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

WIPRO SEF

YEAR 13

QUARTERLY REPORT
Dec 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 are presently in Year 3 of the four year 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.

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 September 15, 2024 through December 15, 2024. We are in 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).

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	45		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	20		5
Florida (U of South Florida)[3]	8	8	8	0	20	3
Massachusetts (UMass – Boston)	8	5	5	0	10	5
Missouri (U of Missouri)	N/A	N/A	4	27	6 (Climate V-CCLS)	5
New Jersey (Montclair State)	17	17	13	34		7
New York (Mercy College)	7	3	10	12	65	1
Texas (U North Texas – Dallas)	13	10	20	8	1	4

[1] Plus two district administrators.
[2] Plus nine district administrators.
[3]Note that the 8 projects are ones that are currently active. We have had a total of 13 projects approved overall but 2 left since fellows took on leadership roles. Some of our fellows submitted a new project as well. Also, for the non-Fellow Teachers involved, please note again this is for current projects and may include some assistant principals who are technically not teachers but are involved with the project.

UPCOMING MEETINGS AND MILESTONES

Wipro Leadership Retreat (January 30-Feb 2, 2025) – Nashville, TN

- University leaders from all sites with meet for two days to discuss issues related to the Wipro Projects including new district administration workshops, other opportunities for supporting district transformation and communication of our successes outside the Wipro SEF network.

New Jersey Wipro Retreat (January 24, 2025)

St. Petersburg, FL Science Festival (Feb 7-8, 2025)

Wipro Book publication date (Feb 12, 2025)

National Science Education Leadership Assn (March 26, 2025), Philadelphia, PA

National Science Teaching Association Meeting (March 27-29, 2025), Philadelphia, PA

Executive Summary for Each Site

Executive Summary Statement - CA

The Wipro Science Education Fellowship (SEF) Innovation Phase at the CA site is positioning itself as a key contributor to district transformation by fostering teacher leadership in science. 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. By providing focused professional development, individualized mentoring, and opportunities for cross-site collaboration, the CA site aims to elevate science teaching to meet the high standards of the Next Generation Science Standards (NGSS). This approach empowers teachers to lead district-wide change while transforming instructional practices across multiple levels.

The three components for the CA site include the traditional Wipro Science Education Fellowship Program for teacher leaders, the Wipro School Leaders Program, and individual district team support. For the Wipro SEF Program, professional learning sessions are focused on fostering teacher agency and promoting student-centered practices that align with the Next Generation Science Standards (NGSS) and address district-wide needs. Teachers will also be equipped to provide equitable opportunities in science education for all students that embrace all cultural and linguistic backgrounds. For the Wipro School Leaders Program, this year's emphasis is on supporting instructional coaches to understand better how to practice leadership and elevate the quality of science instruction through the creation of effective collaborative groups. For district teams, the CA Leadership Team continues to work alongside district coordinators to plan ways to leverage the expertise of Wipro fellows to further their district science goals.

This quarter, the CA site welcomed 20 new Wipro Fellows from five partner districts into Cohort 5 at an Induction Ceremony. Fellows participate in monthly professional learning sessions and work in their collaborative V-CCLS groups. V-CCLS group presentations where fellows will share their collective learning will take place in January. The Wipro School Leader Program includes 6 participants made up of instructional coaches and teacher leaders who are alumnae of the Wipro SEF Program and are taking on more leadership responsibilities in their districts. To further support our district transformation efforts, the School Leaders Program offers professional learning and coaching focused on leadership, coaching, adult learning, and developing a strong learning culture within departments and schools.

In the next quarter, the CA site will continue providing professional learning, coaching, and supporting districts with their science goals. The Wipro SEF Program will launch the H-CCLS collaborative groups, the Wipro School Leaders Program will continue to dive deeper into their problems of practice, and District Coordinators will continue to work alongside the CA Leadership Team to focus on individual district needs.

Executive Summary Statement - FL

The goal of our program is to continue to cultivate leaders in our districts from those individuals with the desire and passion to do more in the classroom. The way we do this is to allow our fellows

to focus on innovations that they are passionate about rather than dictating structure and projects to them.

We have several team projects that are either in their first or second year of implementation. The team leaders chose their own projects based off previous Wipro work, selected their own team members, and then implemented that work. Some of these projects involve creating curricula while others focus on technology or promoting stem to various groups. This was the first school semester for three of our teams (though some of our teams are in the first year of a new project).

This semester had quite a few challenges. We had 3 Major Hurricanes that greatly impacted our area in the fall semester. We were able to still hold two in person sessions, one-virtual session, and one session of us going to the fellows for their team meetings. One of our sessions was held in our STEM lab at USF St. Pete while the other in person session was held at the Florida Aquarium. We try to have an event at an offsite location to learn how we can work with our community partners to enhance what we do in the districts.

Moving forward, we will have our St. Petersburg Science Festival in February. We will start the year with an in-person session in January, followed by the festival, then we will have another virtual meeting followed up by an "us to them" meeting. Finally, we will have a Saturday session that will be our celebration event.

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 following initiatives are taking place:

Cambridge Public Schools is continuing with V-CCLS teams, led by a Wipro Fellow. They have seven middle and high school teachers focusing on Talk Science as one element of their course of study and either Developing and Using Models, or Analyzing and Interpreting Data, as their second element. The science coordinator is anticipating having elementary teachers join the V-CCLS groups in the spring.

A new project, *Wipro's Science-Literacy Teacher Leadership*, will be led by two UMass Boston professors in collaboration with the Massachusetts (MA) State Department of Elementary and Secondary Education. The study aims to identify and develop innovative facilitation scaffolds to support elementary students' sensemaking when engaged in integrated science-engineering learning. This project attempts to create enhanced integrated and equitable science-engineering learning for all elementary students, including dual language learners by helping teachers reconsider the role of disciplinary language and literacy in their students' sensemaking as they

engage in the NGSS practices. The teachers represent three school districts.

Dr. Betsy Clifford, the District Science Coordinator from Braintree Public Schools, will lead the science department in the following work:

Continued work on articulating how science content and skills progress and align K-12. (Vertical Collaborative Coaching and Learning in Science: V-CCLS for DCI and SEP)

Collaboration with peers in the math department about skills for chemistry and physics (Math/Science Collaboration)

V-CCLS related to the Modeling Pedagogy and specifically student whiteboarding, storyline approach related to phenomena, relevancy and real-world application (V-CCLS for Modeling Pedagogy)

Send a few teachers to external Professional Development Offerings such as the MAST Conference so they can present their work. (Project dissemination and leadership)

UMass Boston will continue to 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.

During this semester Cohort 6 started year 1 of their participation and Cohort 5 started year 2. Both cohorts meet at the same time and conduct some of their activities together. Since Cohort 5 consisted of just 4 middle school teachers, the combined meetings give them an opportunity to work with the entire K-12 spectrum of 16 fellows in Cohort 6. A segment that we have introduced this year, called the Physics + math activities, consists of a 60-75 minute segment where fellows conduct a physics lab and analyze it for the science and math practices used in the lab. Since we use an inquiry and modeling-based curriculum (https://exploringphysics.com), it includes questioning strategies, discussion, designing experiments, data analysis to develop scientific formulae and multiple representation – and therefore several math and science practices. In addition, 9 Missouri

teachers participated in the Climate V-CCLS project, a multi-site collaboration.

Next semester Cohort 6 will begin their H-CCLS cycle while Cohort 6 continues developing their lessons. Physics + math activities will continue, along with discussions of leadership.

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.

The current phase of the project has involved 12 Alumni Fellow working on district-related initiatives and one Fellow and a doctoral student 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. The Fellows came together on September 30th for the first all-Fellows meeting of the year. The workshop focused on goal-setting and extending the reach of the Wipro SEF Fellowship even furthe1

The next meeting will be a half-day retreat on January 24, 2025 to continue building and planning their projects.

Executive Summary Statement - NY

We have selected three new Wipro Reimagined teams with 22 teachers and 5 administrators across 2 districts, New Rochelle (2) and White Plains (1). (Please see "Selected/Highlighted Projects".) These projects engage teachers and students across grade levels K-12 and promote partnerships with teachers across their districts. They each have feasible plans for sustainability beyond Wipro funding.

Our Innovation phase (at Mercy University called Wipro Reimagined) Cohort 3 2024-2025 is underway. It launched September 28, 2024, with the Mercy Conference. Our major push was to support projects that engaged educators who were new to our Wipro program and/or projects that were vertically aligned K-12. Proposals became due on November 1st. Seven teams submitted proposals. The Mercy team provided feedback, and proposals were resubmitted by the deadline, November 1, 2024. The team reviewed and selected the three proposals that best met the project criteria. Decisions on the proposals were announced on December 6, 2024. The three projects being funded are as follows: *Coding to Learn-Learning through Coding: Building Cognitive Skills Using Robots and Coding; STEM Spotlight Newsletter; and Arcade Challenge.*

In this quarter, Mercy Center for STEM Education hosted its annual K-12 STEM Educators Conference. The keynote address, "Building teacher Leadership Capacity" was given by Dr. Arthur Eisenkraft. Attendees had the opportunity to make selections from eight 20-minute and three 45-

minute presentations given by Wipro Innovation and Reimagined Fellows and Blue School educators. It was refreshing to have presentations given by visiting Wipro Fellows from San Francisco (Lisa Ernst, Laura Spanier, and Kendrick Chow) and Florida (Nicole Holman). As stated previously, this event was also the kickoff for brainstorming ideas for Wipro Reimagined projects.

In the next quarter all the participants (educators and administrators) of Wipro Reimagined Cohort 3 will meet to bond, plan, share ideas, and inspire each other. The Fellows will be in full implementation mode of their project. The Mercy Team is looking forward to offering support and seeing their projects come to fruition.

Executive Summary Statement – TX

The Wipro SEF Innovation Phase at UNT Dallas is in its third year. This year too we have funded school projects, collaborative as well as individual projects focused on district transformation through teacher leadership. New science Teks have been implemented since fall 2024 and most of these projects address the changes made.

In the innovation phase, three types of projects are funded. School projects involve more than 2 fellows working together on a goal that impacts the school/ ISD. Collaborative projects are between Fellows in the same school, ISD or different ISDs collaborating on a project of common interest. Individual projects enable Fellows to work on projects they are interested in and still be a part of Wipro and impact students. This year, 2024-2025, I am funding a total of 10 projects, 4 schools, 3 collaborative and 3 individual projects.

I first met with the Fellows whose proposals had been accepted for presentation at CAST 2024 at UNT Dallas. Each group/ individual presented their activities before their peers and DSCs, shared their slide shows and handouts and received feedback from their peers.

On Oct 9th we had the Wipro Phase 3 awards and induction ceremony. Phase 3 year 2 participants were awarded a plaque for completion of their projects and new inductees were recognized and presented their funded project.

https://docs.google.com/presentation/d/1zAkkUULwkXK7g7lWFzwQ7We3lgQq04zDkZMvvogDir8/edit#slide=id.g2f9471392c1_0_0 slide show

https://photos.app.goo.gl/GEi4qLYauE6e9cdY9 photographs of the event

Nov 13-15th Wipro Presentations at the Conference for the Advancement of Science Teaching (CAST, 2024, San Antonio)

Dec 2nd Wipro meeting and dinner, funded project participants presented updates that were made to their project till date and expectations set for further progress. New inductees got their Wipro badges, the sweatshirts will be given at the next meeting.

https://docs.google.com/presentation/d/1ndBxsj5rLLATQBmXKeenHYpp8Fd1s5Hb-JtB6Fuq9yE/edit#slide=id.g2f9abb71856_1_60 slide show

The next quarter is going to be very busy as spring normally is at schools with test prep for Staar. Our next Wipro meetings are Feb 3rd and April 15th, each site has a google site created for their

project and these dates will serve as their first two checkpoint for completion of some of the items on their website. April also is the month when CAST proposals are due for CAST 2025 which is in Dallas, so I will have a proposal writing session with the fellows to help them with that.

UMASS BOSTON LEAD INSTITUTION

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

Cross Site Collaborations

We are providing opportunities for cross-site face-to-face collaborations in addition to those on zoom.

September 28, 2024

Mercy University hosted their annual conference. The agenda included:

- 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
- A luncheon hosted by Wipro SEF for those attending and presenting

Attendance and Site Visits for Wipro SEF

Arthur Eisenkraft was able to visit most of the Wipro SEF sites and participate in their meetings and converse with the Fellows as well as meet with the university leadership.
Mercy University, NY: Sep 28 Annual meeting; Eisenkraft also delivered the keynote; Anne Gurney, our evaluator also attended.
Montclair State University, NJ: Sep 30; Eisenkraft and Gurnee conducted a site visit that included school visits and meetings with Fellows and principals; Meeting with new cohorts of Fellows.
University of North Texas, Dallas: Oct 9: Monthly meeting with new cohorts; meeting with the Interim President and Interim Dean.
University of Missouri: Oct 10: Meeting with new cohort
CAST meeting: Nov 14-16: Attended the eight presentations that involved over 20 Wipro Fellows.
Stanford University; Dec 14: Attended the full day Wipro meeting and met with new Fellows.

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.

Climate V-CCLS: Four teams of teachers, each led by a Wipro Fellow, are conducting Climate V-CCLS studies this fall and winter. The teams are from Massachusetts, California, Missouri (2). Each team has decided on a course of study including a climate focus (climate science, climate change, climate anxiety or climate justice) and a research article. They are reflecting on each other's lessons following our V-CCLS protocols. There are also exciting plans for a climate summit (CA). Plans are to share across the four teams in February.

Climate Book Club: District Science Coordinators and University Personnel are participating in a book club. The book, *Not Too Late: Changing the Climate Story from Despair to Possibility,* is being led by Wipro Fellows. The monthly meetings provide a forum where we can discuss how to best teach climate in our respective schools.

