UNIVERSITY OF MASSACHUSETTS BOSTON
CENTER OF SCIENCE AND MATH IN CONTEXT (COSMIC)

WIPRO SEF

YEAR 12

ANNUAL REPORT
Sep 2024

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EXECUTIVE SUMMARY

For over a decade, the Wipro Science Education Fellowship (SEF) has provided funding and support to science teachers and school districts across the country. The program has national reach with sites in California, Florida, Massachusetts, Missouri, New Jersey, New York, and Texas serving almost 750,000 total students (approximately 1.5% of US pre-K – 12 students). The original phases of the program focused on developing a cadre of science teacher leaders who lead *from their classrooms*. As the second decade of the program begins a new layer of leadership is being added by engaging more purposefully with school formal district leadership (administration). The goal is to enable district transformation through teacher leadership.

Across the country, our different university sites have completed Year 2 of the Innovation Phase of Wipro SEF. At some sites, there are individual projects, school projects and cross district projects. At other sites, there have been new cohorts of Fellows working on the classic Wipro SEF program while, in others, science teachers are working with math teachers to enhance STEM (science, technology, engineering, math) education. While the teams were summarizing their excellent work and planning for Year 3 of the Innovation Phase, the leadership at the universities was busy planning for the activities of next year.

As part of our commitment to transparency and continuous improvement, each site constructed a comprehensive progress report demonstrating that we are on target with our stated goals and that the budgets going forward are appropriate. Some of the insights are incorporated into this annual report. Specifically, each site provided:

- Progress on Tasks
- Milestones Achieved and Impact of Work
- Budget Expenditure
- Risk/Crisis Management
- Cross-Site Collaborations
- New Opportunities
- Next Steps and Action Plan

The program continues to be strong across the country and is facilitating some amazing work by the Fellows and involving many new teachers, thereby expanding the impact of our work.

Keywords: Teacher leadership, collaboration, district transformation, learning communities

Wipro SEF Program Overview

The Wipro Science Education Fellowship (SEF) is a four-year STEM district transformation program. Cohorts of K-12 teachers participate in a rolling two-year professional development experience designed to improve individual teacher practice, foster teacher leadership opportunities, and create a district corps of teacher leaders. Professional development for fellows is led by a university in partnership with the local school district. The program was developed at the Center of Science and Mathematics in Context (COSMIC) at UMass Boston and is now in 7 universities and ~35 partner school districts throughout the United States.

Year One: Thinking About Teaching

Monthly Fellows Meetings

Fellows from approximately five different school districts gather once a month at the host university to engage in professional development in the areas of instruction, reflective practice, adult learning, and leadership.

Collaborative Coaching and Learning of Science (CCLS) groups

Fellows engage in research-based, structured inquiry into their own teaching and growth. Fellows meet in CCLS teams to share videos of themselves teaching in their classroom as well as sharing student work to learn from each other, to reflect on science content and pedagogy, and to improve their teaching of science. These small professional learning communities determine their own schedules, courses of study, and the lessons they will all be videotaping and observing with support and guidance from their university partner.

Year Two: Implementing the Individualized Growth Plan System (GPS)

Each fellow develops and carries out an individualized growth plan that has a clear vision and identifiable benchmarks. The 100-hour plan focuses on ways to improve the teacher's own instruction and leadership and is developed in collaboration with a university advisor, the district science coordinator and the fellow's principal. The yearlong project includes the fellow leading professional development for other teachers in their school district and culminates with a report and presentation of a poster at the end of year conference.

A District Corps of Teacher Leaders

Over a rollout of three successive cohorts of fellows, each participating school district will have as many as 12 fellows who have participated in the extensive 2-year Wipro SEF program. These fellows serve as a leadership group for district science and engineering initiatives. This critical mass of teacher leaders sets the stage for district transformation.

Phase II and Phase III – Innovation Phase

After Fellows complete the two-year "foundation" program, District science coordinators work with their university partners in exploring ways in which to build on the Fellows experiences, projects and leadership skills in order to support district transformation. Through various and varied initiatives, Fellows engage with other teachers in their districts. Simultaneously, administrators are made more aware of the resources that the Wipro SEF program has seeded in their schools and districts. This phase of funding is also intended to encourage district incentives to support future work that will continue after this Wipro external funding concludes.

HOW TO READ THIS REPORT

This report captures the work of the Wipro SEF program from June 15, 2024 through September 15, 2024. We are beginning the third year of the Innovation Phase (Phase II/Phase III) of the Wipro SEF where all sites are now moving beyond the Foundation Wipro SEF program (Wipro SEF Classic).

During this time, all sites met the challenges of maintaining and adapting the Wipro SEF program as they adjust to the new "normal" following the Covid-19 pandemic. *The chart below summarizes the activities of this quarter and the activities that took place in this school year. Each site's report includes an overview of the activities that have taken place this quarter. Use the table of contents to locate a site's report.* For a quick look at how the program is influencing individual Fellows please refer to the vignettes in the sections entitled "Featured Fellows." Throughout the report, you will find remarkable stories of Wipro Fellows supporting their students as teachers and supporting other teachers as teacher leaders.

Year	CA Stanford University	FL University of South Florida	MA University of Massachusetts Boston	MO University of Missouri	NJ Montclair State University	NY Mercy College	TX University of North Texas Dallas
2019-2020	Year 2	Year 2	Phase II & Lead Institution	Year 2	Phase II	Phase II	Year 3
2020-2021	Year 3	Year 3	Phase II & Lead Institution	Year 3	Phase II	Phase II	Year 4
2021-2022	Year 4	Year 4	Phase II & Lead Institution	Year 4	Funding ended	Phase II	Phase II
2022-2023	Phase II	Phase II	Phase III & Lead Institution	Phase II	Phase III	Phase III	Phase III
2023-2024	Innovation Phase	Innovation Phase	Innovation Phase & Lead Institution	Innovation Phase	Innovation Phase	Innovation Phase	Innovation Phase
2023-2024	Innovation Phase	Innovation Phase	Innovation Phase & Lead Institution	Innovation Phase	Innovation Phase	Innovation Phase	Innovation Phase

Table of Wipro SEF sites

	Cohort 1	Cohort 2	Cohort 3	Past cohorts, teachers new to Wipro SEF, and some administrators
Year 0	Recruitment			
Year 1	Collaborative coaching and learning in Science (CCLS)	Recruitment		
Year 2	Growth Plan System (GPS)	CCLS	Recruitment	
Year 3		GPS	CCLS	
Year 4			GPS	
Innovation Phase (Phase II &III)				Activities proposed by individual sites.

Key to yearly activities

Foundation Phase (Wipro SEF Classic)

Site (Institution)	Districts	Total Students in Districts	Fellows	Non-Fellow teachers involved (e.g. GPS)	District Science Coordinators	Presentations and Publications
California (Stanford)	5	97,288	60		5	7
Florida (U of South Florida)	3	398,360	60		3	16
Massachusetts (UMass – Boston)	5	73,688	58 – Phase I 17 – Phase II		5	18
Missouri (U of Missouri)	8	34,162	52		13[1]	8
New Jersey (Montclair State)	5	31,486	60 – Phase I 24 – Phase II 31 – Phase III		5	22
New York (Mercy College)	5	33,580	60 – Phase I 60 – Phase II		5	31
Texas (U North Texas – Dallas)	5	83,160	46 – Phase I 20 – Phase 2[2]		5	28

[1]Over four years.
[2]Plus 5 Non-Fellow teachers for the Walk STEM project.

Current Innovation Phase

Site (Institution)	Projects Submitted	Projects Approved	Alumni Fellow	New Fellows	Non Fellow Teachers involved	District Science Coordinators
California (Stanford)	N/A	N/A	16	19		5
Florida (U of South Florida)	13	13	10	21		3
Massachusetts (UMass – Boston)	4	4	2	0	17	3
Missouri (U of Missouri)	N/A	N/A	4	27		5
New Jersey (Montclair State)	17	17	13	34		7
New York (Mercy College)	16	11	4	33	65	3[2]
Texas (U North Texas – Dallas)	9	9	13	22	1	5

.

UPCOMING MEETINGS AND MILESTONES

Mercy University will be hosting their annual conference (Sep 28, 2024). The agenda includes:

- Presentations from Wipro Fellows from New York, California and Missouri
- Information and Recruitment for Year 3 of Wipro Innovation (Wipro Reimagined)
- A keynote by Arthur Eisenkraft
- Celebration of 10 years of Wipro SEF at Mercy
- Presentations by teachers from local school districts and centers

CAST conference (Nov 13-16, 2024) – San Antonio, Texas

- Eight project presentations from Wipro SEF UNT Dallas have been accepted for this statewide conference
- 33 Fellows and 5 District Science Coordinators will participate in the presentations

Montclair State University (Sep 30, 2024)

- Site visit by Anne Gurnee and Arthur Eisenkraft to New Jersey Wipro sites – Paramus and Clifton
- Evening meeting with all Fellows

UNT Dallas (Oct 9, 2024)

- Phase 3, year 3 induction
- Award ceremony

National Science Teaching Association (Nov 6 – 9, 2024)

- Presentations by Wipro Fellows from Texas, Florida, New York

Executive Summary for Each Site

Executive Summary Statement - CA

The Wipro Science Education Fellowship (SEF) Innovation Phase at our site is positioning itself as a key contributor to district transformation by fostering teacher leadership. By providing focused professional development, individualized mentoring, and opportunities for cross-site collaboration, we aim to elevate science teaching to meet the high standards of the Next Generation Science Standards (NGSS). Central to our mission is addressing persistent inequities in science education, ensuring that all students have access to high-quality, engaging, and equitable science learning experiences. This approach empowers teachers to lead district-wide change while transforming instructional practices across multiple levels.

This past quarter, Cohort 4 Fellows culminated their time in the program at the End-of-Year Conference in June 2024. During this time, they presented their GPS Projects and interacted with Wipro fellows from other Wipro sites. Fellows submitted their final portfolios, which highlighted their GPS work throughout the year and included reflections about their own learning in the Wipro SEF Program.

Next quarter, we will onboard 19 new Wipro Fellows from our 5 partner districts. We will focus on fostering teacher agencies and promoting student-centered practices through high-quality professional learning sessions that align with the Next Generation Science Standards (NGSS) and address district-wide needs. A crucial aspect of our work will be integrating differentiated support to provide equitable opportunities for all students in their science education journey, regardless of cultural or linguistic backgrounds. We will equip our teachers with the tools to implement student-centered practices and advocate for equitable practices in their classrooms. Our efforts will focus on three core areas: mentoring teacher fellows, collaborating with district coordinators, and building leadership capacity among school leaders to enhance science teaching. There will be no significant changes to the structure of the Wipro SEF program; we will continue implementing the V-CCLS and H-CCLS work in the first year of the fellowship, followed by the GPS projects in the second year.

We will also expand our Wipro School Leader Program to include instructional coaches and district leaders, including Wipro Alumnae Fellows taking on more leadership responsibilities in their districts. To further support our district transformation efforts, we will offer professional learning sessions focusing on leadership, NGSS, coaching practices, and adult learning.

Executive Summary Statement - FL

Over the summer we allowed our fellows to focus on their individual projects or other tasks as necessary. We had our last in person meeting of the school year on May 4th and then our first meeting of the next school year was just held on August 24th. During that May 4th meeting all of the groups presented either final projects, works in progress, or where they hope to go in the next two years with their projects. Fellows were able to interact with one another providing guidance and ideas to one another with the purpose of enhancing the quality of their individual projects. They spent the summer planning their projects with any possible modifications if needed.

The school year starts early in Florida with many districts having their students return on or around Monday August 12th. With all educators that sometimes creates a challenge. One of our leaders found out she was removed entirely from science to focus on ELA, however after some discussion we were able to show how she would be able to continue given her constraints. Thus, the beginning of the year focused on how to work with the project once they knew their plan ahead for the year.

We kicked off Wipro this quarter with our in-person meeting on Saturday, August 24th. We started this meeting with an introduction to action research for our new projects and team members in attendance from current projects. We then had every project briefly talk about their updates from summer reflections or in some cases new school year challenges. Finally, we ended the day with a choice of sessions for the fellows. They could choose between a session on conference proposal writing or research plan development for the year. The session on writing a proposal discussed key components the fellows would need when submitting a talk for either NSTA or FAST (Florida Association of Science Teachers) or NSELA. The research plan focused on those teams who completed their action research training and now on the actual execution of their research. This involved creating timelines with data to be collected.

We are following up on this meeting with our next virtual meeting on Monday September 23rd. We will continue our action research work to our first timers then have all groups available to talk about their updated project reports.

Executive Summary Statement - MA

The UMass Boston innovation plan includes working with the original five districts as well as beginning Wipro SEF activities with three new districts. Each of the original five districts had a meeting with the Fellows, the District Science Coordinator and Arthur Eisenkraft to discuss district initiatives. The purpose of these meetings is to help define "district transformation" for each district. This requires identifying the gap between the present district situation and the future vision of the district. This leads to a recognition that there are specific changes that the district may want to implement in science. In turn, we identify strategies that are within the capabilities of the Fellows (i.e. teacher leaders) and the coordinator to implement over the next few years.

The Chat GPT seminar series where 9 teachers met during summer 2023 and had monthly followup sessions during the 2023-2024 school year. We found ways that Chat GPT could support teacher work and improve student learning. A paper was presented at the MAST meeting about our work.

The second is the creation of the first of a series of V-CCLS teams in the Cambridge Public Schools. Led by a Wipro Fellow, it involved 9 other teachers. A new set of teachers is being recruited for additional V-CCLS teams next year. We expect other proposals by the DSC.

A new initiative will involve elementary teachers from Boston Public Schools. Their focus will be on science, literacy and sense making.

UMass Boston will also try to generate interest in the foundation Wipro SEF program of 4 years in three high-needs districts in the Boston area. Unlike the original sites, these new sites and Fellows will not be receiving the generous stipends of the past and will have to come up with other ways to incentivize participation in the program.

Executive Summary Statement - MO

The Missouri Wipro project's goal of teaching math and science in a harmonious manner will contribute to the transforming of the teaching of those subjects in participating districts. We are already seeing collaboration among math and science teachers, development of lessons that borrow from the other subject, discussion about changing the sequences in their curricula and interest in bringing in other teachers from their grade bands.

Our Wipro project uses a modified version of the initiatives of Phase I. Fellows participate as teams of 2-4 teachers from three grade bands (K-5, 6-9 and 9-12) from a given district, with at least one math and one science teacher in the team. For cohort 4 and 5, grade 6-12 teachers were recruited for year 1. K-5 teachers were added only in year 2 for cohort 4. For cohort 6 we have changed the grade band mix to recruit all grades, namely, K-12 teachers for both years. In year 1 they collaborate in V-CCLS and H-CCLS teams, anchoring their work in a research article and a math and a science educational practice. In year 2 they focus on creating or modifying four or more lesson plans that integrate math and science content.

In the past quarter, June – Sep 2024, Cohort 4 has completed two years of work in the project. During this academic year each 6-12 teacher has worked on creating 4 or more lessons in their subject (math or science) that includes concepts, methodology, vocabulary and alignment with the other subject. Teachers have worked on collaboration within their district Wipro team and with other Wipro fellows. Cohort 5 has completed year 1, where they worked on V-CCLS and H-CCLS partnerships and created one lesson plan. They have begun planning their lessons and math-science collaborations for 2024-25. Cohort 4 and 5 fellows made presentations about their work during the end-of-year conference in May.

During the next quarter we will work with Cohort 5 and the newly recruited Cohort 6. We have accepted 16 fellows from four school districts for Cohort 6. After having worked with grades 6-12 in year 1 for cohorts 4 and 5 and adding on a one-year program for K-5 in cohort 4, we have changed the composition of the cohort by accepting K-12 teachers for 2 years. This change will help us compare the efficacy of the two grade-band mixes. The essential activities will remain the same, thus the first semester (Aug – Dec 2024) will consist of a V-CCLS partnership among the fellows.

Executive Summary Statement - NJ

The Montclair State University site has made progress through the first half of its Phase III project. The program is contributing to district transformation through the Fellows' self-initiated projects, which extend the reach of the Wipro program to new teachers, new districts, new subjects, and new collaborations. The connections that are made through the program would not be possible without the structure that the Wipro SEF program provides.

As stated in the previous report, the current phase of the project has involved 12 Alumni Fellow working on district-related initiatives and one Fellow working on publicizing the program. Each of the alumni Fellows has recruited a team of district teachers. Together, these teams are working towards their respective goals as a new cadre of teacher leaders are nurtured.

This past quarter, Alumni Fellows continued working with their teams to make progress towards their respective project goals. Their projects involved other teachers new to Wipro, administrators,

instructional coaches from other districts, and former Fellows. With the culminating event in sight, all Fellows worked on developing and refining their presentations. The event, held on Tuesday May 29th, showcased each team's two-year project and brought together various program stakeholders. The presentations were inspiring and thoughtful and represented a variety of ways to make change in districts.

The MSU site accepted proposals for the second half of the innovation phase. All Fellows, including past Fellows and Fellows new to the program in this phase, were invited to apply. With a new cadre of Fellows, the next quarter will focus on goal setting and extending the reach of the Wipro SEF Fellowship even further.

Executive Summary Statement - NY

Wipro Reimagined teachers are reimagining the ways that they can be critical leaders toward district transformation. These teachers are implementing creative strategies for vertical articulation between teachers and students in the districts through initiatives including robotics, engineering, and mathematics, which administrators have indicated intention to support in years to come.

Mercy University's goal is to support Wipro projects that span different schools in each district, connecting elementary, middle, and high schools through STEM programming. Looking ahead, the MCSE will continue to support innovation and collaboration by teachers and administrators to improve STEM teaching and learning in their districts.

In the previous quarter, New York Fellows enacted five vertically articulated projects, including a K-12 engineering design challenge, a 5th grade-high school math peer mentorship collaboration, an elementary-high school family STEAM night, an elementary science teacher conference hosted by high school and middle school science faculty, and a K-5 garden club. These projects are supported by administrators representing various grade levels across the district. The Mercy team hopes that establishing vertical relationships will improve sustainability outcomes for all of these projects. In this upcoming quarter, the Mercy team will begin to recruit up to 18 K-12 Cohort 3 Fellows representing at least four of the five partner districts.

Executive Summary Statement – TX

The Texas Wipro Team continues to work this year (Phase 3, year 2) toward the goal of District Transformation through Teacher Leadership by providing opportunities to Wipro Fellows to advance their development as leaders.

All the funded proposals of Wipro Phase Three at UNT Dallas (2023-2024) continue to be carried out successfully by all the participants involved. These proposals include:

School projects:

- Cedar Hill ISD: Effects of Collins Writing in Science (District initiative, 2nd year of funding with more fellows added,)
- DeSoto ISD: The Garden Project from Seeds to Flowers
- Grand Prairie ISD: a) Gamyfying Forces (2nd year of funding with more fellows added, Bilingual & STEM focus) b) Savvy Sphero Sisters (Focus on girls in STEM, coding)

- Irving ISD: Exploring STEM wonders with 3D printing (first graders, STEM focus)
- Lancaster ISD: Transforming Instruction, one PLC at a time (, 2nd year of funding with more fellows added,)

Collaborative project:

- Trinity Basin / Lancaster ISD: All hands-on deck (third and last year of funding, more fellows added)

Individual Projects were funded:

- Shelby Allen: Stemtastic club
- Marsha Bolden: Exploring Science concepts using PBLs

To record and show progress made on their projects, Wipro fellows are continuing to work on their Portfolios. Fellows also submitted proposals for the yearly Conference for the Advancement of Science Teachers. All the Wipro Fellows and DSCs continue to work productively.

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UMass Boston Lead Institution- Building and Supporting a Network of Wipro SEF sites

Cross Site Collaborations

With the pandemic behind us, we are providing opportunities for cross-site face-to-face collaborations in addition to those on zoom.

September 28, 2024

Mercy University will be hosting their annual conference. The agenda includes:

- Presentations from Wipro Fellows from New York, California and Missouri
- A keynote by Arthur Eisenkraft
- Celebration of 10 years of Wipro SEF at Mercy

Nov 6-9, 2024

National Science Teaching Association, New Orleans, LA

- Presentations by Wipro Fellows from Texas, Florida, New York

Common Interest Seminars

As a new initiative, we are inviting Fellows from different sites to share their efforts in projects that

have similar goals. Each of these meetings will be held on Zoom. If there is enough interest, we can follow these Zoom meetings with a face-to-face meeting, if deemed worthwhile.

One of these "birds of a feather" meetings was on the topic of emergent bi-lingual approaches in the classroom. Preetha (CA) took the lead. The first 1.5-hour meeting took place on Thursday, May 23. There was good attendance with every site represented by at least one Fellow. Another session is planned for the fall semester.

NSELA meeting

The National Science Education Leadership Association's summer meeting took place in Seattle, WA from July 16-18. We have 16 District Science Coordinators, 2 university staff and 2 consultants attending. Six of the seven Wipro sites were represented. The formal focus of the three days was on climate education. This continues the work of this past year where we held cross-site meetings with Fellows on climate education followed by a joint meeting with students in the Kings College, UK program. It also builds on the Sustainability Conference held by Azim Premji University and UMass Boston in Bangalore in January 2024.

During the meeting there were opportunities for our DSCs to discuss strategies to introduce climate education to our Fellows, teachers and students. Surprisingly, the meeting's primary focus was on climate justice rather than climate science. As a result of the meeting, the following initiatives are being implemented:

- A book club ('Not to Late") for DSCs as a vehicle for continuing the discussions from the conference
- An invitation for 10 teams to conduct vertical articulation studies of climate change lessons in the classroom using the Wipro V-CCLS model.
- Climate will be one of the strands for the California cohort this year

Wipro Book

The book (to be published by Routledge (Taylor and Frances Group)) has moved to the production stage, ahead of schedule. The publication date has been moved from June 2025 to March 2025.

Feb 2025: 220pp 13 B/W Illustrations
Pb: 978-1-032-79119-7 ~~$44.99~~ $35.99
Hb: 978-1-032-79120-3 ~~$180~~ $144

For more information visit:
www.routledge.com/9781032791197

A Roadmap for Transformative Science Teacher Leadership

Building Meaningful Professional Development in Districts

Arthur Eisenkraft

This book is a comprehensive guide to an effective Science Education Fellowship (SEF) program. Spanning over ten years and involving hundreds of teachers, district science coordinators, and university faculty, the Wipro SEF program has empowered teachers to become leaders who drive meaningful, sustainable change in their schools and districts without leaving the classroom.

Offering an in-depth look at the SEF program's structure, from its foundation in teacher leadership development to its innovative adaptations across seven universities and 35 school districts, the book presents a roadmap for implementing similar programs in other school districts, targeting teacher retention, teacher development, and fostering student growth. Readers will find detailed explanations of key program components, and the vital roles of district science coordinators and higher education institutions. Through a mix of theoretical insights, practical strategies, and testimonials from program participants, the book provides a comprehensive model for educators, administrators, and university leaders who aspire to replicate or adapt the SEF program in their own contexts.

Ideal for both educators and school administrators, this book will allow you to gain valuable insights into building and sustaining a program that empowers teacher leaders, drives district-wide transformation, and ultimately improves student outcomes in science education.

Wipro Research Initiative

Professor Brooke Whitworth, Professor Julian Wenner and colleagues are continuing research regarding teacher leadership and how the Wipro SEF program aligns with current knowledge regarding this field.

Wipro Report
September 6, 2024

Overall Summary

- Weekly meetings (90 min. each) were held with our group (2 faculty and 4 graduate students) throughout 2023.
- One writing retreat (4 days) with our group (2 faculty and 4 graduate students) was held.
- Reflecting on the last year, it was more difficult to obtain access to the data and organize it and to collect new data than originally anticipated. As a result, there have been many pivots in our original plan and proposal and difficulties in empirically based crafting papers that are robust enough for publication.

Resulting Publications and Presentations:

Study #1 (Social Network Analysis):

- This was presented as a poster at NARST:

    - Bateman, J.M., Wenner, J. A., & Whitworth, B. A. (2024, March). *Implications of social network analysis on science education communities.* Poster presented at the NARST Annual International Conference, Denver, CO.
- Due to insufficient data, this will be written as a case for methodology using the data we do have as examples of what SNA data analysis could do and how it could support DSCs and/or other administrators at the district level.
- Paper is in the last stages of editing.
- The paper will be submitted to *The Science Educator* in mid-October.

Study #2 (Wipro PD Meeting Basic Psychological Needs of Teachers)

- Due to difficulties in aligning the data, this paper will be more practitioner-oriented.
- The paper will be submitted in September to *Educational Leadership* for a call on Strengthening Instructional Cultures.

Study #3 (Alignment Between DSCs and TLs):

- This was presented as a poster at ASTE:
    - Schwendemann, M. L., Cooper, D. J., Hunter, A. D., Wenner, J. A., & Whitworth, B. A. (2024, January). *Mirrors and lenses: How the relationship between science teacher and coordinator demographics impacts professional growth plans.* Poster presented at the Association of Science Teacher Education Conference, New Orleans, LA.
- This paper was submitted and rejected (with substantial feedback) from *JRST* earlier in the spring/summer.
- It has been significantly reworked and editors' comments were taken into account. Mainly, the framework guiding the study was adjusted slightly and the findings re-organized to tell a more cohesive story.
- The paper is now in review with *The Science Educator*

SciLeadPro

Six DSCs have enrolled in SCILEADPRO to complete a year of professional learning with research and other DSCs from around the country. They attended their first all-day session on August 24, 2024 and are in the midst of completing their first asynchronous module.

Monthly Leadership meetings

Meetings of representatives from the seven sites in the Wipro SEF program occur monthly to share best practices, plan strategic initiatives, and share progress. The annotated agendas for the August and September meetings are provided here.

Monthly Meeting Agenda
Tuesday, Aug 20, 2024
11 AM – 1 PM (EDT)

Join Zoom Meeting
https://umassboston.zoom.us/j/99914434497

Meeting ID: 999 1443 4497
Passcode: 973499

Cross-site conferences and updates

- NSELA – July 16-18

Eric	Lewis	CA
Preetha	Menon	CA
Fawnia	Schultz	FL
Shana	Tirado	FL
Larry	Plank	FL
Marilyn	Decker	MA
Douglas	Dias	MA
Sarah	Smith	MA
Deena	DePamphilis	MA
Patricia	Mcgaffigan	MA
Arthur	Eisenkraft	MA
Susan	Bartol	NJ
Mary	Goffredo	NJ
Regina	Borriello	NJ
Carmen	King	NY
Aimee	Ferguson	NY
Leana	Peltier	NY
Pam	Pelletier	other
Tamara	Majors	TX
Faith	Milika	TX

- Focus on Climate Change education
- Time during meeting for work
- How do we leverage?
- How do we find out (i.e. document) value for DSCs
- Follow-up – Book club: Not Too Late
- V-CCLS?
- NSELA memberships
    - **Arthur:** It was wonderful to have so many Wipro people there and we had time to talk. What surprised me was that the focus was not so much on climate science but more on climate justice. The larger issue is the difficulty for teachers to teach about climate science (for example in FL) and an emphasis on climate justice puts extra stress on educators.
    - Arthur introduces Carmen King to the group.
    - **Carmen:** NSELA conference was very energizing. There were representatives across the states. Each of the sites is in a different space of how to teach climate education. Made me think about how much climate science is not taught. It became more essential, but I don't think we are doing a great job in schools about the problem.
    - **Arthur:** In CA we'll lead a book club on "Not too late". Despair is not a way to approach this problem we want the kids to be part of the solution.
    - I'm thinking of how we can integrate 1 lesson of climate science with V-CCLS framework across the sites.
    - **Emily:** I like the idea of teaching it through V-CCLS
    - **Arthur:** We need to see what we have in budget
    - **Anne:** Would be nice to connect virtually all of these local groups later in the semester

- Brooke Whitworth Leadership Institute
- 5 yes

Cross-site interest groups – plans for Fall

- ELL workshop on Thursday – Preetha
- Gardening
    - Preetha did a wonderful job on gardening group
    - **Amanda:** As of right now I don't have any plans for it yet.
    - **Tammy**: If we'll do something, probably next spring

- Climate
- Others?

