches used materials to create PowerPoints, culture (e.g., using place-based STEM examples); and
- Being responsive to context (e.g., adjusting scheduling or combining sessions to meet educators' needs; offering in-person and virtual options).

Lessons from the Field on Sustainability
Sustaining ACRES with Positional Influence

> *"…**each of our [members] is required to complete the purposeful questions training, and I lead that training for our [members]…** I got connected through Million Girls Moonshot, [which provides] a significant amount of match funding to our [program]…And that is why [members] have this STEM focus…I [began] ACRES through the Million Girls Moonshot booster pack that was offered and that's how I became an ACRES coach. **And we apply in order for me to be able to provide that purposeful questions training to all of our [members] who are part of this program."*** -Coach L is Y2

ACRES Coach L, a program specialist in a national STEM-centered volunteer organization, directed regional volunteer onboarding and orientation. ACRES' Purposeful Questions became a standard part of the orientation process that was offered virtually and in-person, depending on the location of the participants. Coach L created supplemental training materials to match participants' communication style, and videos from educators were collected and highly valued, especially for volunteers with limited experience teaching in STEM programs. Coach L took advantage of ACRES sponsored office hours and expressed interest in office hours continuing beyond the grant period, as well as continuing to complete additional ACRES Modules to share within the organization.

– Case Study Participant (Y2 – 3), City Cohort

ACRES supported Sustainability through dissemination of online and print resources to meet a variety of audiences and worked to seed connections and community for educators with shared interests, challenges, or locale. **The amount of time and intention devoted by the ACRES team to accomplish this effort was significant with most of the final year being devoted to these efforts.** Examples of these efforts include:

- ACRES Coaches Corner free online ACRES resources,
- The ACRES Story & Reflection Journal,
- Collaboration Meet-Ups,
- Curated connections established by the project director with groups of ACRES coaches, and
- Supporting leaders and educators with sustainability planning and institutionalizing ACRES in existing organizational training systems

Lessons from the Field on Sustainability

Threat to sustaining ACRES with Limited Positional Influence

> *I wished [my director] had an introduction to ACRES. 'This is what Coach M would be doing, and this is what [they] are going to bring back [to the organization].' I couldn't tell her that at first, because I didn't know**. I think if she had gotten some validation from someone other than me,** this is what [your coach] is going to bring back. This is this is where it's going to fit into your program. **In my case, that would have been helpful**." - Coach M in Y2*

ACRES Coach M is a retired K-12 STEM teacher who served as a part-time afterschool educator. The Director of the afterschool program wanted Coach M to implement STEM skills – specifically math skills – that were not only fun activities but also taught the students essential math concepts. Unfortunately, Coach M could not train educators at the afterschool program because of scheduling conflicts. Educators were excited to attend the training, but Coach M could not start without the director's approval. Coach M also asked if she could use a virtual option, but the director wanted the training to be in person. Coach M wondered if the director understood the concept of Purposeful Questions or ACRES. Ultimately, Coach M planned on training educators at a summer STEM camp at which she volunteered. In Y3, Coach M had not formally trained educators, but still shared ACRES resources and strategies

– Case Study Participant (Y2 – 3), City Cohort

Conclusion

The ACRES project, funded by the National Science Foundation under the After-school and Informal Science Learning (AISL) program, has successfully completed its grant cycle, demonstrating significant progress in scaling a fully virtual professional learning model for afterschool educators across diverse settings. The summative evaluation findings confirm that ACRES not only met its project goals but also contributed valuable insights to the informal science learning field.

Through intentional design and strategic implementation, ACRES scaled its model using 21 distinct strategies aligned to Colburn's (2023) scaling framework, exceeding its goal of 39 coaches. The project team maintained high fidelity to its core components while adapting themselves, and welcoming adaptations from their network of coaches, as they worked to address the unique contexts of educators in State Hubs and City Cohorts. Importantly, the evaluation documented measurable impacts on Hubs and partners, as well as strategies that have the potential to enhance sustainability beyond the life of the grant. While sustainability efforts began in Y2, much of Y4 was devoted to capacity building to sustain the efforts of coaches and their networks nationwide.