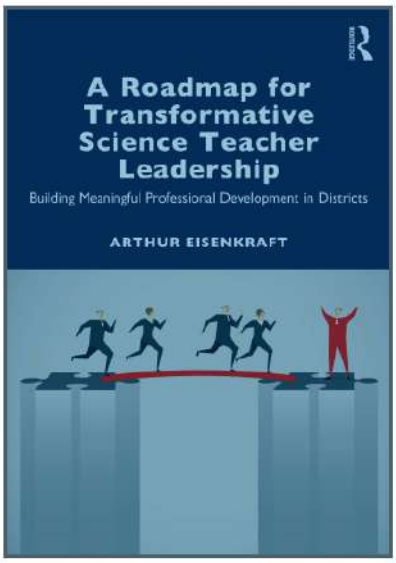
Wipro SEF Newsletter

We produced and disseminated our first Wipro SEF Newsletter. This brief newsletter highlights the latest updates from the Wipro SEF program, along with a few inspiring stories from districts across the country. It offers a glimpse into the extraordinary work being done by teacher leaders and the meaningful impact this initiative is having on students, educators, and communities. We encouraged district administrators receiving the newsletter to:

- **Take pride in your district's role** in this initiative and the achievements of your teacher leaders.
- **Share this newsletter** with your Board of Education and other stakeholders to celebrate your district's contributions to this transformative work.
- **Consider ways to continue supporting teacher leadership** as a catalyst for long-term improvement in STEM education.
- The newsletter was also uploaded to the Wipro SEF website. https://wiprostemprogram.com/

Wipro Book

The book (to be published by Routledge (Taylor and Frances Group)) has moved to the printer. The publication date has been moved to February 15, 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.

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, Oct 15, 2024
11 AM – 1 PM (EDT)

Join Zoom Meeting
https://umassboston.zoom.us/j/99914434497
Meeting ID: 999 1443 4497
Passcode: 973499

Quarterly Report Feedback

Each meeting, two sites can present their reflections on the Annual Evaluation report data.
Mercy and Missouri for November
Montclair and Stanford for December
Florida and UNT Dallas for January

You will have approximately 15 minutes each to discuss and lead a discussion.

The focus can be on:

Engagement with Evaluation Findings:

- "What are the key takeaways from the evaluation report that stood out to you?"
- "How have the evaluation results informed your understanding of the project's impact on teacher learning and development?"

Actions and Follow-up:

- "Based on the findings, are there any specific areas that require immediate attention or adjustments in the project's approach?"
- "How do you plan to address any challenges or areas of growth highlighted in the evaluation?"

Sharing Insights with Parallel Programs:

- "What findings from the evaluation would be most beneficial for other sites running similar parallel programs?"
- "In what ways do you think collaboration across sites can be enhanced based on the insights from this evaluation?"

Improving Future Evaluations:

- "What additional information or data would you like to see in future evaluations to better support your decision-making and project improvements?"
- "Are there any aspects of the current evaluation process that could be changed or expanded to provide more useful insights for your team?"

Cross-site conferences and updates

Climate initiatives

- Climate V-CCLS
    - 4 teams (MO-2; MA -1; CA -1)

      Jennipher Adams
      Yue
      Stephanie (Ng)
      Amy Rapp
      Molly Peters

    - Timeline

      Arthur shared that he sent out an invitation letter to the teams that responded to the survey.

- Climate Book Club: Not Too Late
    - Fawnia
    - DSCs – 10 people registered

      Arthur: We will schedule a virtual meeting

- Preetha – climate change for C5

  Tammy: We are not pushing climate change theme, but presenting this strand as an option to our Cohort 5 fellows

- Climate standards in State Frameworks, NGSS, etc.
- Brooke Whitworth Leadership Institute
    - 5 are enrolled
- Cross-site interest groups – plans for Fall
    - ELL workshop– Preetha? Ratna?
    - Gardening – Lisa (CA)
    - Climate
    - Others?
- Updates from Mercy University conference
    - 3 from CA; 1 from MO
    - Value?

Carmen shared info about the conference: We had a day of presentation that were great. Arthur was a keynote speaker. Some of the presentations included topics such as scientific literacy and visualization, and nature journaling. The conference was well attended. We discussed with some of the participants a potential for their participation in a Wipro reimagined program.

Arthur: There were fellows from other sites as guests at the conference.

Tammy: Several of our fellows from CA went to this conference. They felt really proud to present. Thank you for welcoming and supporting them.

Anne: We also had Nicole from Florida and Bria from MO.

Arthur: We had a really great time and had a wonderful dinner after presentations. I think I'll ask them for their reflections about coming to Mercy University for the conference.

Carmen: It would be very interesting to capture from fellows why it is so essential and refreshing to present at the conference and why the conference experience is so important.

Anne: It was great to be there in NY. This conference is a combination of a lot of their activities. It is just exciting to see the growth of Mercy the fact that they establish this center and now it is hosting Wipro fellows as well.

Arthur: This time it was helpful to provide fellows with a 1k max for their travel to NY. It made it much easier for managing payments. Everyone took their own responsibilities and figured out logistics. It was something new and made it easier for us.

- Math/Science – NJ and others (visit to MO?)
- Conferences
    - NSTA – New Orleans:
    - Who is attending

      Arthur asked each of the sites to email him information about participants in upcoming NSTA conference

- Site Visits
    - NY and NJ - end of Sep

      Arthur: Anne and I also went to NJ.

      Emily: It was great, Anne and Arthur spent some time in 2 districts. It is great for the fellows and principles to have informal conversations. It was a full day, and it worked very well overall. It is always great for us to spend time in schools. It is great for us to get a sense of who are the students in our participating districts. Students are changing and we need to see it. On many levels it is a great opportunity for teachers to share their teaching in classrooms.

Arthur: It is great to see these projects come alive. Anne and I wrote some comments. An example about snow days (different experiences depending on the financial standing).

- MO and TX – Oct

  Ratna: It was our first conference this year. We used this opportunity for new fellows introduction as well as congratulations to older fellows. We have 8 new fellows. We had several principles that attend this event. It went great and all the participants are excited. A lot of our projects are STEM and many of our projects need to learn how to incorporate new standards.

  Arthur: Each of the new team's presentation of work coming up was very nice. They are thinking of how these projects can make a district impact.

  Ratna: For the conference presentation in San Antonio, out of the 10 proposals 9 were accepted to the conference. We practice proposals presentations. There are 25 people who will come to the conference. Next year conference will be in Dallas, TX.

  Arthur: We forget how nervous teacher could get presenting to other teachers. One of the fellows from TX came for the first time for a conference in CA. Another person from CA told me how impressed her family was for her presenting in Stanford University. I want to continue presenting these opportunities to fellows. In MO, I saw Meera and Linda in action.

  Meera: We have cohorts 5 and 6 meetings together. It has been great. It allows enough exposure for participants to meet people from other grades and districts. Teachers presented their research articles. Each of the VCCLS teams talked about their projects and science and math background that went with it and how they will apply this info for research articles. They had some concrete examples, such as how you teach students to ask questions? or what kinds of responses can teachers provide?

  After these presentations we did our physics and math activities. This is something new we started to do this year and it takes about 1 hr for a physics activity based on the response we got from teachers on what they are interested in. This time it was about motion. We used some cut and paste graphs. Our challenge was to find enough of learning opportunities for elementary/middle and high school teachers to find something valuable in it. That time we looked at couple of different ways of doing graphing.

  Linda: As Meera mentioned, we have a combined cohort. Cohort 5 participated in a lot of activities. They talked about their lesson plans. It was useful to them to focus on lesson plans. They were making progress. It is better to get the group together. They've been thinking about lesson plans. It is a great idea to combine cohorts and so that they can learn from each other.

  Arthur: Another thing is that there was time for wow (insights from research articles) and yaks (I thought I was better at physics, but now I realize where the problems are) for each of the participants. It was valuable for participants.

- CA – Dec
    - **Arthur:** I'll attend CA event.
- FL – Remote
    - **Arthur:** I was in FL at remote meeting. Everyone was remote.

- Leadership Retreat Nashville? Feb 7-9?
    - How many will attend?
    - **Arthur:** I'll send out an email so that we can figure out dates that will work.

- Plans and Updates from sites
    - **Tammy:** We have been very busy. We launched our traditional Cohort 5 in person. This last week we launched our school leadership program that is based on the needs on the district. We are focusing more on our alums and fellows in the leadership instructional training roles. We focus on adult learning and go through the literature on what is the coaching is like for adult learners. School leaders were welcomed but the need was around instructional training.
    - We have 7 participants. Some of them are our alums. We looked at the lit of what does it say about high quality professional learning. A part of this program, we will have 5 PD's after school (two hrs. each) and then each person gets 4 hrs. per person throughout the program. They also will get a stipend for their participation.

- Book update
    - Demographics
    - Author recognition
- Website – LIVE: https://wiprostemprogram.com/
- Natasha – monthly newsletter; monthly seminar.
- Reminder: SWEATSHIRT ORDERS: https://forms.gle/HVUULCcnaYmR17Bw5
- Other items
    - **Anne:** I asked all of you your updated contact list. If you have it, please share it and update on Google Doc. Thank you for all your warm welcome at the conferences, I really appreciate it.

Monthly Meeting Agenda
Tuesday, Nov 19, 2024
11 AM – 1 PM (EDT)

Join Zoom Meeting
https://umassboston.zoom.us/j/99914434497
Meeting ID: 999 1443 4497
Passcode: 973499

Quarterly Report Feedback

Each meeting, two sites can present their reflections on the Annual Evaluation report data.

- Mercy and Missouri for November

  Carmen: Wipro reimagine evaluation showed that participants viewed program positively and DSC viewed it as positive. Fellows see a positive impact on the district as a whole and a positive impact on their own leadership. Collaborations are bringing unique and meaningful projects.

  Moving forward we need to help our fellows build their confidence in teaching their colleagues. What opportunities can we provide? Can we all brainstorm about it?

  Anne: yes, they need more opportunities to practice. Some of the districts are not as welcoming to support PD. Also, for the writing. There are very few opportunities to write for peers.

  Carmen: Can we provide fellows an online class on scholarly writing?

  Arthur: We could put together workshops on how to write articles. NSTA has magazines for elementary, middle, HS, and college levels that have incredible resources. That would be a wonderful outcome of an evaluation. We can also have once a month meeting to help with writing.

  Monica: Students have here a writing club over zoom that is very helpful. Also, Emily and I coedit the Educational Forum journal, and we are always looking for high quality articles.

Maybe you can even co-write papers with your fellows.

Ratna: We practice all the time before presentations, and these teachers give really good presentations. Getting them present in front of the adults is really important.

- Missouri:

Linda: Starts with a discussion of a graph on How Missouri Compares on Evaluation

Key takeaways: What we are doing works. Overall positive. We are happy with mathematics and science collaborations. Cross sites collaborations were successful.

Improvements: DC's perspective and low engagement. How can we communicate better

Meera: Evaluation was helpful to see where we need to focus our efforts. We need to improve our Communication with DCs, Spring 2025 and onward: Schedule 2 DC zoom meetings per semester. Email DCs with meeting activities and photos of fellows after each meeting. We have to find ways to increase the value DCs see in the project. Teachers see the value, but it is not communicated to DCs well and we need to improve that.
Current: Inter-cohort collaboration (C5 and C6)
Physics and mathematics activities this academic year.
Fellows write articles about class activities (during a monthly meeting)
Long-term: Fellows should lead science and mathematics activities at monthly meeting (year 2). Guest presenters from previous cohorts.
GPS style mathematics-science collaborative project for alumni cohorts (additional funding?)
Insights: All-Wipro conference? Conference travel for all fellows.

Arthur: Thank you. That is wonderful. What you articulate is the struggle with the DSC role. The easy step is to help DSC see the value that their teachers bringing to the district. The more difficult questions: How can fellows help you in the job that you have? How you create a professional learning community locally and nationwide. Maybe we can have a nationwide newsletter. Any comments?

Linda: Maybe Wipro site can have a space for teacher to write their articles?

Anne: Maybe ask your fellows about what they think is really needed?

Monica: We can invite DSCs as experts and ask them for their opinions

Anne: I agree that many DSC's think of themselves as experts.

David: Our DSC have had very little change since our first project so that we have a lot of buy in. Anything we discuss in the meetings I include all the DSCs in the logistics of the meetings/projects. Sometimes they worry about doing extra work during the school hours, so we schedule most of our meetings after 5 pm. We have been involving them in our decision-making process.

Arthur: I resonate with Monica about seeing them as experts and not as learners.

How do we have superintendents' interest in DSC's coming to our meetings?
We need DSC's take ownership of teacher's success.
This has been an incredibly valuable discussion about evaluations.

- Montclair and Stanford for December
- Florida and UNT Dallas for January

You will have approximately 15 minutes each to discuss and lead a discussion.

The focus can be on:

- Engagement with Evaluation Findings:
  - "What are the key takeaways from the evaluation report that stood out to you?"
  - "How have the evaluation results informed your understanding of the project's impact on teacher learning and development?"
- Actions and Follow-up:
  - "Based on the findings, are there any specific areas that require immediate attention or adjustments in the project's approach?"
  - "How do you plan to address any challenges or areas of growth highlighted in the evaluation?"
- Sharing Insights with Parallel Programs:
  - "What findings from the evaluation would be most beneficial for other sites running similar parallel programs?"
  - "In what ways do you think collaboration across sites can be enhanced based on the insights from this evaluation?"
- Improving Future Evaluations:
  - "What additional information or data would you like to see in future evaluations to better support your decision-making and project improvements?"
  - "Are there any aspects of the current evaluation process that could be changed or expanded to provide more useful insights for your team?"

Newsletter and next steps

- Newsletter will be emailed in each of the sites

Cross-site conferences and updates

- Climate initiatives
  - Climate V-CCLS
  - 4 teams (MO-2; MA -1; CA -1)
- Timeline
- Climate Book Club: Not Too Late
  - Fawnia
  - 1st meeting on Thursday
- Preetha – climate change for C5

- Climate standards in State Frameworks, NGSS, etc
- Brooke Whitworth Leadership Institute
    - 5 are enrolled
- Cross-site interest groups – plans for Fall
    - ELL workshop– Preetha? Ratna?
    - Gardening – Lisa (CA)
    - Climate
    - Others?
- Conferences
- NSTA – New Orleans: Lunch with 18!

  Carmen: I did a 30 mins presentation. It was very interesting to see so many wonderful discussions with teachers.

  David: Some of our fellows were presenting. It was really a great conference. We also had an event in Fl were our teachers presented as well. It showed that the leadership that fellows are learning is important to share with other teachers.

  Carmen: One of our fellows did a presentation about their garden project. So many people attended this talk and many teachers wanted to learn about how she did it. It was such an affirmation that the work we are doing here can be spread nationally and it is not just a local effort.