Plans for 2024-2025 from sites

- **Emily:** We got our application for second part of Phase 3. We got some new participants and projects. We'll be meeting with our fellows before the semester starts. And Arthur will come for a visit. We'll continue our work on social network mapping. One of our grad students will be working on it. We think that this year teachers will think more about themselves as teacher leaders. We didn't get too many participants, so it makes it more manageable.
- **Meera:** We had first meeting of the year on Aug 1 (cohort 5 and 6). We have 16 people in the new cohort. It is a nice group that has a balanced distribution of K-5, middle, and HS levels (half math and science). They are excited about being there and working with others. We have two former fellows to help with the new group. It was great to bring two cohorts together to mingle and get to know each other. We had all of them spend about 1 hour working on a physics activity where they had to think about physics and mathematics and it brought up a lot of interesting discussions about how mathematics teachers view this activity. We also have a new non-tenured faculty member who we are trying to get on board as well.
- **Linda:** It was a great start and having more people there was exciting. One change for the meetings is the integration of physics activity.
- **Arthur:** I'm fascinated by mathematics teachers' perspective on physics activities.
- Arthur asked Emily if they have any groups in NJ doing math/science collaborations.
- **Emily:** We used to have such groups but not sure. Will need to find out it.
- **Tammy:** We have 19 fellows for cohort 5 (in CA) traditional Wipro with potentially 2 more fellows. They received their guidebooks and fellowships. We have district projects going on and trying to figure out what we can do with previous Wipro fellows. We are also doing PD for middle school science teachers with an emphasis on language.
- Created two positions to help with Wipro project. We are focusing on supporting former Wipro fellows leading PD. We are trying to be responsive to leaders needs.
- **Arthur:** We can get together and learn from Tammy what they are doing with leaders and how we can replicate it in other sites.
- **Ratna:** Wipro Phase 3 is going well. We've been asked by our district to push the start date for a later time because of a lot of changes in frameworks. Things are a little up in the air right now. There is a lot of interest in new STEM framework. We'll be working with a new district coordinator. The is a lot of interest in bi-lingual learning. Our garden project is still of interest.
- **Anne:** I was going to suggest a project in TX about writing in science.
- **Amanda:** I'm thrilled to welcome Carmen as a lead Wipro person and PD coordinator for the center. We had some fellows going to NSELA and NSTA. We also started new initiative of STEM network (teachers who work with our teachers. We have several

schools and all of them have Wipro fellows.) During our annual conference in the fall, we will be celebrating 10 years of Wipro fellowships. Arthur will be a keynote speaker. We'll be doing a Wipro happy hour to talk informally. It will be a great conference. It is all exciting.
    - **Arthur:** I want to mention (based on am example from CA where Tammy mentioned about new positions for liaisons, NY is the expert in that.
    - **Amanda:** We found that former fellows understand things much better and are better able to support and connect with new fellows.
    - **David:** We had our first in-person meeting for the year. We have a total of 6 different teams starting 2 year projects. With our teams we have our fellows as a lead and have some administrators. We also have couple of people going to NSTA. I'd really like to connect with folks and get the cohort groups together.
    - With a 2-year model for out teams, during 1st year we work on action research and action plan, where we teach them how o collect data and write a presentation.
    - **Allan:** I think you pretty much said everything.
    - **David:** Our leadership team didn't have any changes and is consistent. We have projects in all the district this time around.
- Updates
- Sep 28 Mercy University
- Sep 30 Montclair State University – Site visit
- Other site visits this year?
    - **Arthur:** Anne and I will head to Mercy college and then will go to Montclair.
    - Other site visits: It was very helpful for me and Anne to visit. The question is should we begin round 2 of these visits? We need to know from you about other potential site visits for the year. I need to know any other events I can put on the calendar. I want you to think about what would be helpful.

Book update
    - **Arthur:** About 2 weeks ago I sent the book to the company expecting that the editor will come back with comments. A week later I got an email saying that it looks great and ready for production.

Evaluation Survey – Anne
    - I'm in the annual report writing mode. I'll let you know if I'll need any help. No other updates.

Website – LIVE: https://wiprostemprogram.com/

Annual report due Sep 15

Suggestions
    - **Arthur:** It will be somewhat different and based on a compilation of what you sent me

already. We'll use the other reports as a basis for the new report.

Monthly meetings – Fall 2024 – Tuesdays 11-1 ET?

- Monthly meetings time seems to work for everyone generally.
- Arthur will need to send out dates/invites for upcoming Wipro monthly meetings.

Other

Monthly Meeting Agenda
Tuesday, September 17, 2024
11 AM – 1 PM (EDT)

Join Zoom Meeting
https://umassboston.zoom.us/j/99914434497

Meeting ID: 999 1443 4497
Passcode: 973499

Cross-site conferences and updates

- Climate initiatives
- Climate V-CCLS
    - **Arthur:** We want to see what kind of responses we will get.
- 10 teams
- Applications due Oct 1
- Climate Book Club: Not Too Late
- Fawnia
- DSCs
- Preetha – climate change for C5
    - **Preetha:** in CA we are offering Climate as a strand for the new cohort.
- Allan with Rita Ortiz – dissertation?
    - **Alan:** This dissertation It is coming along with a focus on Social Justice and
    - climate education. My former student is working on climate education.
- Climate standards in State Frameworks

Brooke Whitworth Leadership Institute

- 5 are enrolled

Cross-site interest groups – plans for Fall

- ELL workshop– Preetha
    - **Preetha**: I don't have a schedule yet. Maybe some other sites would be interested in integrating language and science. TX site is interested in collaborating with CA.
- Gardening – NY?

    - **Carmen:** Don't have any concrete plans on cross site collaborations around gardening. Currently we are trying to get our things in order. We will have our Mercy conference and Arthur will give a keynote. We'll have presentations from our Wipro fellows. We will have 3 presentations from CA and 1 presentation from MO.
- Climate
- Others?

Mercy University conference

- 3 from CA
- 1 from MO
    - **Arthur:** Mercy University usually has this conference in Sept, and they'll also have Wipro reimagine session where there will be discussions with Wipro fellows and science coordinators.
- Math/Science – MO and NJ
    - **Linda:** I don't have anything to add to this now. We had an email discussion, but I don't have any info about that.
- Conferences

NSTA – New Orleans

    - **Ratna:** New Wipro fellow from TX is presenting at NSTA.
    - **David:** We have a presentation from FL.
    - **Carmen:** I'll be presenting, and 2 other fellows will be presenting.
    - **Arthur:** I'll send out an invite for breakfast/lunch/dinner gathering.
- CAST

Site Visits

- NY and NJ - end of Sep
    - **Arthur:** Anne and I are coming to NY and NJ. How is it going with this plan?
    - **Colette:** We have some politics going on about the campus area. I'm working on it and getting things set up. We have a nice plan and will have great presentations. We are working on our social media. We'll start referencing a webpage.
- MO and TX – Oct
- CA – Dec
- FL – nothing scheduled
    - **Arthur:** We can talk about it and see what's going on. Let me know your schedules.

Leadership Retreat

- Administration workshops
- Tammy
- Interest and time to devote to this
- Where, when

- **Arthur:** Tammy has been doing an incredible work. I want Tammy to summarize it and we should think about how interested are we and do we want to spend some serious time online or during our next leadership retreat talking about this idea.
- **Tammy:** We are on our Cohort 5 Wipro fellows. Based on our work with Cohort 2 we had a need for the leadership program. We had our first cohort last year from principles and district coordinators. They did a summer institute and PD throughout the year on leadership coaching. It went well overall. Content-wise, in the summer we looked at how do you build a culture in school to support teacher work. Later in the year we went into what does supporting STEM teachers looks like. We had principals and assistant principals. We did 5 e's with them. This year, we had several alumni teachers who are now instructional coaches, but nobody taught them how to do PD. CA site helped them to learn about how to develop PD. So far, we have only 5 people registered. Wea re hoping to get 10-15 people from prior Wipro fellows to principals/assistant principals. The content is focused on building teams, adult learning theories, and leadership principles. That is where we are at. We are always trying to meet our needs now.
  One of the districts has Wipro fellows who develop and conduct PD in their elementary school districts. Some of the people want to learn how to do PD or how they can do it better. We develop the norms. We will use a model of PD evaluation. They will get coaching (not sure yet of one-on-one or group coaching). We had some carryover from our budget so we'll provide a small stipend to some of our participants. We are doing 5 sessions throughout the year and 4 session of coaching (45 mins-1 hour). They get 10 hours in total. Coaching is based on their own needs.
- **Arthur:** Do we want to learn more about it?
- **David:** Part of the retreat would be a good idea for it. Would it be in CA or we can do it virtually?
- **Colette:** We are kind of doing it but not as formal as Tammy is doing it.
- **Arthur:** Are we providing the right kind of support to people who are in leadership
- roles now?
- **Carmen:** I think it is a great idea to learn more about what Tammy is doing. What are some of the protocols that we can use. How to better evaluate what's happening in these classrooms.
- **Tammy:** Being part of a community. Figure out how to move forward as a group.
- **Arthur:** Because we are a national program, and all of the principles recognize the constraints. In some of the sites principles don't even know who are Wipro fellows. Because we are a national program, we need principles support and use fellows. Let's have a meeting and see how they do it. When teachers hear it from principles it is more relevant. Here is how you use teacher leaders.
- **Colette**: Have an online 1 hr meeting.

- **Carmen:** Maybe need to provide a financial incentive for principals to participate.
- **Arthur:** Incentives: sweatshirts and posters that we produce. You can tell principals that we can provide them with posters they can give to their teachers.
- **Tammy**: Topics really matter. Maybe assessing and evaluating science instruction. Some of the principles don't know how to do it but don't want to admit to. How do I encourage science teachers to innovate (AI, or computer science instruction). I think the way that we say what the topic should be.
- **Arthur:** There are organizations for the principles to participate in. We just want to help principles to support their fellows. We will need to figure out what the next steps will be.
- **Arthur:** I would like to figure out when the next retreat will be. When we have our leadership meeting, we only have 10-15 people. Maybe we can go to some interesting places? Maybe we'll have a ½ day hike?
- **David:** Can we do a retreat before the conference? Maybe NSTA? So it is not a separate travel for us?
- **Arthur:** If we do it, then everybody is distracted. I like the idea that we get together and have some social time. I'll try to figure out dates and talk to people so everybody can attend.

Plans and Updates from sites

Book update

- How many copies?

Evaluation Survey

- Anne
- Feedback and discussion in next meeting
  - **Arthur:** We'll use the next couple of meetings to discuss evaluation results.
  - **Anne:** It is a long document because I've included an appendix for each of the states. I'll share it on Google. Each of you as a state has your own parts and I'd like you to go through and analyze it. This information will be meaningful to you in your context. One of the things that I wanted to highlight, I asked a question of there are perceiving themselves as leaders, on p. 26 Table 5, a large percentage in most states saw themselves as teacher leaders before participating in Wipro program. We started to look more into that and try to understand what this question means to them? This is a year end survey and depending on the program maybe you talked a lot about it. Maybe there was some error because it is self-reporting. What are some leadership skills they feel strong about? And the strong points were about speaking to small groups of colleagues. The least confidence is writing articles for colleagues. I put it in recommendations that that would be a great professional development.
  - On the issue of impact question, at least 75 % of fellows felt that the program made a

positive impact on their schools. I also included feedback on CA and MO conferences. Arthur wanted to know how valuable it was. There is in the main section, there is a section for each state with high level findings. That is a high-level quick read (3-4 pages) for all of you. That is an overview.

- **Tammy:** it is incredible considering that all of the sites are so different.
- **Arthur:** I remember some of the first fellows were very active. What we'll do is have presentations of the reflections from each of the sites. What did you learn about your sites and Wipro program. Are you going to implement or reject some of the suggestions. So, we'll learn more about it. I look forward to building on that.
- Another big item is what do we do about previous fellows, how do we maintain contact with them? We need to keep the community going. How do we incentivize them? How do we do that? I listed CA and NJ as some suggestions. Maye it could be part of our leadership retreat.
  Teachers can get overwhelmed by all of the options. How can we give them small reminders that we care about them?

Website – LIVE: https://wiprostemprogram.com/

Contact with Past Fellows (from mid-term reports)

- CA
  - We invite them to all special events (Induction, End of Year Conferences), and we work with the DSCs to involve them in district level teacher leadership work (committees, leading PDs on certain topics, sharing their classroom practice, etc). We also send out any cross-site opportunities, such as traveling to other sites to present at conferences. We had also talked about doing a social event to bring back former fellows, such as a picnic in the park, but those plans never came to fruition, mostly because of lack of time. I will discuss this with our CA leadership team to see how we can engage former fellows more.
- NJ
- Alumni Fellows
  - work with mentors to develop their two-year plans
  - recruit new teachers by September of first year of participation
  - implement their plans for two years
- New Fellows
  - participate in Alumni Fellows' projects
  - take on leadership roles within the district
- All Fellows
  - submit quarterly reflections
  - attend four meetings each year at MSU

    - attend end-of-year culminating event each year
    - share experiences with districts and education community
    - have opportunity to attend Wipro conferences and other professional conferences
- Select Fellows
    - set up social media efforts
    - work with other sites on social media presence
    - collaborate with District Coordinators and administrators to construct more permanent district support structures through identifying key stakeholders, coordinating meetings, attending Board meetings, and promoting Wipro work within the district

- What more can we do?

CALIFORNIA- STANFORD UNIVERSITY

Authors: Dr. Preetha K Menon; Dr. Tammy Moriarty

Executive Summary Statement

The Wipro Science Education Fellowship (SEF) Innovation Phase at our site is positioning itself as a key contributor to district transformation by fostering teacher leadership. By providing focused professional development, individualized mentoring, and opportunities for cross-site collaboration, we aim to elevate science teaching to meet the high standards of the Next Generation Science Standards (NGSS). Central to our mission is addressing persistent inequities in science education, ensuring that all students have access to high-quality, engaging, and equitable science learning experiences. This approach empowers teachers to lead district-wide change while transforming instructional practices across multiple levels.

This past quarter, Cohort 4 Fellows culminated their time in the program at the End-of-Year Conference in June 2024. During this time, they presented their GPS Projects and interacted with Wipro fellows from other Wipro sites. Fellows submitted their final portfolios, which highlighted their GPS work throughout the year and included reflections about their own learning in the Wipro SEF Program.

Next quarter, we will onboard 19 new Wipro Fellows from our 5 partner districts. We will focus on fostering teacher agencies and promoting student-centered practices through high-quality professional learning sessions that align with the Next Generation Science Standards (NGSS) and address district-wide needs. A crucial aspect of our work will be integrating differentiated support to provide equitable opportunities for all students in their science education journey, regardless of cultural or linguistic backgrounds. We will equip our teachers with the tools to implement student-centered practices and advocate for equitable practices in their classrooms. Our efforts will focus on three core areas: mentoring teacher fellows, collaborating with district coordinators, and building

leadership capacity among school leaders to enhance science teaching. There will be no significant changes to the structure of the Wipro SEF program; we will continue implementing the V-CCLS and H-CCLS work in the first year of the fellowship, followed by the GPS projects in the second year.

We will also expand our Wipro School Leader Program to include instructional coaches and district leaders, including Wipro Alumnae Fellows taking on more leadership responsibilities in their districts. To further support our district transformation efforts, we will offer professional learning sessions focusing on leadership, NGSS, coaching practices, and adult learning.

Summary of Current Project(s) and Goals

The CA site continues to offer the traditional Wipro SEF Program to 19 science teacher leaders across 5 districts to further excellence in science teaching and learning. The goals of the program for Cohort 5 fellows include a focus on the NGSS and a strong foundational understanding of science teaching and learning, equity in the science classroom, and creating engaging science classroom environments. The structure of the CA Wipro SEF Program for the fellows follows the traditional Wipro model, with an emphasis on doing the V-CCLS and H-CCLS reflective practice work in the first year and teacher leadership GPS Projects in the second year.

The CA site is also working with district teams with the aim of developing their collective capacity to advance effective science teaching and learning in their districts, meets the needs of the learners in their districts, and supports science teachers' commitment to maintaining rigor in their science classrooms.

This year, the CA site will continue offering the Wipro School Leaders Program. It will expand this offering to not only school leaders but also teacher leaders and district coaches who are providing science professional learning for others. This program aims to build strong instructional leadership capacity and create strong district teams that will support the overall goals of the Wipro SEF program. Building capacity at all levels of the system - classroom teacher, school leader, and district - can lead to transformational changes at the site and district levels and address persistent inequities that pervade science education.

Progress and Highlights

Our primary goals for Cohort 5 are to equip educators with the knowledge, tools, and strategies to foster equitable science education. We aim to build a strong community of teacher leaders who can drive meaningful change within their districts. We focus on equity of voice and rightful presence to ensure that all students have equitable opportunities. Additionally, we are committed to integrating cutting-edge technologies, such as AI, to enhance science teaching and learning quality.

Cohort 5, Wipro SEF Year 1: Building Foundations

a. **Foundations of NGSS-Aligned Instructional Practices**
   We are committed to advancing instructional practices aligned with NGSS, particularly in implementing the 5E instructional model and emphasizing the 3-dimensional nature of NGSS. Our professional learning sessions will include developing and implementing NGSS-aligned lesson plans and instructional strategies. We will also emphasize ways to promote student

engagement and science discourse in their science lesson plans.

b. **Equity of Voice, Rightful Presence, and Supporting Multilingual Learners**
   We are dedicated to ensuring that all students experience equitable opportunities in science education and promoting equity of voice and rightful presence in the classroom. To achieve this, we will intentionally model teaching practices emphasizing equity in the science classroom and facilitate discussions promoting the idea that all students should feel represented and valued. Supporting multilingual learners continues to be a priority for the CA site, focusing on integrating content and language learning. We will design and share resources and best practices for teaching multilingual learners. To ensure these strategies are effective and impactful, fellows working with multilingual students will receive targeted support and coaching.
c. **Creating Engaging Science Classroom Environments Through the Use of Technology**
   This year, we will introduce AI tools and technologies into science classrooms to enhance science education. Educators will be exposed to different ways AI tools could enhance science teaching and learning and prepare students for the evolving landscape of science education.

Cohort 5, Wipro SEF Year 2: Deepening Leadership Practices and Expanding Impact

a. **Teacher Leadership Development**
   In Year 2, we will focus on developing teacher leadership practices by providing leadership development training and mentorship. Fellows will be encouraged to practice leadership within their schools and districts and expand their influence on district-wide transformation.
b. **GPS Projects that focus on Ongoing Equity and Inclusion Efforts**
   In year 2, Fellows will implement a yearlong leadership growth project based on their individual and district science goals. The CA Leadership Team will encourage fellows to choose projects that support their ongoing equity and inclusion efforts, such as sustained support for multilingual learners in science. We will continue to provide professional learning focused on equity and inclusion and help fellows monitor and assess their work's impact on student outcomes.

In both years, we will engage regularly with all stakeholders—fellows, administrators, and policymakers—to gather feedback and adjust our strategies as needed. By continuously monitoring the effectiveness of our efforts and making data-driven adjustments, we aim to meet the evolving needs of our fellows. Providing ongoing support and resources, we will ensure that fellows have the necessary tools and assistance to overcome challenges and remain focused on their professional growth and learning. This comprehensive plan will guide our efforts over the next two years, keeping us focused on our core objectives while continuing to advance the quality and equity of science education through the Wipro Fellowship program.

Wipro School Leaders Program

To strengthen our district transformation efforts, we plan to refine the Wipro School Leader Program based on our reflections from its first year of implementation. Key changes include expanding the participant pool to instructional coaches, district-level leaders, and teacher leaders involved in professional learning alongside principals and assistant principals. The content of professional learning sessions will be enhanced to cover topics such as planning and facilitating

professional learning, instructional coaching, and adult learning strategies. Additionally, the schedule will be revised to offer sessions five times throughout the school year, with participants receiving one-on-one coaching four times annually. These adjustments aim to create a more sustainable and impactful program.

Plan for the Next Quarter (September-December 2024)

Date	People	Activity
September	Wipro Cohort 5	First PD sessions for the Wipro Fellows on Sept 22nd, 2024

October	Wipro Fellows and DSCs for Cohort 5
	
	School principals, assistant principals, instructional coaches, and/or teacher leaders from the participating Wipro school districts are eligible to participate in this program.
		Second PD session for the Wipro Fellows (Oct 17th, 2024)
		First DSC meeting for Cohort 5 (TBD)
		
		First PD session on Oct 10th, 2024
		<u>Key Ideas for all the Sessions</u>
		The ideas below give a snapshot of the areas that will be emphasized during the one year program:
		• Next Generation Science Standards and the 5E Instructional Model
		• Leadership Theories and Practices
		• Conditions for Learning & Working with Adult Learners
		  • Adult learning and development
		  • Group relations and interactions
		• Planning and facilitating professional learning sessions
		• Instructional coaching and coaching stances

	Wipro Fellow School Leaders for Cohort 5	Third PD session for the Wipro Fellows (Nov 21st, 2024) Second PD session for 2nd cohort of School Leaders (Nov 7th, 2024)
	Wipro Fellows and DSCs for Cohort 5	Third PD session for the Wipro Fellows (Dec 14th, 2024) Second DSC meeting for Cohort 5 (TBD)

Vignettes

Yichang Lui, Gunderson High School
Sun Jose Unified School District.

The Science Coordinator in our district introduced me to the Wipro Science Education Fellowship Program when I faced a bottleneck in my teaching. I wasn't sure if this program could address my challenges, but as I carefully reviewed the program details, I realized how well-structured and purpose-driven it was, with a strong support team for every fellow. I thought, "Why not give myself a chance to grow?"

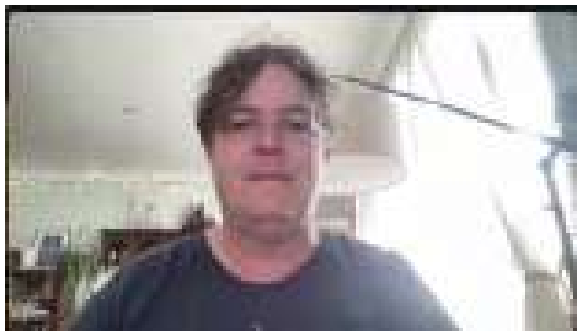
In the first year, we worked with teachers from different districts and grade levels. We recorded our lessons and reviewed each other's teaching practices. I found that these video-recording activities significantly improved my teaching. The V-CCLS group helped me make connections between elementary, middle, and high school education, which surprised me, as even elementary students could use similar strategies to learn the same topics. I appreciated observing how students' thinking evolves across different grade levels.

The H-CCLS group introduced me to various teaching strategies, broadening my perspective. Watching videos from teachers in different disciplines and discussing their methods helped me realize that, although I use many strategies in my classroom, there are always new approaches to explore.

In the second year, we participated in the GPS Project, where fellows practice leadership by implementing a year-long project aligned with personal or district science goals. Each fellow is assigned an experienced coach who provides one-on-one guidance. My coach not only helped me with my project on creating a Project-Based Learning environment in science class but also answered broader teaching questions I had, such as how to balance supporting students without making them overly dependent. This question had been on my mind for a while, and my coach's guidance helped me find the right balance, breaking through the bottleneck I had been facing.

The final presentation at the end of the Wipro Program provided a valuable opportunity to reflect on our experiences and gain deeper metacognitive insight into our growth. Through this presentation, I realized how much this program had contributed to my development in multiple aspects of my educational career. I'm grateful I took this opportunity, as it has been an invaluable experience for my professional growth.

Laura Spanier, 6th Grade Science Teacher
San Francisco Unified School District.



Our cohort began our meetings online. At this point, six months into quarantine, all of us were fairly familiar with the technology and had at least a few months of remote teaching experience. But there were critical differences between the tail end of the '19-20 school year and the start of this school year, namely that we were all looking at this being the new norm, at least for the near future. The previous spring semester had passed in a blur of shell-shocked faces, sporadically connecting through the ether. I did a pizza-making class, hosted online lunch times where we ate and played games together, and generally tried to keep spirits high. This semester, the consensus seemed to be that as teachers, we had to continue academic growth while not losing sight of the fact that none of us - not teachers, students, or parents - had ever done this.

My vertically aligned group - myself, a fifth-grade teacher, and a high school biology teacher - decided to investigate student engagement. We took a poll, asking our colleagues what percentage of their students were "engaged" during virtual class. Unsurprisingly, most reported that their students were very unengaged. We realized that many of us were still looking to the "before" model to inform us what an engaged student looked like: students' cameras were on, they raised their hands and took turns speaking aloud in the meeting, sharing their thoughts and answers to our questions. By this model, we agreed as we all stared at blank screens and conducted almost silent classes, they were right - students weren't engaged.

But what if we reimagined what student engagement looked like? What if there were a different way for students to show that they were paying attention and participating in class? And if we could offer these different choices, might students take advantage of them and become more engaged in the process? We tried dozens of new platforms, and strategies, asking students to share their thoughts in ways other than orally, and achieved remarkable success. Many of us are so familiar with Pear Deck, Padlet, Kahoot, and Jamboard tools that this hardly seems revelatory now. But at the time, there were very few studies on what worked for distance learning in primary and secondary education. In the fourth year of in-person schooling since the lockdown, I have dropped the use of many of these platforms and enjoy lively (and loud) classroom conversations these days. However, that experience changed my pedagogy.

I have a much more flexible viewpoint on what forms student engagement can take and a much more rigid viewpoint on my responsibility as an educator to provide my students with multiple and interesting ways to engage with the material, with their classmates, and with me. The opportunity to participate in the program was a unique gift. Wipro's vision of what teacher development should be, their belief that our ideas about our growth had merit, and their unwavering support in helping us achieve our goals were invaluable in achieving this. I am so grateful that I had this experience.

Calendar

Wipro SEF Program (Cohort 5)

Wipro SEF Master Calendar for 2024-2025 Academic Year

Professional learning sessions will be a combination of in-person and virtual formats. All in-person sessions will take place at Stanford University and Zoom links will be provided for all virtual sessions. Calendar invitations will be sent for all events and sessions.

Thursday, September 5	5:00 PM - 7:00 PM	Induction Ceremony| in-person
Saturday, September 21	9:00 AM - 2:30 PM	PL Session | in-person
Thursday, October 17	4:30 PM - 6:00 PM	PL Session | virtual
Thursday, November 21	4:30 PM - 6:00 PM	PL Session | virtual
Saturday, December 14	9:00 AM - 2:30 PM	PL Session | in-person
Saturday, January 11	9:00 AM - 2:30 PM	PL Session | in-person
Thursday, February 27	4:30 PM - 6:00 PM	PL Session | virtual
Saturday, March 22	9:00 AM - 2:30 PM	PL Session | in-person
Thursday, April 24	4:30 PM - 6:00 PM	PL Session | virtual
Saturday, May 17	9:00 AM - 2:30 PM	PL Session | in-person
Saturday, June 7	9:00 AM - 2:30 PM	End of Year Conference | in-person

Wipro School Leaders Program – Professional Learning Sessions and Dates (location TBD)

Thursday, October 10, 2024	4:00 PM - 6:00 PM
Thursday, November 7, 2024	4:00 PM – 6:00 PM
Thursday, January 16, 2025	4:00 PM - 6:00 PM
Thursday, March 20, 2025	4:00 PM - 6:00 PM
Thursday, April 17, 2025	4:00 PM – 6:00 PM

FLORIDA – UNIVERSITY OF SOUTH FLORIDA

Author: David Rosengrant, Allan Feldman, and Nancy Islam

Executive Summary

Over the summer we allowed our fellows to focus on their individual projects or other tasks as necessary. We had our last in person meeting of the school year on May 4th and then our first meeting of the next school year was just held on August 24th. During that May 4th meeting all of the groups presented either final projects, works in progress, or where they hope to go in the next two years with their projects. Fellows were able to interact with one another providing guidance and ideas to one another with the purpose of enhancing the quality of their individual projects. They spent the summer planning their projects with any possible modifications if needed.

The school year starts early in Florida with many districts having their students return on or around Monday August 12th. With all educators that sometimes creates a challenge. One of our leaders found out she was removed entirely from science to focus on ELA, however after some discussion we were able to show how she would be able to continue given her constraints. Thus, the beginning of the year focused on how to work with the project once they knew their plan ahead for the year.

We kicked off Wipro this quarter with our in-person meeting on Saturday, August 24th. We started this meeting with an introduction to action research for our new projects and team members in attendance from current projects. We then had every project briefly talk about their updates from summer reflections or in some cases new school year challenges. Finally, we ended the day with a choice of sessions for the fellows. They could choose between a session on conference proposal writing or research plan development for the year. The session on writing a proposal discussed key

components the fellows would need when submitting a talk for either NSTA or FAST (Florida Association of Science Teachers) or NSELA. The research plan focused on those teams who completed their action research training and now on the actual execution of their research. This involved creating timelines with data to be collected.

We are following up on this meeting with our next virtual meeting on Monday September 23rd. We will continue our action research work to our first timers then have all groups available to talk about their updated project reports.

Summary of Current Project(s) and Goals

Our first goal is to expand the influence of the Tampa Bay Wipro SEF by including teachers who were not fellows and formal school leaders as part of their teams, not just as participants but as leaders in their own project. Our second goal is focused on strengthening fellows' ability to carry out action research as part of their project work. Our third goal is focused on gathering information that would help our districts determine whether the notion of a "GPS-like project" serves as meaningful, leadership-developing professional learning

Progress and Highlights

We believe we are meeting the first goal. Each team is required to have include teachers who were not fellows in Phase 1, and at least one administrator. It is clear from the team reports that this structure is working well. However, for the most part, only the team leaders (the Phase 1 fellow, and PI of the team project) attend our meeting. It has been a challenge to get the other team members to attend. We have had some meetings in the past with teammates attending, however we only have one team that has consistently brought team members to the event. Moving forward we will continue to encourage the whole teams to attend our meetings, and to remind the team members we highly encourage team members to attend.

With our second goal, we have built action research into the project. During all of the one year projects and in the first year of two-year projects, Dr. Feldman has provided instruction on how to engage in action research. At each meeting the teams report back on how they engaged in action research between meetings. The participants are enjoying these sessions and are applying this work in the classroom. Where we need to focus on this year is that we have multiple projects going into their second year (excluding our previous one who was including this work in her doctoral dissertation) so we need to make sure they are doing what they need to do in this year with the data collection.

During this coming academic year and the next we will focus on attaining goal 3. Because the teams are nearing completion of their projects, we will have a better opportunity to research the work they have been doing to gain a better understanding of the power of the team projects in affecting teacher leadership and professional development in the districts.

Milestones Achieved and Impact of Work

We have had a total of 13 projects led by fellows from Phase 1. Only two of those projects were a 1-year project. However, the PIs of those projects requested to extend their project into a new two year. We also had two 2-year projects that stopped after their first year. That is because both of the PIs became administrators in their district, which greatly reduced the time they had available to work on their project. We have three fellows who are returning in Cohort 3 with a new round of

projects to continue their excellent work, including the two who are extending their one-year project. Each project has one new educator as a lead team member on the project and one administrative member. In some cases, those administrators were the same individual or a current DSC involved with the project. Our goal was to get a building wide leader to help promote sustainability, but every project is different, and we evaluated each project individually.

One of our fellows is using her work in Wipro to lay a foundation for her doctoral studies in Science Education at USF. Her work has resulted in several different presentations, including at major research conferences, and she is preparing a paper for publication. It is important to note that in our Wipro SEF Phase 1, we had several doctoral students do research on that project, however, in this report we are only focusing on Phase 2.