Key lessons from ACRES underscore the transformative potential of virtual learning environments when participants are explicitly invited to adapt solutions to local contexts and when iterative improvements, guided by participant feedback, are enacted and clearly communicated. While challenges remain— particularly around staffing instability, public perceptions of afterschool as more than daycare, and beliefs about culturally responsive practices— the project demonstrates that virtual coaching models can contribute to elevating educators' confidence in STEM and professionalism of informal science educators at scale. Additionally, findings emphasize the importance of supportive networks, advocacy for improved working conditions, and embedding professional learning within existing organizational structures to ensure long-term viability.

Finally, the ACRES model responded to the evolving needs of informal science educators by recognizing that professional growth extends beyond online training and curriculum resources. ACRES worked to seed sustaining connections to learning communities to support educators as they worked to remain responsive to a demanding and ever-changing afterschool landscape. ACRES' accomplishments and lessons offer a roadmap for scaling virtual professional learning models and building the capacity of the informal science education workforce nationwide. Much of that learning has now been archived and disseminated via their forever website and published articles (in practice and research venues) for the benefit of practitioners and researchers within and beyond the afterschool domain.

APPENDIX A

MMSA ACRES Evaluation Crosswalk

	Evaluation Metrics						
Guiding Evaluation Questions	P	S	FG	SS	A	I	M
1. What factors promoted/constrained the adoption of ACRES?	X	X	X	X	X	X	X
1.1. In what ways, do Hubs integrate ACRES into existing coaching and professional development structures?	X		X	X	X	X	X
1.2. What if any additional resources did programs require beyond what ACRES supplied?	X	X	X	X	X	X	X
2. How and in what ways, do partners adapt the ACRES PL model to be culturally responsive to their communities?	X	X	X	X	X	X	X
2.1. Why, and in what ways were essential ACRES components adapted by Hub coach and/or educator cohorts in ways that support shift and sustainability beyond the initial grant funding?	X	X	X	X	X	X	X
2.2. [Y2 and beyond] What similarities and differences exist between rural- and city-based partners?	X	X	X	X	X	X	X
3. What aspects of ACRES do Hub leaders, coaches, and educators identify as salient in their professional growth immediately to 6 months after coaching?		X	X	X	X	X	X
3.1. How, if at all, do perceptions of salience and impact differ by role, region, program, and community characteristics?		X	X	X	X	X	
4. Overall, what lessons are learned from the project implementation that will assist in future content development and dissemination?	X		X	X	X	X	X
4.1 In what ways does MMSA succeed in building sustainable collaborations with Hubs to scale and iterate on ACRES?	X		X	X	X	X	X

The evaluation will leverage a range of data types. These data types include the following, as well as data sources specified in the measurement of performance measures (see appendix, Figure 3):

- P = Plans for sustainability and adaptability made by Hub leaders and coaches
- S = (existing) Coach registration forms, module rose-bud-thorn, Coach reflection form, module coach formative feedback form, asynchronous post-module reflection form [All sites]
- FG = Focus Groups as needed with Frontline Educators (case study; see Table 2, S4)
- SS = Recordings of Story Share Gatherings [All sites]
- A = Program Implementation Artifacts including Hub document reviews and performance monitoring data (case study; see Table 2, S4)
- I = Interviews with Hub leaders and coaches (case study; see Table 2, S4)
- M = MMSA Meeting Minutes & Artifacts (including MMSA Flipgrid reflections)

APPENDIX B

Afterschool Coaching for Reflective Educators in STEM (ACRES) Logic Model

Vision: Expand the ACRES model of fully virtual professional learning for Afterschool Educators in rural and urban settings, addressing an acute need for high-quality, immediately applicable, highly-transferable and low-cost instructional strategies to increase positive impacts of hands-on youth programming.