  Arthur: Ranta and I also just came back from a conference in TX.

  Ratna: Our 10 presentations were much better organized. For many of our fellows it was a first presentation and teachers got a lot from it. It involved 26 fellows.

  Arthur: Teachers brough so many wonderful materials/hands on activities to share with other teachers. It was very engaging. I really enjoyed listening to presentations and it felt like Wipro had a strong presence there.
- Site Visits
    - CA – Dec
- Leadership Retreat
    - Nashville Feb 7-9
    - Need to update dates
    - Two from each site
- Plans and Updates from sites
- Book update
    - All the editing is completed
- SWEATSHIRT Update
- Other items

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

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

Meeting ID: 999 1443 4497
Passcode: 973499

Holiday Plans?

Quarterly Report Feedback

- Each meeting, two sites can present their reflections on the Annual Evaluation report data.
    - Mercy and Missouri for November
    - **Montclair and Stanford for December**

Florida and UNT Dallas for January

You will have approximately 15 minutes each to discuss and lead a discussion.

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- Actions and Follow-up:
    - "Based on the findings, are there any specific areas that require immediate attention or adjustments in the project's approach?"
    - "How do you plan to address any challenges or areas of growth highlighted in the evaluation?"
- Sharing Insights with Parallel Programs:
    - "What findings from the evaluation would be most beneficial for other sites running similar parallel programs?"

    - "In what ways do you think collaboration across sites can be enhanced based on the insights from this evaluation?"
- Improving Future Evaluations:
    - "What additional information or data would you like to see in future evaluations to better support your decision-making and project improvements?"
    - "Are there any aspects of the current evaluation process that could be changed or expanded to provide more useful insights for your team?"

- Montclair University presentation:

  Mika: We are in our 12th year in Phase 3. We are currently working with teacher leaders who are taking an independent approach. We have great doctoral students who help us with planning and leading PD efforts. They are also teaching, and that adds a lot to our program.

  We are also working with our 17 alumni fellows and 34 new fellows. There are also new fellows who are setting up their projects.

  Evaluation report: Fellows are very satisfied and said that that is the best PD they were part of. In terms of teacher leadership, they see it as lifelong learning and working with their colleagues.

  I want to focus more on suggestions they had. They would like us to continue the program. We can think about ways to help them do it at school level and incorporate in school culture.

  At the university scale, we'll continue to think about interaction opportunities with districts. We can also help with financial support and write small grants to supplement their experiences and publicize their work. We need to have more communication from us to fellows (to have a more centralized system). Would like new fellows to work with our alumni. Also considering our alumni becoming mentors in writing proposals to new fellows.

  Need to think of helping them start sharing their ideas and lead PD activities.

  We also feel that some of our fellows can initiate their own meetings to support each other.

  District Coordinators. This is an area where we can really improve. They need to have more clarity on what their role is. We are having a meeting with District Coordinators in February and hopefully we'll have a clear set of expectations of what it is they need to do.

  Sharing with other programs: We have a great sense of community. The leadership team has been consistent, and we have great time working with each other. Graduate students add a lot with their teaching experience and activities. Our research helps to spread the findings and connect with teacher leaders.

  Arthur: That summarizes things well. You had such tremendous success over 12 years. Can you share how you do it?

  Mika: I think it is because of the fellows. I think they talk to each other in schools. We have a core of 10 fellows that keep coming back. It is mostly their enthusiasm. I think the districts

that we have been working had less changes in teacher population.

Anne: I think part of the reason that fellows are excited because you build a strong community that teachers are excited to be part of and share about.

Arthur: I like the idea of helping DSC see the overlap between their work and Wipro responsibilities.

- Stanford University presentation:

  Preetha: CA is in Phase 2. We partner with several districts and for the current Cohort we included School Leadership project. Impact that Wipro has on CA school sites is great. All the fellows feel that it had a great impact on them and their schools. We had a great conference in June and feedback was very positive. All who took the survey said the program met their expectations. One of the things they felt after second year is the development of leadership. Fellows felt was useful for them to learn about intersection of research and practice, and work with groups across grades. Fellows want to continue growing leadership skills through their projects. They also felt that we need to scale up the program and continue having access to the resources and community.

  Suggestions for improvements: Promotion of the program, especially to younger teachers. Extending experience for an extra year, improve connections.

  Fellows really want to understand ways they can be teacher leaders.

  Tammy: We were really pleased that all CA fellows felt that they can make a change. They have a positive attitude and there is a hope that they can change things and their role is important.

  Mindset of teacher leaders. They felt that they were providing support to other teachers and engaging in discussions about teaching approaches.

  From interviews, fellows are also highly regarded in their districts and other teacher ask them for help.

  School Leaders program, it is a small group (mostly principles and assistant principals), but it is successful. They need comradery and connection with other school leaders.

  With DSC, it is more challenging, but they were consistent over years. DSC has been coming to our team for support and recommendations. They feel that we have a classroom level impact as well as a district level impact.

  Regarding the evaluation findings, we are happy that fellows felt that their voices are being respected and heard. We felt that school leaders need support as well, so that was a motivation for starting a School Leadership program.

  We have learned that fellows continue to have an impact in their schools. Fellows appreciated a sense of community that we started.

  Actions: We feel that we need to help fellows put their leadership in practice. I was thinking

about asking fellows mapping their spheres of influence. We would like to support their grant writing. We need to do better job at communicating their successes. We need to find more ways for district coordinators to communicate with each other. Some of our fellows need to have support in teaching them how to teach PD. We need to increase our survey responses. We need to work collaboratively with other administrators. We need to give them more concrete goals.

We need to provide high quality of learning that is more tailored to the needs of fellows. For us it is a constant iteration process. We need to continue providing them opportunities for participations. Our fellows really enjoy coming to other sites. More opportunities are helpful.

Preetha: We want to thank Anne and our cohort.

Arthur: It is wonderful that you focus on things like 10 fellows feeling positive about the change. It is great to mention that. Maybe give teachers a list of leadership references, so that fellows can identify some of the references that they completed. How can we give fellows a metric so that they can recognize what they have done. What leadership that they have taken and what their experiences have been like.

- Newsletter dissemination
    - To whom
    - How did you disseminate?
    - Did you use/adapt the cover letter?
    - Future issues – Quarterly?
    - The update has been added on the website here.

      CA: We decided to send it out after the holidays. We'll send one set to DSC and one set to the alumni.

      David: We sent it out. But decided to send it as a hard copy to all of our superintendents.

      Meera: Maybe we can just keep it as one letter and not have separate versions? That might simplify things for you all.

      David: It can also show the broadness of the program. We sent it out last week.

      Arthur: We can try it as quarterly reports. We can also include some data from the evaluation report.

      Anne: We can also pull quotes from evaluation report and vignettes.

- Cross-site conferences and updates
    - Climate initiatives
    - Climate V-CCLS
    - 4 teams (MO-2; MA -1; CA -1)
    - Timeline

- Meeting in February
- Only heard from couple of them. One of the teams is not doing V_CCLS. Interesting to see.

- Climate Book Club: Not Too Late
  - Fawnia
  - 1st meeting reflections
- Brooke Whitworth Leadership Institute - update
  - 5 are enrolled – send out names of the 5

NJ	Mary Goffredo <mgoffredo@kearnyschools.com>,
NJ	"Graziano, Megan" <mgraziano@pascack.org>,
NY	Aimee Ferguson <aimee.ferguson@gmail.com>,
TX	Raisha Allen <raisha.allen@desotoisd.org>,
NJ	Susan Bartol <sbartol@montclair.k12.nj.us>
MO	Erin Snelling <esnellin@hallsville.org>

- Cross-site interest groups – plans for Spring
  - ELL workshop– Preetha? Ratna?
  - Gardening – Lisa (CA)
  - Climate
  - Others?
- Conferences
  - NSTA – Philadelphia (e will have some presentations there)
  - AAAS – Boston (Let us know if anyone is coming to this meeting)
  - People attending?

- **Arthur**: Book club idea. As Linda to lead a club and share her reflections.

- Site Visits
  - CA – Dec
  - **Arthur:** Had a wonderful visit. Very productive.

- Leadership Retreat
  - Nashville Jan 31-Feb 2
  - Two from each site
  - Reimbursements: It is totally up to the subs. If they want to incur the reimbursements and then we can issue amendments to increase their overall totals, we can absolutely

do that. If the individual wants to pay the travel expenses and get reimburse from here, that's also fine. It is a little more work making sure that they are registered in the UMass system and waiting to be reimbursed. We will try our best to get the reimbursements process in a timely manner.

    - Agenda
- Plans and Updates from sites
    - **MO:** We had end of semester meeting and everyone had presentations. It went for 3 and ½ hours. The presentations went really well. It showed how the teachers really prepared.
      Linda: All of the presentations were really interesting.
      Arthur: One thing I noticed that went administrators show up they start with a warm and cool feedback.
      Meera: It was happening here too. Administrators were providing feedback.
      Arthur: I wonder if a thank you letter to administrators with a copy to the teacher would be helpful.

- Book update
    - **Arthur:** Book will come out in February, and I will send out copies to each of the sites. Thank you so much for all your help and support!
- SWEATSHIRT Update; SWEATSHIRT ORDERS: https://forms.gle/HVUULCcnaYmR17Bw5
    - We will be placing another order next month, so please go to the spreadsheet to place an order.
- December Quarterly Report
- Other items
- Have a wonderful holiday season

CALIFORNIA- STANFORD UNIVERSITY

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

Executive Summary Statement

The Wipro Science Education Fellowship (SEF) Innovation Phase at the CA site is positioning itself as a key contributor to district transformation by fostering teacher leadership in science. 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. By providing focused professional development, individualized mentoring, and opportunities for cross-site collaboration, the CA site aims to elevate science teaching to meet the high standards of the Next Generation Science Standards (NGSS). This approach empowers teachers to lead district-wide change while transforming instructional practices across multiple levels.

The three components for the CA site include the traditional Wipro Science Education Fellowship Program for teacher leaders, the Wipro School Leaders Program, and individual district team support. For the Wipro SEF Program, professional learning sessions are focused on fostering teacher agency and promoting student-centered practices that align with the Next Generation Science Standards (NGSS) and address district-wide needs. Teachers will also be equipped to provide equitable opportunities in science education for all students that embrace all cultural and linguistic backgrounds. For the Wipro School Leaders Program, this year's emphasis is on supporting instructional coaches to understand better how to practice leadership and elevate the quality of science instruction through the creation of effective collaborative groups. For district teams, the CA Leadership Team continues to work alongside district coordinators to plan ways to leverage the expertise of Wipro fellows to further their district science goals.

This quarter, the CA site welcomed 20 new Wipro Fellows from five partner districts into Cohort 5 at an Induction Ceremony. Fellows participate in monthly professional learning sessions and work in their collaborative V-CCLS groups. V-CCLS group presentations where fellows will share their collective learning will take place in January. The Wipro School Leader Program includes 6 participants made up of instructional coaches and teacher leaders who are alumnae of the Wipro SEF Program and are taking on more leadership responsibilities in their districts. To further support our district transformation efforts, the School Leaders Program offers professional learning and coaching focused on leadership, coaching, adult learning, and developing a strong learning culture within departments and schools.

In the next quarter, the CA site will continue providing professional learning, coaching, and supporting districts with their science goals. The Wipro SEF Program will launch the H-CCLS collaborative groups, the Wipro School Leaders Program will continue to dive deeper into their problems of practice, and District Coordinators will continue to work alongside the CA Leadership Team to focus on individual district needs.

Summary of Current Project(s) and Goals

The CA site continues to offer the traditional Wipro SEF Program to science teacher leaders across five districts, aiming to further excellence in science teaching and learning. One of the goals for Cohort 5 fellows is to build a strong foundational understanding of science teaching and learning. To this end, professional learning sessions focused on exploring the intersections of the 5E science instructional model and the NGSS standards. Additionally, fellows examined strategies for developing coherent conceptual flows and storylines in science units. The CA site has also started to set a foundation that promotes equity in science classrooms. Fellows were introduced to an equity and social justice framework developed by CSET and reflected on their personal educational journeys and the role they would like to play in their students' journeys. (Note: Last month, one fellow had to recuse herself from the program due to health issues. With the support of district coordinators from Mountain View Whisman and Moreland, two new fellows joined the program: an elementary school Math TOSA and a middle school science teacher.)

The CA site continues to offer the Wipro School Leaders Program and expand its reach to include not only principals and assistant principals but also instructional coaches and teacher leaders (Wipro alumnae) who provide science professional learning to others. This program is designed to build strong instructional leadership capacity and foster cohesive district teams that align with the goals of the Wipro SEF Program. Strengthening capacity at all levels of the system—classroom teacher, school leader, and district—can drive transformational changes, address persistent inequities in science education, and promote systemic improvements at both site and district levels.

The CA site continues to collaborate with district teams to enhance their collective capacity to advance effective science teaching and learning, address the diverse needs of their students, and support science teachers in maintaining rigor in their classrooms. These efforts include meeting regularly with District Coordinators to plan and strategize how to leverage the expertise of Wipro fellows in their districts.