We are also having multiple projects present their research at local through national conferences. We had multiple submissions for NSTA in New Orleans this year. We have also had submissions for the Florida Association of Science Teachers, which will be held on the Tampa campus this fall. One of our tasks we need to do a better job with is to keep track of those presentations. We are compiling the list here:

https://docs.google.com/spreadsheets/d/1WUVu61eRfa3XwgwT5XD4a-gLzfagfmTcCMJOCpe7Bqo/edit?usp=sharing

Conferences are not the only place our fellows have been presenting. Nicole Holman has shared her work with science methods courses at USF so we can reach and target the next generation of educators. We also had our teachers participate in the St. Petersburg Science Festival. They were able to share science activities that were related to work being done on our projects. The festival brings in around 15,000 people every year.

Our fellows and district science coordinators also helped spearhead the initiative to have a Wipro presence at NSELA this past year. Our leadership has shared this was very successful. We also had our DSCs present various workshops through Wipro over the past two years.

Risk /Crisis Management

Our biggest challenge is the time crunch on our educators. The feedback from fellows that we have received who did not apply for projects are those who said the time it would take to do the project does not warrant the funds they would receive for doing the project. Thus, they are simply not adding more to their plates. Every district we are working with has multiple openings (at this time, approximately 500 openings in Hillsborough County) which puts stress on teachers to help fill classrooms without educators.

Moving forward, to work with this challenge we are reducing the number of in-person meetings and replacing them with virtual meetings. So instead of four in person meetings a semester, we are doing two in person and two virtual. We were able to increase to a higher number of applications for our 3rd cohort than previous cohorts.

We have also had some logistical issues at USF with things being processed. This was due to multiple folks leaving positions, changing positions, realignment, etc. However, these issues have been resolved and I also have a new administrative specialist in place who is full-time and reports directly to me. This additional support will be utilized moving forward to prevent any other delays.

Cross-Site Collaborations

One of our fellows traveled to California's event, and then fellows from Florida participated in conversations with fellows from other sites while at national conferences. We are not aware of any ongoing collaborative efforts. A challenge here is that for Phase 2, so many projects are different that it is challenging to have these cross-site collaborations. However, we can work like we have in the past at various national conferences to specifically connect our fellows. Also, as we noted in section 4 above, teachers in our partner districts are overworked and highly stressed.

New Opportunities

One opportunity we have not done in the past is the possibility of scholarships for graduate degrees for Phase 2 fellows. This could be for either master's or doctorate level work. One of our fellows in the program is working on her doctorate. Thinking about what defines teacher leadership, we wonder if this is something that would be worthwhile pursuing. Naturally, it would not be free money for them, but a graduate course that could work towards a higher degree.

Our second major opportunity is to run a mini-Year 1 with new fellows for a CCLS project. The districts have a plethora of new teachers every year, thus, it would be beneficial to get them together to model for our districts the ideas of this work for them to carry on in their districts, led by our Phase 1 fellows in collaboration with either the DSC or other district administrator.

Next Steps and Action Plan

We recently accepted our 3rd cohort into the program. We are planning to have a 4th cohort in the 2025-26 academic year. Because our current Wipro grant ends in 2026, these new projects would be for one year. This year, we are working on making sure we are able to develop collaborative relations between the new teams and the ongoing ones.

We are also going to be focusing more on research this past year as well which is why we are requesting a full time graduate student to assist in this area.

Vignettes

Rachel Cacace, University of South Florida

Rachel joins the Wipro Science Education Fellowship Program as a Ph.D. student at the University of South Florida. She is pursuing her Ph.D. in Curriculum and Instruction and concentrating in Science Education. She is also working toward a graduate certificate in eLearning and Design. She earned a Master of Education in Educational Leadership from the University of South Florida in 2023 and a Bachelor of Science in Secondary Education - Biology and a minor in marine science/biology from the University of Tampa in 2020. She spent the last three years teaching advanced and regular comprehensive science in middle school. While teaching middle school, Rachel was the chair of her school's professional development committee, where she managed a team of seven teachers to plan quarterly professional development for the school's teachers. The professional developments covered instructional strategies, data analysis, differentiation, and accommodations. She also served as the school's STEM Fair coordinator, where she collaborated with her department of seven teachers to host a school fair with over seventy participants. Of these students, over thirty advanced to the district competition and eight to the state competition. Prior, she taught pre-AICE biology and environmental science for one year in Hillsborough County. During her undergraduate coursework, she interned at multiple schools in Hillsborough County, where she taught 6th-grade life science and high school honors marine science.

Rachel is passionate about creating engaging and effective learning materials for science classrooms and sharing these resources with teachers. She seeks to help students understand the relevance of science and scientific thinking to their lives, regardless of their future goals. Rachel is passionate about learning and working with teachers to continuously improve instruction.

Virtual Reality in the Chemistry Classroom

Ileana Bermudez Luna; Roschell Thybulle; and Luis E. Rosado-Bermudez

Ileana, Roschell, and Luis

My name is Ileana Bermudez Luna. I am from Puerto Rico, and I have been teaching high school students in Hillsborough County for almost eleven years. I earned my B.S in Secondary Science Education-Chemistry at the University of South Florida. In addition, I earned my master's degree in Curriculum and Instruction, with a concentration in Science K-14, from Concordia University. I am a very dedicated and enthusiastic teacher that instills my passion for science in my students, motivating them to take higher level science courses and, in many cases, to pursue a STEM career after high school graduation.

I had the opportunity to be part of the WIPRO Phase 1-Cohort 3, where I worked on a project that focused on two important aspects of teaching. The first one was to create a learning environment founded in respect and rapport and free of labels such as AP, Honors, Regular, etc. The second one was to instill confidence and self-esteem in Chemistry Regular students before challenging or less appealing topics. I am very excited and invested in the project that we are developing for Phase 2. We are an amazing team of educators that will be working on integrating Virtual Reality in the Chemistry classroom. By performing this type of labs and simulations, students will be able to have a deeper understanding of abstract chemistry content, such as chemical bonding and reactions. The project also wants to foster the appropriate use of more advanced technology in the classroom that will encourage students' engagement as well as the opportunity to explore more challenging science topics. The other members of my team are Roschell Thybulle and Luis Rosado-Bermudez. Roschell has been teaching science for 25 years mostly in Florida but also in Tennessee and Georgia. She attended USF where she obtained two bachelor's degrees; one in science education and the other in chemistry. I also has a master's degree in Curriculum and Instruction from NOVA Southeastern University. She have taught Chemistry (Honors and Regular), Chemistry in the Community, Physical Science, Earth Science, as well as AP Chemistry.

Roschell is excited about joining the program is because students will have the opportunity to experience labs on a microscale that we talk about, but students are unable to visualize. Another reason is that it will allow those who are absent a way to make-up the lab and not have to worry about if chemical will be available or useable when they can make it up. We have experienced an increase in the cost of chemicals as well as faulty equipment, lack of gas for experiments, and a great need for understanding when it comes to absences. This allows us more freedom to give the students access to a deeper understanding of the material, maintaining good relationships with the students because we can be accommodating to their needs, and in the long run a savings in cost because we won't need all the chemical, equipment, or worry about the expense if there is broken or damaged equipment.

Luis is from Puerto Rico, and has been teaching middle/high school students in Hillsborough County and Boston Public Schools for 7 years. I earned my bachelor's at Florida State University. He is currently the science department head at the Josiah Quincy Upper School in Boston. The reason he wants to be a part of this project is to use virtual reality with students who have been marginalized in science. Having been a teacher in financially challenged districts and institutions, he saw that science materials and spaces were difficult to find. This led to topics and concepts being skipped over or completely left out due to not having the right resources. He's hoping that by providing an opportunity to be in a virtual reality lab, students will be able to have the experience that could be life altering. Examples include being able to learn and use tools only accessible in major labs for experience, being able to freely explore lab spaces without the danger of chemical safety and being able to collaborate and share lab spaces with students from different cultures and backgrounds across the world.

Fellow Quotes:

Nicole Holman:

I have experienced significant professional growth within the district by aligning my efforts with both personal and district goals. This journey has been further enriched by my decision to pursue a PhD in Science Education, which has deepened my understanding and passion for the field. Collaborating with my peers and staying actively involved in science research has been fundamental to my development as an educator, ensuring that I continually bring fresh, innovative perspectives to my students and colleagues.

Lora Darby:

Our first Collaborative Coaches meeting on September 3 was filled with changes and excitement. We had two of our original coaches decide not to move forward, due to time constraints and /or the pressure of being a BSI (state monitored) school. Luckily, we had another coach willing to take their spot. So, we are a 6-person group now, instead of seven. We decided to focus on students owning their learning and determined we would use weekly observations with a common data collection tool, so we are collecting the same data in the same way. The book we chose to complete a book study on is Get Better Faster. We already have the book, so we don't need to order it. Our second book, Supporting Grade 5-8 Students in Constructing Explanations in Science: The Claim, Evidence, and Reasoning Framework for Talk and Writing. We will begin the book study on the second book after the first of the year. Everyone is very excited about the opportunity to work together and getting the opportunity to help one another increase student outcomes in all six of our schools.

Chelsey Swatts:

My project focuses on new teachers and making them feel that they can be successful in their classrooms for day one. We modernized the new teacher training over summer, and we were able to get a lot of feedback from the new teachers. They felt they understood that science is for everyone, and it is meant to be student centered. We are starting a cohort model for our new teachers so we will be meeting again with them in October. We are trying to build their toolbox so they can feel safe to try new strategies in their classrooms. This will be helpful for keeping new teachers in the district because they feel supported.

Calendar

Date	Activity
September 17, 2024	Leadership and DSC Meeting
September 23, 2024	Online meeting with fellows and leadership
October 24-26, 2024	We (a leadership team member) are going to one of the meetings at Florida Association of Science Teachers Conference
November 16, 2024	In person meeting (working on location)

MISSOURI- UNIVERSITY OF MISSOURI

Author: Meera Chandrasekhar and Linda Godwin

Executive Summary Statement

The Missouri Wipro project's goal of teaching math and science in a harmonious manner will contribute to the transforming of the teaching of those subjects in participating districts. We are already seeing collaboration among math and science teachers, development of lessons that borrow from the other subject, discussion about changing the sequences in their curricula and interest in bringing in other teachers from their grade bands.

Our Wipro project uses a modified version of the initiatives of Phase I. Fellows participate as teams of 2-4 teachers from three grade bands (K-5, 6-9 and 9-12) from a given district, with at least one math and one science teacher in the team. For cohort 4 and 5, grade 6-12 teachers were recruited for year 1. K-5 teachers were added only in year 2 for cohort 4. For cohort 6 we have changed the grade band mix to recruit all grades, namely, K-12 teachers for both years. In year 1 they collaborate in V-CCLS and H-CCLS teams, anchoring their work in a research article and a math and a science educational practice. In year 2 they focus on creating or modifying four or more lesson plans that integrate math and science content.

In the past quarter, June – Sep 2024, Cohort 4 has completed two years of work in the project. During this academic year each 6-12 teacher has worked on creating 4 or more lessons in their subject (math or science) that includes concepts, methodology, vocabulary and alignment with the other subject. Teachers have worked on collaboration within their district Wipro team and with other Wipro fellows. Cohort 5 has completed year 1, where they worked on V-CCLS and H-CCLS

partnerships and created one lesson plan. They have begun planning their lessons and math-science collaborations for 2024-25. Cohort 4 and 5 fellows made presentations about their work during the end-of-year conference in May.

During the next quarter we will work with Cohort 5 and the newly recruited Cohort 6. We have accepted 16 fellows from four school districts for Cohort 6. After having worked with grades 6-12 in year 1 for cohorts 4 and 5 and adding on a one-year program for K-5 in cohort 4, we have changed the composition of the cohort by accepting K-12 teachers for 2 years. This change will help us compare the efficacy of the two grade-band mixes. The essential activities will remain the same, thus the first semester (Aug – Dec 2024) will consist of a V-CCLS partnership among the fellows.

Summary of Current Project(s) and Goals

The current project is an expansion of the teacher network, providing opportunities for collaboration and leadership, and focusing on collaboration between science and math teachers in elementary, middle, and high school. The project will address the challenges of teaching science and math in a harmonious manner at the middle and high school grade levels, and for some cohorts also during the elementary grades. Students often think of math as a set of rules used to manipulate abstract concepts. Several factors contribute to this thinking. Examples include terminology used in math vs science, the sequencing of math units with relation to science, the infrequency of discussion about the relevance of science topics in math units, and the differences in graphing methods used in math and science classes. The collaboration between math and science teachers is essential to the implementation of successful science and math curricula. This project will focus on having teachers develop such a culture in a systematic manner using appropriate research articles and paired Science and Engineering Practices and Common Core Math Practices.

In the first year of a fellow's participation, the project will enroll math and science teachers in teams from previous and new school districts. A team can be either from an elementary (cohort 6 only), middle (6-8), or a high school (9-12) grade band. A team will consist of 2 to 4 teachers, with at least one science and one math teacher. Members of a given team will participate in the project in the same cohort. Grade 6-12 (and for cohort 6 also K-5) fellows will work with the project for 2 years. Three cohorts of fellows will be recruited in 2022, 2023 and 2024, with up to 15 fellows per cohort. Fellows will work in V-CCLS and H-CCLS teams in Year 1 and will each develop one lesson plan that integrates math and science. In Year 2 they will work within their teams and develop 3-4 lesson plans or a module of lesson plans that they will disseminate to their and other school districts.

In Year 2 of cohort 4 (beginning fall 2023) elementary teachers were recruited from Year 1 fellows' districts as associate fellows. Elementary teachers typically teach both math and science. The purpose of having them work with middle and high school teachers is to have them learn content and methods as well as work on vertical collaboration across the K-12 spectrum so that they can integrate science into their math classes and vice versa. For Cohort 6 (beginning fall 2024) we have recruited from the entire K-12 spectrum for the 2-year program, allowing us to observe the differences among the two groupings.

Selected/Highlighted Projects

The initial general goals of our Innovative Phase Wipro project were:

- To expand the teacher network
- Provide new opportunities for leadership
- Focus on collaboration among science and math teachers in middle and high school

To implement these goals, middle and high school teachers from local and surrounding districts would enroll in the Wipro SEF project as teams of 2-4 teachers, with each team having a math and a science teacher from the grade band. Three cohorts of approximately 15 teachers each were to be recruited, with each teacher participating for two years (referred to as Cohorts 4-6).

The focus of addressing the challenges of teaching science and math in a harmonious manner at the middle and high school grade levels was chosen for Phase 2 as this collaboration between math and science teachers is essential to the implementation of a successful science curriculum.

Specific Goals:

- Goal 1: Math and science teachers will collaborate to choose mathematical practices and determine methods to harmonize the practices in math vs science courses in middle and high school.
- Goal 2: Fellows will create lessons/units that include harmonized mathematical practices for use in math and science courses.
- Goal 3: The project will disseminate these lessons via a repository that is available to all Wipro fellows and teachers outside the Wipro project. This repository may be in the form of a website.

Progress and Highlights

Recruitment

- We recruited 9 grade 6-12 teachers for Cohort 4 for 2022-2024.
- During the first year of Cohort 4 we made a modification to our original guidelines for teacher recruitment following a recommendation from the Wipro project: we decided to modify our recruitment criteria to include K-5 teachers.
- During the spring and summer of 2023, we recruited six K-5 teachers to participate in Cohort 4 second year (2023-24), for a total of 15 Cohort 4 teachers.
- Recruitment for Cohort 5 was challenging – we have four teachers in the 2023-25 Cohort 5 group.
- Based on the experience of adding K-5 teachers to Cohort 4, we decided to expand the grade-bands recruited to K-12 for the full two years for Cohort 6 and not have a one-year K-5 option.
- The newly recruited Cohort 6, which covers the whole K-12 spectrum, consists of 16 teachers.
- We have 35 Fellows over three cohorts vs. the planned 45.
- On the recruitment side we are somewhat short of the original planned numbers but are

finishing strong with 16 fellows in Cohort 6.

In the next two years, as we work with Cohort 5 (Year 2) and Cohort 6 (Years 1 and 2), we are modifying both the structure and the content of the monthly meetings.

- The structure of the meetings was modified to have concurrent meetings for cohorts 5 & 6 because the four teachers in Cohort 5 (all middle school teachers) did not have the advantage of vertical collaborations with K-5 and 9-12 teachers. Therefore, we are having them spend part of their monthly meetings in Year 2 with the Cohort 6 K-12 teachers.
- Year 2 meeting frequency for Cohorts 5 & 6 were increased to monthly (vs bi-monthly) with an increase in Year 2 stipend for the additional hours. This matches the monthly meeting frequency of Year 1.
- We are planning a series of physics + math activities during the monthly meetings for Cohorts 5 and 6 together based on the Exploring Physics curriculum that was created by Dorina Kosztin and Meera Chandrasekhar for the Physics First project and is available for free online. The first activity was presented during the August meeting, and we chose activities on electricity. K-5 teachers conducted an activity on vegetable batteries. Grade 6-12 teachers conducted a lab on measuring the resistance of pencil lead. In both cases teachers had to learn a few basics (measuring voltage and resistance) and then design an experiment where they determined independent and dependent variables and conducted the experiment. Both groups then analyzed their data and described their conclusions to the rest of the fellows. They then conducted a discussion about the math and science practices used in the activity and the math/science overlaps. (bulleted list in Plan for next two quarters table below). After the August activity we asked the teachers for feedback to determine whether they thought the physics + math activity was useful to them (a resounding yes). We have planned this semester's content based on their interests (motion and gravity). We have also informed Cohort 4 about these activities and invited them to attend if they are interested.

While Cohort 4 teachers created their lesson plans with their grade-alike district teams and were successful in doing so, we felt that content-based discussions about math and science would be useful as a regular activity during the monthly meetings. This decision was based on a pilot activity of discussion about uniform motion that we conducted with Cohort 5 during Spring 2024. During that activity math and science teachers got to discuss and compare how specific aspects, such as slope, graphs and measurement were approached in math and in science. Having a total of 20 teachers across the K-12 spectrum in the meetings provides a wide base of expertise that will be valuable to all participants.

Challenges and mitigation

- **Recruitment** has been a major challenge, especially for Cohort 5. For Cohort 6, we continued to contact surrounding districts with past participation but emphasized reaching new districts. This paid off for Cohort 6 with 4 HS teachers applying from a new district. Including K-5 teachers in recruitment also increased our Cohort 6 numbers.
- **Participation of District Coordinators** is a continuing challenge. We will continue to encourage them to participate in our monthly meetings, our December presentation meeting, and the May conference. A visit from Arthur will again be useful as it was last fall for DC

contact.

- **Bringing in new faculty:** Linda and Meera who are both retired faculty, are currently working on bringing in new faculty into the project so that new and younger blood can continue possible future phases of the Wipro SEF program. While we still have two years to go in this phase, we think it is imperative to bring them in well in advance of the end-date of this phase.

Cross-site collaboration

- Conference visits: Four fellows from Wipro programs at University of North Texas and Stanford traveled to Columbia to attend and present at our Missouri Wipro Conference on May 4. Having visiting presenters added another dimension to our conference as phase 2 projects differ across the program. Both the local and visiting fellows benefitted by learning new ideas for science and math education and ways to incorporate other types of curricula in math and science classrooms such as environmental projects and using language arts. Four of our fellows attended the Stanford Wipro conference in June. All feedback was very positive. Kelli Anthes, 8th grade math teacher at Hallsville Middle School, reported that she and Bryan Bolton (Hallsville 8th grade science) had an amazing experience with their joint presentation at the conference, were able to network, and brought back ideas for their 2024-2025 school year.
- Tina Cheong, who used to be at Stanford, developed a Venn diagram of overlaps among Math, Science and ELA practices. After consulting with Tina we have printed posters of the Venn diagram for all our Fellows and DSCs.
- Tammy Moriarty has been very helpful with sharing the California site's list of research articles for use by Missouri teachers.
- Conversations with Mika Munakata have been helpful as we established the math-science collaboration among teachers.

Leadership and teaching of math and science harmoniously

- The work completed by Cohort 4 and 5 teachers has exceeded expectations. From the work presented at the May 2024 conference, it was clear that the teachers discovered new value in collaboration between math and science teachers.
- Their lesson plans reflected depth in their collaboration, enthusiasm in expanding their collaboration with other teachers in the districts, and considerable learning among the math-science teams. The lesson plans submitted to the project repository reflect these values.
- The professional development they presented to teachers in their districts was met with obvious enthusiasm, and we have gained several Cohort 6 fellows from their efforts.

Milestones Achieved

We see clear evidence of increased harmonization between math and science, and leadership among Phase 2 fellows (project goals 1 and 2):

- Cohort 4 teachers, who have completed the full 2-year cycle (total of 15 teachers) have created lesson plans that clearly indicate the collaboration among math and science teachers.
- The work of these teachers will be available to others within their district and will include

many good examples of math-science harmonization in classrooms such as graphing and common functions.

- Based on the submitted final projects, we see math teachers conducting hands-on science or math activities to demonstrate various mathematical concepts (e.g., experiments that produce five common functions observed in basic science experiments, such as linear, quadratic, exponential, inverse and sinusoidal functions). Conversely, science teachers are using tools where students observe the same functions, often in graphical representations, in descriptions of phenomena.
- 6-12 teachers are synchronizing science and math lessons so content similarity is obvious to students. K-5 teachers are adding graphical representations of data and measurement to activities that they previously conducted as qualitative activities.

Impact of Work

- A heightened awareness of bringing math and science together in their teaching is evident in the lessons teachers created. The next step they are contemplating is widening math-science harmonizations among teachers and among non-Wipro teachers. We describe this aspect in the first bullet under New Opportunities.
- End of year 2 professional development by Cohort 4 yielded increased enrollment from teachers for Cohort 6.

New opportunities and next steps toward district transformation

- Encourage graduated Cohort 4 fellows: Cohort 4 fellows have expressed interest in continuing to work on harmonizing math-science lessons for their grade, non-Wipro teachers in their grade bands, and across their districts. In a recent Zoom that we conducted to discuss their interest, they informed us that they will write down their priorities and describe what they think will work well for their districts. Several of them are also interested in taking part in the physics + math activities with Cohorts 5 and 6. We expect to solidify these ideas over this semester. We have suggested it might be possible to fund these activities, which we will discuss based on their plans' strength once they create defined plans.
- Continue work with Cohorts 5 and 6, namely V- and H-CCLS for Cohort 6 and Lesson plan creation for Cohort 5
- Include content activities (physics+ math) for Cohorts 5 and 6 at monthly meetings.
- Encourage vertical collaboration with Cohort 6 fellows for Cohort 5 fellows
- Bring in new faculty to take over potential Wipro SEF project post spring 2026 as current faculty “truly” retire.

Plan for the Next Two Quarters

Date	People	Activity
August 1, 2024	Cohorts 6	Induction, Introduction to WiproSEF program
Aug – Nov 2024 meetings	Cohort 5	Collaborative discussion of lesson plans
Dec 2024	Cohort 5	One lesson plan completed and presented during Dec presentations. The lesson plan is meant to be one of four that will be presented to non-Wipro teachers in their building/district, with the goal of seeding the collaboration among math and science teachers in the district.
Aug -Oct 2024 meetings	Cohort 6	Aug: VCCLS teams chose math and science practices and begin search for the team's research article Sep: Research article finalized Oct: Teams present research article to rest of cohort
Sep – Nov 2024	Cohort 6	VCCLS: Lessons recorded and debriefed
August - Nov 2024 meetings	Cohorts 5 and 6	Physics + math activities (all based on curriculum on the Exploring Physics website https://exploringphysics.com. Aug: Electricity experiments; Vegetable battery lab for K-5 and What causes resistance lab for 6-12 Sep: Uniform motion lab (V-CCLS teams); analysis focus on graphs and motion diagrams Oct: Accelerated motion lab (V-CCLS teams); analysis focus on graphs and motion diagrams Nov: Gravity lab (V-CCLS teams); analysis focus on graphs and motion diagrams All labs are followed by discussion of math-science connections • What science/ math practices did you use? • Which practices are common to math and science? • What practices are approached similarly / differently in the science /math classes? • What practices might be imported among math and science?
Sep -Nov 2024 meetings	Cohort 6	Sep: "PowerPoint can kill your presentation (or maybe not)" Nov: Presentation on Astronomy/space travel
Dec 12, 2024	Cohorts 5 and 6	C6: V-CCLS team presentations C5: One lesson plan presented by district teams

Vignettes

My name is Melissa Hundley and I am a 9-12 high school Mathematics teacher. I earned my undergraduate degree in Secondary Mathematics and Master of Curriculum and Instruction - Secondary Mathematics from the University of Missouri - Columbia. I currently teach at Boonville High School, a rural mid-Missouri school with a high school population of approximately 550 students. I have taught mathematics in Boonville for 17 years. Prior to that I taught for 8 years at Hickman High School in Columbia, Missouri.

I was approached by my high school science colleague to participate in Wipro Cohort 4. We had worked together over the past few years to align concepts taught in Physical Science and Algebra 1and found we used similar language or activities in our Physics and Algebra 2 classes. We joined the MU Wipro Cohort 4 to continue to build curriculum for our classes and develop a common language that students would recognize and be able to use in our classes.

One of my favorite Algebra 1 activities is titled "walk the graph". My science colleague and I realized we were doing very similar activities in our classrooms. Students are given a distance time graph and a motion detector and asked to analyze the graph and try to "walk" to see if they could match the graph. As my colleague and I share several students (who never mentioned the similar activities) we decided to collaborate in lesson planning so that we were not just repeating the same activity. We now both use Desmos (a free online math tool) to create activities that are slightly different yet alike in vocabulary. One Desmos activity I use is titled Graph Stories requiring students to watch a short video and then make a graph of that situation. The science teachers developed their own activity that requires students to make graphs for various situations.

Our shared students have now commented that what they learned in science class is related or very similar to their math class. One specific lesson I used to discuss direct and inverse variation was titled "oil spills" where students had to measure the height of an "oil spill" in various cylindrical objects or beakers. Students in my Algebra 2 classes that were also in Chemistry or Physics seemed to have a different model or equation they used when talking about inverse variation. This lesson was intended to model variation while developing a better understanding of how to work with equations in both math and science. Some of the common language we focused on during the past few years while participating in Wipro cohort 4 was related to graphing, independent and dependent variables, rate of change, and constant of variation. Our work in Cohort 4 has encouraged us to continue to work in vertical teams across our district (kindergarten through 12th grade) to develop more cross curricular activities.

Students in Hundley's Algebra 2 class measure the height of an "oil spill" and relate findings to the constant of variation.

My name is Matt Wightman and I live in Columbia, Missouri. I worked in the Wipro Fellowship program from 2022 – 2024. I currently teach 7th grade science at Smithton Middle School for the Columbia Public School District. Here, our 7th grade year includes one semester of physical science and one semester of earth science.

Our primary units during the year include an introduction to chemistry, the electromagnetic spectrum and other waves, weather, and climate change. I have used my Wipro learning experiences to teach math/science concepts in a way that catches all students, regardless of their math skills. I integrate valuable modeling techniques to facilitate the teaching of density both conceptually, as well as mathematically.

While my curriculum, at times, doesn't focus heavily on mathematics, I do incorporate a tie-in wherever I can. I am focusing on utilizing mathematical cognitive thinking at a high student level in regard to analyzing collected data and representing relationships between variables as students conduct experiments. In the Spring semester students will measure decibels and use problem solving to discover how to minimize the escaping volume (using sound waves) coming from their created cardboard box models of a "garage band practice space."

Calendar

Date	People	Activity
August 1, 2024	C5 and C6	C6: Induction, Introduction to WiproSEF program C5& C6: Physics + math activities, Electricity experiments C5: Lesson plan collaboration
Sep 5, 2024	C5 and C6	C6: Research Meeting; "PowerPoint can kill your presentation (or maybe not)" C5& C6: Physics + math activities: Uniform Motion C5: Lesson plan collaboration
Oct 10, 2024	C5 and C6	C6: V-CCLS Research Article presentation C5& C6: Physics + math activities: Accelerated Motion C5: Lesson plan collaboration
Nov 7, 2024	C5 and C6	C6: Getting a start on V-CCLS presentations C5& C6: Physics + math activities: Gravity C5: Lesson plan collaboration
Dec 12, 2024	C5 and C6	C6: V-CCLS team presentations C5: One Lesson plan presentation by district teams

Author: Mika Munakata, Monica Taylor, Emily Klein, Colette Killian

Executive Summary Statement

The Montclair State University site has made progress through the first half of its Phase III project. The program is contributing to district transformation through the Fellows' self-initiated projects, which extend the reach of the Wipro program to new teachers, new districts, new subjects, and new collaborations. The connections that are made through the program would not be possible without the structure that the Wipro SEF program provides.

As stated in the previous report, the current phase of the project has involved 12 Alumni Fellow working on district-related initiatives and one Fellow working on publicizing the program. Each of the alumni Fellows has recruited a team of district teachers. Together, these teams are working towards their respective goals as a new cadre of teacher leaders are nurtured.

This past quarter, Alumni Fellows continued working with their teams to make progress towards their respective project goals. Their projects involved other teachers new to Wipro, administrators, instructional coaches from other districts, and former Fellows. With the culminating event in sight, all Fellows worked on developing and refining their presentations. The event, held on Tuesday May 29th, showcased each team's two-year project and brought together various program stakeholders. The presentations were inspiring and thoughtful and represented a variety of ways to make change in districts.

The MSU site accepted proposals for the second half of the innovation phase. All Fellows, including past Fellows and Fellows new to the program in this phase, were invited to apply. With a new cadre of Fellows, the next quarter will focus on goal setting and extending the reach of the Wipro SEF Fellowship even further.