Inputs	Core Strategies	Outputs	Short-Term Outcomes (By End of Module)	Intermediate Outcomes (Six-Months Post-Module)	Overall Impact
ACRES Personnel & Curriculum, MMSA Master-Coaches, User Management System, Research, & Evaluation **Program Partners** • Youth Development Organization • IL Afterschool Network • NAA • Thrive Paradigm • NYS Network • MO Afterschool Network • Every Hour Counts • Million Girl Moonshot	***Goal 1: Deliver relevant, dynamic, and impactful Virtual Coaching for Educators***				
	Synchronous Virtual Coaching as a humanizing context for reflection & feedback	• # of peer-based cohorts proposed and completed • # of educators recruited, registered, started, and completed cohorts • Use of the UMS • Refinement of the UMS • (MMSA-Coached) Educator field videos archived • 90% of educators provide formative feedback	• Positive perceptions of cohort climate • Positive perceptions of ACRES materials & resources • Expressed understanding of target skills • Increased confidence to give, receive, and incorporate feedback • Ability to create an artifact (video or lesson plans)	• Educators report continued use of skills into practice. • Express professional learning (PL) as valuable use of time • [Spread] Recommend colleagues to ACRES and additional PL experiences • # STEM micro-credentials submitted • 75% of STEM micro-credentials applicants are successful	Increased STEM facilitation confidence

Afterschool Coaching for Reflective Educators in STEM (ACRES) Logic Model

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Inputs	Core Strategies	Outputs	Short-Term Outcomes (By End of Module)	Intermediate Outcomes (Six-Months Post-Module)	Overall Impact
Goal 2: Build capacity of Hub Leaders & Coaches to advance sustainability and impact					
ACRES Personnel & Curriculum, MMSA Master-Coaches, User Management System, Research, & Evaluation **Program Partners** • Youth Development Organization • IL Afterschool Network • NAA • Thrive Paradigm • NYS Network • MO Afterschool Network • Every Hour Counts • Million Girl Moonshot	**Implement the ACRES coach-the-coach (train-the-trainer) model and sustained engagement via CoPs**	• # of knowledge and supportive Hub/network leaders • # of coaches recruited, registered, started, completed training • # of leaders and coaches reporting plans for sustainability • # of coaches attending office hours for ongoing support	• Increase coaching confidence • Increase confidence with coaching technology • Coaches self-identify additional learning goals • Coaches identify needs for culturally responsive and human-centered adaptations • Positive perceptions of coaching climate • Positive perceptions of ACRES materials & resources	• Integrate culturally responsive and human-centered adaptations by leveraging MMSA supports and expertise • Commitment to ACRES coaching • Sustained participation in ACRES beyond formal module training (e.g., storyshares and office hours)	Sustain and evolve ACRES model

Afterschool Coaching for Reflective Educators in STEM (ACRES) Logic Model

Vision: Expand the ACRES model of fully virtual professional learning for Afterschool Educators in rural and urban settings, addressing an acute need for high-quality, immediately applicable, highly-transferable and low-cost instructional strategies to increase positive impacts of hands-on youth programming.

Inputs	Core Strategies	Outputs	Short-Term Outcomes (By End of Module)	Intermediate Outcomes (Six-Months Post-Module)	Overall Impact
Goal 3: Advance Research on Adaptation, Scale-up, and Innovative Assessments					
ACRES Personnel & Curriculum, MMSA Master-Coaches, User Management System, Research, & Evaluation **Program Partners** • Youth Development Organization • IL Afterschool Network • NAA • Thrive Paradigm • NYS Network • MO Afterschool Network • Every Hour Counts • Million Girl Moonshot	**Comparative case studies of mechanisms of integration and adaptation** **Study of the expanded use of the SAS**	• ACRES Legacy Materials (Manual, Modules, & Hand-outs) • # of participants who engage in formal reflection over time via research and evaluation events • # of dissemination strategies	• ACRES systematically documents and analyzes impressions and impact over time • ACRES understands key contextual variables that impact scaling & adaptations • ACRES identifies sustainable ways to support the field with coaches • ACRES presents at practice- and field-level dissemination outlets	• Increased understanding of: ○ critical mechanisms of adaptation over time by context ○ validation of SAS for broader use	ISE Knowledge-Building

APPENDIX C

Twelve Measurable objectives were established for the three overarching project goals:

Goal 1: Deliver relevant, dynamic, and impactful Virtual Coaching for Educators

Goal 2: Build the capacity of Hub Leaders and Hub Coaches to advance long-term sustainability

Goal 3: Advance Research on Adaptation, Scaling, and Innovative Assessments

The table below details the status and explanation of progress for 8 of 12 annual measurable objectives applicable in Y4. The four remaining objectives were sunset in Y3 based on planned or evolving project implementation milestones. On 5 of 8 Y4 objectives, ACRES exceeded annual performance targets. For the remaining 3 of 8 objectives, the annual performance targets were met.