Progress and Highlights

Professional Learning Sessions for Wipro Fellows

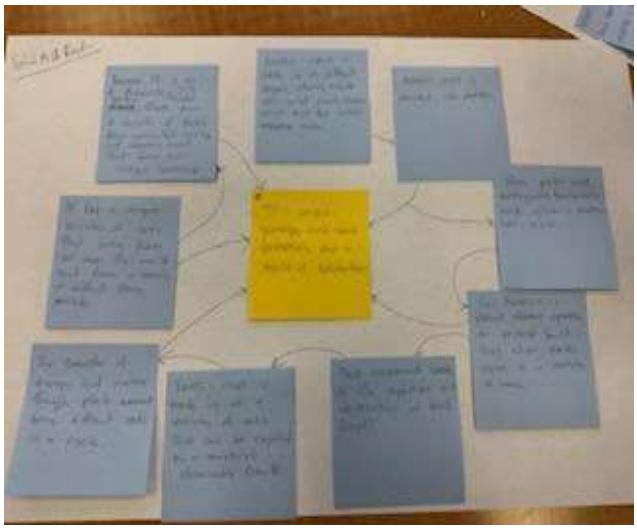
The CA site facilitates monthly professional learning sessions for Cohort 5 Wipro fellows. Four professional learning sessions have been held since the beginning of the school year (two in-person sessions and two virtual sessions) with the following focus:

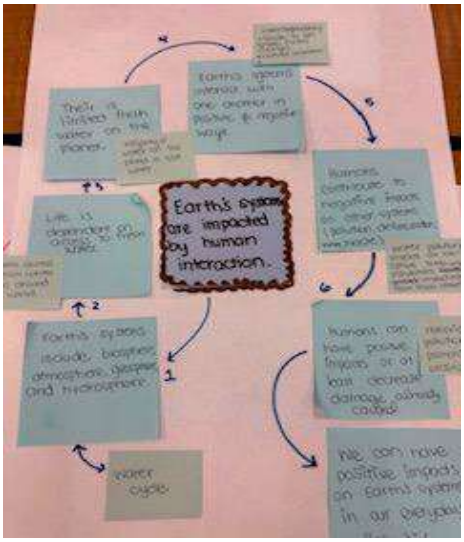
a) Next Generation Science Standards (NGSS): What does this look like in practice?

b) Equity & Social Justice: Who are we serving?

c) Leadership: What does it mean to be a teacher leader?

Fellows have explored the intersection of NGSS and the 5E instructional model and were introduced to CSET's Social Justice Framework. Most recently, teachers learned how to develop Conceptual Flow Graphics (CFGs) for disciplinary core ideas they teach in their classrooms. These CFGs help teachers explicitly identify the major conceptual ideas for their units, the sequence in which these ideas are taught, and the connections between the ideas. Here are some examples of these conceptual flow graphics.





V-CCL Work

V-CCLS collaborative groups have been established, with fellows selecting their content area and course of study for their group work and associated research papers. There are six V-CCLS groups with three to four teachers per group. Fellows were given the autonomy to decide their course of study for investigation. Currently, they are in the middle of their V-CCLS cycles. Fellows will present their findings on January 11, 2025.

Teacher Leadership Initiatives in SFUSD- Lisa Ernst (Cohort 4 Fellow)

1. SF Climate Summit Participation- Lisa Ernst, alongside her school principal, is working with students in preparation for their participation in the SF Climate Summit on April 18, 2025. This event will host approximately 4,000 participants, including students, teachers, and community

members, with prominent attendees such as the Governor of California, the San Francisco Mayor, and County Supervisors. Students from Lisa's classes will host multiple booths showcasing climate change initiatives, including projects from the school garden and makerspace. Efforts are also underway to connect with the CA Wipro team to extend invitations to other educators and students, broadening the program's impact.

2. Advocacy for Outdoor Classrooms- Lisa has been invited to speak at the January San Francisco Commissioners meeting to emphasize the importance of supporting outdoor classrooms, makerspaces, and school gardens. Currently, funding for SFUSD school gardens is inconsistent and lacks transparency for San Francisco residents. Her advocacy will focus on securing sustainable funding and demonstrating the value of these programs.

3. Invitation to Demonstrate Programs- To strengthen advocacy efforts, Lisa plans to invite Commissioners to visit Alice Fong Yu Bilingual Immersion School to witness the effectiveness of outdoor classrooms and maker spaces in fostering student engagement and environmental stewardship.

Plan for the Next Two Quarters

Date	**People**	**Activity**
Wipro SEF Program		
Jan 2025	Wipro Fellows	Full Day- VCCLS presentations (in person)
Feb 2025	Wipro Fellows	2 hour Monthly Professional Learning Session (virtual) Begin HCCLS groups
Mar 2025	Wipro Fellows	Full Day- Monthly Professional Learning Session (in person)
April 2025	Wipro Fellows	2 hour Monthly Professional Learning Session (virtual)
May 2025	Wipro Fellows	Full Day- Monthly Professional Learning Session (in person)
June 2025	Wipro Fellows	Full Day- End of year Conference with H-CCLS presentations
Coaching sessions with all Fellows (across the school year)	Wipro Fellows + Stanford Coaches	Ongoing coaching with Stanford Wipro Team
Wipro School Leaders Program		
Oct 10th, 2024	6 participants (Instructiona	2-hour professional learning session (in-person)

	l Coaches and Teacher Leaders)	
Nov 7th 2024	SLP Participants	2-hour professional learning session (in-person)
Jan 16th 2025	SLP Participants	2-hour professional learning session (in-person)
Mar 20th, 2025	SLP Participants	2-hour professional learning session (in-person)
April 17th, 2025	SLP Participants	2-hour professional learning session (in-person)
Coaching sessions with all Participants (across the school year)	SLP Participants + Tammy	Five 45-minute individual coaching sessions throughout the school year
District Work		
Nov 14th Jan 23rd Mar 13th May 8th	Tammy + Preetha	District Coordinator meetings with district representatives from the five districts, SFUSD, SJUSD, Moreland, MVWSD, and Campbell HSD
Quarterly	Tammy + Diane Aaronson (SJUSD District Coordinator)	Tammy will meet with Diane to strategize and plan how to continue to leverage the expertise of Wipro fellows in the San Jose Unified School District.
April 2025	Lisa Ernst (Cohort 4), Tammy and Preetha	Lisa Ernst will seek guidance and feedback on preparing for the Commissioners' presentation, particularly on designing sustainable funding models for the initiatives she led.

Vignettes

Kendrick Chow
High School Teacher
Ruth Asawa School of the Arts
SFUSD

When I was first nudged by district science leadership to apply for Wipro SEF, I was fairly shocked. I was "department head" by title that year and the next. However, the title meant to me acquiring marginally extra pay, gaining insight into changes within the science community of San Francisco Unified, and networking with other teachers within the district, in exchange for a few extra tasks of supporting my team members with curriculum and planning (which I was already doing), managing school site supplies and waste, and running bi-monthly department meetings. My intrigue led me to apply and learn more about what leadership meant and looked like.

Wipro SEF began with collaboration among a group of motivated teachers who wanted to continually learn and develop their teaching expertise. It was exciting to join a group of teachers who were ready to break away from just looking at standards and begin to conceptualize the ways NGSS expects students to demonstrate their understanding. With mixed-grade teams, we looked at how elementary students might begin their way to learning HS-PS1-3 "Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles" or how a high school student might utilize their prior knowledge from when they learned elementary-level equivalent standard. With high school teachers, we looked into using models not just because we want them to build and see a model, but how models begin to give multilingual learners tools to build toward more formal academic and scientific language.

Year two of Wipro reinvigorated my enjoyment of research and learning. I had to attend various PDs, sign up for online courses, and have meetings with experts to learn how AI could potentially be used as a positive writing tool for students. All of the data collection and experimental implementation culminated in a presentation that my pre-Wipro self could not have imagined doing. I finally felt like a teacher who was a leader in their own right, a teacher who dared to attempt new ideas and weave them in a way that could improve my students' lives and could finally feel comfortable sharing my findings regardless of scrutiny from other teachers because I could trust them to have my students in mind.

Throughout Wipro, I felt that remaining in education was the best choice for me, despite colleagues who have left the field, school leadership and district leadership rockiness, and starting off with a slump in enthusiasm. I'm glad to have met so many inspiring teachers who helped me rediscover the joys of teaching, and I'm thankful Wipro gave me the space to meet them.

Lisa Ernst
6th Grade Teacher
Alice Fong Yu School
SFUSD

As a Wipro Fellowship alumnus from Stanford, I have leveraged the program's tools to promote sustainable outdoor classrooms and school gardens within the San Francisco Unified School District (SFUSD). Through Fellow Johnathan Lee from Presidio Middle School, I connected with Esther Tang, Senior Environmental Educational Strategist for the City of San Francisco.

Last month, Ms. Tang visited Alice Fong Yu School, meeting with Principal Ms. Szeto, students, and me to explore how our outdoor space fosters inquiry-based learning for the entire school community. Following our discussion, Ms. Tang invited me to collaborate on identifying SFUSD schools with underfunded school gardens or interest in outdoor Makerspaces. Her team is focused on securing funding for these spaces and ensuring their sustainability.

In April, Ms. Tang asked me to speak to the SF Commissioners and Mayor about the importance of supporting school gardens and Makerspaces. To strengthen this initiative, the Commissioners and Mayor Lurie are invited to a walkthrough of Alice Fong Yu to meet student leaders and observe these programs firsthand.

Additionally, Ms. Tang and I are working on expanding the SF Climate Change Summit in partnership with KQED and Voice of Witness, integrating media literacy into the event. Through these efforts, I continue to inspire my students to be "Stewards of Change" while fostering partnerships that connect our school community with broader SFUSD and citywide initiatives.

FLORIDA – UNIVERSITY OF SOUTH FLORIDA

Author: David Rosengrant, Allan Feldman, and Nancy Islam

Executive Summary

The goal of our program is to continue to cultivate leaders in our districts from those individuals with the desire and passion to do more in the classroom. The way we do this is to allow our fellows to focus on innovations that they are passionate about rather than dictating structure and projects to them.

We have several team projects that are either in their first or second year of implementation. The team leaders chose their own projects based off previous Wipro work, selected their own team members, and then implemented that work. Some of these projects involve creating curricula while others focus on technology or promoting stem to various groups. This was the first school semester for three of our teams (though some of our teams are in the first year of a new project).

This semester had quite a few challenges. We had 3 Major Hurricanes that greatly impacted our area in the fall semester. We were able to still hold two in person sessions, one-virtual session, and one session of us going to the fellows for their team meetings. One of our sessions was held in our STEM lab at USF St. Pete while the other in person session was held at the Florida Aquarium. We try to have an event at an offsite location to learn how we can work with our community partners to enhance what we do in the districts.

Moving forward, we will have our St. Petersburg Science Festival in February. We will start the year with an in-person session in January, followed by the festival, then we will have another virtual meeting followed up by an "us to them" meeting. Finally, we will have a Saturday session that will be our celebration event.

Summary of Current Project(s) and Goals

Title: Storyline: How to use scientific narratives purposefully in science education.

This project delves into research on science instruction in high school biology, focusing on enhancing scientific literacy across diverse content areas. The approach centers on utilizing storylines—narrative-driven methods that interweave scientific content and practices into a cohesive and engaging learning experience. Drawing on pedagogical content skills such as 5E lessons, inquiry-based teaching, 3-dimensional instruction, and Socioscientific Issues (SSI), the narrative aims to connect learners to the content through personalized perspective-taking. This project is led by Nicole Holman, Phase 1 Fellow.

Title: Working Across Grade Levels to Improve Grades 3-5 Science Teaching

This two-year project brings together grades 3-5 teachers in a V-CCLS to improve the teaching of science at their school. The team is led by Tara McClintick, Phase 1 Fellow Floyd Howze, classroom teacher, and Nicole LeGrant, Assistant Principal. The team will work together to establish a science progression for the three grades, identify appropriate curriculum materials, and implement them.

Title: Flipped classroom in advanced courses in Hillsborough County High Schools

This project is an extension of Bhagyashree Kulkarni's Phase 1 GPS project which is two separate but related projects. Chelsey Swat leads the other project. The other team members (Steven Velez Hernandez and Alan Sherburn, classroom teachers, and Khadijah Gaskins-Jones, Science Coach) are implementing flipped classroom strategy by using available videos or videos made by the teachers. The focus is advanced courses like AP, AICE and Honors classes for this upcoming year and a goal to extend this to other classes in year 2. They will disseminate their work to other high schools in Hillsborough County, and through conference presentations.

Title: Creating new teacher confidence

Chelsey Swats (phase 1 Fellow), Alan Sherburn (biology teacher), and Khadijah Gaskins-Jones, Science Coach. The aim of our project is to create more class time for classroom activities, which will facilitate learning and use traditional homework time for notes/lectures. We are all working in different content areas, so many of us are utilizing different modes of note taking strategies for content knowledge. In the second year of our project, we intend to create a training for new teachers to implement the same strategies into their science classroom, as we have had much success in our project so far. We know that many new teachers do not have many tools in their toolbox to pull from when it comes to strategies they use in their classroom. The training will help new teachers learn of these strategies we are using in and out of the classroom.

Title: Pasco Teacher Leader/Coach Elementary Science PLC

Lora Darby: Project Description: Design a scope and sequence, professional learning plan and collaborative structure for a two-year Elementary Science Teacher Leader PLC for seven east side Pasco County Elementary schools experiencing high turnover. Facilitate six PLC sessions that bring 7 instructional leaders together to learn, grow, practice and model collaboratively. Part of the PLC will be an interactive book study using either Ambitious Science or Students Constructing Explanations in Science paired with our district's coaching manual Getting Better Faster. Learning and discussion from each session will include follow-up activities and modeling in classes.

Title: Gifted but 'Off Track': Serving the Gifted Students of a Title 1 High School Team

Ileana Bermudez Luna (Phase 1 fellow), Jacqueline Bromley, Carolyn Graham

In this two-year project, Jacqueline Bromley, Phase I Fellow, Carolyn Graham, classroom teacher, and Aaron Melvin, Assistant Principal, is establishing an after-school club to support gifted students who have been designated either 'at-risk' or 'off track' according to Early Warning Intervention data. Teachers of gifted students often struggle with recognizing and acknowledging their gifted students' unique behaviors and characteristics; proper training of Teachers to support gifted students in their classrooms at PHS is crucial. To mitigate potentially unsuccessful outcomes, they propose that they identify and invite Gifted students to join a newly formed club that will be known as 'Above Deck'. The purpose of this club will be to support the unique social, emotional, and cognitive needs of this unique group of underserved students. They will disseminate their work to other high schools in Pasco County and through conference presentations.

Title: VR in the Chemistry Classroom: Enhancing students' learning experience

Roschell Thybulle, Khadijah Jones

This technology enhancement project will focus on developing the curriculum for the Chemistry classroom that will integrate the use of Virtual Reality (VR) for labs, simulation, and other hands-on activities. The curriculum as well as the activities that will use VR as an integral part of the lesson will be align with the Next Generation Sunshine State Standards (NGSSS) and the Science and Engineering practices. The main goal of the project is to effectively integrate innovative VR technology that will help with the following aspects in the chemistry classroom. The first year of the project will focus on curriculum development and learning VR technology. During this time, the team will also work on writing grants to acquire a minimum of thirty-five VR sets and participate in professional development opportunities. These PDs should emphasize how to effectively manage and instruct students the proper and responsible ways to use the VR sets. Then the second year of the program, the team will work with the implementation of the VR technology along with the curriculum already developed. Finally, the results of the project will be presented to school and district personnel with the goal to spread the implementation of this approach in the chemistry classroom across the school district and eventually make this technology available to impact other STEM courses.