Summary of Current Project(s) and Goals

Our initial goals and benchmarks for the program's success include:

1. Expand the impact of the Montclair State University (MSU) Wipro SEF Program on K–12 schools in New Jersey (NJ), both within the current partnership districts and new districts

- Participation of up to 30 new teachers including those in other content areas;
- Addition of 4 new districts.
- Professional development experiences in the areas of interdisciplinary curriculum and pedagogy (particularly focused on science and math but also literacy and art); diversity/equity/inclusion; LGBTQ+ inclusive curriculum; gender equity; teacher leadership.
- Continued engagement of Fellows with the larger professional community at all levels (school, state, national, and global) through professional organizations as well as NJ Department of Education.
- Mentorship of doctoral students interested in math and science education as well as teacher leadership through co-facilitating professional development, collecting and analyzing data, and publishing and presenting research.
- Expansion of the social media presence of the MSU Wipro SEF program as well as the nationwide network of Wipro SEF programs.
- Continued dissemination of Wipro SEF model and resulting research through conference presentations, peer reviewed articles, doctoral dissertations, and book chapter publications.

2. Create sustainable teacher leadership throughout those districts.

- Support of district initiatives.
- Stronger university/district partnerships that includes an expanded list of districts.
- Construction of district structures that provide sustainable support for Wipro science teacher leadership and equitable access to learning for all K–12 students.

Progress and Highlights

We have met and exceeded our initial goals. Below is the timeline we originally proposed. We met all of our benchmarks and have selected Fellows for Cohort 2 for Years 3 and 4.

<table>
<tr><td colspan="2">Cohort 1
15 Alumni Fellows
15 new Fellows</td><td colspan="2">Cohort 2
15 Alumni Fellows
15 new Fellows</td></tr>
<tr><td>Year 1
(July 1, 2022-August 31, 2023)</td><td>Year 2
(September 1, 2023-August 31, 2024)</td><td>Year 3
(September 1, 2024-August 31, 2025)</td><td>Year 4
(September 1, 2025-February 28, 2026)</td></tr>
<tr><td colspan="4">Alumni Fellows
• work with mentors to develop their two-year plans
• recruit new teachers by September of first year of participation
• implement their plans for two years
New Fellows
• participate in Alumni Fellows' projects
• take on leadership roles within the district</td></tr>
</table>

<table>
<tr><td colspan="4">All Fellows
• submit quarterly reflections
• attend four meetings each year at MSU
• attend end-of-year culminating event each year
• share experiences with districts and education community
• have opportunity to attend Wipro conferences and other professional conferences
Select Fellows
• set up social media efforts
• work with other sites on social media presence
• collaborate with District Coordinators and administrators to construct more permanent district support structures through identifying key stakeholders, coordinating meetings, attending Board meetings, and promoting Wipro work within the district</td></tr>
<tr><td colspan="4">Project Leadership</td></tr>
<tr><td>Collect pre-participation data from Cohort 1
Mentor Fellows
Ongoing data analysis</td><td>• Collect post-participation data from Cohort 1
• Mentor Fellows
• Data analysis/ presentation
• Recruit Cohort 2 Alumni Fellows</td><td>• Collect pre-participation data from Cohort 2
• Mentor Fellows
• Report on Cohort 1 research through presentations and publications</td><td>• Collect post-participation data from Cohort 2
• Mentor Fellows
• Ongoing data analysis, presentations, and publications</td></tr>
</table>

Milestones Achieved and Impact of Work

- We have extended our reach from five districts to a total of 8 districts.
- In 2013, we started with a cohort of 20 Fellows. Over the eleven years since then, we will have involved 111 Fellows, including new Fellows starting in Year 3. We have over 22 publications and presentations on our research on teacher leadership related to the Wipro SEF program. Our publications include articles in journals such as The International Journal of Science Education, International Journal of Leadership in Education, Professional Development in Education, two book chapters, and presentations at conferences such as AERA and NARST

Cross-Site Collaborations

- David Kleiner, Janine Hogel, and Alison Mahfouz attended the year-end conference at the California site. They presented their reflections on their ten years in the Wipro SEF program.
- Regina Borriello continued her work with other sites on social media and publicity efforts.

New Opportunities

Our research activities have been robust. We are currently working with three full-time doctoral students, one of whom is basing her dissertation on the social networks of our Wipro SEF Fellows.

Plan for the Next Two Quarters

For Years 3 and 4 of our projects, we have recruited 9 Alumni Fellows and 23 New Fellows, exceeding our goal of recruiting 15 of each. We will have additional participating teachers, bringing the total number of active teachers and supervisors to 49 for Year 3 and 4. We will continue to support their district-driven initiatives as outlined above.

Vignettes

Title: Finding Our Path to the Future

Team:
Jessica McMasters (jmcmasters@kearnyschools.com)
Jackie Galella (jgalella@kearnyschools.com)
Betty Rodriguez (brodriguez@kearnyschools.com)

We had additional help from Pat Hester-Fearon, Kim Serino and Erika Kliszus.

Project: The idea for our project was to create a sustainable Career Day Program for the students in grade 8. We reached out to our administrators, teachers, staff and the community to find presenters that we felt would appeal to our students. We were able to gather 25 presenters in the arts, the medical field, law enforcement, STEM, culinary, the trades, local entrepreneurs, as well as a group we called "outside the box". We had three presenters in each area and finished with a great AI presenter. Jackie prepared an interest survey for the students to determine in which team they would be placed. They had 30 minutes with each presenter in that area.

Our guests gathered for breakfast to let them relax and ask any last minute questions. Each person was assigned a 7th grade Student Council member to help for the day. Erika and her photojournalism class took wonderful pictures and prepared an Instagram for the school site. The kids were full of tons of questions, so we knew we hit on the right project. "Live for today" is good, but it doesn't really inspire 13 year olds to try their best in school.

We wrapped up with a group photo of our presenters in the auditorium, lots of applause and a small gift to remember us by. Then, there was the AI finale that had all their attention. The students returned to their last period class to hot pretzels and juice from our PTSA and an exit survey to complete.

The comments were all pretty positive, but some would have liked to have had more of a "hands on" experience. The favorites were our cheesecake baker who came with samples, the Olympic fencing coach who suited them up to try out fencing, the veterinarian who let them all use a stethoscope to listen to his dog's heart, the realtor who gave out gift cards to kids who asked questions and Captain Jack who is on his 9th career.

We will be doing this again! We already have volunteers.

E.R. Nurse

Aeronautics Engineer

Olympic Fencing Coach

Chef / Restaurant Owner

Title: Number Strings: Stringing Schools Together

Team:
Kristen Scrivens, Stony Lane School, Paramus, kscrivens@paramusschools.org
Alison Mahfouz, East Brook Middle School, Paramus, amahfouz@paramusschools.org
Jessica Cappello, Bloomfield, jcappello@bloomfield.k12.nj.us
Justine Lopez, Paterson, lopez.justine@gmail.com

Objectives:
1. District initiative addressed:
    - Mathematical Best Practices/Resources
    - Meaningful Feedback
2. Classroom or learning initiatives addressed:
    - The learning frameworks we addressed were:
    - Continuum of sociomathematical norms
    - Principles of math discussions
    - Mathematics teaching framework

What did we do?
- Created a group of knowledgeable and reflective teachers with skills to teach math effectively.
- New Questions- How can we engage students in more productive struggle? How can we center student talk and ideas during number strings & math conferences.

What did we find?
- Choosing rich-tasks and conferring supports productive struggle and maintains student ownership
- Teachers deserve and flourish when they are given agency and treated as reflective practitioners
- Reflection promotes learning- invites teachers to analyze and reflect on their own practice and set goals for themselves
- Investing in reflective practitioners develops leadership & community.

Next Steps:
- Keep it going! More district level engagement and support.
- Transition to science district initiatives.

Quotes from Innovation Phase:

"My teachers are really enjoying the Wipro program so far - we are all looking forward to our January PD Day together." Patricia Hester-Fearon

"I appreciate all that you have done to continue this fellowship program and further grow it. I hope that you will be able to continue this for years to come." Susan Bartol, Montclair

Calendar

Date	Activity
September 30, 2024 4:30 – 6:30 pm	Fall Meeting
January 24, 2025 (Snow date 1/31) 1:00 – 6:00 pm	Half-day retreat
May 29, 2025 4:30-7:00 pm	Culminating event

NEW YORK - MERCY COLLEGE

Author: Kristen Napolitano, Amanda Gunning, Meghan Marrero

Executive Summary Statement

Wipro Reimagined teachers are reimagining the ways that they can be critical leaders toward district transformation. These teachers are implementing creative strategies for vertical articulation between teachers and students in the districts through initiatives including robotics, engineering, and mathematics, which administrators have indicated intention to support in years to come.

Mercy University's goal is to support Wipro projects that span different schools in each district, connecting elementary, middle, and high schools through STEM programming. Looking ahead, the MCSE will continue to support innovation and collaboration by teachers and administrators to improve STEM teaching and learning in their districts.

In the previous quarter, New York Fellows enacted five vertically articulated projects, including a K-12 engineering design challenge, a 5th grade-high school math peer mentorship collaboration, an elementary-high school family STEAM night, an elementary science teacher conference hosted by high school and middle school science faculty, and a K-5 garden club. These projects are supported by administrators representing various grade levels across the district. The Mercy team hopes that establishing vertical relationships will improve sustainability outcomes for all of these projects. In this upcoming quarter, the Mercy team will begin to recruit up to 18 K-12 Cohort 3 Fellows representing at least four of the five partner districts.

Summary of Current Project(s) and Goals

MCSE's goals are to support Wipro Fellows and their colleagues to implement Fellow-driven, collaborative, GPS-type projects within districts to support teacher leadership in science and STEM education and drive sustainable district change. The goals MCSE set forth were:

- Goal 1: To engage existing Fellows in new projects to support implementation of innovative science instruction related to the newly adopted NYS Science Learning Standards (based on the NGSS) or STEM instruction.
- Goal 2: To recruit new teachers and administrators to participate in Wipro SEF GPS projects with existing Fellows to broaden the impact of the SEF in current districts and sustain district transformation.
- Goal 3: To support teacher leadership and dissemination of GPS work through participation in conferences and professional development opportunities.
- Goal 4: To involve District Coordinators and administrators in GPS work to build in-district capacity for teacher leadership and champion future teacher leadership in science/STEM.

Progress and Highlights

Thus far, MCSE has exceeded goals 1 and 2. The team has supported 48 teachers and 10 administrators to engage in teacher-driven projects in a variety of areas including engineering, gardening, and robotics.

MCSE is on track for meeting Goal 3. Thirteen fellows presented at the Mercy University Annual STEM Educators Conference in September 2023 and another 20 are expected to do so in 2024. Eight Fellows presented at the National Science Teaching Association (NSTA) conference in Denver in Spring 2024 and 4 Fellows, and 1 former District Coordinator are presenting in New Orleans in November.

Regarding Goal 4, both Cohorts of Fellows saw involvement from their administrators in their projects. During a March 2023 IHE site visit, the MCSE team along with project evaluator, Anne Gurnee, and project director Arthur Eisenkraft, met with principals at several of the Fellows' schools. Throughout implementation, the administration representing each project has joined either Zoom or in-person meetings with Fellows and with the Cohort, and supported Fellows in other ways by helping provide coverage and funding to Fellows during their project. As for DSCs, three attended the DSC leadership meeting in 2023. One DSC ran an elementary STEM education conference in March 2024. Currently, two have registered for the SciLeadPro teaching leadership fellowship and one former DSC is presenting their work at NSTA in New Orleans this November.
Foundation and new Fellows have reported that administrators have recognized their leadership abilities, and they have taken on leadership roles in their schools and districts, especially in light of the implementation of the NYSSLS, New York's adaptation of the NGSS. Fellows are serving on district curriculum teams, leading professional development sessions on the new state-required laboratory activities and three-dimensional assessments. Additionally, thanks to the vertically aligned projects that the Fellows have enacted, MCSE is seeing greater collaboration across schools in participating districts.

Milestones Achieved and Impact of Work

- 38 Wipro Fellows (including new and foundation)
- 4 District Science Coordinators

- 10 administrators
- 110 other teachers involved in projects in the first two years

Risk/Crisis Management

As has been the case since the inception of Wipro Reimagined, communication with some districts has been easier than with others. MCSE had anticipated funding projects from each original district, but thus far have only done so in 4/5 districts. Thanks to some in-person professional learning that MCSE facilitated in the 5th district, MCSE reconnected with some foundational Fellows and met some of their colleagues, encouraging them to consider applying this year. Further, MCSE will reach out to this district to attend the MCSE STEM Educator Conference to continue fostering this line of communication.

As mentioned in the previous quarter, another challenge encountered has been with the university finance team. In the past year, there has been complete turnover of the entire team, from the CFO and controller down to assistants. Thus, it has been a challenge to assure consistent accounting, reporting, reimbursements for Fellows, and more. MCSE met with the Mercy University President and new controller to discuss the team's grave concerns, and the team remains hopeful that procedures will improve going forward.

A final challenge is that Dr. Kristen Napolitano, GNY Wipro SEF Project Director, was on parental leave from February-June 2024, meaning that other team members had to support the Fellows in their work, conduct site visits, and lead meetings. Unfortunately, Dr. Napolitano will be leaving the team for a faculty position in September. MCSE hired former DSC, Carmen King, who retired in June, to serve as the new Director. Kristen graciously offered to train and work with Carmen this fall to ensure a smooth transition.

Cross-Site Collaborations

Several of the MCSE Fellows had the opportunity to attend the Wipro SEF presentations at the California site, which they reported was quite beneficial. Unfortunately, they traveled after the final MCSE meeting of the year, so they did not get to share with last year's cohort, but they will have an opportunity to do so this year.

Vittoria Condello-Vessecchia, a Cohort 1 Wipro Reimagined Fellow from New Rochelle, said, "The California trip was wonderful! It was great to meet teachers from different places and make those connections. It's always wonderful to be around people who appreciate your work. These events really help keep that burn-out at bay and give a recharge. The job gets harder and harder and after 26 years of teaching at the same place, getting to see how the education world works outside of my school is inspiring. Alicia and I connected with Lisa and we plan on meeting up with her when she is in NY to discuss her success with Donors Choose. We also spoke with administrators there and started to think about how we can do better to involve district administrators. Looking forward to any other similar events!"

The MCSE team anticipates that Fellows from other sites will participate in and present at the MCSE K-12 STEM Educators Conference in September.

Cross-site collaboration for the IHE leadership has been incredibly important. Both Dr. Gunning and Dr. Marrero attended in-person leadership meetings last year in Texas, allowing them to learn from the successes and ideas from other site leaders. These collaborations have been instrumental in propelling their work at the Mercy University Center for STEM Education forward.

New Opportunities

In June 2024, MCSE announced that seven local K-12 schools had been named Mercy University STEM Schools, due to their outstanding STEM programming, leadership, and participation in Mercy Center for STEM Education programs. Three of these schools have two or more Wipro Fellows on staff, contributing to the school's STEM initiatives. MCSE hopes to grow the network and to create opportunities for STEM Schools to collaborate in initiatives such as Wipro SEF. Additional funding would support creating opportunities specifically designed around teacher leadership.

Next Steps

In the next two years, MCSE aims to continue the momentum, supporting district transformation in STEM. We will begin this year, as we have for the past two years, with a brainstorming session at our annual conference, followed by a virtual meeting. Fellows will then apply for collaborative projects, supported by their administrators, and we will select the projects in early December. Through monthly virtual or in-person meetings, we will support the Fellows as they enact the projects and create opportunities to share their challenges and successes. The Mercy IHE team looks forward to building on the success of the project thus far.

Vignettes

White Plains (Tiger Tech Boat Battle!)

Michael Nangle, Wipro Reimagined Fellow and general and physical science teacher at White Plains High School reported that, "The Tiger Tech Boat Battle is the most meaningful project I've been a part of in my 15 years of teaching experience. Getting to know and work with my colleagues from other buildings and grade levels was incredible; I will be implementing the teaching techniques and project organization that I've learned from them with my students this year. Meeting the younger students at the event was a personal highlight of mine since I don't work with that age level often. I was blown away by their enthusiasm and ingenuity! Finally, I felt proud that we were able to put forth an interesting and fun challenge for our high school students, and they rose to the occasion! Overall, it was a great experience and I can't wait to do it again this year."

Aldwin Martinez, Wipro Reimagined Fellow and White Plains High School industrial arts teacher said, "Working with elementary students has been particularly rewarding. Their enthusiasm and imagination are infectious, and their unique perspectives often lead to innovative and unexpected solutions. The Tiger Tech Boat Battle has provided a platform for these young minds to explore their creativity and develop a love for learning."

The four-member Wipro ReImagined team (Aldwin Martinez, Michael Nangle, Giordano Garcia, and Damien King) planned and implemented the Tiger Tech Boat Battle. Middle school and high school students designed and 3-D printed boats. Elementary school students got the opportunity to use recycled materials to design and build their own boats and test them. They were also able to sail some of the boats designed by the upperclassmen. Ultimately, several of the upperclassmen exhibited the speed and dexterity of the boats they designed.

Damien King (middle school industrial arts teacher) Dr. Margaret Doty (coordinator of science and engineering) Carmen King (Wipro DSC) Aldwin Martinez (high school industrial arts teacher) Giordano Garcia (high school physics teacher,) Michael Nangle (high school general and physical science teacher)

Ward School STEAM Math Night - New Rochelle

Wipro Reimagined Fellow and elementary teacher Ana Weisner said, “The annual STEAM Night event was eagerly anticipated and hosted at William B. Ward. It promised an immersive experience for all attendees. Showcasing a diverse array of captivating activities, the event was dedicated to highlighting the exciting realms of science, technology, engineering, arts, and mathematics. Participants engaged in hands-on experiments, interactive demonstrations, thought-provoking presentations, and collaborative challenges, stimulating a deep appreciation for the interconnected STEAM fields. Through this event, participants were provided an enriching and enjoyable experience that seamlessly integrated academic depth with interactive and dynamic fun.”

Ward School STEAM Math Night - May 16, 2024

Maria Walsh, Ann Marie Manganiello, Ana Weisner

Calendar

Date	People	Activity
September 28, 2024	MCSE	MCSE STEM Educator Conference – Wipro 10-year anniversary celebration – face-to-face Initial Brainstorming for new Wipro Reimagined Groups
October 15, 2024	Carmen King	Wipro Reimagined Cohort 3 info session on Zoom (7-8 pm)
November 1, 2024	MCSE	Wipro Reimagined Cohort 3 proposals are due – MCSE team reviews proposals throughout November
December 2, 2024	Carmen King	Award announcements for Cohort 3, projects begin, material orders are placed
January 2025 (TBD)	MCSE	In person Cohort 3 meeting at MCSE in Tarrytown, NY

TEXAS - UNIVERSITY OF NORTH TEXAS - DALLAS

Author: Dr. Ratna Narayan

Executive Summary Statement

The Texas Wipro Team continues to work this year (Phase 3, year 2) toward the goal of District Transformation through Teacher Leadership by providing opportunities to Wipro Fellows to advance their development as leaders.

All the funded proposals of Wipro Phase Three at UNT Dallas (2023-2024) continue to be carried out successfully by all the participants involved. These proposals include:

School projects:

- Cedar Hill ISD: Effects of Collins Writing in Science (District initiative , 2nd year of funding with more fellows added,)
- DeSoto ISD: The Garden Project from Seeds to Flowers
- Grand Prairie ISD: a) Gamyfying Forces (2nd year of funding with more fellows added, Bilingual & STEM focus) b) Savvy Sphero Sisters (Focus on girls in STEM, coding)
- Irving ISD: Exploring STEM wonders with 3D printing (first graders, STEM focus)
- Lancaster ISD: Transforming Instruction, one PLC at a time (, 2nd year of funding with more fellows added,)

Collaborative project:

- Trinity Basin / Lancaster ISD: All hands-on deck (third and last year of funding, more fellows added)

Individual Projects were funded:

- Shelby Allen : Stemtastic club
- Marsha Bolden: Exploring Science concepts using PBLs

To record and show progress made on their projects, Wipro fellows are continuing to work on their Portfolios. Fellows also submitted proposals for the yearly Conference for the Advancement of Science Teachers. All the Wipro Fellows and DSCs continue to work productively.

Summary of Current Project(s) and Goals

Phase 3 at UNT Dallas was designed to attempt to address the notion of district transformation.

Phase 3 Projects:

The projects funded were year-long consisted of projects targeting different groups of science educators and students.

- The School Projects, focused on one school per collaborating district per year,
- Collaborative Projects, between fellows of 2 or more Wipro Districts
- Individual projects, carried out by Wipro Fellows.

Each group/ individual had to send a proposal that I provided feedback on, after the changes were made, they were sent to experienced external reviewers who recommended acceptance/additions/ changes. Once the changes were made, participants received a letter of acceptance detailing the requirements of the grant that they agreed to, signed and returned it to me.

Phase 3 Projects	**School Projects**	**Individual Projects**	**Collaborative Projects**	**Status**
Year 1 (22-23)	9	3	2	Complete
Year 2 (23-24)	6	2	1	Complete

Selected/Highlighted Projects

Progress and Highlights

The initial goals and benchmarks were focused mainly on the school projects. The idea behind them was that each ISD select a district goal or issue that was important at a district/ school level and design and implement a study involving the fellows (old and new) that would have an impact on the school/ districts/ students/ teachers.

Collaborative projects were offered because there was interest. Individual projects were offered as there are a number of Wipro fellows who are interested in conducting individual projects in their classrooms.

I believe we have done pretty well. There are aspects of our design I am very pleased with and there are things we need to tweak. We have definitely NOT fallen short, we have met and even exceeded expectations on some counts, but we can do better.

Yes, there are some changes I anticipate, the framework will stay the same, however some aspects will change to improve the experience,

- New science TEKS are being implemented from Fall 24. I am currently in discussions with my DSC as to how we can respond to the implementation in a manner that will assist them, their district and teachers. https://tea.texas.gov/academics/subject-areas/science
- TEA has introduced a new STEM framework that Fellows need to get familiar with. https://tea.texas.gov/academics/college-career-and-military-prep/texas-stem-education-framework.pdf
- Based on discussions with my DSCs, we might offer some projects focused on the above for Phase 3, years 3 & 4
- I am also thinking of doing away with collaborative projects between districts as they come with their own set of problems of accountability.
- In the past we had a summer conference that provided free PD for all teachers, where the fellows also presented at, I believe it needs to be offered again.
- The original plans had the DSCs doing a joint project, although the idea is a good one, given their responsibilities and their involvement in the school projects, the time constraints do not make it possible.

Milestones Achieved

Both Phase 3, year 1 and year 2 projects were completed on time. Below are the Google sites / Wix portfolios for the Phase 3, years 1 & 2 projects.

Project Phase 3 Year 1 2022-23	Name of project Google Site	Status	CAST Proposal submitted	CAST proposal presented
Grand Prairie ISD school Project	NSEC Enrichment for Middle School	Completed	Yes	Yes
Irving ISD school Project	STEMing to Staar	Completed	Yes	No
Grand Prairie ISD school Project	STEMtastic Morning https://sites.google.com/view/wipro-grant/home	Completed	Yes	Yes
Lancaster ISD School Project	5th grade Science teacher PLC https://sites.google.com/view/5th-grade-science-teacher-plc/home	Completed	Yes	No
Grand Prairie ISD project	Edible Gardening https://sites.google.com/view/wipro-template-site/home	Completed	No	No
Cedar Hill ISD School Project	Effects of Collins writing on 8th grade science https://sites.google.com/d/14vSCXVxBXyO9H4uSkHmCtWe0Az3awYNL/p/1lVjcpPIsNiTRaK8zozr42m7s1KFHmZ_b/edit?pli=1	Completed	Yes	No

Grand Prairie ISD School project	What Properties Matter https://sites.google.com/view/wipro-ochoa-stem-academy/home	Completed	Yes	Yes
Grand Prairie ISD School project	GFAA Starts Club https://sites.google.com/view/gfaa-starts-club/home	Completed	Yes	No
Collaborative Project Irving/Lancaster ISDs	Exploring science concepts using social studies https://sites.google.com/view/exploring-science-concepts/home	Completed	Yes	Yes
Collaborative Project Advantage Academy/ Lancaster ISD	All Hands-on Deck https://sites.google.com/view/impact-of-hands-on-activities/home	Completed	Yes	Yes
Shelby Allen Individual Project Denton ISD	Classroom Educational Website for science content https://sites.google.com/view/classroom-educational-website/home	Completed	Yes	Yes
Brittney Preston Individual project Lancaster ISD	Science Staar Bootcamp https://sites.google.com/view/wiprotemplatesite/home	Completed	Yes	Yes
Candace Edmerson Individual Project Duncanville ISD	I CER You	Completed	Yes	Yes
Gayla Davidson Individual Project Lancaster ISD	Preparing students for Staar 2.0 https://sites.google.com/view/preparing-students-for-staar-2/meet-the-team	Completed	Yes	Yes
Project Phase 3 Year 2 2023-24	Name of project Wix portfolio	Status	CAST proposal submitted	CAST proposal accepted
DeSoto ISD School Project	The Garden Project https://rainobhatti.wixsite.com/zinc	Completed	Yes	Yes
Grand Prairie ISD School Project	Forcing Game Development https://rainobhatti.wixsite.com/silver	Completed	Yes	Yes
Irving ISD School Project	Exploring STEM wonders https://rainobhatti.wixsite.com/website-26	Completed	Yes	Yes
Lancaster ISD School Project	Professional Learning communities https://rainobhatti.wixsite.com/ourplc	Completed	Yes	Awaiting decision
Cedar Hill ISD School project	Effects of Collins Writing in Science https://rainobhatti.wixsite.com/platinum/proposal	Completed	Elementary Yes Secondary Yes	Yes Awaiting decision
Grand Prairie ISD School Project	Savvy Sphero Sisters https://rainobhatti.wixsite.com/website-24/meet-the-team	Completed	Yes	Yes

Collaborative project Trinity Basin/Lancaster ISD	All hands-on Deck https://rainobhatti.wixsite.com/platinum/proposal	Completed	Yes	Yes
Marsha Bolden Individual Project Irving ISD	Exploring science concepts using PBL strategies https://rainobhatti.wixsite.com/bariu m/proposal	Completed	Yes	Yes
Shelby Allen Individual Project Denton ISD	STEMtastic Club https://rainobhatti.wixsite.com/copper	Completed	Yes	Yes

Changes made from Phase 3 Year 1 to year 2

Project Portfolios

For Phase 3, Year 1, we used Google sites for the project portfolios. Few presenters did not complete their google sites to my satisfaction. For Phase 3, year 2 and henceforth I have included a clause on their acceptance letter that the third and final stipend will be disbursed only if the Project portfolio is completed, and a CAST proposal is submitted.

For Year 2, I used Wix portfolios because they are more presentable, however, most of my Fellows find Wix unwieldy and prefer Google sites, so I will revert back to Google sites for Phase 3, year 3 projects.

For Phase 3, year 3, I intend each participant having their own page on the google project site so I can keep track of their progress.

Conference Presentations

The Conference for the Advancement of Science Teachers (CAST):

CAST is an annual conference hosted by the Science Teacher's Association of Texas. It is attended by 6000-7000 attendees each year. For Phase 3, one of the requirements of the grant at UNT Dallas is for each participating group to submit a proposal for presentation at CAST. While we have no control over what proposals get accepted, I think it is very good professional development for our fellows to learn to write a conference proposal, get it accepted and present at a conference. Many of our Wipro Fellows, especially the newer ones, have never attended CAST or presented at any conference.

Few districts support their fellows in presenting at CAST. Last year, I paid for their registration ($285) and each participant received a stipend of $500 towards their conference expenses. While this does not cover their entire expense, especially when CAST is in Houston or San Antonio, I will attempt to increase the amount depending on my budget. I also provide any materials they might require for their presentation.

CAST 2023, Houston	9 Phase 3, Year 1 presentations	19 Fellows, 2 DSCs
CAST 2024, San Antonio	8 Phase 3, Year 2 presentations accepted, 2 pending	~ 33 Fellows, 5 DSCs

I was not happy with some of the presentations at CAST 2023, in that they were not hands-on enough. This year, on Sept 14th, all accepted CAST presenters will meet with me and my DSCs and walk us through their presentation, documents and activities and receive feedback on them. It will also be an opportunity for me to let the newer fellows know about our expectations for them at CAST, how to get reimbursed, registration etc.

Impact of the work

Some of the school projects have been expanded from P3Y1 to P3Y2 and have shown impact that we are all happy with. There is a clear rationale for all the projects that were funded. In this section I will describe a few projects and their impact.

Cedar Hill ISD School Project: Collins Writing in Science

Collins writing	Grades	Participating Fellows	Students impacted
P3Y1	8th Science	1 DSC, 4 Fellows	606
P3Y2	5th, 8th Science Biology	1 DSC, 7 Fellows	1516

Collins writing is a district initiative put in place by the district to increase writing and reading comprehension. First implemented during P3Y1, the aim of the project was to determine the effect of Collins writing on 8th grade science. The CHISD DSC and four teachers (Wipro Fellows) worked on the project which impacted their students and teachers. 2023 was the year when the short answer responses were introduced into the STARR test. The CHISD students did well, scoring 0.81/2 (third highest in the state, which is pretty good considering almost 85% of 5th graders responded with an "I don't know"!) The district then asked all the grade 3-11 teachers in English, Social Studies, and Science to implement Collins Writing for their students.

For P3Y2 of their project, Jeremy and his team expanded their study to include 5th grade, 8th grade Science and Biology STAAR (State of Texas Assessment of Academic Readiness)/(EOC) End Of Course scores across Cedar Hill Independent School District. They are currently awaiting results; however, the district has decided that the writing process used by the Fellows will be copied to other content areas as well.

The Fellows presented their results at the Missouri Wipro conference.

Two proposals were submitted to CAST 2024, one directed towards elementary grades that was accepted and a second towards the secondary level that we are awaiting a decision on.

One of the CHISD Fellows, a new fellow, Krystal Rising presented in MO and submitted a proposal to NSTA 2024 in New Orleans which was accepted.

Lancaster ISD School project: Professional Learning communities

Since the pandemic, Lancaster ISD has had an increase in teacher turnover. The national teacher shortage has impacted Lancaster ISD significantly. To fill teaching positions the district moved some teachers into unfamiliar grades and content areas, as well as hired long term substitutes with the hopes of them working towards their alternative teaching certification.