Annual Measurable Objective	Quantitative Data					
Goal 1: Deliver relevant, dynamic, and impactful Virtual Coaching for Educators						
1.1 [Modified in Y2] Over Years 1-3, ACRES will serve approx. 1,560 educators. ***Measure***: ACRES User Management Systems & Coach Reflection Forms	**Target (Over 3 years)**			**Actual Performance Data (As of Year 4)**		
	Raw Number	**Ratio**	**%**	**Raw Number**	**Ratio**	**%**
	1,560	/		1,878	/	
Explanation of Progress: This objective sunset in Y3. As of Year 4, ACRES reported 1,878 participants in ACRES sessions led by coaches funded by this National Science Foundation award.						
1.2. Following each module taken, there will be statistically significant increases in ability to recognize effective use of target facilitation skills and suggest future improvements, as well as self-reported confidence receiving and incorporating constructive feedback from colleagues. ***Measure***: SAS, educator surveys, administered approx. twice per year, Years 1 -3.	**Target**			**Actual Performance Data (As of Year 4)**		
	Raw Number	**Ratio**	**%**	**Raw Number**	**Ratio**	**%**
	0.05	/		N/A	/	
Explanation of Progress: This objective sunset in Y3.						
1.3 [Modified in Y2] Beginning in Year 3, at least 10 ACRES educators each year will	**Target**			**Actual Performance Data (As of Year 4)**		

Annual Measurable Objective	Quantitative Data					
apply for the NAA STEM micro-credential. ***Measure:*** NAA reports, requested annually.	**Raw Number**	**Ratio**	**%**	**Raw Number**	**Ratio**	**%**
Original: 1.3. Beginning in Year 1, at least 10% of cohort members will apply for the NAA STEM micro-credential, increasing by 5% annually or until 25% of cohort members apply for NAA micro-credentialing. ***Measure:*** NAA reports, requested annually.	10	/		12	/	
Explanation of Progress: **This objective has been exceeded as of Y4.** As of April 2025, 12 of 29 National AfterSchool Association Professional Credentialing System applicants were from ACRES. This achievement exceeded the goal of 10 ACRES applicants annually.						
1.4 [Modified in Y2] Beginning in Year 3, at least 75% of ACRES NAA STEM micro-credential applicants are successful, ***Measure:*** NAA reports, requested annually.	**Target**			**Actual Performance Data (As of Year 4)**		
	Raw Number	**Ratio**	**%**	**Raw Number**	**Ratio**	**%**
Original: 1.4. Beginning in Year 1, at least 75% of ACRES NAA STEM micro-credential applicants are successful, increasing by 5% annually or until 90% of ACRES applicants are credentialed. ***Measure:*** NAA reports, requested annually.		/	75		/	87
Explanation of Progress: **This objective has been exceeded as of Y4.** Overall, 39 of 45, or 87% of the STEM micro-credentials from ACRES were awarded through the National AfterSchool Association Professional Credentialing System. This achievement exceeds the goal of 75% of ACRES educators, annually. According to project staff based on NAA reports, all ACRES' educators who were initially denied a NAA micro-credential received some type of micro-credential, either through a reattempt or by attempting a different micro-credential. Of 88 attempts at an NAA micro-credential, 45 were made by ACRES educators, or 51%.						
1.5. [Modified in Y3] Through Years 1-3, 90% of educators can articulate examples	**Target (Over 4 years)**			**Actual Performance Data (As of Year 4)**		

<table>
<tr><th>Annual Measurable Objective</th><th colspan="6">Quantitative Data</th></tr>
<tr><td rowspan="2">of their use of target skills in current practice. Measure: Educator interviews. approx. 6 months after module completion.