Progress and Highlights

The past several months has been a busy time for the USF/Tampa Bay Wipro Science Education Fellowship leadership team and fellows alike. However, the impacts of two major hurricanes upon the area significantly impacted not only the projects within our grant, but more broadly the school systems, university system and community. Several grant personnel (leaders, fellows and their teams) were personally impacted by the storms and some were relocated from their homes for periods of time.

Our meeting cadence changed slightly in accommodating the storm-related school closures, however we were able to move the project-wide in-person meeting scheduled for October to November and held this meeting at The Florida Aquarium in Tampa. This in-person meeting was our first since the beginning of school year and provided time for university leadership to present a continuation of research-based practice (Action Research, Allan Feldman) and our Journal Club, a portion of our local meetings dedicated to reading/reflecting upon a peer-reviewed journal article as a whole

group. The selected article was focused upon a science teacher leadership project. Other whole-group meetings this fall were virtual, as planned, as well as several university leadership and DSC meetings related to the full project, all via virtual means.

One important new support and communication structure for the project that we have successfully implemented this fall was the leadership team (university faculty/staff and DSCs) meeting individually with fellow-based teams during their regular team meetings at their school sites, other pre-determined locations or virtually. This structure has led to a more intimate connection with the fellows and their teams and will continue forward. The cadence also provides for strengthened lines of communication between fellows who are leading their own projects across the three large districts and university leadership.

Several fellows, DSCs and university faculty/staff attended conferences in late summer and fall, with a signification portion of our fellows presenting at the Florida Association of Science Supervisors, Florida Association or Science Teachers, both in October in Tampa, and the National Science Teachers Association in New Orleans in November. In many cases, Wipro leadership supported fellows in preparing the presentation of their work. Additionally, DSCs, one university leader and several fellows and their team members attended the NSELA Summer Leadership Institute in Seattle, either via the Wipro grant or other means, such as district initiatives or state-level organizations.

In our project, three groups represent new projects in which the leaders (Nicole Holman, Bhagyashree Kulkarni, and Chelsey Swats) have had had either a 1 year or 2-year project in the past, two groups are currently in year 2 of their projects (led by Tara McClintock and the team of Jacqueline Bromley and Carolyn Graham), and three new, first-year groups led by Ileana Bermudez Luna, Dawn Avolt and Lora Darby. Each of these projects is planned to be two years in length. During our site-wide meetings and even in some small-group meetings, fellows share their progress compared to their goals, and often this involves peer feedback from other groups representing other districts and even grade levels. Our most recent face-to-face meeting at The Florida Aquarium included the team members of fellow-based projects who were introduced to the leadership of the site project and other teams across the project.

The individualized team meetings with leadership have presented opportunities for the DSCs to not only mentor fellows from their districts, but also provided the DSCs with valuable information across individualized projects from their districts that then in-turn, serves as data and/or ideation that district-level decision makers can consider. All these meetings provide an avenue to cross-district sharing and value of voice within districts leading to an increase of impact district-wide. Our plan is to continue the current meeting structure since it is working well for the fellows and project leadership.

Plan for the Next Two Quarters

Over the next two quarters, our individualized team meetings and whole group meetings with fellows will continue, as will meetings with DSCs. In addition, our fellows will once again participate in the St. Petersburg Science Festival at the USF St. Petersburg campus in February and some have submitted proposals for the spring NSTA Conference in Philadelphia. David Rosengrant and Larry Plank have submitted proposals and plan to attend as well. The NSELA Leadership Summit is being held the day prior to the NSTA spring conference as usual, and our fellows who are attending NSTA are encouraged to attend NSELA as well. We will hold our annual celebration in May of 2025, with

presentations from our fellows supported by our project team and invited leadership from area districts. Our proposed meetings are summarized in the table below.

Date	People	Activity
January 25th	All	In person meeting, place TBD
Feb. 24th	All	Virtual session at night
March/April	All	Us to Them
May 17th	All	Celebration Event
BiWeekly	USF Team	Planning and Project Management Meetings.
Monthly	USF & DSCs	Planning and Project Meetings
February 7/8th	All are invited	St. Petersburg Science Festival (8th) and School Day (7th)

Vignettes

Dawn Avolt

I am a 4th grade math and science teacher at Curlew Creek Elementary School in Pinellas County. I was a Fellow of Cohort 3 during Phase 1 of the Wipro Science Education Fellowship Program. My cohort had a unique experience as we were greatly impacted by COVID. We weren't able to meet face-to-face very often during those two years, and for much of my time in the V-CCLS group, I was teaching students online and face-to-face. Being a part of this group of teachers ranging from elementary through high school made teaching feel less isolated during this time. I learned how the science content standards build from elementary, to middle, and high school and how similar teaching methods are used across all grade levels. When I had trouble thinking of what materials I could send home for my online students to participate in hands-on activities, some of the best ideas came from the member of my group who was a high school physics teacher. My group was a built-in support system.

During my H-CCLS group, I learned more about problem-based learning by seeing recordings of a teacher from another district teach about heat conduction through the use of turtle nests. Hearing ideas from teachers of different grade levels and from different districts helped me to become more reflective of my own teaching practices and inspired me to learn more about implementing problem-based learning in my classroom. This ultimately became the focus of my GPS project.

My experiences as part of Phase 1 helped me understand more about myself as a teacher. I learned a lot by speaking with teachers from different grade levels, schools, and districts. After every meeting, I felt inspired by the other teachers and had new ideas I wanted to try in my own classroom. I learned that I am a better teacher when I have a community of other life-long learners to share with. By sharing these experiences with my school administrators and colleagues, I was able to convince many of them to join me for Phase 2 of the project (which we have just started this year). I'm looking forward to continuing to build my community of learners and teachers during this next phase.

Lora Darby

My team continues to meet monthly, although it has been challenging to meet more frequently due to our different school locations and after-school responsibilities. Despite this, we stay connected through regular emails and texts. We also use a OneNote to store our meeting notes, ask questions, upload resources, and track progress.

One of the strategies we've implemented is daily spiral reviews, but some teachers have found this difficult to maintain. We are currently working on a plan to help teachers who are falling behind catch up, but unfortunately, the spiral reviews were the first thing to be reduced. I emphasized the importance of continuing them, as they serve as excellent discussion starters and stimulate students' thinking. Notably, the school that is consistently using spiral reviews is outperforming the one that isn't.

We've also started a book study on Supporting Grade 5-8 in Constructing Explanations in Science. Given everyone's busy schedules, especially with testing, we decided to focus on the first chapter and share our key takeaways at our January meeting.

In January, along with the book study, we will look at data from our latest NWEA assessments and begin planning lessons to help fill the gaps before the FSA Science in May.

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.

During this semester Cohort 6 started year 1 of their participation and Cohort 5 started year 2. Both cohorts meet at the same time and conduct some of their activities together. Since Cohort 5 consisted of just 4 middle school teachers, the combined meetings give them an opportunity to work with the entire K-12 spectrum of 16 fellows in Cohort 6. A segment that we have introduced this

year, called the Physics + math activities, consists of a 60-75 minute segment where fellows conduct a physics lab and analyze it for the science and math practices used in the lab. Since we use an inquiry and modeling-based curriculum (https://exploringphysics.com), it includes questioning strategies, discussion, designing experiments, data analysis to develop scientific formulae and multiple representation – and therefore several math and science practices. In addition, 9 Missouri teachers participated in the Climate V-CCLS project, a multi-site collaboration.

Next semester Cohort 6 will begin their H-CCLS cycle while Cohort 6 continues developing their lessons. Physics + math activities will continue, along with discussions of leadership.

Summary of Current Project(s) and Goals

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. This initial goal was later amended to include elementary teachers.

To implement these goals, middle and high school teachers (and later elementary 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.

Selected/Highlighted Projects

V-CCLS Team 2, which consisted of Logan Durk, Kayla Eads, Kyle Chrisman, and Stephanie Worthen, who teach grades 3,5,6 and 9 are investigating the impact of students using first-hand and second-hand data in science and math.

In their V-CCLs presentation on Dec 12, 2024, teachers presented their observations. All fellows used the same concept of having their students collect data (first-hand) and making comparisons vs with available online data others had collected (second-hand). They found that the use of both first-hand data and second-hand data in the science and mathematics classroom has many benefits. Their students observed and collected data, and then reflected on and analyzed various events and phenomena.

It was interesting to see how the chosen concept was adapted and applied across grade levels. Third grade students measured shoe dimensions, fifth graders made paper airplanes of various sizes and measured length of flights, sixth graders measured various objects in the classroom and worked on fractions, ninth graders worked with a simulation of pushing boxes across a floor, learning about inverse relationships.

Two of their conclusions:

- First-hand data experiences resulted in a greater focus on students gathering data and discussing the limitations of the data, while second-hand data experiences saw students frequently identifying patterns and drawing conclusions.
- Using a ruler to measure with resolution of 1/16 inch was challenging for many of the grades as was working with fractions.

Progress and Highlights

During a Wipro meeting in spring 2024, we conducted a physics experiment and analyzed the science and math practices that were addressed. After the success of this trial run, we conducted another physics lab during the August 2024 for Cohort 5 and 6 (20 fellows total). Since they were enthusiastic about continuing the labs, we gathered feedback on the science topics they were interested in. These topics were addressed in September, October and November, with more to come in spring 2025.

All the labs used a curriculum developed by Dorina Kosztin and Meera Chandrasekhar during *A TIME for Physics First*, an NSF funded project. While the curriculum is written for 9th grade physics, labs can be adapted for middle school and upper high school grades, and several aspects can be used in K-5 grades. This curriculum is available free of charge at https://exploringphysics.com.

After each lab was conducted, the following questions were discussed by the Fellows:

- What are the science and math practices that you used today?
- Which of these practices are common to math and science?
- What practices are approached similarly / differently in the science /math classes?
- What practices might be imported from science to math classes and vice versa?

August: Electricity labs

K-5 teachers conducted the Everyday Stuff Battery Lab, (Exploring Physics Unit 1 p. 54), where they used a potato and different metal rods (zinc, copper, steel, aluminum and zinc) to build a battery and measure its voltage. They then analyzed the voltage produced and drew a bar graph.

6-12 teachers conducted the What causes resistance lab, (Exploring Physics Unit 2, p. 24) where they used a board with three pencil leads (HB, 2H and 6H), and designed and conducted an experiment to determine some of the factors that affect the resistance of an object (in this case, the length and the kind of lead used). They analyzed the data, drew graphs and drew conclusions about the relationship between the length and resistance.

After labs were completed, Fellows presented their conclusions on whiteboards and listed the math and science practices used in the lab.

September: Uniform Motion lab

The four V-CCLS teams, each consisting of Cohort 6 teachers from all grade bands, along with Cohort 5 Fellows, conducted the Battery Car Lab (Exploring Physics Unit 3, p. 26). Their visual observations of the car indicated that it traveled at a constant velocity. They then designed the lab, collected position-time data, drew a graph and concluded that the car did indeed travel at a constant velocity. They then learned how to draw motion diagrams, and thus represent the motion of the car verbally, pictorially, and graphically.

October: Accelerated Motion lab

The four teams conducted the Down the Ramp lab (Exploring Physics Unit 4, p. 10). Each team had a car traveling down a ramp, and tracked by a spark timer with tape that recorded its position every 1/10th of a second. This data was analyzed in two different ways – the first by a position-time graph created by reading off the position of the car from the spark tape. The second method was to cut up the tape and paste it onto graph paper to produce a position-time graph and a velocity-time graph. For comparison, similar position-time and velocity time graphs were created for uniform motion. These methods offered two different methods of analyzing motion-diagram style data that is quantitatively accurate.

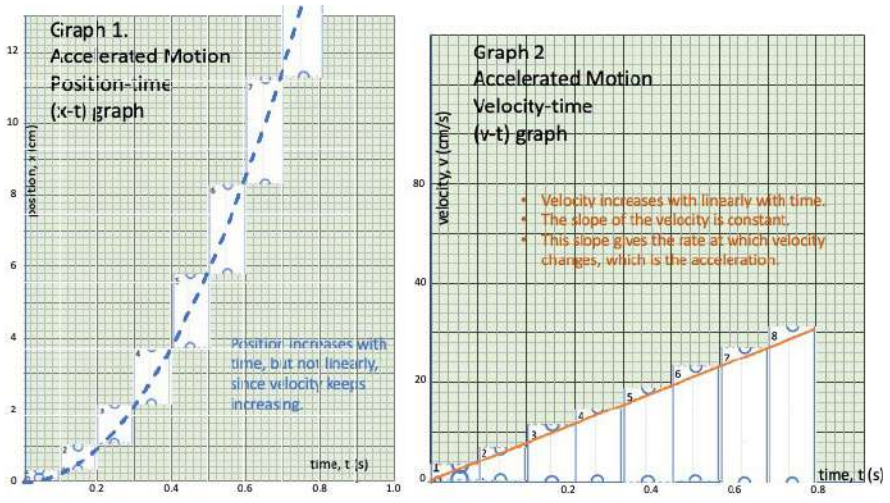


Figure 1. Using spark timer tape to create position-time and velocity-time graphs

November: Multiple Representations of Accelerated Motion

Fellows worked on presenting accelerated motion as verbal, pictorial and graphical representations. Motion diagrams were described verbally and graphically by position-time, velocity-time and acceleration-time graphs. Reversing the process, motion presented as a position-time graph was then re-drawn as velocity-time and acceleration time graphs, verbal descriptions and motion diagrams. Each team presented a problem to the rest of the class and discussed it.