The project arose due to the lack of teacher experience in the content area.

Content area and grade	Total no of teachers	Teachers with 2+ years in Content/Grade	Teachers with 0-1 year in Content/Grade
3rd grade science	8	38% (3)	63% (5)
4th grade science	7	0%	100% (7)
5th grade science	8	38% (3)	63% (5)
6th grade science	3	33% (1)	67% (2)
STEAM	6	50% (3)	50% (3)

The aim behind the project was to ensure teachers have the content and pedagogical knowledge necessary to equip students to be successful in secondary level STEM courses, and beyond. Developing grade level Professional Learning Communities (PLCs) for the science teachers as well as for the elementary STEAM teachers would provide the means to support the development of these specific educators. By developing their content of science/STEAM and instructional pedagogy, we anticipate an increase in the students' content knowledge.

In 2022-23, the Lancaster ISD DSC led a PLC for three 5th grade science teachers as a district proposal through Wipro. During this time teachers met with her to cover district expectations and tools/strategies that they could incorporate into their classroom to help with student mastery in 5th grade science. The outcome of the proposal was successful and now those teachers have an opportunity to share their expertise with new science teachers via a similar proposal in 2023-24.

2022-2023	2023-2024
Faith PLC coordinator 5th grade	Faith 3rd grade, 5 new teachers
Preston 5th Grade Science Teacher	Medford 4th grade, 7 new teachers
Mosley 5th Grade Science Teacher	Preston & Mosley, 5th grade, 3 new teachers
Burkhalter 5th Grade Science Teacher	Burkhalter 6th grade, 3 new teachers
	Hatley STEAM, 3 new STEAM teachers

The project impacted a total of 1040 elementary students in 2 elementary school and 459 6th graders as well as 21 of their new teachers. Based on MAP student growth data, students grew in science content throughout the school year. In addition, based on the Pre and Post Survey responses, the teachers' confidence of science content and instructional strategies increased after participating in the PLC sessions. The team successfully presented at the Stanford University Wipro conference this summer.

Grand Prairie ISD School Project: Forcing game development

This project is a very interesting one with unintended, unexplored student impact. The 2022-23 proposal was science content based where 2nd and 3rd grade students invented a useful tool using the efficiency of the properties of matter of the object they invented. The initial project was led by 2 teachers but had expanded in task and the number of participants.

For the 2023-2024 project, General and Bilingual science educators at GPISD will give students in grades 3 to 5 continuous opportunities to explore the connections between the Energies and Forces through the engineering and investigative design process. Students created a game that used forces and the students' ability to reengineer strategies to win. Of the teachers, 3 are dual language, 1 bilingual and one general education science and math teacher.Dr. Uvaldina Janecek, a friend and a reviewer of Wipro Proposals suggested sending a conference proposal based on their study to present at TABE (Texas Association of Bilingual Educators) as there is a dearth of bilingual science-based studies. The proposal was accepted, and the conference is in Round Rock, Texas in October. The Grand Prairie ISD Executive Director of Bilingual/ESL Programs and Pre-K Enrollment/Registration, Ms. Tamara Sanchez was so excited about the acceptance, she said she would cover all the conference costs for the presenters. This is an opportunity we need to pursue, as well as the leadership opportunities associated with the project that can impact the teachers and students.

Risk/Crisis Management

Our biggest challenge is the high attrition rates among teachers and administrators in our partner districts.

There is a LOT of movement of teachers from one district to another. We cannot do anything to avoid this, however, it does create a challenge with regards to the continuity of projects, especially school projects from year to year.

Having several individual projects at districts is not economically feasible with our budget. I try to support interested fellows; however, it is not always possible.

Within districts, positions, grade levels and subjects change at whim. In Lancaster ISD, Faith Milika our DSC is now in charge of the Gifted and Talented students and STEM. It remains to be seen who will oversee Science at Lancaster ISD.

The GPISD DSC just informed me that she is seeking a position at a non-Wipro district.

We encounter all kinds of challenges, but we do not let them defeat us!

Wipro @UNT Dallas has developed a reputation for providing dependable high quality professional development for our partner districts, they often take us for granted. There are a few districts (namely CHISD) where there is NO response from the superintendent or Asst Superintendent to anything we send out to them. At the Principal level, they do respond and attend our meetings and

communicate and provide feedback. We have never been able to attend even a single CHISD Board meeting.

Presenting at CAST when it is out of town is expensive, the registration fee is $305 per person and costs are ~ $15-1800 per person. I have 33 fellows and DSCs presenting at CAST this year. While I provide some stipend, I do not have funds to cover all of it (>$50,000). While Grand Prairie ISD helps support their fellows, other districts do not, and the funds have to come from the fellows' own pockets.

This year, for CAST 24, I will register the fellows and provide a stipend of 500$ each. CAST 25 is in Dallas, so my costs will be reduced, and I will only register the fellows who present and pay for parking.

One fellow from Lancaster got too busy and stopped working on her projects as she had other commitments. She exited from the two group projects she was involved in.

Changes at UNT Dallas

As of Fall 2024, we will have a new University President and Provost as well as a new Dean for the School of Education.

Cross site Collaboration

As of now we do not have any cross-site collaboration, but I am definitely interested in it, and I believe all participants can benefit from it. I see two definite possibilities with the garden project and supporting English language learners in the classroom. I would like to see either or both of those strands in our site conferences. I believe we can learn from and enrich each other. Given the diversity of sites, we can do what suits the needs of our sites under 1 common overarching question. Perhaps the collective data can be presented at NSTA.

New Opportunities

I would really like to restart the partnership we had with the informal sites in and around Dallas. It was unique and very much needed. Perhaps in the next round of funding some monies could be set aside explicitly for this purpose and projects designed around the informal sites.

There is interest in the districts in STEM projects, especially with the introduction of the TEA STEM framework in fall 2024, a lot of districts now have a STEM department separate from science. The need for STEM instruction, PD and projects is large and immediate.

CAST 2025 is in Dallas. I would like all our fellows to present. I know it's a big ask @ $300 per conference registration but I think it would be a great opportunity and would also speak to our continued support for them.

Next Steps and Action Plan

Our action plan for the next two years is to complete what we have planned for with fidelity, keeping district transformation in mind as an overarching goal, yet being supportive of our individual fellows. I look forward to participating in cross site collaborative projects, sending my fellows to other sites and welcoming fellows from other sites.

2024-25

August 2024	Phase 3, year 3 request for Proposals
Sept 14th 2024	CAST Preparatory session
Oct 9th 2024	Phase 3, year 3 Induction and award ceremony
Nov 2024	CAST 2024 San Antonio
Dec 2024	Mid-year meeting /Quarterly report due
Feb 2025	Meeting
March 2025	Meeting /CAST 2025 proposals / Quarterly report due
June 2025	Wipro annual meeting and dinner / Quarterly report due
Summer 2025	Summer online PD
June 2025	Phase 3 Year 3 proposals completed; portfolios turned in

2025-26

August 2025	Phase 3, year 4 request for Proposals
Sept 2025	CAST Preparatory session
Oct 2025	Phase 3, year 4 Induction ceremony
Nov 2025	CAST 2025 Dallas
Dec 2025	Mid-year meeting /Quarterly report due
Feb 2026	Meeting
March 2026	Meeting /CAST 2026 proposals / Quarterly report due
June 2026	Wipro annual meeting and dinner / Quarterly report due
Summer 2026	Summer online PD
June 2026	Phase 3 Year 4 proposals completed; portfolios turned in

Vignettes

Sherry Thompson, Academic Specialist- Irving ISD

As an educator for 18 years, I have attended a plethora of trainings, workshops, and classes to enhance my craft in teaching. As a veteran teacher, there have been many times in which I have attended a training that appeared to be a repeat of something that I have heard many times before. This has not been the case since being introduced to Wipro, which makes it so unique.

In 2019, I had the opportunity to become a Wipro Fellow, and it has made a positive impact on my career and my students' learning. The experiences that I have had with Wipro has allowed me to think differently about ways in which students learn best. It is because of Wipro that my students have been exposed to STEM activities, Project Based Learning and researching science and engineering practices more in depth than some of their peers. In addition, the collaboration with teachers in other districts has provided me with feedback to improve my teaching strategies.

Most recently, I had the opportunity to work with 1st graders and introduce them to the meaning of STEM and how it impacts the world around us. Receiving guidance from Dr. Narayan during this process was helpful in scaffolding our students' learning. The first graders were able to design and create a prototype of a prosthetic leg while learning about empathy. We were then able to use TinkerCad to produce a 3D printing of their design. The results of their efforts as first graders impressed my team and I. We are looking forward to presenting our project at CAST, the Conference for the Advancement of Science Teaching, in San Antonio, TX in November.

Because of Wipro, I have networked with amazing educators throughout the years, developed reflective practices, and gained a better understanding of the Next Generation Science Standards. I look forward to collaborating with more educators and continue to engage students in real world application of the science standards.

Tamesha Brown, Vice Principal, Trinity Basin Preparatory – Ewing

(A Cohort 3 wipro Fellow at Lancaster ISD)

The Wipro Science Education Fellowship at the University of North Dallas has impacted my life greatly over the past five years. When I began this journey as a Wipro Science Fellow, I knew that I was a part of something great, yet I did not know how great. I have been provided the opportunity to grow alongside other great educators who are not only passionate about teaching Science but we are also passionate about collaborating with others. I have collaborated with teachers both vertically and horizontally while trying to move the education needle for students.

Being an intricate part of this fellowship has grown my confidence in teaching and supporting others not just on my campus but within my district as well. It contributed to the development of teacher leadership and district transformation. The various projects that I have facilitated have had a positive impact on science awareness and student achievement.

Since being in the fellowship, I have obtained my Masters in Curriculum and Instruction as well as my Principal Certification. I have witnessed true leadership as the fellowship has continuously supported my growth as a leader and it has stretched me to continue developing other leaders. Development of teacher leaders will always been an asset within any district and that has been evident in my journey throughout my Wipro Science Education Fellowship experience.

Calendar

We do not have any more face to face group meetings this year. However, I will be setting up individual zoom meetings with each P3Y2 participant regarding their Wix portfolio.

August 2024	Phase 3, year 3 request for Proposals
Sept 14th 2024	CAST Preparatory session
Oct 9th 2024	Phase 3, year 3 Induction and award ceremony
Nov 2024	CAST 2024 San Antonio
Dec 2024	Mid-year meeting /Quarterly report due
Feb 2025	Meeting
March 2025	Meeting /CAST 2025 proposals / Quarterly report due
June 2025	Wipro annual meeting and dinner / Quarterly report due
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June 2025	Phase 3 Year 3 proposals completed; portfolios turned in

Monthly Evaluation Updates

2023 - 2024 Evaluation Executive Summary

ANNE GURNEE
CONSULTING, LLC

Wipro Science Education Fellowship
Evaluation Update
June 2024

Activities this Month

- Traveled to California for year-end meeting on June 1.
- Began year-end interviews of IHE leads.
- Submitted drafts for post-conference survey for travelling Fellows/DSCs and for the NSELA conference in July.
- Continued analysis of year-end data and began drafting the 2023-2024 annual report.

What's Next?

During the month of July, AGC will be working on the following:

- Finalizing and administering the post-conference survey and NSELA survey.
- Touching base with the New Jersey team about site visit planning in late September.
- Offering further insights from the evaluation for the Wipro SEF book.
- Completing year-end interviews with IHE leads from each site.
- Continuing the analysis of all year-end data and continue drafting the 2023-2024 annual report.
- Participating in any scheduled/needed meetings for the project.

ANNE GURNEE
CONSULTING, LLC

Wipro Science Education Fellowship
Evaluation Update
July 2024

Activities this Month

- Completed design and began administration of Missouri conference survey.
- Completed design and began administration of post-NSELA conference survey.
- Continued analysis of year-end data and began drafting the 2023-2024 annual report.
- Began review of Wipro book to insert related/relevant evaluation findings.
- Began planning for site visit trip to New York and New Jersey in late September/early October.
- Completed contract for 2024/2025 Wipro SEF evaluation work.

What's Next?

During the month of August, AGC will be working on the following:

- Reviewing/analyzing final data from Missouri conference survey and post-NSELA conference survey.
- Continue working with the New Jersey team to finalize site visit in late September/early October.
- Continuing to offer further insights from the evaluation for the Wipro SEF book.
- Continuing the analysis of all year-end data and submitting the draft of the 2023-2024 annual report.
- Participating in any scheduled/needed meetings for the project.

ANNE GURNEE
CONSULTING, LLC

Wipro Science Education Fellowship

Evaluation Update

August 2024

Activities this Month

- Completed analysis of year-end data and submitted draft of the 2023-2024 annual report on August 26, 2024.
- Continued planning for site visit trip to New York and New Jersey in late September/early October including making all travel arrangements.
- Offered recommendations for book project based on past evaluation data.
- Attended monthly leadership team meeting on August 20, 2024.
- Began planning for upcoming evaluation activities for 2024-2025.

What's Next?

During the month of September, AGC will be working on the following:

- Revising and finalizing annual report for 2023-2024.
- Continue working with the New Jersey team to finalize site visit in late September/early October.
- Begin creation/updating of evaluation tools for 2024-2025.
- Participating in any scheduled/needed meetings for the project.

2023-2024 Evaluation Report

September 10, 2024

Prepared by:
Anne Gurnee, M.Ed., Founder
& Brian Garrison, M.A., Research Assistant
Anne Gurnee Consulting, LLC

Submitted to:
Center of Science and Mathematics in Context (COSMIC) at the University of Massachusetts Boston

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Executive Summary

With financial support from Wipro, the University of Massachusetts Boston's Center of Science and Mathematics in Context (COSMIC) launched an initiative to prepare teacher leaders in partnering school districts. This initiative, the Wipro Science Education Fellowship (Wipro SEF), was originally built on the success of the Boston Science Partnership's Science Education Fellowship, a project funded by the National Science Foundation from 2009-2012. Since 2012, the Wipro Science Education Fellowship program expanded to include partnering school districts from New Jersey and New York, in collaboration with Montclair State University and Mercy University. In 2017, the program added a new state, Texas, with a new university partner, the University of North Texas at Dallas (UNT), and in 2018, three more universities, Stanford University in California, University of South Florida and the University of Missouri joined Wipro SEF.

Since its inception, a major goal of the Wipro Science Education Fellowship is to develop a cadre of teacher leaders in each partnering district who deepen their practice and lead from their classrooms. As the program has remained active in each state's partner districts for four or more years, a new goal has arisen: district impact. Defined individually by each state and their partner districts, the goal of district impact has become an equally important outcome of the program in addition to the continued development of high-quality teacher leaders.

In 2022-2023, a new phase of funding of the project began, Wipro SEF Innovation, which allowed for each site to grow and modify their program while keeping the two prime goals of teacher leadership and district impact at the core. Here is a summary of each state's Wipro SEF Innovation structure:

- California–Two more cohorts of Fellows from their existing partner districts will go through the "classic" Wipro SEF program; School Leaders Program will provide leadership professional development for selected leaders from their partner districts.
- Florida–Fellows from partner districts will propose extended GPS one- or two-year projects that involve new Fellows and utilize action research.
- Massachusetts–Districts as a whole and/or individual Fellows will engage in selected projects such as Vertical Teaming; professional development seminars will be offered to interested Fellows (still in development).
- Missouri–Three more cohorts of Fellows from their existing partner districts (and some new districts as well) will engage in a Wipro SEF "classic" program with a focus on science and math educators initially at the 6-12 level but now expanding to include K-5.
- New Jersey–Fellows from partner districts develop and implement two-year district goal-aligned projects involving new Fellows.
- New York–Fellows from partner districts will engage in new GPS projects that are generated, in part, at an annual K-12 STEM Teacher Conference each fall.
- Texas–School-based projects will begin in each partner district annually; collaborative mini-grants will be offered that involve at least one Fellow and one other district personnel.

The Wipro Science Education Fellowship program leadership contracted with Anne Gurnee Consulting, LLC (AGC) to continue an evaluation study of Wipro SEF Innovation during the 2022-2023 academic year. The goal is to document outcomes of participation on the Fellows and the participating school districts. Specifically, the evaluation seeks to gain insight regarding the effects of the program on the development of teacher leaders within the districts, the growth in the District Science Coordinators leadership and how they engage the cadres of teacher leaders, and to the extent possible, the type and amount of district impact that results from the Wipro SEF Innovation program.

During the year, the evaluation team submitted several interim reports including a report on the site visit in December 2023 to the California sites and the 2024 Fellows and District Science Coordinators Mid-Year Survey. The focus of this report will be to summarize the key findings from program activities in spring 2024, to present overall findings of note, and to offer data-driven recommendations on next steps for program growth and refinement.

Key Findings–2023-2024

In 2024, there continued to be broad agreement among the Fellows and District Science Coordinators involved with the program that the Wipro Science Education Fellowship was successfully implemented at all sites with active Fellows (California, Florida, Missouri, New York, New Jersey and Texas). The data from this evaluation study indicated that the program was positively received by participants and resulted in numerous outcomes and impacts for Fellows and District Science Coordinators and early evidence of district impact.

Key overall findings from the 2023-2024 academic year include:

- Nearly all the Fellows (95%) reported that they were "satisfied" or "very satisfied" with the Wipro Science Education Fellowship program with over half (55%) choosing "very satisfied."
- A large majority of District Science Coordinators (89%) also reported that they were "satisfied" or "very satisfied" with the Wipro Science Education Fellowship with over half (52%) choosing "very satisfied."
- Nearly all the Fellows (94%) felt that the Wipro SEF program "met most," "met all" or "exceeded" their expectations, and more than a quarter (28%) specifically chose "exceeded.
- Nearly all the District Science Coordinators (92%) also felt the program "met most," "met all" or "exceeded" their expectations, and nearly a quarter (23%) specifically chose "exceeded."
- Nearly all of Fellows (94%), "agreed" or "strongly agreed" that the program was worth the time they had invested in it this year, and similarly 97% "agreed" or "strongly agreed" that they would recommend the program to a colleague.
- A large majority of the District Science Coordinators (80%) also "agreed" or "strongly agreed" that the program was worth their time, and nearly all (97%) "agreed" or "strongly agreed" that they would recommend the program to a colleague.
- A large majority of Fellows (87%) and more than three-quarters of District Science Coordinators (78%) cited the network of like-minded colleagues created by Wipro SEF as a key source of support.
- More than a third of the Fellows participating see were beginning to consider themselves teacher leaders because of participating in Wipro SEF. In California and New Jersey, more than half are beginning to consider themselves teacher leaders because of participating in Wipro SEF.
- The teacher leadership behaviors that Fellows were almost universally most comfortable with is speaking to a small group of professional colleagues. The leadership behavior they were almost universally least comfortable with is knowing how to write an effective article for their peers.
- Teacher leadership behaviors that Fellows engaged in most frequently overall included providing guidance to other teachers who asked for or needed support and taking action to increase the success of all the students at their school.
- More than three-quarters of all Fellows in every state "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their school.
- More than three-quarters of all Fellows in every state except Florida "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their district.
- All the District Science Coordinators in California, Florida, and New York and most District Science Coordinators in New Jersey (75%) and Texas (86%) "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their districts.

- Fellows overall believed that teachers have a role to play in school change, can help lead school change and that positive change is possible for their schools.
- Fellows and District Science Coordinators overall felt strongly that teachers can help lead district change and have an important role to play in district change.
- A significant majority of California year-end conference participants (85%) felt that the conference influenced their approach to forthcoming science teaching and leadership opportunities to a great extent.
- A majority (70%) of California year-end conference participants felt that interaction with Fellows from other sites has impacted their sense of belonging to a community of K-12 science teacher to a great extent.
- Nearly all Missouri year-end conference participants (94%) "agreed" or "strongly agreed" that the cross-site interactions provided valuable insights that they would not have gained otherwise.
- A large majority of respondents to the post-NSELA (National Science Education Leadership Institute) survey (83%) "agreed" or "strongly agreed" that they had learned more about how to enhance science instruction through teacher leadership at the NSELA institute, and they came home with ideas that could impact their districts in significant ways.
- Considering the investment of time and resources involved in traveling to a distant conference such as the NSELA institute, a large majority of respondents (83%) felt that the experience was "highly valuable" or "very highly valuable" for themselves, and three-quarters (75%) felt it was "highly valuable" or "very highly valuable" for their districts.

Recommendations

While the Wipro Science Education Fellowship continues to be successful, input collected from participants (e.g., Fellows, District Science Coordinators, and program leadership) indicated potential areas for continued refinement of the model. As the program continues to evolve during this Innovation phase, the evaluation team provides the following recommendations to help to inform the future program growth and expansion:

1. **Recognize the high value that Fellows and District Science Coordinators place on the relationships built within the Wipro SEF program framework and plan for them to thrive long-term.**

2. **Continue to communicate explicitly and often about the Wipro SEF program's key goals of teacher leadership and district impact.**

3. **Consider offering future rounds of "classic" Wipro SEF programming to continue to train newer teachers in the partner districts.**

4. **Think about how to adapt the program to support long-time Fellows and District Science Coordinators.**

5. **Provide support for Fellows in article-writing skills.**

6. **Seek innovative ways to engage districts in supporting the program financially.**

7. **Work to improve the efficiency and effectiveness of program meetings.**

Introduction

The Wipro Science Education Fellowship (Wipro SEF) is a partnership between the University of Massachusetts Boston, Montclair State University in New Jersey, Mercy University in New York, University of North Texas Dallas, Stanford University in California, University of Missouri and the University of South Florida, with funding from Wipro, to foster teacher leadership and science teaching excellence among teachers in partnering school districts. The program grew out of the success of the Boston Science Partnership's Science Education Fellowship, a grant initiative funded by the National Science Foundation from 2009-2012.

The original Wipro Science Education Fellowship focused on the following program goals:

- Creating and supporting a corps of teachers and leaders
- Instituting a culture of active and reflective instruction
- Improving teacher quality through vertical alignment within content and horizontal alignment within grade bands, meeting in small groups, and professional development in order to increase student achievement

This program endeavored to create skilled cadres of science educators that lead from the classroom to help promote positive change in their districts. The goals of the program were met by focusing the Fellows' professional development in three specific areas or the "Pillars" of Wipro SEF: reflective practice, leadership with peers, and adult learning.

With a new round of Wipro funding beginning in 2022, Wipro SEF Innovation is expanding on past work with the teacher cohorts in partner districts, continuing to build teacher leaders but also striving to impact districts in deep and meaningful ways. To accomplish this, each partner site has modified the original program plan in unique ways to meet the needs of their partner districts. Here is a brief summary of each state's Wipro SEF Innovation plans:

- California–Two more cohorts of Fellows from their existing partner districts will go through the "classic" Wipro SEF program; School Leaders Program will provide leadership professional development for selected leaders from their partner districts
- Florida–Fellows from partner districts will propose extended GPS one- or two-year projects that involve new Fellows and utilize action research.
- Massachusetts–Districts as a whole and/or individual Fellows will engage in selected projects such as Vertical Teaming; professional development seminars will be offered to interested Fellows (still in development).
- Missouri–Three more cohorts of Fellows from their existing partner districts (and some new districts as well) will engage in a Wipro SEF "classic" program with a focus on science and math educators initially at the 6-12 level but now expanding to include K-5.
- New Jersey–Fellows from partner districts develop and implement two-year district goal-aligned projects involving new Fellows.
- New York–Fellows from partner districts will engage in new GPS projects that are generated, in part, at an annual K-12 STEM Teacher Conference each fall.
- Texas–School-based projects will begin in each partner district annually; collaborative mini-grants will be offered that involve at least one Fellow and one other district personnel.

For the 2023-2024 academic year, Anne Gurnee Consulting, LLC (AGC) was contracted as a research and evaluation consultant to continue an evaluation study of the newest phase, Wipro SEF Innovation. The goal is to document outcomes of participation on the Fellows and the participating school districts. Specifically, the evaluation seeks to gain insight regarding the effects of the program on the development of teacher leaders within the districts, the growth in the District Science Coordinators leadership and how they engage the cadres of teacher leaders, and to the extent possible, the type and amount of district impact that results from the Wipro SEF program.

During the year, the evaluation team submitted several interim reports including a report on the site visit in December 2023 to the California sites and the 2024 Fellows and District Science Coordinators Mid-Year Survey. The focus of this report will be to summarize the key findings from program activities in spring 2024, to present overall findings of note, and to offer data-driven recommendations on next steps for program growth and refinement.

Evaluation Study Framing

To frame the study when initially designed in 2014, the evaluation team reviewed relevant literature, drawing from two fields of study:

1) Best practices and recommendations from the corpus of research on professional development; and
2) Prior studies on teacher leadership.

Collectively, these streams of literature were used to inform the conceptual framework for the study.

Conceptual Framework

The culture of science education is dynamic and in transition as the field adapts to global challenges while also integrating 21st century skills. In response to these new challenges and needs, several organizations have proposed various science education reforms (e.g., AAAS *Benchmarks for Scientific Literacy* in 1993, *National Science Education Standards* in 1996, *Taking Science to Schools* in 2007, and *A Framework for K-12 Science Education* in 2012 which informed the *Next Generation Science Standards*). These evolving reforms for science education have re-envisioned and redefined science education, viewing science not only as a body of knowledge, but also as a process that is perpetually extended, refined and revised.

Prominent science education documents worldwide also consistently point to the importance and need for quality teacher education to realize the vision outlined in these reform documents (Australian Science Teachers Association, 2009; National Research Council, 2007; 2012; Osbourne & Dillon, 2008). The National Research Council (NRC) documents (2007; 2012) posit that teachers are critical to improving science education. For example, in *A Framework for K-12 Science Education* (2012), the NRC highlights the need for professional development of teachers of science stating,

> *Ultimately, the interactions between teachers and students in individual classrooms are the determining factor in whether students learn science successfully. Thus, teachers are the lynchpin in any effort to change K-12 science education. And it stands to reason that in order to support implementation of the new standards and the curricula designed to achieve them, the initial preparation and professional development of teachers of science will need to change. (p. 255)*

Research findings from studies in teacher education at the time of the evaluation's initial design in 2014 identified several effective design principles for professional development including:

- Professional development should be continuous and ongoing (Hawley & Valli, 2007; Opfer & Pedder, 2010) as well as extensive in duration (Desimone, 2009)
- Professional development activities should engage teachers in active learning (Desimone, 2009) and should mirror the instructional approaches that teachers are expected to implement in their classrooms (Hawley & Valli, 2007)
- The content of professional development should be research-driven and reflect best practices (Hawley & Valli, 2007)
- Professional development opportunities should encourage collaboration and collective participation amongst groups of teachers to build a professional learning community (Desimone, 2009; Opfer & Pedder, 2010)

- Professional development should engage teachers in identifying their professional development needs (Hawley & Valli, 2007)
- Professional development opportunities should provide coherence. That is, professional development experiences should be consistent with teachers' individual goals as well as local, state, and national initiatives (Desimone, 2009)

The need for teacher education to realize such reforms is situated within the complexities of the science education system in which there are multiple levels of control—classroom, school, district, state, and national level—that influence curriculum, instruction, professional development and assessment (NRC, 2012). Inciting change within this complex system of science education will require school leaders, including teachers who feel empowered to lead from within and outside their classrooms.

While a clear definition of teacher leadership is still emerging in the field (York-Barr & Duke, 2004, Wenner & Campbell, 2017), there is a general view of teachers as agents of change to achieve school growth and student success within their specific contexts (Crowther, Ferguson, & Hann, 2009; York-Barr & Duke, 2004). Current views argue for leadership that is distributed throughout an organization, rather than centralized among particular individuals or formally recognized roles. Gronn (2000; 2002) and Spillane, Halverson and Diamond (2001) offered the notion of "distributed leadership" in which leadership is a decentralized and distributed practice (Harris, 2003). Similarly, Crowther et al. (2009) introduced the concept of "parallel leadership" where administrators and teachers work collectively to build school capacity. Both "distributed" and "parallel" views of leadership challenge hegemonic power relationships inherent in traditional views of leadership and reform and instead offer models where teachers and administrators work collaboratively as partners for school change. Programs such as the Wipro Science Education Fellowship seek to foster such collaborative relationships with the goal of developing a cadre of teacher leaders to advance school change.

