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

WIPRO SEF

YEAR 11
QUARTERLY REPORT
December 2023

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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.

This quarter the theme of the report reflects on the work of our second year of the "innovation phase" of the Wipro SEF initiative. Each university is continuing efforts unique to their sites as we implement and investigate strategies to promote district transformation through teacher leadership. As a means of better understanding what is occurring at each location, site visits that included visits to Fellows in their classrooms and meetings with principals took place. These site visits also provided increased recognition of the programs at each school district. The minutes of the cross site monthly meetings provided overview details of the work of this past quarter.

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 April 2023 through June 2023. It is the third quarterly report of the newest phase of the program. During this time, all sites met the challenges of maintaining and adapting the Wipro SEF program as they adjust to the new "normal" following the Covid-19 pandemic. *The chart below summarizes the activities of this quarter and the activities that took place in this school year. Each site's report includes an overview of the activities that have taken place this quarter. Use the table of contents to locate a site's report.* For a quick look at how the program is influencing individual Fellows please refer to the vignettes in the sections entitled "Featured Fellows." Throughout the report, you will find remarkable stories of Wipro Fellows supporting their students as teachers and supporting other teachers as teacher leaders.

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

Table of Wipro SEF sites

	Cohort 1	*Cohort 2*	*Cohort 3*	*Phase II*
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	
Phase II &III				Activities proposed by individual sites.

Key to yearly activities

BY THE NUMBERS

Foundational Phase

Site (Institution)	Districts	Total Students in Districts	Fellows	District Science Coordinators	Presentations and Publications
California (Stanford)	5	97,288	60	5	7
Florida (U of South Florida)	3	398,960	50	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 II[2] 33 – Phase III	5	28

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

Current Phase

Site (Institution)	Projects Submitted	Projects Approved	Alumni Fellows	New Fellows	Non Fellow Teachers	District Scienc Coordinator
California (Stanford)	N/A	N/A	60	16		5
Florida (U of South Florida)	5	3	3	0		3[1]
Massachusetts (UMass – Boston)	8	5	TBD	TBD		5

Missouri (U of Missouri)	N/A	N/A	2	7		4
New Jersey (Montclair State)	13	13	13	26	250	5
New York (Mercy College)	16	11	4	33	50	3
Texas (U North Texas – Dallas)	14	14	11	22	280	5

[1] Plus two district administrators.
[2] Plus nine district administrators.

UPCOMING MEETINGS AND MILESTONES

Jan	Feb	Mar	Apr
MO – Jan 10 Cohort 4 Meeting	MO – Feb 15th Cohort 5 Meeting	MA ?	MO – Apr 3rd Finalize year 1 Lesson Plan. Finalize plans for Year 2 lessons
MO – Jan 11 Cohort 5 Meeting	NY – Feb Visit all 5 Project Sites	MO – 14th Cohort 5 Continue discussion of Lesson plan for Yr. 1	MO - Apr 4th Present one of year 2 lesson plans.
NY – Jan 15 & 17 MCSE Cohort 2 Meeting	CA - Feb In-Person PL Sessions with Wipro Team and Fellows	CA - March Virtual PL Session with Wipro Team and Fellows	CA – Apr In-Person PL Sessions with Wipro Team and Fellows
CA – Jan10 and 18 PL Session /Virtual	FL – Feb 10 St. Petersburg Science Festival – General Public	FL – March 4th Project Members meeting Virtual	FL – April 14th Project Members meeting Virtual
NJ – Jan 19 Half day Retreat	TX – Feb 12 Dinner Meeting/Workshop for P3Y2		TX – April 15th Face to Face Dinner Meeting Focus on participants data collection
FL – Jan 8th and 22nd Meeting with Project Members			

Dates of upcoming meetings across all sites (note: dates subject to change).

This table highlights the larger and/or culminating events across sites. Additionally, sites continue monthly meetings with Fellows and DSCs as can be seen in the individual site reports.

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

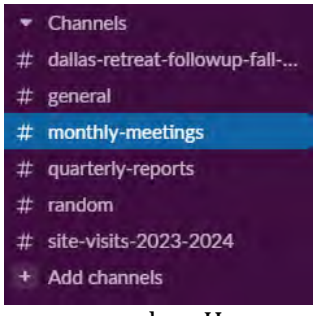
Monthly Leadership meetings

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 agenda for the September, October and December meetings is provided here.