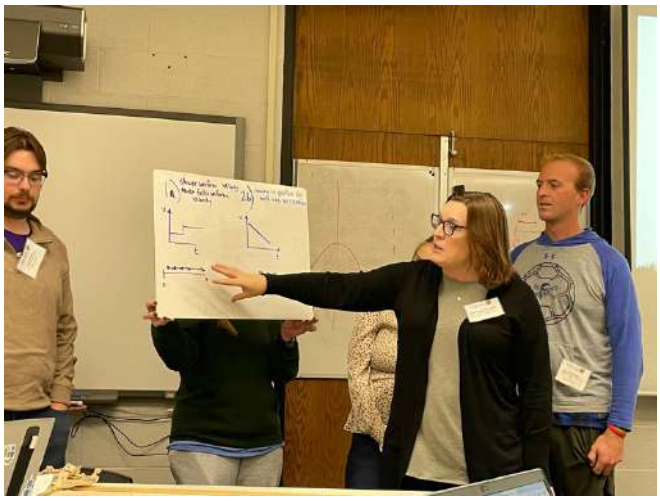
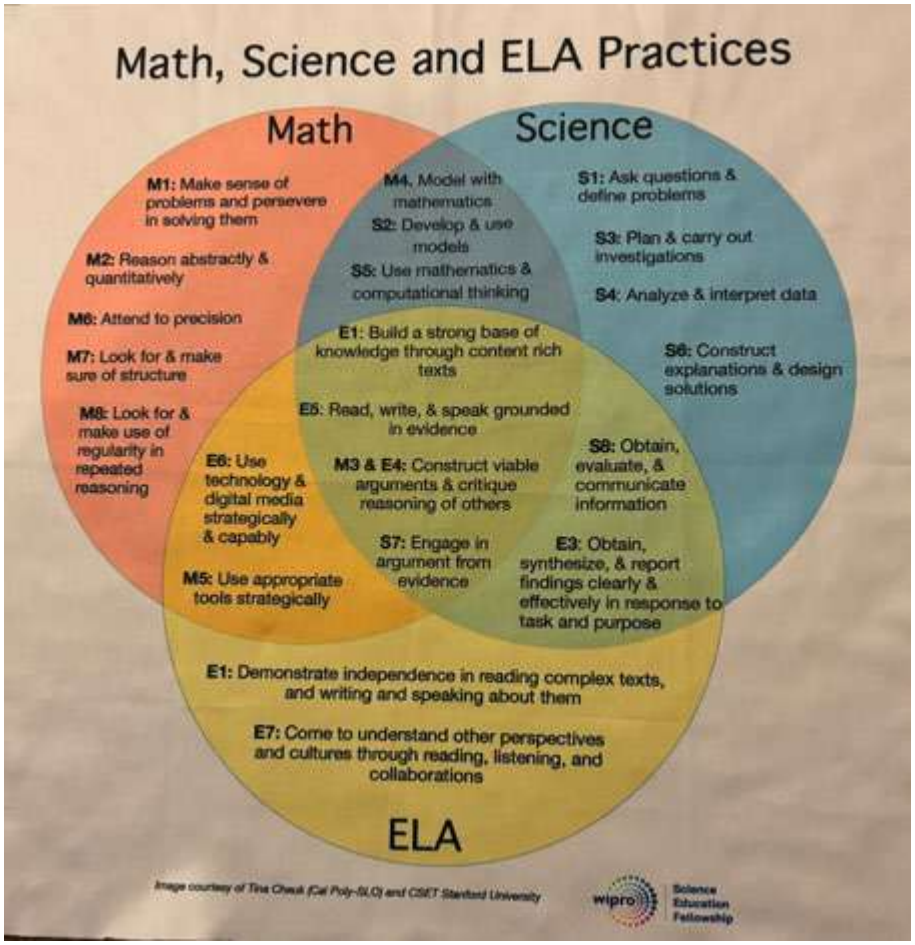


Figure 2. L-R: Logan Dirk, Stephanie Worthen and Kyle Christman present a verbal and graphical representation of a motion diagram during the November monthly meeting.

Math and Science Practices used in the labs (from Fellows' discussions)		
Lab activity	*Common Core Math Practices*	*NGSS Science Practices*
Everyday Stuff Battery Lab	M2, M4, M6	S2, S3, S4, S5, S6
What Causes Resistance Lab	M1, M2, M4, M7	S2, S3, S4, S5
Battery Car Lab – Uniform Motion	M1, M2, M3, M4, M6	S1, S2, S3, S4, S5, S7, S8
Down the ramp lab – Accelerated Motion	M1, M2, M4, M5, M6, M8	S2, S3, S4, S5, S7
Multiple representations of Accelerated Motion	M1, M2, M4, M5, M8	S2, S4, S5, S7, S8

Fellows repeatedly refer to a poster of a Venn diagram of Science, Math and ELA practices, reinforcing the overlap between practices in science and math classes. By working in their vertically mixed K-5, middle and high school V-CCLS teams Fellows get to discuss the aspects of the labs that are relevant or modifiable to different grade levels, while also discussing the expectations at each grade band. While the labs this semester have been based on physics or physical science, we hope to have Fellows present labs from other science subjects in year 2 of the project.



As an added bonus each fellow received one set of equipment to conduct the lab in their classroom – a liquid battery set, pencil lead and wire resistance boards, bubble tubes, battery cars, and a spark timer for each district.

Planning future labs

We plan to continue physics+ math labs next semester, addressing topics in gravity and density, as requested by the fellows.

While high school and middle school teachers have been enthusiastic about relevance of these labs to their classes, the K-5 teachers have said less. Therefore we have set up a spreadsheet to gather feedback from them on two aspects (1) aspects of those the labs that they found pertinent to their grade level and how we can make the Physics + math segment relevant to their grade and earlier/later grades. (2) student misconceptions about gravity at their grade level (our next topic).

Climate V-CCLS

Two Missouri teams, one from Boonville and one from Maries R-2 signed up to participate in the Climate V-CCLS project, a multi-site cohort. A total of 9 teachers participated, of which four were alumni fellows and the rest were new teachers recruited by them. We are excited to see this enthusiastic participation.

Plan for the Next Two Quarters

Date	People	Activity
Jan 16, 2025	C5 and C6	C6: Discussion of HC-CLS Process C5& C6: Physics + math activities, Motion Under Gravity C5: Lesson plan collaboration
Feb 13, 2025	C5 and C6	C6: Discussion of Lesson Plan Structure C5& C6: Physics + math activities: Density C5: Lesson plan collaboration
Mar 13, 2025	C5 and C6	C6: Research presentation and feedback C5& C6: Physics + math activities: TBD C5: Lesson plan collaboration
Apr 10 2024	C5 and C6	C6: Lesson Plan structure, May Conference prep C5& C6: Physics + math activities: TBD C5: Lesson plan collaboration
May TBD, 2025	C5 and C6, DCs, Past Fellows	May Wipro Conference Presentations

Vignettes

Lynn Salzman teaches first grade at Hannah Cole Primary School in Boonville, Missouri.

She has shared how her participation and involvement in the WIPRO SEF program has benefited her classroom this past year.

Figure 3. Lynn Salzman

Her students worked with collecting, graphing, and interpreting weather data. They were able to partner with a kindergarten class and teach them some components of their weather graphing unit. This experience helped the students gain a deeper understanding of what they were learning. It also helped the kindergarten students grasp some aspects of weather data collection and graphing they had not explored before.

Lynn's students developed a newfound interest in and understanding of collecting, graphing, and interpreting data for a variety of different topics. They also formed a bond with their kindergarten partners, and Lynn and her students made several more visits to the kindergarten classroom for various reasons throughout the Spring. Overall, this experience positively impacted her students, a kindergarten class, and Lynn's own teaching. Lynn stated that she is very pleased that she participated in the program!

Figure 4. Lynn Salzman's class

Kelli Anthes is an eighth-grade math teacher at Hallsville Middle School in Hallsville, Missouri.

Figure 5. Kelli Anthes

She has taught math for the last 15 years spanning grades six through eleven. For the last eight years she has taught eighth grade math and thoroughly enjoys this grade level. She recently graduated with an Education Specialist degree in the Elementary Mathematics Specialist program from the University of Central Missouri.

She is currently a part of the Wipro program in Cohort 5 partnered with her fellow teammate, Bryan Bolton, the eighth-grade science teacher at Hallsville Middle School. Since being in the Wipro program, the pair have looked more closely at their two curriculums and how much curriculum is shared between their two subjects. They were fortunate to be able to present their work at the Wipro conference at Stanford University in June 2024, discussing a cross-curricular activity they created for their eighth-grade math and science classes. Students collected data on force and motion in science class and then used functions to model relationships between the data in math class. Attending the conference was an amazing experience for them, and they were able to network and bring a lot of ideas to their 2024-2025 school year.

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.

The current phase of the project has involved 12 Alumni Fellow working on district-related initiatives and one Fellow and a doctoral student 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. The Fellows came together on September 30th for the first all-Fellows meeting of the year. The workshop focused on goal-setting and extending the reach of the Wipro SEF Fellowship even furthe1

The next meeting will be a half-day retreat on January 24, 2025 to continue building and planning their projects.

Summary of Current Project(s) and Goals

The NJ site hosted the opening meeting for all Fellows in late September. Below is the agenda:

Monday, September 30: 4:30–6:30, Schmitt 327

4:30-4:40 Introduction to program, welcome new Fellows–Mika can do.

- thank site visit hosts (Kristen Scrivens, Alison Mahfouz, Frances Carlo)
- If you haven't already - NEW fellows complete the sweatshirt form

4:40-5 Ice Breaker–led by doc students

- Getting to know each other…(20 minutes)
- Six degree of Kevin Bacon
- Prime for SNM - prepare index cards w/ small network, get fellows accustomed to labeling nodes/edges
    - Collect these!
- Updated SNM Protocol
- Collect posters
- Take pictures of posters

5:00-6:15 Social network mapping- 1+ hour

6:15-6:30 Wrap-up

- Future dates:
    - Half-day retreat: Friday, January 24, 2025 (SNOW DATE 1/31) 1p-6p (dinner included)
    - Culminating event: Thursday, May 29, 2025 4:30-7p
- Publicity
    - $500 extra for Publicity Initiatives
    - Submit your ideas
        - Create newsletter
        - Newsletter template creation for districts
        - Website update?
        - Posting social network

Progress and Highlights

Below are the projects the Fellows are undertaking in Year 1 of their participation.

Mazurek	Kearny	Thousand Pounds for Garden Grounds
Kleiner	Clifton	Connecting students, parents and teachers to explore authentic STEM activities
Carlo	Clifton	Arts Integration and S.T.E.A.M. Club

Scrivens	Paramus	Tiger Tinkering Tank (our mascot is the tiger)
Bartol	Montclair	Getting S___ Done
Trabona	Hawthorne	Building Bridges - Diversifying Social Networking Presence to Support Teacher Feedback
Cappello	Other	The effect of math metacognitive problem-solving practices on critical thinking and problem-solving in the science classroom
Cann	Other	Integration of boardgames into the science curriculum
Mahfouz	Paramus	Paramus Does Phenomena
Borriello	Clifton	Making Environmental Science Relevant for Students
Rodriguez	Kearny	LMS Culture Club
Hester-Fearon	Kearny	LMS - charging forward with eSTEM and ELLs to make lasting school community connections
Hogel	Clifton	In Our Science Era
Serino	Kearny	STEAM Full Ahead in understanding climate change @ LMS
Griffith	Other	Creating vertically aligned K-12 Science Assessments
Tchalabi	Kearny	Garden Expansion Project
Graziano	Other	Increasing 3-Dimensional Teaching Practices by Supporting Teacher-Leaders

The research team had a proposal accepted for a paper session at AERA 2025:

“Mapping Their Terrain: Using Social Network Analysis to Support Feminist Teacher Leadership and Promote Educational Renewal,"

The team is also working on revisions to an article for submission to International *Journal of Teacher Leadership*: Self-Created Social Network Maps: A Tool to Advance Professional Development of Science Teacher Leadership.

Additionally, we are revising the 2024 AERA paper that was presented in order to submit it to *Studying Teacher Education.*

Plan for the Next Two Quarters

Date	People	Activity
1/24/25	All Fellows	Half-day retreat
5/29/25	All Fellows	Culminating Activity

NEW YORK -MERCY COLLEGE

Author: Kristen Napolitano, Amanda Gunning, Meghan Marrero

Executive Summary Statement

We have selected three new Wipro Reimagined teams with 22 teachers and 5 administrators across 2 districts, New Rochelle (2) and White Plains (1). (Please see "Selected/Highlighted Projects".) These projects engage teachers and students across grade levels K-12 and promote partnerships with teachers across their districts. They each have feasible plans for sustainability beyond Wipro funding.

Our Innovation phase (at Mercy University called Wipro Reimagine) Cohort 3 2024-2025 is underway. It launched September 28, 2024, with the Mercy Conference. Our major push was to support projects that engaged educators who were new to our Wipro program and/or projects that were vertically aligned K-12. Proposals became due on November 1st. Seven teams submitted proposals. The Mercy team provided feedback, and proposals were resubmitted by the deadline, November 1, 2024. The team reviewed and selected the three proposals that best met the project criteria. Decisions on the proposals were announced on December 6, 2024. The three projects being funded are as follows: *Coding to Learn-Learning through Coding: Building Cognitive Skills Using Robots and Coding; STEM Spotlight Newsletter; and Arcade Challenge.*

In this quarter, Mercy Center for STEM Education hosted its annual K-12 STEM Educators Conference. The keynote address, "Building teacher Leadership Capacity" was given by Dr. Arthur Eisenkraft. Attendees had the opportunity to make selections from eight 20-minute and three 45-minute presentations given by Wipro Innovation and Reimagined Fellows and Blue School

educators. It was refreshing to have presentations given by visiting Wipro Fellows from San Francisco (Lisa Ernst, Laura Spanier, and Kendrick Chow) and Florida (Nicole Holman). As stated previously, this event was also the kickoff for brainstorming ideas for Wipro Reimagined projects.

In the next quarter all the participants (educators and administrators) of Wipro Reimagined Cohort 3 will meet to bond, plan, share ideas, and inspire each other. The Fellows will be in full implementation mode of their project. The Mercy Team is looking forward to offering support and seeing their projects come to fruition.