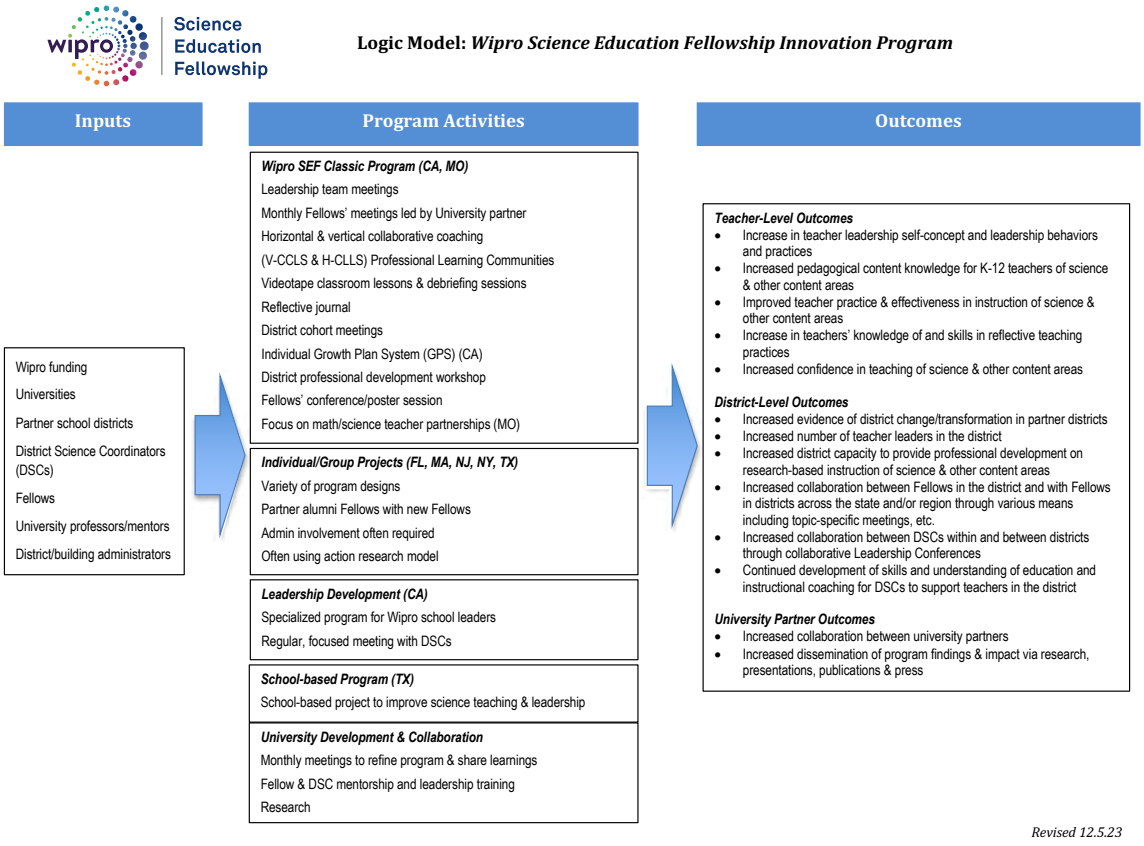
Within such views of leadership, teacher leaders engage in a number of practices including instructional roles, curriculum work (e.g., selecting curriculum, defining standards), participation in school change (e.g., facilitating professional learning communities, participating in school and district decision making, engaging in action research), and professional development (e.g., mentoring teacher, leading workshops, peer coaching) (York-Barr & Duke, 2004).

This conceptual framework—informed by the teacher education and leadership literature—guided the development of the evaluation plan and study design in 2014. We continue to use the framework as a conceptual lens for the collection, analysis and interpretation of data for the evaluation study.

Logic Model

The logic model in Figure 1 visually depicts the theory of action for the Wipro Science Education Fellowship Innovation Program and highlights specific ways in which the inputs and activities lead to programmatic outcomes and strategic impacts. Visually representing the theory of action and causal chain allowed the evaluation team to identify appropriate formative and summative evaluation questions to guide the evaluation study. This logic model was updated during the 2023-2024 year to better reflect the Wipro SEF program as it continues to grow and evolve.

Figure 1. Wipro Science Education Fellowship Innovation Program Logic Model, Revised 2023



Evaluation Approach, Questions, and Methodology

This evaluation study documents participants' (e.g., Fellows, District Science Coordinators and university staff/faculty) perceptions of the Wipro Science Education Fellowship during the 2023-2024 academic year. Of particular interest were the outcomes related to increased teacher leadership and evidence of district impact. As this year marks the second year of a new round of Wipro funding and a departure from the original Wipro SEF model to allow more flexibility for sites to modify the program to meet the needs of their region, the evaluation returned to a formative approach.

Evaluation Approach

To understand how the Wipro Science Education Fellowship was implemented in each region during the 2023-2024 academic year, the evaluation continues to employ an implementation evaluation. The purpose of an implementation evaluation is to measure the extent to which a project or initiative is being implemented and conducted as planned (Patton, 2001; Westat, 2010).

Additionally, the evaluation team applied a utilization-focused evaluation approach to ensure that the study meets the needs of the Wipro Science Education Fellowship program and associated stakeholders. Using a utilization-focused approach required members of the evaluation team to work closely with the project leadership to conduct evaluation planning and administration in a way that best meet the needs of the project this year.

Evaluation Questions

The following formative evaluation questions, developed in collaboration with the Wipro Science Education Fellowship program leadership, guided the evaluation study during the 2023-2024 academic year:

Formative Evaluation Questions

- What evidence of teacher leadership development can be found at both the local level and in the program overall?
- How are the evolving structures of the Wipro SEF Innovation program affecting the leadership development of Fellows in each region?
- What evidence of district transformation can be found in each regional location?
- How are the evolving structures of the Wipro SEF innovation program affecting the district transformation opportunities in each region?
- What are the lessons learned, to date, with regard to implementing Wipro SEF programming and related professional development activities as it relates to teacher leadership development and district transformation?
- What are the challenges/barriers experienced by Wipro SEF key players (e.g., leaders, district coordinators) in implementing the program?
- How do participants understand and perceive the overall Wipro SEF program?
- What are the programmatic and strategic recommendations of Wipro SEF participants for improving the overall program for current and future participants of the program?

Looking ahead, in the final two years of the program (2024-2026), the evaluation team will also look to answer these summative evaluation questions.

Summative Evaluation Questions

- How and to what extent does participation in the Wipro SEF program build teachers' leadership self-concept and use of leadership behaviors?
- How and to what extent does participation in the Wipro SEF program encouraged or motivated district change or transformation in the participating districts?

Methodology and Study Design

The evaluation uses a complementary, mixed-methods approach to collect data and insights related to the stated evaluation questions and project objectives. A complementary approach was warranted as it explores a question or problem from multiple perspectives and incorporates both quantitative and qualitative data (Creswell, 2003). Each type of data is viewed as complementary; the quantitative data provide a broad overview while the qualitative data allow for a nuanced, in-depth understanding of the program and related outcomes.

As the program continues in this Innovation phase, the evaluation will seek to explore how the modifications being made in each region impact the two prime objectives: increases in teacher leadership and evidence of district impact. Because the design of each sites' individual program now includes more disparate elements, the evaluation analysis will do less comparison across all sites and instead look at each site as its own case study, a multiple case study approach (Merriam, 1998; 2009; Stake, 2006; Yin, 2014). With a collective or multiple case study approach, data are analyzed for insights both within each particular case and, in the case of Wipro SEF Innovation, minimally, across cases where appropriate (Merriam, 1998). Treating each region as a separate case study allows us to elucidate the ways in which Wipro SEF Innovation was uniquely implemented in each region and the ways in which contextual factors influenced perceptions and resulting outcomes for participants. As part of the multi-case study approach, we also conduct, where appropriate, a cross-case analysis (Stake, 1995; 2006) to understand general themes that emerged across the regional sites.

Data Collection and Analysis

Data was collected from a variety sources and different perspectives as a means to address issues of reliability and trustworthiness of data (Charmaz, 2000). Specifically, Table 1 summarizes data collection performed during the evaluation study of the Wipro Science Education Fellowship Innovation in 2023-2024 for all sites.

Table 1. Wipro SEF Innovation Data Collection 2023-2024

Evaluation Instrument	Description	Participants	Number of Respondents
Surveys	Mid-Year (January 2024)	All active Fellows & DSCs in CA, FL, MO, NJ, NY and TX	104
	Year-end (late April/early May 2024)	All active Fellows & DSCs in CA, FL, MO, NJ, NY and TX	122
	California Post-Conference (June 2024)	All California conference participants (Fellows, DSCs, IHE leaders)	27
	Missouri Post-Conference (July 2024)	All Missouri conference participants (Fellows, DSCs, IHE leaders)	17
	NSELA Post-Institute (July 2024)	All participants (DSCs, IHE leaders)	17
Interviews	District Leaders	All states invited; CA, FL, MO, NY & TX participated	5
	District Science Coordinators	All states invited; CA, NJ, NY and TX participated	7
	IHE Leadership	All states invited; CA, FL, MO, NJ, & NY participated	5
Site Visit	California (December 2023)	4 schools visited (3 districts represented)	--
Observations	Fall IHE Leadership Meeting (August 2023)		--
	Winter IHE Leadership Meeting (February 2023)		--
	Virtual Multilingual Learner Meeting (May 2024)		--
	California Year-end Conference (June 2024)		--
	IHE Leadership team virtual meetings (monthly)		--

Most of the survey and interview questions sought evidence of the two primary program goals: teacher leadership development and district impact.

The data collected for the evaluation study were analyzed using quantitative and qualitative methods. Calculations and quantitative analysis were completed using the analysis tools in SurveyMonkey as well as Microsoft Excel and the R statistical programming language version 4.1.2. Analyses tools were used to compute descriptive statistics (e.g., frequencies, percentages, measures of central tendency) as well as to make comparisons by region. Responses to several of the open-ended questions were also coded and cross-tabulated to look for patterns and trends.

Participants

For this multi-case study, the evaluation team included each of the six regional sites with active cohorts participating in the Wipro Science Education Fellowship Innovation program. In 2023-2024, this included Stanford University, University of South Florida, University of Missouri, Montclair State University, Mercy University, and University of North Texas Dallas. All these sites work with multiple local school districts (between 3-6). Participating school districts in each region as well as the Fellows selected each year for the program are subject to a selection and vetting process. The program leadership at each site initiated the vetting process and established selection criteria to ensure that partnering districts, schools, and participating Fellows were committed to the program and to advancing its goals and mission.

Participants of this year's study included:

- Fellows engaging actively in program elements at one of the sites
- District Science Coordinators (3-6 from each state) from participating school districts
- Project leadership and higher education faculty/staff at each of the six universities with active and recent Fellows this year (Stanford University, University of South Florida, University of Missouri, Montclair State University, Mercy University, and University of North Texas Dallas)
- Select district administrators in partner districts
- California district leaders (e.g. principals, vice principals, teacher leaders, superintendents, etc.)

Table 2 summarizes the type of program experiences offered to participants in each site.

Table 2. Brief Program Descriptions at Each Wipro SEF Site

Program Site	*Description of 2023-2024 Program*
California	Wipro SEF "Classic" Program with 2 cohorts over 4 years
	Leadership Institute for school leaders (e.g. principals, vice principals, superintendents, etc.)
Florida	Individual/group projects; admin included in teams; action research element
Missouri	Wipro SEF "Classic" Program with 3 cohorts over 4 years; middle school/high school focus but some elementary added this year; includes math teachers
New Jersey	Individual/group projects; including math teachers
New York	Individual/group projects; including admin
Texas	Individual/group projects; annual school-based project at district-selected school

Note: Additional participant demographic data from the Fellows year-end survey, the California & Missouri conference surveys, and the NSELA post-institute survey are in Appendices A-I.

Overview of Findings

In 2024, there continued to be broad agreement among the Fellows and District Science Coordinators involved with the program that the Wipro Science Education Fellowship was successfully implemented at all sites with active Fellows (California, Florida, Missouri, New York, New Jersey and Texas). The data from this evaluation study indicated that the program was positively received by participants and resulted in numerous outcomes and impacts for Fellows and District Science Coordinators and early evidence of district impact.

Key overall findings from the 2023-2024 academic year include:

- Nearly all the Fellows (95%) reported that they were "satisfied" or "very satisfied" with the Wipro Science Education Fellowship program with over half (55%) choosing "very satisfied."
- A large majority of District Science Coordinators (89%) also reported that they were "satisfied" or "very satisfied" with the Wipro Science Education Fellowship with over half (52%) choosing "very satisfied."
- Nearly all the Fellows (94%) felt that the Wipro SEF program "met most," "met all" or "exceeded" their expectations, and more than a quarter (28%) specifically chose "exceeded.
- Nearly all the District Science Coordinators (92%) also felt the program "met most," "met all" or "exceeded" their expectations, and nearly a quarter (23%) specifically chose "exceeded."
- Nearly all of Fellows (94%), "agreed" or "strongly agreed" that the program was worth the time they had invested in it this year, and similarly 97% "agreed" or "strongly agreed" that they would recommend the program to a colleague.
- A large majority of the District Science Coordinators (80%) also "agreed" or "strongly agreed" that the program was worth their time, and nearly all (97%) "agreed" or "strongly agreed" that they would recommend the program to a colleague.
- A large majority of Fellows (87%) and more than three-quarters of District Science Coordinators (78%) cited the network of like-minded colleagues created by Wipro SEF as a key source of support.
- More than a third of the Fellows participating see were beginning to consider themselves teacher leaders because of participating in Wipro SEF. In California and New Jersey, more than half are beginning to consider themselves teacher leaders because of participating in Wipro SEF.
- The teacher leadership behaviors that Fellows were almost universally most comfortable with is speaking to a small group of professional colleagues. The leadership behavior they were almost universally least comfortable with is knowing how to write an effective article for their peers.
- Teacher leadership behaviors that Fellows engaged in most frequently overall included providing guidance to other teachers who asked for or needed support and taking action to increase the success of all the students at their school.
- More than three-quarters of all Fellows in every state "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their school.
- More than three-quarters of all Fellows in every state except Florida "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their district.

- All the District Science Coordinators in California, Florida, and New York and most District Science Coordinators in New Jersey (75%) and Texas (86%) "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their districts.
- Fellows overall believed that teachers have a role to play in school change, can help lead school change and that positive change is possible for their schools.
- Fellows and District Science Coordinators overall felt strongly that teachers can help lead district change and have an important role to play in district change.
- A significant majority of California year-end conference participants (85%) felt that the conference influenced their approach to forthcoming science teaching and leadership opportunities to a great extent.
- A majority (70%) of California year-end conference participants felt that interaction with Fellows from other sites has impacted their sense of belonging to a community of K-12 science teacher to a great extent.
- Nearly all Missouri year-end conference participants (94%) "agreed" or "strongly agreed" that the cross-site interactions provided valuable insights that they would not have gained otherwise.
- A large majority of respondents to the post-NSELA (National Science Education Leadership Institute) survey (83%) "agreed" or "strongly agreed" that they had learned more about how to enhance science instruction through teacher leadership at the NSELA institute, and they came home with ideas that could impact their districts in significant ways.
- Considering the investment of time and resources involved in traveling to a distant conference such as the NSELA institute, a large majority of respondents (83%) felt that the experience was "highly valuable" or "very highly valuable" for themselves, and three-quarters (75%) felt it was "highly valuable" or "very highly valuable" for their districts.

As each continues to implement new versions of the "classic" Wipro SEF program, the focus of the evaluation is also evolving. Instead of looking at the implementation and its effects across all states, the evaluation team is now considering any potential impacts and lessons learned from the variations being employed at each site.

This report will begin with an overview of the 2024 year-end survey results, calling out any notable overall findings. Next, we will look briefly at each state in turn to highlight findings from each site focusing on evidence of growth in teacher leadership, district impact and lessons learned. Lastly, the results and key insights gained from the California and Missouri year-end conferences held in spring 2024 will be shared along with learnings from the National Science Education Leadership Association (NSELA) Summer Institute attended by a subset of District Science Coordinators and IHE leaders in summer 2024.

Year-end Survey Findings

Out of the 162 Fellows and District Science Coordinators invited to participate in the year-end surveys in 2024, 122 responded at least partially, a 75% overall response rate. There was quite a bit of difference in the numbers of Fellows responding from each site as well which means that care should be taken in both the comparison of results from site-to-site and attempting to derive broad meaning from the responses overall due to low numbers. Table 3 below details the response rate for the year-end survey.

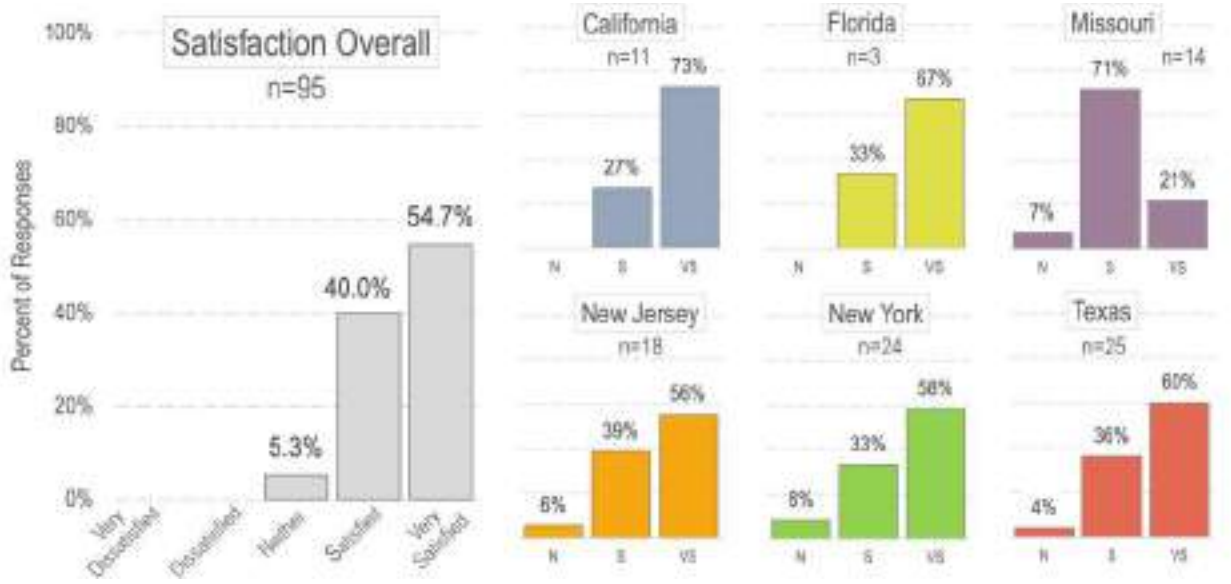
Table 3. Fellows & District Science Coordinators: Response Rate by State, Year-end Surveys 2023 & 2024

State	Fellows		District Science Coordinators	
	2023	2024	2023	2024
California	12.2% (10)	11.6% (11)	-	11.1% (3)
Florida	3.7% (3)	3.2% (3)	-	11.1% (3)
Missouri	8.5% (7)	14.7% (14)	-	11.1% (3)
New Jersey	20.7% (17)	18.9% (18)	-	18.5% (5)
New York	26.8% (22)	25.3% (24)	-	22.2% (6)
Texas	28% (23)	26.3% (25)	-	25.9% (7)
Overall	**100% (82)**	**100% (95)**	**-**	**100% (27)**

Program Satisfaction

As in past years, overall satisfaction with the program remains high with 95% of Fellows reporting that they were "satisfied" or "very satisfied" with the program this year. (See Figure 2.)

Figure 2. Fellows: Satisfaction Overall and by State, Year-end Survey 2024

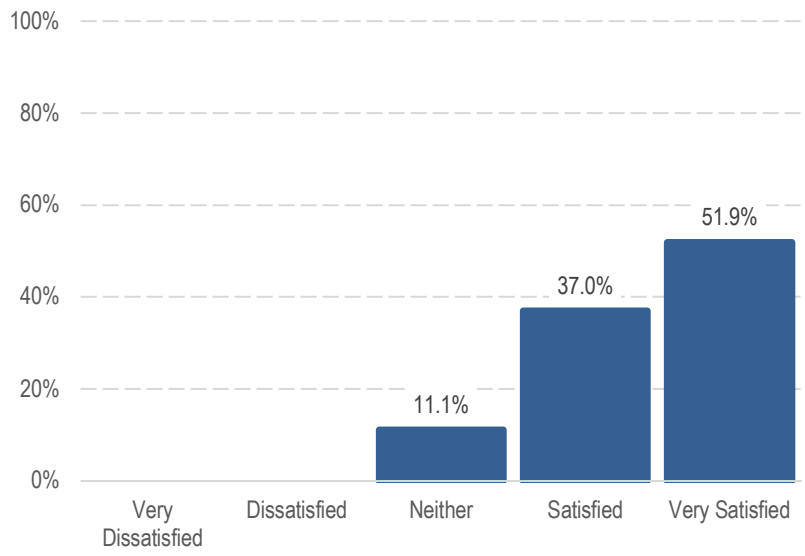


Many of the comments offered about Fellows' satisfaction with the program commonly underscored the importance of the collaborative network in their satisfaction with Wipro SEF. However, this year, another common theme was the support that the program offered:

- *I really appreciate how they create a trusting, open, collaborative atmosphere where all voices are respected and honored without anxieties. The climate is very professional and open. No intimidation at all. Kudos to their leadership.* (Fellows Year-end Survey 2024, California Fellow)
- *I loved meeting different teachers from across NJ. I love how they support teachers and their ideas.* (Fellows Year-end Survey 2024, New Jersey Fellow)
- *As a first-year fellow, I felt welcomed and supported by the staff and other members. As a first-year fellow, I received warm support from all staff and members.* (Fellows Year-end Survey 2024, New York Fellow)
- *I feel supported by my team as well as Dr. Narayan. She gives us the best guidance and challenges our thinking to make our project even better!* (Fellows Year-end Survey 2024, Texas Fellow)

District Science Coordinators also reported high levels of satisfaction with almost all the DSCs (89%) reporting that they were "satisfied" or "very satisfied" with the program. (See Figure 3.)

Figure 3. District Science Coordinators: Satisfaction Overall, Year-end Survey 2024 (n=27)



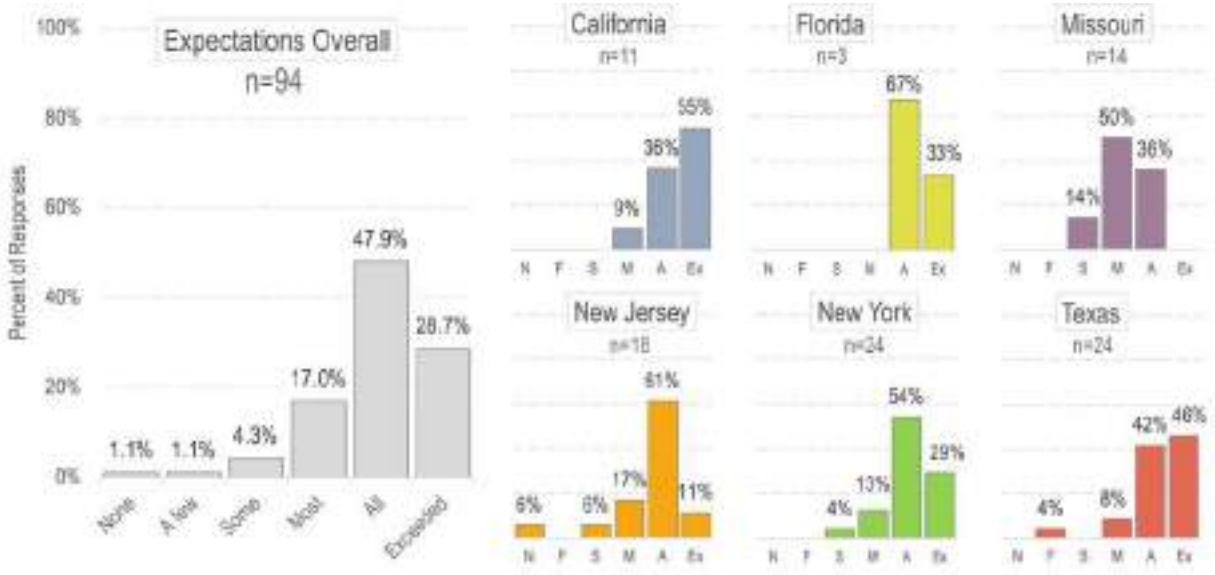
Comments on the reasons for the District Science Coordinators' satisfaction with the program were wide-ranging but also echoed the Fellows' value of the collaborative network:

- *I really enjoy the camaraderie of the other participants and the learning that we do as a group. The facilitation and support are just incredible.* (Year-end Survey 2024, California DSC)
- *This still seems to be the place where I feel supported and a place where I can clearly see people's enthusiasm in the work they do. I feel respected here.* (Year-end Survey 2024, New York DSC)

Like the high satisfaction ratings, nearly all of Fellows (94%) responding to the year-end survey indicated that the program "met most," "met all" or "exceeded" their expectations. (See Figure 4.) Notably, more than a quarter of Fellows (28%) felt the program "exceeded" expectations.

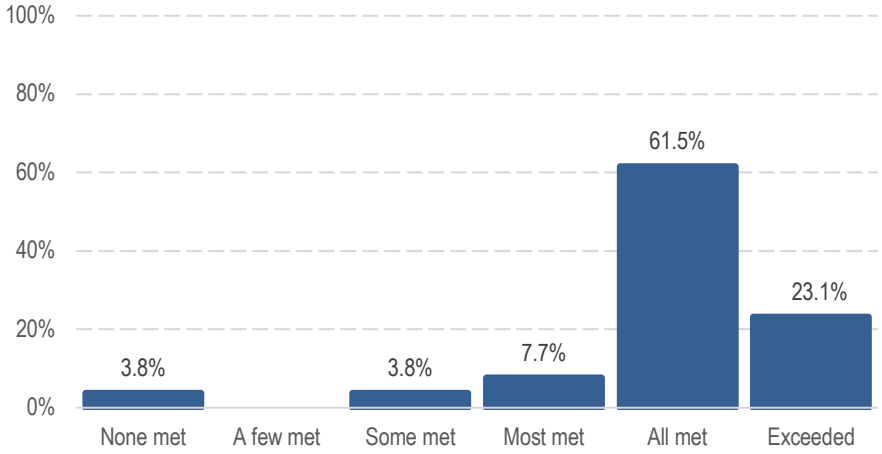
> *"This has been the most meaningful professional development I've participated in!"*
> *(Fellows Year-end Survey 2024, California Fellow)*

Figure 4. Fellows: Met Expectations Overall and by State, Year-end Survey 2024



Similarly, nearly all the District Science Coordinators (92%) also felt the program "met most," "met all" or "exceeded" their expectations, and nearly a quarter (23%) specifically chose "exceeded." (See Figure 5.)

Figure 5. District Science Coordinators: Met Expectations Overall, Year-end Survey 2024 (n=27)



The year-end survey also asked Fellows what they thought was the most successful aspect of the Wipro SEF program this year. Table 4 summarizes their thoughts by state.

Table 4. Fellows: Most Successful Aspect of Wipro SEF by State, Year-end Survey 2024

State	Most Successful Aspect of Wipro SEF This Year	Sample Quote
California *(n=11)*	Development of leadership skills (56%)	*This year, the most impactful aspect was discussing the difference between leadership and being a leader. I think we have a problem of having leaders who have no ability to provide true leadership.*
Florida (*n=3)*	[No majority opinion]	
Missouri *(n=14)*	Collaboration with like-minded network & the improvement of STEM teaching collaborations (50%)	*I enjoyed collaborating with math and science teachers, and hearing from different grade levels.*
New Jersey *(n=18)*	Collaboration with like-minded network (65%)	*It is always good to get together with other Fellows to get a "new charge on the batteries."*
New York *(n=24)*	Collaboration with like-minded network (55%)	*Being able to collaborate with colleagues and seeing the positive impact our project had on students.*
Texas *(n=25)*	Collaboration with like-minded network (31%)	*The most successful aspect was working with my colleagues and getting to know them better and getting to work with my students on the project.*

> *"[The most successful part of the Wipro SEF program was] providing us the opportunity to work in a project that allowed us to reflect on our teaching practices. It was time consuming but SOO worth it."*
> *(Year-end Survey 2024, California Fellow)*

The District Science Coordinators also offered their thoughts on what the most successful aspects of the program was. Their responses were diverse but often centered on the joy of the collaboration and supporting the Fellows:

- *Seeing the Fellows grow as leaders.* (Year-end Survey 2024, Texas DSC)
- *Collaboration and getting to know the teachers' passions and helping them grow and succeed.* (Year-end Survey 2024, Texas DSC)
- *Seeing GPS projects come to fruition. I'm so excited about the diversity and breadth of the projects.* (Year-end Survey 2024, California DSC)
- *Building a group of like-minded individuals that have a passion for science to improve science teaching and learning at our school*. (Year-end Survey 2024, Florida DSC)

To get a sense of the Fellows' thoughts about the overall value of the program, the year-end survey also asked whether the program was worth the time they invested and if they would recommend the program to a colleague. Nearly all of Fellows responding (94%) "agreed" or "strongly agreed" that the program was worth the time they had invested in it this year, and similarly 97% would recommend the program to a colleague. Both figures are higher than last year.

Nearly all of Fellows responding (94%) felt the program was worth the time they had invested in it this year, and similarly 97% would recommend the program to a colleague. Both figures are higher than last year.

A large majority of the District Science Coordinators (80%) also "agreed" or "strongly agreed" that the program was worth their time. Nearly all (97%) "agreed" or "strongly agree" that they would recommend the program to a colleague. (See Appendices B-G for a breakdown of these sentiments by state.)

Support Provided by Wipro SEF Participation

Like last year, a large majority of Fellows (87%) reported that the network of like-minded colleagues was the most important component of the support offered by participation in Wipro SEF. (See Figure 6.)