Original: Through Years 1-4, 90% of educators can articulate examples of their use of target skills in current practice. Measure: Educator interviews. approx. 6 months after module completion.</td><td>Raw Number</td><td>Ratio</td><td>%</td><td>Raw Number</td><td>Ratio</td><td>%</td></tr>
<tr><td></td><td>/</td><td>90</td><td></td><td>/</td><td>N/A</td></tr>
<tr><td colspan="7">Explanation of Modification to Objective: This performance measure sunset in Y3.</td></tr>
<tr><td colspan="7">Goal 2: Build the capacity of Hub Leaders and Hub Coaches to advance long-term sustainability</td></tr>
<tr><td rowspan="3">2.1 Over Years 1-3, the project will train and support at least 39 Coaches. Measure: PLC Attendance Records, ACRES website enrollment records.

Original: Beginning in Y1, 80% of Hub leaders participate in at least one Sharing-Our-Stories meeting, annually. Measure: ACRES Online Meeting Sign-in Sheets.</td><td colspan="3">Target (Over <u>3 years</u>)</td><td colspan="3">Actual Performance Data (As of Year 4)</td></tr>
<tr><td>Raw Number</td><td>Ratio</td><td>%</td><td>Raw Number</td><td>Ratio</td><td>%</td></tr>
<tr><td>39</td><td>/</td><td></td><td>41</td><td>/</td><td></td></tr>
<tr><td colspan="7">Explanation of Progress: This performance measure sunset in Y3. As of Year 4, ACRES reported a total of 41 trained coaches within the entire grant cycle.</td></tr>
<tr><td rowspan="3">2.2 [Modified in Y2] Beginning in Y1, 80% of Hub leaders participate in at least one Sharing-Our-Stories meeting or monthly check-in, annually. Measure: Session attendance reported by project team.

Original 2.2 Beginning in Y1, 80% of Hub leaders participate in at least one Sharing-Our-Stories meeting, annually. Measure: Session attendance record by the external evaluator.</td><td colspan="3">Target</td><td colspan="3">Actual Performance Data</td></tr>
<tr><td>Raw Number</td><td>Ratio</td><td>%</td><td>Raw Number</td><td>Ratio</td><td>%</td></tr>
<tr><td></td><td>/</td><td>80</td><td></td><td>/</td><td>100</td></tr>
<tr><td colspan="7">Explanation of Progress: This objective has been exceeded as of Y4. All Hub leaders (100%; 3 of 3) actively engaged in at least an annual story share and monthly check-in held between the start of the grant period and January 2026. The Story-shares were opportunities for Hub leaders and coaches to network within and across Hubs and share insights and discoveries with each other. The monthly state</td></tr>
</table>

<table>
<tr><th>Annual Measurable Objective</th><th colspan="6">Quantitative Data</th></tr>
<tr><td colspan="7">Hub leaders' check-ins were used to share interim successes and identify support for leaders and coaches. Check-ins have been the most popular mode of participation.</td></tr>
<tr><td rowspan="3">2.3 Each Hub will create or revise sustainability plans. Measure: Sustainability Plans, collected annually.</td><td colspan="3">Target</td><td colspan="3">Actual Performance Data</td></tr>
<tr><td>Raw Number</td><td>Ratio</td><td>%</td><td>Raw Number</td><td>Ratio</td><td>%</td></tr>
<tr><td>3</td><td>/</td><td></td><td>3</td><td>/</td><td></td></tr>
<tr><td colspan="7">Explanation of Progress: This objective has been met as of Y4. Beginning in January 2025, the project team held four collaboration meet ups. All three Hubs attended these sessions. Plans for sustainability by each state included:

Illinois committed to leading monthly virtual ACRES training sessions for the Afterschool Network educators led by a Wisconsin-based ACRES Coach with a commitment to making sure afterschool educators have consistent access to the ACRES resources. The ACRES website is included in their conference materials this year and going forward.

In New York, an ACRES Hub Coordinator leads all professional development for the New York Network for Youth Success, and a STEM lead has been hired. The STEM lead is using ACRES resources and philosophy to train educators across the state.