Summary of Current Project(s) and Goals

DISTRICT	TEACHERS	PROJECT TITLE/DESCRIPTION
New Rochelle	Antoinette Koehler, Anny Vanegas (Wipro Consultant), David Webb, Susan Siegel Erik Brillon Emily Schneeberg Sebastian Arango Sebastian Zamora-Giraldo Shemika McClellan Michael McGowen	**CODING TO LEARN-LEARNING THROUGH CODING: BUILDING COGNITIVE SKILLS USING ROBOTS AND CODING** Integrating robots into general and special education classes fosters critical thinking skills and supports student abilities, benefiting both general and special education students. The hands-on project using a variety of age-appropriate robots will allow students to complete coding tasks that encourage creative solutions. It will build students' computer science and digital literacy skills, specifically the sub-concepts of digital use and computational thinking from grades K-5. Students will develop critical thinking skills when building codes for classroom projects. The project will expand accessibility of coding and exploration of robots to students in Special Education classes and primary grades.
White Plains	Mike Nangle Aldwin Martinez Jordan Garcia Kim Fleming Damien King Susannah Genty-Waksberg Jakki Forbes-Machado	**STEM SPOTLIGHT NEWLETTER** The STEM newsletter is designed to highlight the exciting world of Science, Technology, Engineering, and Mathematics within the WPCSD community. Each issue will feature a diverse range of STEM-related activities, projects, and achievements from students at all grade levels. The newsletter will highlight the outstanding work of students, teachers, and staff in all STEM disciplines across WPCSD and celebrate successes, breakthroughs, and innovative projects. It will foster a passion for STEM by sharing engaging stories, profiles, and resources and providing valuable information about STEM-related topics, news, and events for students, teachers, and parents. To promote STEM equity and inclusion it will highlight the contributions of diverse individuals to STEM and share resources and initiatives that support equity and inclusion in STEM education. It aims to bridge the gap between schools and the community by

		featuring local STEM initiatives, partnerships, and events. The hope is to encourage collaboration and engagement between students, teachers, parents, and the broader community.
New Rochelle	Kathleen Coyne Samantha Eisenberg Sandra Galano Melissa Landau Zachariah Biondo	**ARCADE CHALLENGE** Students will step into the exciting world of arcade games while exploring essential scientific concepts and engineering fundamentals. Over several months, they will design and build arcade games, from classic shooters to innovative new ideas, using engaging STEAM materials and problem-solving skills. Through this experiential process, students will deepen their understanding of energy conversion, motion, and design principles while collaborating with peers and mentors from higher grade levels. Participating students will engage in lessons and hands-on activities to develop their understanding of key science concepts. Students will design and create arcade games that convert energy and/or use the effects of force on the motion of an object; use the iterative process to test and refine their arcade games; explain to others the engineering design process that they engaged in; collaborate and work across grade levels and schools within the district to align with district wide STEAM goals.

Progress and Highlights

Wipro Reimagined:

- Three teams of Wipro Fellows and new participant teachers are working on new GPSs as group projects. (Cohort 3)
- Targeting more administration participation in the Wipro Reimagined projects.
- Working towards reengaging three Wipro districts (Tarrytown, Port Chester, East Ramapo) for more active participation in Cohort 4.

Key Successes:

- Seven Wipro Reimagined educators had proposals accepted for presentation at NSTA New Orleans. (Elcilia Taveras, Susannah Genty-Waksberg, Marcia Manzueta, Aimee Ferguson, Michelle Memoli, Alicia Ricks, and Carmen King.) Four of these educators were able to travel to the conference and present.
- Buy-in from New Rochelle and White Plains has been strong. All 7 Wipro Reimagined proposals submitted were from these two districts.

The White Plains High School teachers who implemented the Wipro Reimagined Tiger Tech Boat Battle project saw district transformation in the way they were able to get a different perspective on student approaches to engineering design through the eyes of elementary-aged students. As one Fellow, Al Martinez stated, "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 work the Fellows in this project completed moved them to pursue a second project in working with elementary and middle-school teachers to build bridges between groups in the learning community: students, teachers, parents, and residents of White Plains via an information STEM Spotlight Newsletter. The hope is to get all parties excited and engaged with STEM. There is the potential for the newsletter to be shared with 6,649 students and 600 instructional staff.

Edison's Kindness Garden (Port Chester Wipro Cohort 2) positively transformed the district with 150 students intentionally visiting the garden during the fall. Marcia Manzueta explained, "Students helped weeding, harvesting and identifying seeds, made observations about diverse wildlife visiting the pollinator garden. Other students casually enjoyed it while they were out in the playground during recess." (And pollinators found new homes in the garden.)

Plan for the Next Two Quarters

Date	People	Activity
December 2024 - June 2025	**Coding to Learn – Learning to Code** Antoinette Koehler, Anny Vanegas David Webb Susan Siegel	• Introduce students to robots through after-school club and lunch-time club. • Teach students basic coding and commands to program the robots'

	Erik Brillon Emily Schneeberg Sebastian Arango Sebastian Zamora-Giraldo Shemika McClellan Michael McGowen	specific tasks, using Code.org or Scratch jr. • Present monthly Robot Family Nights for primary or intermediate grade families. (Jan., Feb., Mar.) • Support student groups work with teachers to design an activity or project related to their schoolwork. • 6/25 Student showcase of coding projects
	STEM Spotlight Newsletter Mike Nangle Aldwin Martinez Jordan Garcia Kim Fleming Damien King Susannah Genty-Waksberg Jakki Forbes-Machado	• Create and distribute flyers to teachers explaining the STEM Spotlight Newsletter project. • Create and distribute "try it at home" kits for students. • Engage in student and alumni outreach. • Request teachers via a QR code to submit pictures and information about class STEM projects/activities • Distribute semester 1 Newsletter. • Repeat the process for semester 2 Newsletter.
	Arcade Challenge Kathleen Coyne Samantha Eisenberg Sandra Galano Melissa Landau Zachariah Biondo	• teachers research, plan lessons, gather materials • plan for introducing arcade clubs to students and how students will be chosen. • arcade club begins for all grades • students learn about scientific concepts based on their grade level standards • students plan and design arcade games based on scientific and engineering concepts. • students begin building games. • test & refine games • finalize games and prepare for STEAMposium (5/25) creating posters or short presentations about games and science/engineering concepts.

Vignettes

Anny Vanegas, a National Science Foundation STEM Master Teacher Fellow and a Wipro Reimagined Fellow, teaches at one of the STEM schools newly appointed to the Network. She described the steady growth of STEM opportunities made possible by the MCSE at her school, Columbus Elementary in New Rochelle, N.Y. "Science teaching is often misunderstood, which is unfortunate," she said. But she added, with support from Mercy and the Wipro fellowship, she has seen an expansion of STEM and even a spreading effect she describes as "energizing. We have many more access points, not just at our school, but across the district. The consortium allows us to network and share ideas school-wide," she said. "We're proving that every child can become excited about science and become active learners. Everyone has something to give."

Dr. Arthur Eisenkraft speaking to Dr. Amanda Gunning and Anny Vanegas, a Wipro Reimagined Fellow and teacher at Columbus Elementary in New Rochelle, part of the first cohort of the Mercy University STEM Schools Network.

The annual Tiger Tech Boat Battle was a thrilling and educational competition designed for students from grades 5 through 12. This district-wide initiative aimed to harness the creativity and problem-solving skills of young minds through fun and interactive challenge: building and racing toy boats

Giordano Garcia, Aldwin Martinez, Michael Nangle, and Damien King (White Plains City School District Wipro Science Education Fellowship) present their Tiger Tech Boat Battle project at the Mercy Center for STEM Education K-12 STEM Educator Conference

TEXAS - UNIVERSITY OF NORTH TEXAS - DALLAS

Author: Dr. Ratna Narayan

Executive Summary Statement

The Wipro SEF Innovation Phase at UNT Dallas is in its third year. This year too we have funded school projects, collaborative as well as individual projects focused on district transformation through teacher leadership. New science Teks have been implemented since fall 2024 and most of these projects address the changes made.

In the innovation phase, three types of projects are funded. School projects involve more than 2 fellows working together on a goal that impacts the school/ ISD. Collaborative projects are between Fellows in the same school, ISD or different ISDs collaborating on a project of common interest. Individual projects enable Fellows to work on projects they are interested in and still be a part of Wipro and impact students. This year, 2024-2025, I am funding a total of 10 projects, 4 schools, 3 collaborative and 3 individual projects.

I first met with the Fellows whose proposals had been accepted for presentation at CAST 2024 at UNT Dallas. Each group/ individual presented their activities before their peers and DSCs, shared their slide shows and handouts and received feedback from their peers.

On Oct 9th we had the Wipro Phase 3 awards and induction ceremony. Phase 3 year 2 participants were awarded a plaque for completion of their projects and new inductees were recognized and presented their funded project.

https://docs.google.com/presentation/d/1zAkkUULwkXK7g7lWFzwQ7We3lgQq04zDkZMvvogDir8/edit#slide=id.g2f9471392c1_0_0 slide show

https://photos.app.goo.gl/GEi4qLYauE6e9cdY9 photographs of the event

Nov 13-15th Wipro Presentations at the Conference for the Advancement of Science Teaching (CAST, 2024, San Antonio)

Dec 2nd Wipro meeting and dinner, funded project participants presented updates that were made to their project till date and expectations set for further progress. New inductees got their Wipro badges, the sweatshirts will be given at the next meeting.

https://docs.google.com/presentation/d/1ndBxsj5rLLATQBmXKeenHYpp8Fd1s5Hb-JtB6Fuq9yE/edit#slide=id.g2f9abb71856_1_60 slide show

The next quarter is going to be very busy as spring normally is at schools with test prep for Staar. Our next Wipro meetings are Feb 3rd and April 15th, each site has a google site created for their project and these dates will serve as their first two checkpoint for completion of some of the items on their website. April also is the month when CAST proposals are due for CAST 2025 which is in Dallas, so I will have a proposal writing session with the fellows to help them with that.

Summary of Current Project(s) and Goals

Wipro @ UNT Dallas Phase 3, year 3 projects funded, 2024-25

A	**School Projects**		
1	Effects of Collins Writing in Science: Cedar Hill ISD The goal of the project is to improve 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. Collins Writing: CHISD District Initiative	1 DSC 7 alums Third year of funding	2 elementary 2 middle 1 high school
2	From Concrete to Abstract Science: Grand Prairie ISD They are combining the development of English and Spanish language speakers with STEM (Science, Technology, Engineering, Math) through the Grand Prairie ISD Dual Language Program. An English speaker is paired with a Spanish speaker to help acquire and facilitate dual language acquisition through a science project-based curriculum Focus on: STEM, TEA's STEM framework, dual language vocabulary acquisition, leadership, science and engineering practices	4 alums 2 new Second year of funding	6 teachers paired up at Ellen Ochoa
3	STEM Sensation: 3D Toys for the Senses: Irving ISD This project aims to engage 3rd grade students in designing and creating a 3D printed game that can be enjoyed by someone with a disability. Through this project, students will learn about accessibility, 3D modeling, and the process of designing and printing 3D	1 DSC 2 alums 1 new	Stipes Elementary

	objects. The game will focus on tactile elements that allow children with various types of disabilities to play and enjoy the experience Focus: STEM, 3D Modelling, designing, printing, fostering empathy and STEM, science and engineering practices		
4	STEAMing Year Round: A LISD Elementary Initiative: Lancaster ISD This proposal aims to establish STEAM events/experiences for Pre-K through 5th grade students, families of students 3 Lancaster ISD elementary schools and foster a culture of family and community engagement that enriches all students through hands-on STEAM experiences Focus: TEA's STEM Framework Domain 5.5 STEM family engagement events/experiences hosted by the district/campus.	1 alum 2 new	Pleasant Run, Rosa Parks, West Main, and Belt Line Elementary
B.	**Collaborative projects**		
1	STEM Explorations for Gifted Minds: A Framework for Innovation and Excellence: Lancaster ISD We will focus on creating interdisciplinary, project-based learning activities that integrate science, technology, engineering, and math based on grade level content for grades 3-5. By providing these project - based learning activities, students will explore real-world experiences and connect it back to the classroom content. Our project will incorporate robotics, coding, engineering design, and inquiry-based activities that can prepare students for future STEM careers. Focus: his proposal aims to implement the TEA STEM framework in the Gifted and Talented (GT) classroom for students in grades 3rd through 5th.	1 alum 1 new	Pleasant Run, West main elementary
2	Building Blocks of Discovery: K-2 STEM adventures DeSoto ISD This proposal outlines an exciting initiative to engage K-2 students in the world of STEM through three interactive projects: designed to spark curiosity and foster a love for learning while introducing fundamental concepts in physics, engineering, and design thinking. Focus: TEA STEM Framework, scientific and engineering practices, hands-on science	1 DSC 2 alums 1 new	Cockrell Hill elementary, DeSoto
3	Extending writing through design challenges: Lancaster ISD This project aims to engage 3rd and 6th grade students in science content by utilizing the 5E model with specific attention being given to Engineering Design Challenges during the elaboration stage. During this project, we will utilize Science and Engineering Practices and	1 DSC 2 alums	3rd graders at Pleasant Run Elementary 6th graders in George Washington Carver 6th grade center

	Engineering Design Challenges connect learning to real-world problems. Students will be expected to reflect on their learning of the content after the conclusion of the Design Challenges using short constructed response questions. Focus: articulate science content learned through writing, engineering design challenges, science and engineering practices		
C	**Individual Projects**		
1	Personalized learning through AI: a new approach to differentiation in science: Brittney Preston, Lancaster ISD This proposal aims to integrate artificial intelligence (AI) into 3rd - 5th grade science classrooms to enhance differentiated instruction through leveled choice boards that will be used during small group/ intervention times in the science classroom. The subjects of the study will be four 3rd - 5th science teachers and twenty-four students total. There will be 6 students chosen by the teacher to collect data based on learning levels high, medium, and low. The goal is to collect data from pre/post exams created by district curriculum to see the effectiveness of the activities with students Focus: integrating AI into elementary school science, LISD places a high value on equity in education, and AI-based differentiation can ensure that all students, regardless of background or ability, can access quality science instruction.		Pleasant Run Elementary
2	Mixed Reality and Aquaponics: Using immersive Technology in the classroom, Marquita Muhammad, Lancaster ISD In this project four classes of 7th and 8th grade students and the STEM and Applied Engineering teachers from Elsie Robertson will collaborate on a sustainable PBL project using 3D technology. Students will use the Z-space platform to bring learning to life through immersive experiences and hands on through the aquaponics system Focus: As a STEM school with limited resources, the project provides students hands and minds on simulations providing virtual and authentic collaborations of aquaponics systems and technology	1 alum	Elsie Robertson middle school
3	Using the Engineering Design Process to Increase Student Engagement in Physics, Robert Matthews, Lancaster ISD As a physics teacher, I will use Science and Engineering Practices specifically and Engineering Design Challenge for each of my units in order to increase student		Lancaster ISD STEM High School

	engagement and learning gains related to physics content knowledge. Focus: This project will engage students in hands-on learning and real-world application to solve problems and challenges. The proposal also supports district goals of increasing STEM education and creating pathways for students to pursue advanced learning in the field of science.		