Figure 6. Fellows: Support Provided by Wipro SEF, Overall, Year-end Survey 2024 (n=95)

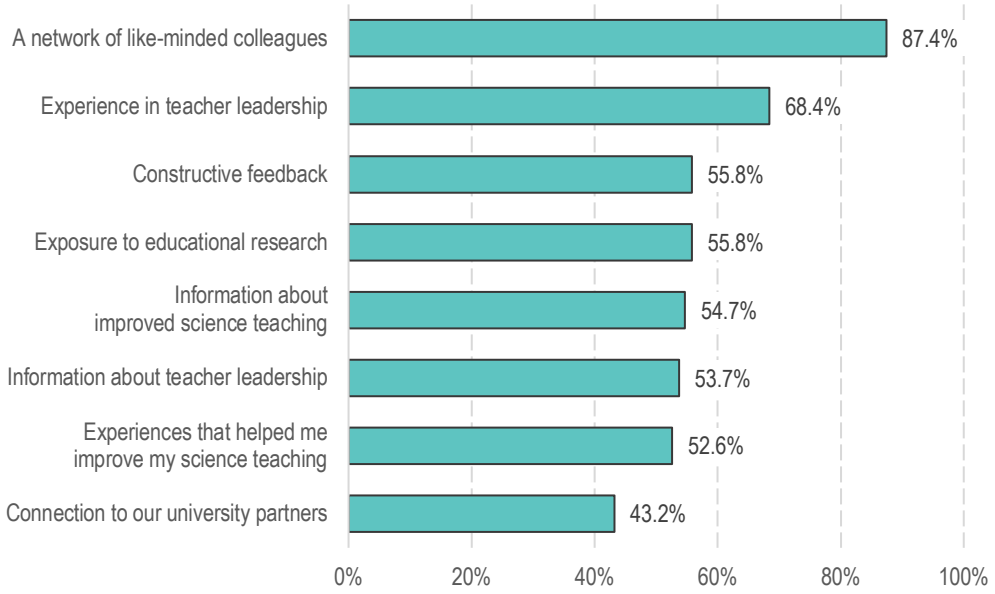
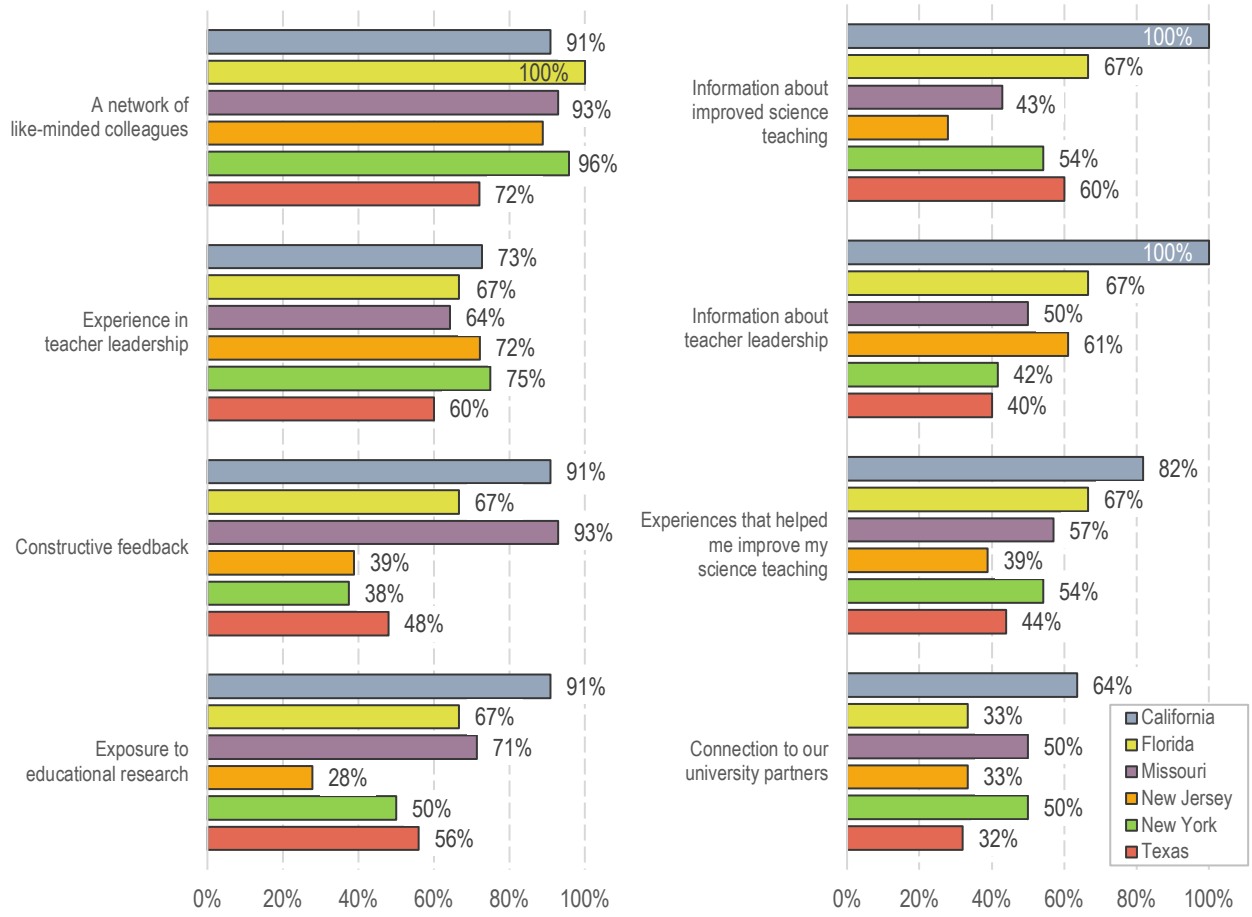


Figure 7 summarizes these same sentiments by state offering more nuanced insights into the differences in the kind of support deemed most valuable by each states' Fellows. For instance, 91% of the California Fellows and nearly all of Missouri Fellows (93%) appreciated the constructive feedback offered through the program, much higher than other states. At least half of Fellows in California, Missouri and New York valued the connection to their university partners highly.

A large majority of Fellows (87%) report that the network of like-minded colleagues is the most critical component of the support offered by participation in Wipro SEF.

Figure 7. Fellows: Support Provided by Wipro SEF, By State, Year-end Survey 2024

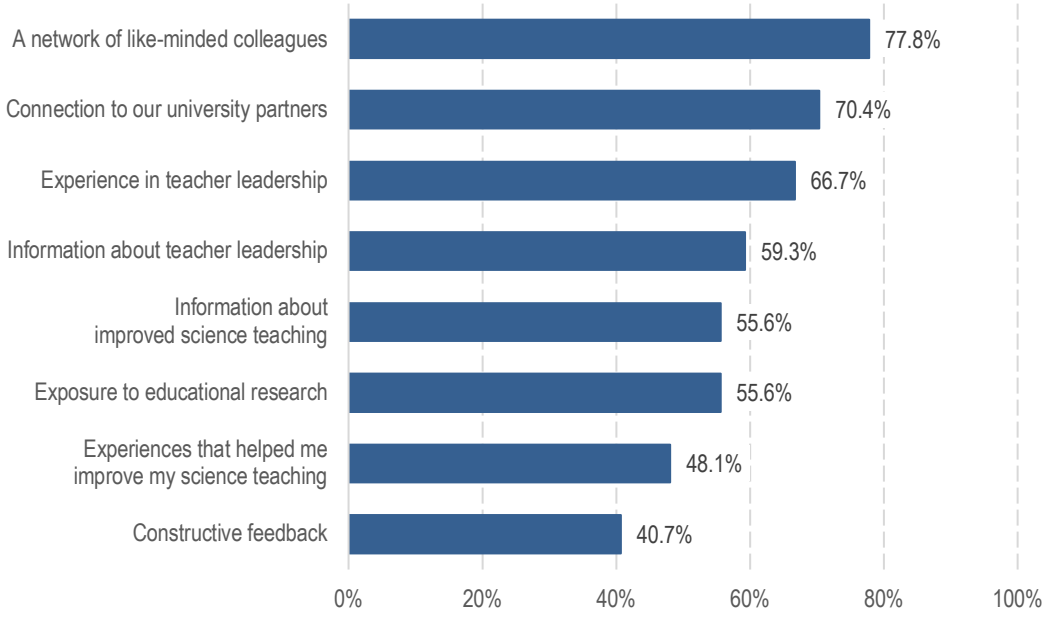


The year-end survey also asked what more Wipro SEF could do to help support Fellows as educators. Some wanted support in continuing to access research and guidance on applicable research for their classrooms. Several mentioned additional funding to support their work. However, this year, a dominant them related to support was the plea to continue the program that has offered such rich growth for many and built strong relationships between Fellows and other local educators. One New Jersey Fellow put the plea succinctly: "Please just keep being here for us so we can continue to grow and thrive." A California Fellow offered this wise suggestion for keeping Fellows connected after their formal time in the program has ended: "Keep the relationship beyond our time as Wipro Fellows. Once we leave the program, we may forget to implement what we have learned, so continued exposure and involvement with the values set forth by Wipro SEF."

> *"Please just keep being here for us so we can continue to grow and thrive."*
> *(Year-end Survey 2024, New Jersey Fellow)*

Like the Fellows, District Science Coordinators also ranked the network of like-minded colleagues as the top source of support from the Wipro SEF program. However, they differed from the Fellows in their second highest source of support: their connection to the university partners. Figure 8 summarizes the District Science Coordinators thoughts on the sources of support from Wipro SEF.

Figure 8. District Science Coordinators: Support Provided by Wipro SEF, Overall, Year-end Survey 2024 (n=23)



Most of the District Science Coordinators did not have specific ideas for how Wipro SEF could better support them, but a few District Science Coordinators offered ideas including a desire to connect with more Fellows and other Wipro SEF participants from other states, to improve science teaching through more local partnerships, and to increase the sharing of strategies to support Fellows between the District Science Coordinators and university mentors.

Teacher Leadership Self-concept–Overall

Because growth in teacher leadership is a key goal of Wipro SEF in this Innovation phase, we sought one overall snapshot of the Fellows' self-concept of their teacher leadership at the close of the 2023-2024 school year. In all states except New Jersey and California, more than half of the Fellows responding indicated that they considered themselves teacher leaders before participating in Wipro SEF. In all states, at least a third, but in some closer to a half, of all Fellows were beginning to consider themselves teacher leaders because of participating in Wipro SEF. (See Table 5.) Recognizing that teacher leadership is far more nuanced and complex than just the responses to this single question, there will be more data on teacher leadership in each of the state-specific sections later in this report.

Table 5. Fellows: Teacher Leadership Self-concept Overall, Year-end Survey 2024

State	Fellows that considered themselves teacher leaders before participating in Wipro SEF	Fellows that are beginning to consider themselves teacher leaders because of participating in Wipro SEF	Fellows that do not see themselves as teacher leaders yet
California (n=11)	37%	55%	9%
Florida (n=3)	67%	33%	-
Missouri (n=14)	57%	43%	-
New Jersey (n=17)	47%	53%	-
New York (n=24)	58%	38%	4%
Texas (n=24)	54%	46%	-

School & District Impact–Overall

Similarly, we sought to find a summary of sentiments from the Fellows and District Science Coordinators regarding the impact of Wipro SEF on both their schools (for Fellows) and their districts (for both Fellows and District Science Coordinators). Table 6 provides that snapshot. At least three-quarters of Fellows, and in two states (California and Florida) all the Fellows, reported that they felt that Wipro SEF had a positive impact on their schools. Similarly, at least three-quarters of Fellows, and in one state (New York) all the Fellows felt that Wipro SEF had a positive impact on their district. For District Science Coordinators, nearly all felt that Wipro SEF had a positive impact on their district. In three states (California, Florida, and New York) all the District Science Coordinators saw positive impact from of the Wipro SEF program.

Table 6. Fellows & District Science Coordinators: School & District Impact: Overall, Year-end Survey 2024

State	School Impact? (Percentage that "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their school)	District Impact? (Percentage that "agreed" or "strongly agreed" that Wipro SEF made a positive impact on their district)	
	Fellows	Fellows	DSCs
California	100% (n=11)	91%	100% (n=3)
Florida	100% (n=3)	67%	100% (n=3)
Missouri	85% (n=14)	78%	33% (n=3)
New Jersey	77% (n=21)	76%	75% (n=4)
New York	88% (n=25)	100%	100% (n=5)
Texas	86% (n=21)	86%	86% (n=5)

State-specific Findings

As each site has diverged from doing only the "classic" Wipro SEF program that involved only science teachers in two-year cohorts, the evaluation team is now looking at the states more independently for continued evidence of both teacher leadership development and district impact. In this section, we will use survey, interview, and site visit data to look briefly at each state and summarize the evidence, when present, for these two key program impacts. (The full results of each state's responses on the year-end survey are in Appendix B-G.)

California Findings

California's program at Stanford University involves bringing in two more cohorts of science teachers (K-12) over the four years of current funding (2022-2026) from the same partner districts and offering them the "classic" Wipro SEF experience. By doing so, they will continue to saturate these districts with more Wipro SEF trained teacher leaders who can then help promote and instigate district impact. (The expansion requires greater district support with Wipro SEF providing smaller stipends than the first three cohorts received.) California is also working with school leaders through their School Leaders Program, a year-long effort to provide leadership development for a selection of school leaders in these same partner districts. (See Appendix B for the complete set of data from the Year-end Survey 2024 for California Fellows and District Science Coordinators.)

California: General Program Input

- All the California Fellows (100%) reported being "satisfied" or "very satisfied" with the program this year
- All the California Fellows (100%) reported that the program "met most," "met all" or "exceeded" their expectations
- All the California Fellows (100%) "agreed" or "strongly agreed" that the program was worth the time invested and they would recommend the fellowship to a colleague
- The top areas of support that Wipro SEF provided to California Fellows were:
    - Information about teacher leadership
    - Information about improved science teaching
    - Exposure to education research
    - Constructive feedback
    - A network of like-minded colleagues
- Top suggestions for ways Wipro SEF could provide more support for California Fellows and District Science Coordinators included:
    - Scaling up the program to include more Fellows
    - Providing continued access to research
    - Fostering continued connection to past Fellows and to the Fellowship family in general
- Some of the notable aspects of Wipro SEF mentioned as the most successful this year by the Fellows and District Science Coordinators included:
    - The challenge and success of the teacher-driven GPS experience
    - The continued growth in teacher leadership overall

- Some suggestions for program improvement from the Fellows and District Science Coordinators included:
  - Increasing the promotion of the program to get more involved
  - Extending the experience for another year
  - Creating more ways for both Fellows and District Science Coordinators connect with each other both locally and nationally
  - Encouraging the district to contribute to the stipend
  - Allowing more time during meetings to work on projects
  - Discussing more ways for teachers to become teacher leaders in their schools/districts

> *"I really learned a lot about how to identify the actions and mind sets of teacher leadership. There are so many ephemeral elements that go into being a leader and this fellowship helped me identify and name them."*
> *(Year-end Survey 2024, California Fellow)*

California: Teacher Leadership

- California Fellows reported feeling the most confidence in speaking to small groups of colleagues (<10 people) and least confident in knowing how to write an effective article about a project for their peers
- California Fellows reported feeling most comfortable receiving feedback from colleagues about their work
- California Fellows reported feeling most comfortable participating in CCLS meetings with their colleagues and least prepared to lead professional development opportunities with other teachers in their school/district
- California Fellows reported the strongest relationships with their school colleagues and their least strong relationships with other administrators in their district
- Most of the California Fellows (55%) are beginning to consider themselves a teacher leader because of participating in Wipro SEF; a third (36%) considered themselves teacher leaders before participating in Wipro SEF
- The most frequent leadership behaviors California Fellows participated in were:
  - Taking action to increase the success of all students at their school
  - Providing guidance to other teachers who asked for or needed support
  - Engaging in discussions with other teachers in their school/district about how to teach a particular concept
  - Assuming leadership roles at their school
- The least frequent leadership behaviors California Fellows participated in were:
  - Leading professional development opportunities for other teachers in the district
  - Visiting another teacher's classroom in their school/district to observe his/her teaching
  - Leading professional development opportunities for other teachers in the school
  - Working collaboratively with other teachers and administrators to solve a district problem

- When asked to define teacher leadership, California Fellows commonly mentioned themes such as supporting others, being continual learners, collaborating with others, and working for positive change
- When asked to define teacher leadership, California District Science Coordinators echoed the Fellows' ideas of learning and collegial support but also added that teacher leadership involves risk

> *"Leadership is making visible a shared vision, encouraging team members to strive for greatness, take risks, continue to grow, and keep science learning and teaching in the forefront"*
> *(Year-end Survey 2024, California DSC)*

California: School & District Impact, Attitudes and Behavior

- Nearly all California Fellows (91%) "strongly agreed" that being involved in Wipro SEF made a positive impact on their school
- A large majority of California Fellows (82%) "strongly agreed" that being involved in Wipro SEF made a positive impact on their classroom
- All California Fellows (100%) believed that positive change is possible for their school and most "agreed" or "strongly agreed" (91%) that teachers have a role to play in school change, teachers can help lead school change and that school change is an important goal for every teacher
- Changes that California Fellows noted in their schools included increases and/or improvements in STEM teaching and experiences at their schools and improvements in teacher collaboration
- Nearly all California Fellows (91%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their district
- Nearly all California Fellows "agreed" or "strongly agreed" (91%) that teachers have a role to play in district change, teachers can help lead district change and that district change is an important goal for every teacher
- All the California District Science Coordinators believe that teachers have an important role to play in district change and can help lead district change
- A large majority of California Fellows (81%) "agreed" or "strongly agreed" that they were aware of top district goals, but half (54%) "agreed" or "strongly agreed" that they did not know how to contribute to district change
- California Fellows and District Science Coordinators both commonly cited improvements or increases in STEM learning and the development of teacher leadership as examples of district change that has occurred because of Wipro SEF

> *"The teacher leaders that have gone through Wipro SEF in the past are continuing to engage their departments in purposeful planning. This results in teachers planning and teaching engaging NGSS-aligned lessons using teaching strategies that get students talking, designing, exploring science concepts."*

California: Interview Insights

- California's School Leader Program is unique and has been well-received by those involved although school leaders find it challenging to add anything new into their demanding schedules
- Administrators have joined the School Leader Program for the camaraderie and connections with other local administrators; they feel "siloed"
- Some Fellows have left their schools but have remained in leadership in the district or county
- Some District Science Coordinators are perpetually challenged by the dysfunction and lack of a healthy culture in their districts; for them, Wipro SEF has been a beacon of hope and offered professional renewal
- District Science Coordinators see both large and small impacts that Fellows are having in their schools, and the small impacts are no less valid or important
- Fellows are held in high regard in their districts by the District Science Coordinators and other administrators; they are seen as "teachers to turn to"
- District Science Coordinators are a critical component of this program; if they don't know how to use a group of teacher leaders, then there is little progress or meaningful change in a district
- Both teacher malaise and teacher retention issues have had an impact on Wipro SEF in recent years

> *"District Science Coordinators are a critical component of this program. If they don't know how to use a group of teacher leaders, then there is little progress or meaningful change in a district."*
> *(Year-end Interview 2024, California IHE Lead)*

Site Visit Insights–Key Takeaways from California

- School culture–The importance of a strong school culture was evidenced and mentioned by many. The culture, if supportive and positive, has a ripple effect through the teachers and the students at the school making teamwork more cohesive and productive.
- Development of cadre of teacher leaders–Related to the culture, several sites mentioned the value of the "critical mass" of teacher leaders being developed by their involvement in Wipro SEF in the schools visited. These leaders find support in each other, but they also become the "go-to"

teachers for additional work needed at the schools (e.g. curriculum selection/implementation, professional development, etc.)

- School leaders–The new School Leaders program is providing much needed professional development and coaching for involved school leaders, especially in the post-COVID educational landscape where offerings for administrators are thin.
- Multilingual learner focus–This is clearly needed and appreciated by the Fellows. For most, it is an everyday need to learn how to better serve these learners and for many districts, it is also a priority. Dr. Menon's facilitation of the topic during the Fellows Meeting was sensitive, impactful and clearly benefited from her deep knowledge of how best to serve these learners.

Site Visit Insights–Challenges in California

- Time–Many teachers and administrators mentioned the limits of time. Since time is never unlimited, one area of support for these program participants may be help in prioritizing the vast amount of work set before them.
- Science testing in specific grades–Science is tested in 5th and 8th grades in California which means that Fellows struggle to get "attention" for science in younger grade levels in elementary. Wipro SEF is making inroads in some schools/districts with this longtime dilemma which is encouraging.
- District change–In SFUSD, upheaval at the district level impacts all and threatens to sap the energy of quality educators. One of the threats: "Burnout from lack of stability at the district."

Florida Findings

Florida's Wipro SEF Innovation program, housed at the University of South Florida, involves a more project-oriented approach to the work. Instead of having new Fellows engage in the classic two-year program, the intent of the Florida IHE leaders and their District Science Coordinators is to help previous Fellows to design and implement independent projects (like the GPS projects) that meet the needs of the classrooms, schools and/or districts and includes and action research component. This year, Florida continued to struggle to have many Fellows involved, and for the year-end survey, only three Fellows from one district responded. Because of these continued low numbers, the results and the inferences that can be drawn from them are very limited. (See Appendix C for the complete set of data from the Year-end Survey 2024 for Florida Fellows and District Science Coordinators.)

Florida: General Program Input

- All the Florida Fellows (100%) reported being "satisfied" or "very satisfied" with the program this year
- All the Florida Fellows (100%) reported that the program "met all" or "exceeded" their expectations
- All the Florida Fellows (100%) "strongly agreed" that the program was worth the time invested, and they would recommend the fellowship to a colleague
- The top areas of support that Wipro SEF provided to Florida Fellows was the network of like-minded colleagues
- Top suggestions for ways Wipro SEF could provide more support for Florida Fellows and District Science Coordinators was to continue to provide the collaborative network and opportunities for growth
- Some of the notable aspects of Wipro SEF mentioned as the most successful this year by the Florida Fellows and District Science Coordinators included the continued cultivation of the network of like-minded educators
- Some suggestions for program improvement from the Florida Fellows and District Science Coordinators included:
    - Offer fewer whole group meetings but more individual check-ins
    - Provide additional virtual opportunities for research-based professional learning
    - Increase the number of elementary school teachers involved in Wipro SEF

Florida: Teacher Leadership

- Florida Fellows reported feeling the most confidence in speaking to groups of colleagues (any size) and in designing effective presentations and the least confidence in knowing how to write an effective article about a project for their peers
- Florida Fellows reported feeling comfortable giving feedback, receiving feedback, and asking for feedback from colleagues about their work
- Florida Fellows reported feeling prepared and confident in facilitating or leading professional development in their school or district or CCLS-style meetings with peers

- Florida Fellows reported the strongest relationships with their school colleagues and administrators
- Two of the Florida Fellows considered themselves teacher leaders before participating in Wipro SEF; one of the Florida Fellows is beginning to consider themself a teacher leader because of participating in Wipro SEF
- The most frequent leadership behavior Florida Fellows participated in was providing guidance to other teachers who asked for or needed support
- The least frequent leadership behavior Florida Fellows participated in was leading professional development opportunities for other teachers in the district
- When asked to define teacher leadership, Florida Fellows commonly mentioned helping and developing other teachers.
- When asked to define teacher leadership, Florida District Science Coordinators mentioned that teacher leaders take risks and inspire their colleagues

> *"Teacher leadership is feeling confident enough to not only try new things in your classroom, but also helping other teachers build their confidence to do new and exciting things in their classrooms. The teachers in your department and beyond should look to you for advice in their classroom."*
> *(Year-end Survey 2024, Florida Fellow)*

Florida: School & District Impact, Attitudes and Behavior

- All the Florida Fellows (100%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their school and classroom
- All the Florida Fellows (100%) believe that positive change is possible for their school, that teachers have a role to play in school change, teachers can help lead school change and that school change is an important goal for every teacher
- Two of the three Florida Fellows "strongly agreed" that being involved in Wipro SEF made a positive impact on their district
- All the Florida Fellows "agreed" or "strongly agreed" (100%) that teachers have an important role to play in district change and teachers can help lead district change
- All the Florida District Science Coordinators believe that teachers have an important role to play in district change and can help lead district change
- All the Florida Fellows (100%) "agreed" or "strongly agreed" that they were aware of top district goals, but one "agreed" that they did not know how to contribute to district change
- Florida Fellows and District Science Coordinators both commonly cited improvements or increases in STEM learning as examples of district change that has occurred as a result of Wipro SEF

Florida: Interview Insights

- One administrator reported increasing science scores at her building because science has been a higher priority at the school because of highly engaged Wipro SEF Fellows
- One District Science Coordinator mentioned how empowering Wipro SEF has been for involved Fellows inspiring them engage in action research to explore more deeply the issues facing students
- Participation has been a challenge; few former Fellows are interested in participating, but others are not
- Some potential Fellows are intimidated by the idea of a $10,000 grant; it seems daunting if they have never done anything like this before
- Florida's educational landscape adds another challenge to recruiting Fellows; most teachers are just trying to "lay low" and not do anything to attract attention or scrutiny; some teachers have been targeted by parents or charged with felonies

Missouri Findings

Initially, the leadership team in Missouri was spreading the methods of Wipro SEF from science educators to math educators at the middle and high school levels. This year, they also expanded to include more elementary educators. Their intent is to offer a program similar in structure to the "classic" Wipro SEF but with science teachers working with math educators. They too struggled with recruitment, but their numbers are improving. (See Appendix D for the complete set of data from the Year-end Survey 2024 for Missouri Fellows and District Science Coordinators.)

Missouri: General Program Input

- Nearly all the Missouri Fellows (92%) reported being "satisfied" or "very satisfied" with the program this year
- A large majority of the Missouri Fellows (86%) reported that the program "met most" or "met all" of their expectations
- Three-quarters of the Missouri Fellows (76%) "agreed" or "strongly agreed" that the program was worth the time invested, and a large majority (86%) indicated that they would recommend the fellowship to a colleague
- The top areas of support that Wipro SEF provided to Missouri Fellows were:
  - Constructive feedback
  - A network of like-minded colleagues
- Some of the notable aspects of Wipro SEF mentioned as the most successful this year by the Missouri Fellows and District Science Coordinators included:
  - Sharing with colleagues provided new ideas and helped share the workload
  - Incorporating more science and math learning into lessons
- Some suggestions for program improvement from the Fellows and District Science Coordinators included:
  - Improving the communication especially around program expectations and scheduling
  - Refining the structure and organization of the program and program elements (e.g. the shared Google Drive)
- Notably, at least one District Science Coordinator feels that the role is too demanding and perhaps unnecessary

> *"I truly appreciated the time spent on educational research articles or those about teacher leadership."*
> *(Year-end Survey 2024, Missouri Fellow)*

Missouri: Teacher Leadership

- Missouri Fellows reported feeling the most confidence in speaking to small groups of colleagues (<10 people) and the least confidence in knowing how to write an effective article about a project for their peers
- Missouri Fellows reported feeling most comfortable receiving feedback from colleagues about their work
- Missouri Fellows reported feeling most comfortable participating in CCLS meetings with their colleagues and least prepared to lead professional development opportunities with other teachers in their school/district
- Missouri Fellows reported the strongest relationships with their school colleagues and their least strong relationships with other administrators in their district
- Most of the Missouri Fellows (57%) considered themselves teacher leaders before participating in Wipro SEF; a little less than half (43%) are beginning to consider themselves a teacher leader because of participating in Wipro SEF
- The most frequent leadership behaviors Missouri Fellows participated in was providing guidance to other teachers who asked for or needed support
- The least frequent leadership behaviors Missouri Fellows participated in was leading professional development opportunities for other teachers in the district
- When asked to define teacher leadership, Missouri Fellows commonly mentioned themes such as being continual learners, mentoring others, and using their influence positively
- When asked to define teacher leadership, Missouri District Science Coordinators echoed the Fellows' ideas of using their influence, helping others grow and supporting the larger school system

> *"[Teacher leadership] is the ability of teachers to take on leadership roles within their schools, which can vary from leading professional development sessions, mentoring other educators, participating in curriculum design, advocating for policy changes, and more. Teacher leaders often play a crucial role in driving school improvement, fostering a positive school culture, and supporting the growth and development of their colleagues."*
>
> *(Year-end Survey 2024, Missouri Fellow)*

Missouri: School & District Impact, Attitudes and Behavior

- Nearly all Missouri Fellows (93%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their classroom
- A large majority of Missouri Fellows (85%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their school
- Nearly all Missouri Fellows (93%) "agreed" or "strongly agreed" that teachers have a role to play in school change and a large majority (86%) "agreed" or "strongly agree" that teachers can help lead school change
- One change that Missouri Fellows noted in their schools was more collaboration between math and science teachers
- All Missouri Fellows (100%) "agreed" or "strongly agreed" that positive change is possible for their district, but only 71% believe that district change is an important goal for every teacher
- Nearly all Missouri Fellows "agreed" or "strongly agreed" (84%) that they are aware of the top goals in their district, but 21% "agreed" that they did not know how to contribute to district change
- Most of the Missouri District Science Coordinators believe that teachers have an important role to play in district change
- Missouri Fellows cited district changes including more time for math and science teachers to meet together and modifications to the order of science classes at their high school as a result of Wipro SEF
- District Science Coordinators did not see any district changes because of Wipro SEF

Missouri: Interview Insights

- The administrator interviewed said that he saw teachers "step-up" this year who likely would not have prior to involvement with Wipro SEF; he also values that the involved teachers are excited, want to share what they are learning and are solution oriented
- The administrator noted several teacher leadership opportunities that he sees including department chairs, committee membership, executive council, grade level leadership
- The IHE leadership team member interviewed really appreciated the cross-fertilization that came from having other Fellows attend Missouri's year-end conference
- She also noted that teachers struggle to see themselves as leaders, and the reticence to participate in the program is not limited to Fellows but also to the District Science Coordinators

New Jersey Findings

New Jersey's Wipro SEF Innovation program is project-based where existing Fellows develop and implement two-year district goal-aligned projects, recruiting new Fellows to join these initiatives. New Jersey's program continues to grow in numbers as existing Fellows invite new educators to join their projects. If this trend continues, they are anticipating the possibility of steady growth in 2024-2025. (See Appendix E for the complete set of data from the Year-end Survey 2024 for New Jersey Fellows and District Science Coordinators.)