The Missouri afterschool network has embedded ACRES resources into its mobile STEM lab.</td></tr>
<tr><td rowspan="3">2.4 By the end of year 1, the project will launch a user management system (UMS) and automated dashboard, which will be revised based on user feedback in subsequent years. Measures: Annual Snapshots of UMS and Dashboards; MMSA Staff Administrative Reports</td><td colspan="3">Target</td><td colspan="3">Actual Performance Data</td></tr>
<tr><td>Raw Number</td><td>Ratio</td><td>%</td><td>Raw Number</td><td>Ratio</td><td>%</td></tr>
<tr><td>1</td><td>/</td><td></td><td>1</td><td>/</td><td></td></tr>
<tr><td colspan="7">Explanation of Progress: This objective has been met as of Y4. In Year 4, ACRES launched their forever website based on feedback and insights that were collected from their network of coaches across the first three years of the project. The new website consists of different pathways to engage educators and network leaders based on their prior experience with ACRES. The website includes requested resources like marketing materials, complete guides, and tips on adapting ACRES based on the particular circumstances of existing and aspiring coaches.</td></tr>
<tr><td rowspan="3">2.5 Midway through Year 4, 80% of Hubs will report ongoing use of ACRES beyond grant funding. Measures: Interviews with Hub leaders.</td><td colspan="3">Target</td><td colspan="3">Actual Performance Data</td></tr>
<tr><td>Raw Number</td><td>Ratio</td><td>%</td><td>Raw Number</td><td>Ratio</td><td>%</td></tr>
<tr><td></td><td>/</td><td>80</td><td></td><td>/</td><td>100</td></tr>
</table>

Annual Measurable Objective	Quantitative Data					
Explanation of Progress: **This objective was exceeded in Y4.** ACRES reports that Hub leaders continued to meet with ACRES eight months after the last round of funding was administered. All Hub leaders provided examples of how they used ACRES beyond the grant period. See the explanation of progress for objective 2.3.						
Goal 3: Advance Research on Adaptation, Scaling, and Innovative Assessments						
3.1 The project will present at least one national conference and produce at least one research publication in Years 2, 3 and 4. Original: 3.1 By the end of Year 1, MMSA will present at least one local or national conference and produce at least one publication; increasing three presentations and products in Year 2; and five in Years 3 and 4.	**Target**			**Actual Performance Data**		
	Raw Number	**Ratio**	**%**	**Raw Number**	**Ratio**	**%**
	2	/		11	/	
Explanation of Progress: **This objective has been exceeded as of Y4**. In Year 4, the ACRES team presented at two conferences, published three articles, and submitted one research publication for review. Conference presentations occurred at the ASTE annual conference in January 2025 and included one roundtable presentation and one paper presentation, a roundtable presentation at the National Association of Research in Science Teaching (NARST) in March 2025, and at the National Afterschool Association (NAA) on STEM Micro-credentials. Presentations were made at the National Academies of Sciences, Engineering, and Medicine Convocation on the Status of Information Science and Engineering Education (June 2025) and the AISL awardee meeting (February 2026). An additional conference paper presentation is accepted to share at the 2026 NARST conference. Articles were published in *Afterschool Matters, Journal of Science Teacher Education, and Practice: Contemporary Issues in Practitioner Education.* One manuscript is under review with *Education Sciences.* One manuscript is accepted pending minor revisions at *The New Educator.* Data sources: ACRES project team Y4 project report and evaluation meeting notes.						
3.2 In Year 4, ACRES will produce legacy materials that incorporate successful culturally responsive adaptations.	**Target**			**Actual Performance Data**		
	Raw Number	**Ratio**	**%**	**Raw Number**	**Ratio**	**%**
	1+	/		2	/	

Annual Measurable Objective	Quantitative Data
Explanation of Progress: This objective has been met as of Y4. As of Y4, the following legacy materials were released that showcased adaptations. ACRES Guidebook: Revised and existing coaching guides included a section labeled adaptations. The "adaptations" offer suggestions for changes coaches might make under certain circumstances. ACRES Celebratory Booklet: The ACRES coach-facing reflection journal included strategies for adapting ACRES to fit with the experiences of educators.	