Lancaster ISD recognition

The Lancaster ISD school board recognized all the teachers who have been funded for the Wipro phase 3 year three, 2024~25 year

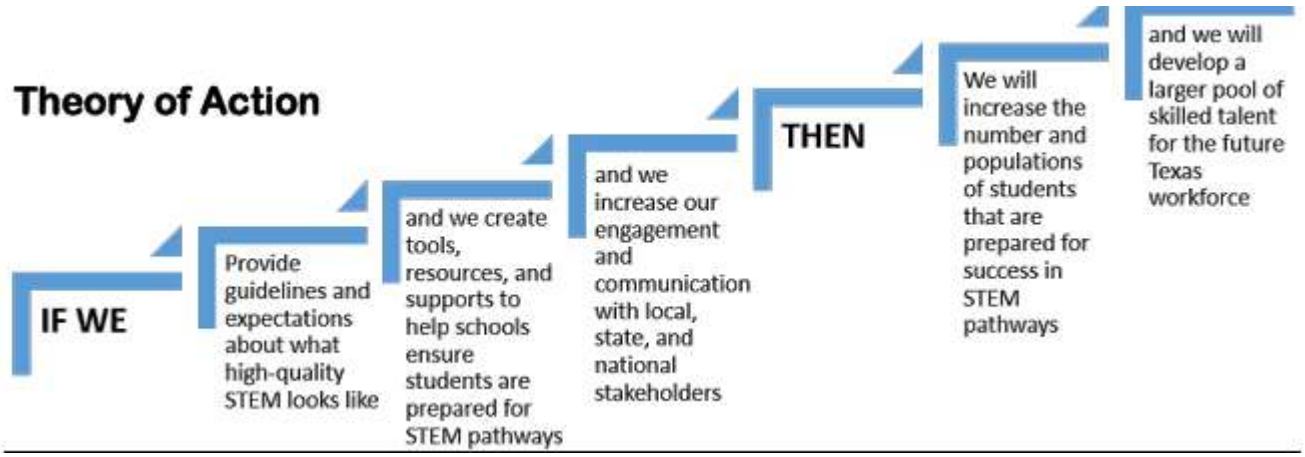
Selected/Highlighted Projects

STEAMing Year Round: A LISD Elementary Initiative: Lancaster ISD

This initiative will address TEA's STEM Framework Domain 5.5 STEM family engagement events/experiences hosted by the district/campus. This proposal aims to establish STEAM events/experiences for Pre-K through 5th grade students, families of students at Pleasant Run, Rosa Parks, West Main, and Belt Line Elementary in Lancaster ISD. Through this project they want to expose their students, staff, parents, and community to all of the elements of STEAM. It is their hope that we help them by giving them hands-on experiences, STEAM rotations, and community technology leaders to show them what it looks like in their community to work in a STEAM field. The culminating event will be STEAMfest in May. I hope to invite a few members of Wipro Dallas to that event. While there are other STEAM events planned prior to that such as Hour of code, Design with Dads, Makerspace with Moms, these events start at 7:30 am, the schools are in south Dallas while most of Wipro live in North Dallas and attending on short notice will be an issue.

Progress and Highlights

I am funding 10 projects this year, I am pleased that all the projects went through our review process, out of 13 proposals, 10 were accepted. Participants include 21 Wipro alums, 8 new Wipro Fellows and 4 DSCs (we do not have a DSC for GPISD as yet). New science TEKS have been implemented from Fall 2024 with the incorporation of the TEA STEM framework https://tea.texas.gov/academics/college-career-and-military-prep/texas-stem-education-framework.pdf, science and engineering practices and phenomena based instruction as some of the highlights.



I am pleased that almost all approved projects incorporate aspects of the above and with it also comes the responsibility of developing our fellows' understanding (both individually and collectively) of what STEM/ STEAM actually are and how to communicate that to their students. Most students have a very basic understanding of what STEM is and this is a good opportunity to deepen their understanding of it. Each participant will receive a stipend for completing project successfully and materials were provided for each project as required. Each project was also provided a google site that they will upload their projects on, the expectation is also that they submit a proposal for presentation at CAST 2025 which is in Dallas.

From our meeting in December, all project participants are making progress on their projects. Below is a slideshow for your perusal.

https://docs.google.com/presentation/d/1ndBxsj5rLLATQBmXKeenHYpp8Fd1s5Hb-JtB6Fuq9yE/edit#slide=id.g2f9abb71856_1_60

Wipro@UNT Dallas at CAST 2024

I would personally like to extend my deepest gratitude to Dr. Eisenkraft for attending all our presentations at CAST and even helping out with his own hotspot when the CAST internet didn't work during the presentations. My Fellows and I LOVE that you attend our sessions and are so supportive! THANK YOU SO MUCH!

Wipro@UNT Dallas had 8 presentations accepted at CAST 2024 in San Antonio in Nov 2024. The grant registered the Fellows for the conference and each fellow was reimbursed $500 towards conference expenses.

All CAST presentations were Phase 3 Year 2 projects completed during 2023-2024. Each of the presentations had one or more activities for the attendees. Presenters were prepared with the materials for multiple activities and multiple attendees.

11/15/24	8 am - 9 am	Location 007A	Wipro presents: Stemtastic after school club Shelby Allen

Shelby is a Cohort 3 Wipro Fellow who was in Lancaster ISD, she is currently working at a new school in Denton ISD.

11/15/24	9:30 - 10:30	Location 217A	Wipro presents: From Sesame Street to Main Street, The Art of Scientific Writing Jeremy Hesse, Judge Solomon, Carlece Jackson, Kellie Burchfield, Brandi Tilley Oppenhammer, Stephanie Riley, Terri Harris, Krystal Rising

This is the Cedar Hill ISD team led by the DSC Jeremy Hesse. 23-24 was the second year they had Wipro funding. They had submitted a proposal to CAST 23 which was not accepted, so for CAST 2024, they submitted 2 proposals, one focused on writing in science at the elementary and Middle school levels, that was accepted, the other targeted at the high school level was not accepted.

11/15/24	12:30-1:30 PM	Location 007C	Wipro Presents: Unleashing Scientific Curiosity—The Power of Hands-On Activities Markus Burkhalter, Tamesha Brown, Amanda Zoller, Deanna Wingerter, Taylor Burkhalter

This was their second year of funding, and they addressed the incorporation of the science and engineering standards (a new addition to the TEKS in TX from fall 2024) to hands-on science activities in the Elementary classroom. The fellows were from Lancaster ISD and Trinity Basin

11/15/24	2:00 PM - 3:00 PM CST	Location 007D-	Wipro Presents: Energize Your Classroom—STEM Coding Adventures with Spheros Jennifer Melton, Patricia Lee, Crystal Trejo Grand Prairie ISD
11/15/24	3:30 PM - 4:30 PM CST	007A	Wipro Presents: Exploring Science Concepts and Engaging Struggling High School Learners Using Problem-Based Learning Dr. Marsha Bolden Irving ISD
11/16/24	8:00 AM - 9:00 AM CST	007B-	Wipro Presents: Growing Minds—Cultivating Science Literacy Through Hands-On Garden Experiences Raisha Allen, Ratna Narayan DeSoto ISD presentation

11/16/24	11:00 PM - 12 :00 PM CST	217C	Wipro presents: Gamifying forces Ian Talamantes, Guillermo Lozano, Marisol Guerrero, Julio Balbuena

Second year of funding for this school project from Grand Prairie ISD

11/16/24	12:30 PM - 1:30 PM CST	006C-	Wipro Presents: Exploring STEM Wonders—Elementary Students Unleash Innovation Sherry Thompson, Michelle Hanson, Chris Dazer Irving ISD

Plan for the Next Two Quarters

Date	People	Activity
February 3rd, 2025 Face to face	All Phase 3, year 3 participants, DSCs	Project updates, website check ins, sharing research
April 14th, 2025 Face to face	All Phase 3, year 3 participants, DSCs	Project updates, website check ins, sharing research CAST proposal writing workshop
TBA Via zoom	CAST 25 meeting with all interested fellows	

CAST 2025

CAST 2025 is in Dallas and I think this is a great opportunity to get all our Fellows (all those interested at least) to present. In my opinion, anyone can attend a conference, it takes leadership skills to be able to present at a conference before other science teachers. Also, as the conference is in Dallas, we can just pay for registration and parking. We have a number of Wipro Fellows who are not active, I believe getting them to present at CAST will be one way of activating them and showing them, they are still part of the Wipro family. As is evident from the reflections of the Wipro fellows who presented at CAST 24, presenting at CAST is a wonderful leadership opportunity and is good both for the fellow, district and attendees.

Vignettes

Carlece Jackson: Science Lead, Cedar Hill ISD

Over the past three years, my experience in the WIPRO program has been incredibly positive, offering a wealth of personal and professional growth. One of the most significant aspects of this journey has been the opportunity to collaborate with diverse and talented individuals such as Dr. Naryan. Working alongside professors, fellow teachers, and district coordinators has expanded my knowledge and skill set, while fostering a sense of shared purpose.

From the very beginning, 2021, I was welcomed into the WIPRO community of passionate and dedicated individuals, all eager to explore new ideas and push the boundaries of learning. It was incredibly refreshing to be surrounded by like-minded individuals. During this time, I was responsible for collecting and analyzing data for the effects of Collin's writing on 8th grade Science STAR scores. I presented these findings at CASTE 2024 which will contribute to the advancement of my peers. WIPRO has further sharpened my critical thinking abilities through conducting experiments and analyzing data. I have learned how to approach challenges methodically, ensuring that each step of the research process was thoroughly explored. Furthermore, the WIPRO program provided numerous opportunities for professional development, such as workshops on research methodologies, time management, and academic networking. These resources have been invaluable in shaping my career trajectory.

I am incredibly thankful for being inducted into the WIPRO program. This opportunity has been a transformative journey, offering me invaluable experiences and personal growth. Looking back on these past years, I am filled with gratitude for the mentors, peers, and experiences that have made this journey so enriching. The knowledge and skills I have gained during my time with WIPRO continue to inspire me to pursue greater academic and professional endeavors.

Monica Hatley: Innovative Laboratory Specialist, Lancaster ISD

Monica Hatley is a passionate and dedicated STEAM (Science, Technology, Engineering, Arts, and Mathematics) teacher at Belt Line Elementary. With eight years of teaching experience, Monica is committed to fostering creativity and critical thinking in young minds, helping students build the skills needed for the future. This is her second year with Wipro, where she continues to expand her expertise in integrating technology and innovation into the classroom. She is currently serving as the lead on her current initiative to expand STEAM to the other elementary schools in the district as well as to bring in community involvement.

In addition to her role as a teacher, Monica is also an Amazon Future Engineer Ambassador, working to inspire and mentor students interested in pursuing careers in computer science and technology. Through her work with Wipro and Amazon, Monica is dedicated to creating opportunities for her students to explore the exciting world of STEAM fields.

Monica believes in the power of education to transform lives and is passionate about preparing her students for success in an ever-evolving digital world.

Monthly Evaluation Updates

ANNE GURNEE
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Wipro Science Education Fellowship
Evaluation Update
September 2024

Activities this Month

- Made final edits to 2024 Annual Evaluation Report and submitted on September 10, 2024.
- Attended monthly leadership team meeting on September 17, 2024. Offered the IHE Leadership Team initial insights from 2024 Annual Evaluation Report. Also made the full report available to all IHE leads.
- Visited New York site on September 28, 2024 for Mercy University's annual K-12 STEM Educators Conference.
- Performed site visit at three New Jersey schools on September 30, 2024 and attended their fall Fellows meeting at Montclair State University.
- Contacted all IHE leads to request an update of their Fellows and DSCs contact information for 2024-2025 evaluation activities.
- Continued planning for 2024-2025 evaluation activities.

What's Next?

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

- Continue the creation/updating of evaluation tools needed for 2024-2025.
- Work with project leadership to determine plans for additional site visits, leadership meeting in February, and plans for evaluation of the new climate V-CCLS teams.
- Participating in any scheduled/needed meetings for the project.

ANNE GURNEE
CONSULTING, LLC

Wipro Science Education Fellowship

Evaluation Update

October 2024

Activities this Month

- Sent site visit thanks and immediate feedback to New Jersey and New York Wipro SEF partners.
- Attended monthly leadership team meeting on October 15, 2024.
- Continued to follow-up with all IHE leads to request an update of their Fellows and DSCs contact information for 2024-2025 evaluation activities.
- Made travel plans to attend leadership meeting in February.
- Began revising mid-year survey for Fellows and DSCs for administration in mid-January 2025.

What's Next?

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

- Finalizing collection of all current contact information on Fellows and DSCs for all sites.
- Finalizing the mid-year survey.
- Working with project leadership on to collect feedback from Wipro SEF participants in climate change initiatives this year.
- Beginning to draft mid-year report to be submitted in mid-February.
- Participating in any scheduled/needed meetings for the project.

ANNE GURNEE
CONSULTING, LLC

Wipro Science Education Fellowship
Evaluation Update
November 2024

Activities this Month

- Attended monthly leadership team meeting on November 19, 2024.
- Continued to follow-up with all IHE leads to request an update of their Fellows and DSCs contact information for 2024-2025 evaluation activities.
- Continued revising mid-year survey for Fellows and DSCs for administration in mid-January 2025.

What's Next?

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

- Completing collection of all current contact information on Fellows and DSCs for all sites.
- Finalizing the mid-year survey draft. (Will send for review by December 15, 2024.)
- Working with project leadership on ways to collect feedback from Wipro SEF participants in climate change initiatives this year.
- Drafting mid-year report to be submitted in mid-February.
- Participating in any scheduled/needed meetings for the project.