New Jersey: General Program Input

- Nearly all the New Jersey Fellows (95%) reported being "satisfied" or "very satisfied" with the program this year
- Nearly all the New Jersey Fellows (89%) reported that the program "met most," "met all" or "exceeded" their expectations
- All the New Jersey Fellows (100%) "agreed" or "strongly agreed" that the program was worth the time invested and they would recommend the fellowship to a colleague
- The top areas of support that Wipro SEF provided to New Jersey Fellows were:
  - A network of like-minded colleagues
  - Experience in teacher leadership
- Top suggestions for ways Wipro SEF could provide more support for New Jersey Fellows and District Science Coordinators included:
  - Continuing the program
  - Providing more monetary support
  - Offering information about other professional development opportunities for Fellows
- Some of the notable aspects of Wipro SEF mentioned as the most successful this year by the New Jersey Fellows and District Science Coordinators included:
  - The value of meeting with like-minded colleagues
  - Ongoing collaboration with other educators
- Some suggestions for program improvement from the New Jersey Fellows and District Science Coordinators included:
  - Consider holding more meetings
  - Help the Fellows connect across districts
  - Provide more opportunities to showcase their work to others
  - Offer clarity for District Science Coordinators who are also teachers about their role

> *"I will say this to anyone who will listen as many times as I can...the Wipro program has been the most transformative professional development program I have ever participated in (and probably ever will)."*
> *(Year-end Survey 2024, New Jersey DSC)*

New Jersey: Teacher Leadership

- New Jersey Fellows reported feeling the most confidence in speaking to small groups of colleagues (<10 people) and the least confidence in knowing how to write an effective article about a project for their peers
- New Jersey Fellows reported feeling most comfortable receiving feedback from colleagues about their work
- New Jersey Fellows reported feeling most comfortable participating in CCLS meetings with their colleagues and least comfortable in facilitating CCLS meetings with colleagues
- New Jersey Fellows reported the strongest relationships with their school colleagues and their least strong relationships with their District Science Coordinators and members of the university team
- Most of the New Jersey Fellows (53%) are beginning to consider themselves a teacher leader because of participating in Wipro SEF; almost half (47%) considered themselves teacher leaders before participating in Wipro SEF
- The most frequent leadership behaviors New Jersey Fellows participated in were:
  - Providing guidance to other teachers who asked for or needed support
  - Taking action to increase the success of all students at their school
  - Engaging in discussions with other teachers in their school/district about how to teach a particular concept
- The least frequent leadership behaviors New Jersey Fellows participated in were leading professional development opportunities for other teachers in their school or district
- When asked to define teacher leadership, New Jersey Fellows commonly mentioned themes such being continual learners and being confident
- When asked to define teacher leadership, New Jersey District Science Coordinators commonly mentioned themes such as mentoring other teachers, motivating others, and being ready and available to work beyond their classroom's immediate needs.

> *"Teacher leadership is your willingness to help others and work with coworkers and administrators to better your school district."*
> *(Year-end Survey 2024, New Jersey DSC)*

New Jersey: School & District Impact, Attitudes and Behavior

- A large majority of New Jersey Fellows (77%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their school and their classroom
- All New Jersey Fellows (100%) believe that teachers can help lead school change, that positive change is possible for their school and that teachers have a role to play in school change
- Changes that New Jersey Fellows noted in their schools included increases and/or improvements in STEM teaching and experiences at their schools and improvements in teacher collaboration
- All New Jersey Fellows (100%) "agreed" or "strongly agreed" that positive change is possible for their district and that teachers can help lead district change

- A large majority of New Jersey Fellows "agreed" or "strongly agreed" (88%) that they are actively engaged in helping to improve their district; a few (18%) "agreed" that they did not know how to contribute to district change
- New Jersey Fellows commonly cited improvements or increases in teacher collaboration and leadership and more impact on and involvement of the broader community and families as examples of district change that has occurred because of Wipro SEF

> *"In our current project we were able to bring together talented teachers who needed a little push of encouragement to be ready to share these talents. We had some very positive results, so we are hoping that they will become the next wave of teacher leaders in our district."*
>
> *(Year-end Survey 2024, New Jersey DSC)*

New Jersey: Interview Insights

- The climate change connection with a Wipro SEF sister project in Great Britain was noted as a timely and helpful project
- The New Jersey Wipro SEF program is spreading and feels as though it is gaining momentum
- Obstacles to the program's future success include lack of time (e.g. lack of release time, no time for Professional Learning Committees, etc.) and educators being unwilling to give anything "extra" right now
- A teacher acting as a District Science Coordinator noted the challenge of not having a district-level District Science Coordinator; she does not have relationships with teachers at different grade levels and lacks authority to encourage teachers to participate
- Almost every project happening in New Jersey is, in some way, addressing the "COVID gap"
- The IHE leadership team member noted the high importance of district administration buy-in for program success and spread within a district
- The IHE leadership team member noted the advantage that New Jersey has had to continue with the same leadership team since the beginning of the program in the state
- However, the long-term nature of the program is that Fellows involved early on are now nearly 10-years advanced in their careers; they need/want different program elements at this stage; she wonders about whether another Wipro SEF "classic" program is needed with new generation of teachers in the districts

> *"Teachers need little to thrive, but they do need something. And the districts are giving them nothing!"*
>
> *(Year-end Interview 2024, New Jersey IHE Lead)*

New York Findings

New York is also encouraging former Fellows to engage in new GPS projects that are generated, in part, at an annual K-12 STEM Teacher Conference held each fall at Mercy University. These projects are intended to support teacher leadership and inspire district impact by being tied to district initiatives. They also are meant to involve new teachers and administrators in the Wipro SEF family. The length of these projects varies. (See Appendix F for the complete set of data from the Year-end Survey 2024 for New York Fellows and District Science Coordinators.)

New York: General Program Input

- Nearly all the New York Fellows (91%) reported being "satisfied" or "very satisfied" with the program this year
- Nearly all the New York Fellows (96%) reported that the program "met most," "met all" or "exceeded" their expectations
- Nearly all the New York Fellows (91%) "agreed" or "strongly agreed" that the program was worth the time invested and all (100%) they would recommend the fellowship to a colleague
- The top areas of support that Wipro SEF provided to New York Fellows were:
  - A network of like-minded colleagues
  - Experience in teacher leadership
- Top suggestions for ways Wipro SEF could provide more support for New York Fellows and District Science Coordinators included:
  - Providing more access to professional learning
  - Offering support with publishing
  - Continuing the program and support
  - Providing more funding
- Some of the notable aspects of Wipro SEF mentioned as the most successful this year by the New York Fellows and District Science Coordinators included:
  - The collaboration with like-minded, supportive colleagues
  - Opportunities for the growth in STEM teaching and experiences
- Some suggestions for program improvement from the New York Fellows and District Science Coordinators included:
  - More check-ins/support from university team
  - More funding
  - More district support/buy-in

> *"The most successful aspect is collaboration with each other and also collaboration with administration. Holding administration accountable by making them part of it is key. This allows for administration to see the value while also making time for it."*
> *(Year-end Survey 2024, New York DSC)*

New York: Teacher Leadership

- New York Fellows reported the most confidence in speaking to small groups of colleagues (<10 people) and the least confidence in knowing how to write an effective article about a project for their peers
- New York Fellows reported feeling most comfortable receiving feedback from colleagues about their work
- New York Fellows reported feeling most comfortable participating in CCLS meetings with their colleagues and least prepared to lead professional development opportunities with other teachers in their school/district
- New York Fellows reported the strongest relationships with their school colleagues and their least strong relationships with members of the university team
- Most of the New York Fellows (58%) considered themselves teacher leaders before participating in Wipro SEF; a little over a third (38%) are beginning to consider themselves a teacher leader because of participating in Wipro SEF
- The most frequent leadership behaviors New York Fellows participated in were:
    - Providing guidance to other teachers who asked for or needed support
    - Taking action to increase the success of all students at their school
    - Engaging in discussions with other teachers in their school/district about how to teach a particular concept
- The least frequent leadership behaviors New York Fellows participated in were:
    - Leading professional development opportunities for other teachers in the district
    - Assuming leadership roles in their districts
    - Leading professional development opportunities for other teachers in their school
- When asked to define teacher leadership, New York Fellows commonly mentioned themes such being continual learners, listening to others, taking initiative, inspiring others and providing support for other teachers
- When asked to define teacher leadership, New York District Science Coordinators echoed the Fellows' ideas of learning and collegial support

> *"Teacher leadership involves listening and being flexible."*
> *(Year-end Survey 2024, New York Fellow)*

New York: School & District Impact, Attitudes and Behavior

- All New York Fellows (100%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their school
- A large majority of New York Fellows (88%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their classroom
- All New York Fellows (100%) "agreed" or "strongly agreed" that teachers have a role to play in school change and can help lead school change
- Nearly all New York Fellows (96%) "agreed" or "strongly agreed" that positive change is possible for their school
- Changes that New York Fellows noted in their schools included increases and/or improvements in STEM teaching and experiences at their schools, improvements in teacher leadership and increased family involvement
- All New York Fellows (100%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their district
- Nearly all New York Fellows "agreed" or "strongly agreed" (96%) believe that teachers have an important role to play in district change and that teachers can help lead district change
- All the New York District Science Coordinators believe that teachers can help lead district change
- A large majority of New York Fellows (79%) "agreed" or "strongly agreed" that they were aware of top district goals, but a fifth (21%) "agreed" that they did not know how to contribute to district change
- New York Fellows and District Science Coordinators both commonly cited improvements or increases in STEM learning, increases in collaboration among teachers, and improvements in resources available for teachers as examples of district change that has occurred because of Wipro SEF

> *"A number of schools in the district that participated in the Wipro program now have materials and resources to bring different enrichment opportunities to our district."*
>
> *(Year-end Survey 2024, New York Fellow)*

New York: Interview Insights

- The District Science Coordinator interviewed identified the importance of having a district-level person involved in the program; it elevates the work, they can see across the district for how best to implement the program, it helps ensure the success of the program and provides a way to "share out" what the program is doing
- The role of the building administrator is also critical; they can find the right teachers to participate, invite them personally (which means a lot to teachers), and showcase the teachers' work
- One of the District Science Coordinators interviewed would like to see better communication of expectations from Mercy University

- It helps if the District Science Coordinator is a "connector"–someone who likes to match people up with similar interests and complimentary skills
- District Science Coordinators who are teachers at one level (e.g. elementary) struggle to get teachers at other levels involved; they just do not have those relationships
- District Science Coordinators who are teachers are mainly involved at their school only; they do not have relationships with teachers in other schools within the district
- District Science Coordinators who are teachers are also challenged to know which administrators to go to with requests or for help with projects
- District Science Coordinators see both large and small impacts that Fellows are having in their schools and the small impacts are no less valid or important
- Getting nontenured teachers involved is a challenge; teachers without tenure have less courage to do anything new or extra
- The impact on Mercy University of the Wipro SEF program cannot be overstated
- Even though it is more time consuming to orchestrate, collaborations (especially those across districts) are bringing unique and deeper projects

Texas Findings

For Wipro SEF Innovation, the Texas project, based at the University of North Texas Dallas, is focusing on an annual, school-based project in each district and collaborative mini-grants to support projects involving at least one Fellow and one other school personnel. The school-based projects are intended to be schools in the partner districts, must involve teachers either horizontally or vertically and be STEM-focused. The District Science Coordinators or a former Fellow must also be involved in the planning and are often involved as mentors for the project as well. Like other projects, new Fellows are being brought in via these projects. (See Appendix G for the complete set of data from the Year-end Survey 2024 for Texas Fellows and District Science Coordinators.)

Texas: General Program Input

- Nearly all the Texas Fellows (96%) reported being "satisfied" or "very satisfied" with the program this year
- Nearly all the Texas Fellows (96%) reported that the program "met most," "met all" or "exceeded" their expectations
- Nearly all the Texas Fellows (9%) "agreed" or "strongly agreed" that the program was worth the time invested and they would recommend the fellowship to a colleague
- The top areas of support that Wipro SEF provided to Texas Fellows were:
  - A network of like-minded colleagues
  - Information about teacher leadership
  - Experience in teacher leadership
- Some suggestions for ways Wipro SEF could provide more support for Texas Fellows and District Science Coordinators included:
  - Increased funding
  - More time to complete assigned tasks
  - More flexibility with meetings and scheduling
- Some of the notable aspects of Wipro SEF mentioned as the most successful this year by the Texas Fellows and District Science Coordinators included:
  - Continued collaboration with like-minded educators
  - Improvement in STEM teaching and opportunities
  - Improvement in teacher leadership
- Some suggestions for program improvement from the Texas Fellows and District Science Coordinators included:
  - Increase the promotion of the program to get more involved
  - Improve communication of expectations
  - Offer more feedback and frequent check-ins
  - Find more opportunities to speak at conferences
  - Hold fewer meetings

> *"The most successful part of the Wipro Science Education Fellowship this year was starting the Girls Coding Club. It gave female students a supportive space to learn coding and feel empowered in STEM. Seeing their enthusiasm and confidence grow was incredibly rewarding. The club also helped break down stereotypes and inspire future female leaders in technology. It showed the importance of creating inclusive environments for all students to pursue their passions."*
> *(Year-end Survey 2024, Texas Fellow)*

Texas: Teacher Leadership

- Texas Fellows reported the most confidence in speaking to small groups of colleagues (<10 people) and the least confidence in speaking with groups larger than 10 people
- Texas Fellows reported feeling most comfortable receiving feedback from colleagues about their work
- Texas Fellows reported feeling most comfortable participating in CCLS meetings with their colleagues
- Texas Fellows reported the strongest relationships with their District Science Coordinator and their least strong relationships with administrators in their district
- Most of the Texas Fellows (54%) considered themselves teacher leaders before participating in Wipro SEF; the remainder (46%) are beginning to consider themselves a teacher leader because of participating in Wipro SEF
- The most frequent leadership behaviors Texas Fellows participated in were:
  - Taking action to increase the success of all students at their school
  - Providing guidance to other teachers who asked for or needed support
  - Working collaboratively with other teachers and administrators to solve a school problem
  - Engaging in discussions with other teachers in their school/district about how to teach a particular concept
  - Working with other teachers in their school/district to prepare instructional materials
- The least frequent leadership behaviors Texas Fellows participated in were:
  - Leading professional development opportunities for other teachers in the district
  - Assuming leadership roles in the district
  - Working collaborative with other teachers and administrators to solve a district problem
  - Inviting other teachers to observe their classroom and teaching
- When asked to define teacher leadership, Texas Fellows commonly mentioned themes such as supporting and collaborating with others
- When asked to define teacher leadership, Texas District Science Coordinators mentioned that teacher leaders are lifelong learners, help develop other teachers, and take on initiatives that impact the school or district as a whole

> *"Teacher leadership is when educators take the initiative and lead in improving their schools and communities. It's about collaborating, mentoring, advocating, and innovating to enhance education for students."*
> *(Year-end Survey 2024, Texas Fellow)*

Texas: School & District Impact, Attitudes and Behavior

- Nearly all Texas Fellows (95%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their school
- Nearly all Texas Fellows (98%) "agreed" or "strongly agreed" that being involved in Wipro SEF made a positive impact on their classroom
- All Texas Fellows (100%) "agreed" or "strongly agreed" that positive change is possible for their school and most "agreed" or "strongly agreed" (96%) that teachers have a role to play in school change, teachers can help lead school change and that school change is an important goal for every teacher
- Changes that Texas Fellows noted in their schools included increases and/or improvements in STEM teaching and experiences at their schools and improvements in teacher collaboration
- A large majority of Texas Fellows (86%) felt that being involved in Wipro SEF made a positive impact on their district
- Nearly all Texas Fellows (95%) "agreed" or "strongly agreed" that teachers can help lead district change, have an important role in district change and that district change is an important goal for every teacher
- Nearly all of Texas Fellows (91%) "agreed" or "strongly agreed" that they were aware of top district goals, but a third (34%) "agreed" or "strongly agreed" that they did not know how to contribute to district change
- Texas Fellows and District Science Coordinators both commonly cited improvements or increases in STEM learning, improved teacher collaboration and increases/improvements in professional development opportunities as examples of district change that has occurred because of Wipro SEF

> *"I see Fellows leading district [professional development] and collaborating with teachers from other campuses. Additionally, I see my Fellows supporting our Emergent Bilingual program by demonstrating best practices for EB students."*

Texas: Interview Insights

- The administrator interviewed spoke highly of the program and its impact on his school
- He noted that Wipro SEF teachers are more advanced at participating in PLCs and doing observations of other teachers
- From the District Science Coordinators interviewed, they noted:
    - Meetings needed to be more efficient to maximize time and minimize stress for busy educators
    - Expectations need to be clear and then adhered to once communicated (e.g. reduce "moving the bar")
    - Barriers that they are facing include the general teacher shortage and principals' reticence to allow teachers to leave classrooms
    - Garden projects in several schools are thriving and students love them
    - Including more opportunities for Fellows and District Science Coordinators to travel was a highlight

California & Missouri Conference Findings

Both Missouri and California hosted year-end conferences this year. To encourage more cross-site interactions, both sites hosted some Fellows and District Science Coordinators from other sites. Missouri's Conference on May 4, 2024 included some guests from Texas and California. California's Conference on June 1, 2024 included guests from Missouri, Texas, Florida, New York and New Jersey.

Two separate surveys were used to collect insights from participants. For California, the survey was developed by Stanford University Wipro SEF leadership team member, Dr. Preetha Menon. It was administered at the end of the conference using Google Forms and participants completed the survey on-site. Twenty-seven participants (27) responded to this survey. The Missouri post-conference survey was developed and administered by project evaluator, Anne Gurnee Consulting, LLC, and it was sent to conference participants in early July. The goal was to ask similar questions to those posed to the California conference participants. Seventeen (17) Missouri conference participants responded to this survey. Below are some highlighted findings from the two surveys. (All of these surveys' data can be found in Appendix H.)

California Conference Survey Highlights

- California participants indicated that listening to presentations not from their own sites and networking with other Fellows were the most impactful aspects of the conference
- A significant majority of participants (85%) felt that the conference influenced their approach to forthcoming science teaching and leadership opportunities to a great extent
- California participants' top suggestion for future conferences was to provide more opportunities to dialogue with colleagues about their Wipro SEF projects
- A majority of California participants (70%) felt that interaction with Fellows from other sites has positively impacted their sense of belonging to a community of K-12 science teacher to a great extent
- When asked how they would describe the conference experience to a colleague who had not attended, respondents used words and phrases such as impactful, inspiring, collaborative, and a great opportunity for growth and networking
- When asked what additional resources or support would enhance the effectiveness of future cross-site interactions/collaborations, participants mentioned:
    - More cross-site opportunities (including virtual)
    - A copy of all the slides and/or links to all the projects
    - More time to talk with/network with other Fellows
    - Being able to choose the sessions to attend instead of being assigned
    - Cross-site collaboration on projects
    - District support

> *"[The California year-end conference] is a great method for building an impactful community of like-minded professionals who are eager to share information and methods."*
>
> *(California Post-conference Survey 2024, Participant)*

Missouri Conference Survey Highlights

- Missouri participants felt that networking with other Fellows from other Wipro SEF sites, networking with Fellows from their own site and listening to presentations from other Wipro SEF sites theirs and other sites were the most impactful aspects of the conference
- Nearly all Missouri participants responding (94%) "agreed" or "strongly agreed" that the cross-site interactions provided valuable insights that they would not have gained otherwise
- Nearly half (41%) of Missouri conference participants felt that in-person interaction with Fellows from other states impacted their sense of belonging to a nationwide community of K-12 educators
- When asked what additional resources or support would enhance the effectiveness of future cross-site interactions and collaborations, comments included:
  - Providing more collaborative work time
  - Having a bigger national conference
- For the three (3) Missouri conference participants responding who had traveled from another state, all of them felt that the conference was "highly valuable" for their Wipro SEF team and their school community
- The biggest obstacle that gets in the way of traveling to conferences such as the Missouri conference is funding (93%)

NSELA Institute Findings

A group of twenty District Science Coordinators and IHE leadership team members attended the National Science Education Leadership Association's (NSELA) Summer Leadership Institute in Seattle, Washington in July 2024. The focus of the Institute was about climate change education and sustainability learning. The Institute was an opportunity to provide additional professional development to a group of Wipro SEF District Science Coordinators in a way that might help foster continued connection and collaboration. Seventeen (17) of the participants responded to a post-NSELA institute survey administered immediately after the conference concluded in mid-July. Thirteen (13) respondents were current or former District Science Coordinators, and the remaining respondents were IHE team members, friends/consultants to the program. Below are some of the highlights from the conference survey. (The full set of data can be found in Appendix I.)

NSELA Institute Survey Highlights

- A large majority of respondents to the post-NSELA institute survey (83%) "agreed" or "strongly agreed" that they had learned more about how to enhance science instruction through teacher leadership at the NSELA institute
- Almost three-quarters (70%) felt that they learned more about how to improve their own leadership at the institute
- When asked about some of the participants' key takeaways related to teacher leadership, some of the repeated themes included:
    - A fresh understanding and good resources to support teacher leaders wanting to engage with the topic of climate change
    - The importance of collaboration across states/sites and the buy-in of building and district leadership to build/support teacher leaders
    - Ideas on how to approach the climate change topic with an attitude of hope and optimism
- A large majority of respondents (82%) "agreed" or "strongly agreed" that, at the NSELA institute, they learned ideas that could improve science/STEAM instruction in their district and ideas that could impact their district in significant ways
- Some of the ideas shared by participants that could positively impact their districts included:
    - Inspiring students to lead change
    - Partnering more with community organizations
    - Creating a cross-district community garden with connections to climate change
    - Increasing climate change instruction across a full high school grade level
    - Leveraging teachers already interested in the topic
    - Using local natural resources to approach the topic of climate change
    - Creating a professional development opportunity on climate change for teachers of grades 3-5
    - Creating climate change units
    - Including discussions of climate change in professional learning communities (PLCs) in their district
    - Including the idea of "climate justice" in science units in their district

- Considering the investment of time and resources involved in traveling to a distant institute such as the NSELA Summer Institute, a large majority of respondents (83%) felt that the experience was "highly valuable" or "very highly valuable" for themselves and three-quarters (75%) felt it was "highly valuable" or "very highly valuable" for their districts
- Some suggestions from the respondents about how to improve the NSELA Summer Leadership Institute experience in the future included:
    - Meeting as a group in advance to discuss goals and objectives of the time together
    - Considering whether existing Fellows are the right group to address the topic if climate change or if a new group focused on this topic would be more effective
    - Meeting in small groups based on current work might have been a better way to emerge with actionable plans

> *"NSELA provided so many great resources and frames for how to best teach this topic to a variety of students at different grade levels. I think that the doom and gloom scenarios that overwhelm me and many students are very prevalent, but this conference provided alternative ways to talk about the issues to provide more hope and action for our youth."*
>
> *(NSELA Post-institute Survey 2024, Participant)*

Program Dissemination

The broader Wipro SEF program team continues to make progress in disseminating to the broader professional community about the successes of Wipro SEF in their regions. Here are some of the noteworthy dissemination efforts this year:

- New Jersey–The Montclair State University Wipro SEF team continues to have success in publishing academic articles related to their work on the project. Additionally, they have had several doctoral students who have worked on Wipro SEF related projects this year.
- New York–Mercy University has embedded their work with Wipro SEF within their Center for STEM Education. Each fall, the Center hosts a conference that both serves as a recruitment strategy for new Wipro SEF Fellows and projects, but also provides professional development for regional teachers who are not involved in Wipro SEF.
- Texas–The University of North Texas Dallas had more than fifteen Wipro SEF Fellows present at CAST, the annual conference of the Science Teachers Association of Texas, in fall 2023.
- Website–With the help and support of Wipro, Wipro SEF debuted a new website in summer 2024 that tells the broader story of Wipro SEF
- Book–Currently in development, the full Wipro SEF team collectively drafted a new book about the Wipro SEF program. Under the leadership of the team at the University of Massachusetts Boston, the book will be published in spring 2025.

Recommendations

While the Wipro Science Education Fellowship continues to be successful, input collected from participants (e.g., Fellows, District Science Coordinators, and program leadership) indicated potential areas for continued refinement of the model. As the program continues to evolve during this Innovation phase, the evaluation team provides the following recommendations to help to inform the future program growth and expansion:

1. **Recognize the high value that Fellows and District Science Coordinators place on the relationships built within the Wipro SEF program framework and plan for them to thrive long-term.**

As we have found consistently over the years, the top value of the program reported consistently by both Fellow and District Science Coordinators is the relationships built with a network of like-minded educators in their region and beyond. These relationships have buoyed these educators through some of the most turbulent times in the American education system in, arguably, the last one hundred years.

The question is: how do we maintain these relationships for the long-term to continue their high-value work in these educators' professional lives? The answers are simple, but not easy. Here are a few options to consider:

- Communicate regularly–Stay in touch by whatever means possible and practical (e.g. texts, emails, calls, meetings, etc.); even brief connections matter
- Show appreciation–Wipro SEF has been strong on this front, but continuing to maintain the practice of regular and sincere appreciation helps to maintain relationships
- Adapt to change–This is important to consider as Fellows and DSCs change their roles and/or responsibilities and as they progress in their own professional growth; this is also important to consider within the ever-changing landscape of the education system
- Find ways to share the responsibility of relationship maintenance–These suggestions should not all fall on one person or one organization; true relationship is shared by all the parties involved

2. **Continue to communicate explicitly and often about the Wipro SEF program's key goals of teacher leadership and district impact.**

This recommendation, a repeat from last year, is still crucial to Wipro SEF's mission. Because the continued development of teacher leaders and district impact are the two prime goals of Wipro SEF Innovation, all sites should regularly, explicitly and repeatedly communicate with all stakeholders about both teacher leadership and district impact. Given the number of years all the partner university teams have been involved in the program, it can be easy to forget these core goals and to assume that others know and understand their purpose and meaning. Instead, assume the opposite, and use every opportunity to remind stakeholders that these are the two goals and to help define these goals whenever possible. Ask Fellows and District Science Coordinators regularly:

- What is teacher leadership to them? And how is this definition evolving and they grow and learn professionally within the Wipro SEF program?

- What do they think of themselves as teacher leaders? If they are comfortable with being teacher leaders, why? And if not, why not?
- What obstacles are standing in their way of becoming teacher leaders? How can this collection of like-minded Fellows and District Science Coordinators work together to remove these obstacles?
- What does district impact look like for their district? Can they come up with specific goals to impact their district?
- What is the role of a teacher leader with facilitating district change? Is this a responsibility for a teacher leader? Why or why not?

3. Consider offering future rounds of "classic" Wipro SEF programming to continue to train newer teachers in the partner districts.

Teacher retention and turnover has been a challenge nationally over the last several years. This means that nearly every district involved has had a fresh influx of new teachers that do not know about Wipro SEF, its values and culture-changing possibilities. Although the new directions that many of the state are taking with the Innovation phase are novel and exciting, there may be a need to continue the "classic" program to ensure to provide a "pipeline" of Wipro SEF-trained Fellows for the coming years.
vs. New Fellows needs.

4. Think about how to adapt the program to support long-time Fellows and District Science Coordinators.

The Wipro SEF program has the very good fortune to have some Fellows and District Science Coordinators who have been involved with the program for a long time, even some more than a decade. These long-term participants have grown and evolved in many ways as professionals, and they want and need a different kind of support and roles within the program. Some things to consider for long-term program participants include:

- Customize the professional development opportunities–Consider offering different types of professional development for long-term program participants than for those who are newer; these participants want and need more sophisticated or nuanced training
- Provide access to advanced resources–The opportunity to attend the NSELA Summer Institute this year was a perfect example of offering long-term participants the chance to expand their horizons while remaining connected to the program overall
- Involve them in program design–Give long-term participants more leadership within the program itself; ask specifically what they want and need to remain active and engaged with Wipro SEF
- Involve them in program leadership–Have them spearhead communication, maintain a program website, write a monthly newsletter, lead training sessions for newer Fellows, lead teams, etc.; this is already happening in many sites, but it should become a norm throughout

5. Provide support for Fellows in article-writing skills.

The one leadership skill that Fellows almost universally need more support in is article writing for their peers. This may not be appropriate for younger teachers or for newer Fellows in general, but for schools and districts that have been involved in the program for many years now and who have a cadre of long-term Fellows that have been involved for more than five years, offering specific support in academic writing for publication is a natural next step. Offering this kind of training, even to just a subset of Fellows, addresses two programmatic needs:1) providing professional development for both Fellows and DSCs who are ready for more advanced levels of professional work; and 2) creating a way for more professionals outside the program to learn about its methods and successes and to inspire others.

6. Seek innovative ways to engage districts in supporting the program financially.

There are two issues here: the short-term needs of the program and the long-term. The short-term needs include boosting the amount of funds available to support the Fellows and District Science Coordinators (e.g. larger stipends) and taking some of the program administration burden off the IHE institutions involved (e.g. having districts provide some of the administrative support for the program).

For the long-term, the issues relate to the program's sustainability in the districts. As the program matures in the many districts nationwide, there is increasing buy-in in some districts to remain committed to the program most important features and goals for the long-haul. These districts have seen the benefits to their teachers, their students and their districts. However, very few are making positive steps toward funding more of the program internally. This is necessary for the support of the long-term change that the district is seeking. Wipro will likely not fund the program forever.

To make this transition, the program leadership, the IHE teams and the district leadership need to work together to justify on-going, long-lasting support for the program that comes from the districts themselves. Some of the steps to consider include:

- Begin discussions now with key stakeholders–Work to involve all the key players (Fellows, DSCs, key administrators, IHE leadership, other teachers, parents, community members, etc.)
- Identify possible funding sources–Brainstorm ideas both internal and external to the district that might provide additional support
- Work to include the Wipro SEF program model in the districts' strategic plans–Ensure that the goals of the district are clearly connected to the goals of the Wipro SEF program
- Build capacity for sustainability–The DSCs are a critical component here as they are the on-the-ground administrators who know the program's inner workings the best; work to support their readiness to takeover more of the program's administration
- Communicate regularly and with clarity–Keep all the key stakeholders informed regularly about plans for the future of the Wipro SEF program in the districts and any upcoming transitions

7. Work to improve the efficiency and effectiveness of program meetings.

Every year, there are some comments from all types of program participants–from IHE leads to District Science Coordinator to Fellows–about the need to improve meetings. While this may seem a trivial matter, it never hurts to spend some time re-evaluating the purpose, function and flow of program meetings. Given that they are a foundational way that participants interact with each other and receive critical program information, they should be intentionally designed to ensure that the goals of the program are central, and participants' time is respected and well used. Some questions to consider when designing meetings include:

- What are the purposes/objectives of the meeting?
- Who needs to attend, and almost as important, who does not?
- Is the agenda well-structured, timed and communicated in advance?
- What do participants need to do to prepare for the meeting?
- Is there a timekeeper designated at each meeting to help the meeting on track and focused?
- What are the outcomes desired for the meeting and how are they communicated?
- Who leads the meeting? How will Fellows and District Science Coordinators, if present, contribute to the meeting?

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