Monthly Meeting Agenda
Tuesday, September 26, 2023
11 AM – 1 PM (EDT)

ZOOM link: https://umassboston.zoom.us/j/495005989

1. Updates from each site
2. Dallas Leadership Retreat feedback
    a. February retreat
3. Slack
    a. How has it worked out?



    b. How can we use in the future
4. Annual report and evaluation (to share in the next week; discussion item in October)
5. Outreach
    a. Public Relations Package from UNT Dallas
    b. Regina on Instagram – NJ – any updates?
    c. Wipro Website progress and help needed

6. Picture a Scientist movie - Mika
    a. One of our Fellows, David Kleiner, went to the Teacher Film Festival at the NY Public Library over the summer where he saw "Picture a Scientist", a film about the experiences of women in STEM. He suggested that it might be a good film to share with other Wipro Fellows. I was wondering if this was something you'd be interested in making available to everyone? I looked it up and it looks like access to the film to stream for up to 250 people is $225.
        Here's the link: https://rocofilms.com/films/picture-a-scientist/
7. Upcoming Site visits – feedback from NY and TX
    a. MO
    b. CA
8. DSC meetings in Fall (goody bags arrived?)
9. Fellows meetings by Zoom
    a. Gardening
    b. Emergent bilingual (ESL, ELL)
10. Sweatshirts for 2023
11. Additional items???

12. Meetings at site - Guidance

a. Note from "addendum to the quarterly report": One of the final questions asked of Fellows on the year-end survey was what could be improved about the Wipro SEF program. Overall the most common category of suggestion related to meetings (too long, too short, wanted more, wanted fewer, etc.) and other program logistics. Table 21 (below) summarizes some of the most common suggestions by state.

    To help us better understand these comments and to support one another, please share copies of three of your monthly meetings with Fellows from the 2022-2023 school year on Slack.

    We can then share and compare and figure out how we can improve these important opportunities that we will have with our Fellows, etc. during this coming year.

    I've made an informal list of purposes of our site meetings as well as purposes for our agendas and optimal level of detail for our agendas. (see below)

    By looking at the data we have (e.g. evaluation report Table 21 (see below) and the 3 agendas from each site (see Slack channel), we can reflect on the purpose of our site meetings, our agendas and find ways to learn from each other.

    Toward that end, can you review the brief lists below and take a look at the site agendas on Slack in anticipation of our discussion.

b. To shape our discussion:
    i. What can we learn?
        1. Each site can comment on their meeting and agenda and rationale for their approach to each.
        2. Comments/questions/reflections from group
        3. Identify strengths, area for improvement
    ii. What is the purpose of the agendas?

Monthly Meeting Agenda – Follow-up
Tuesday, October 17, 2023
11 AM – 1 PM (EDT)

Recording:
https://umassboston.zoom.us/rec/share/lV1pJi6Ruu04yYWeMSmR6YT7QI-uy2hXI4hF3AEZeQILTTh9sfI1LWpkTukK71yQ.sP8qFYbOAsdJEQsk
Passcode: 8=f.+33*

MA – Arthur
TX – Ratna
MO – Meera
NY – Kristen
NJ – Colette
CA – Preetha, Tammy
FL - Allan
Eval - Anne

1. Updates from each site
    a. NJ – Project → Leadership
        i. involve grad students
        ii. 8 districts
        iii. 13 returning PLUS 11 new, new 13 alumni
        iv. Retreat 1/19 from 1-6 PM
        v. ½ day off requires permission which raises awareness
    b. TX - Ratna
        i. Understanding Leadership session by Provost
            1. She mentors STEM faculty
            2. Connected to Wipro and 3 pillars
        ii. 45 attended meeting – Wipro Fellows and new Fellows
        iii. 9 projects
        iv. Garden project
    c. NY – Kristen
        i. Wipro Reimagined conference
        ii. 30 Fellows but did not bring friends
        iii. Speaker – Computer Science and jobs/careeers
        iv. DSCs are taking the lead – Leana on Community Building
        v. Portchester – K-12 Math (MO – site visit?)
        vi. Social media – tagged Wipro Instagram page
    d. CA - Tammy

i. 2 meetings with C4 – Teacher Leadership focus
    1. All chose GPS projects
ii. School leaders
    1. 2nd round coaching calls
    2. Follow up – how are you moving science instruction?
    3. District work Moreland– Full day for all Math and Science for K-8
        a. Focus on new multilinqual – how to teach science
        b. Wipro SEF team
        c. District Transformation
        d. ***Dec Quarterly report – emphasis on Teacher Leadership and District Transformation!!!!
            i. How to tell this story of Fellow, etc

e. MO – Meera
    i. C5 meeting this week
    ii. Principals and DSCs invited
    iii. Linda and Meera went to conference and got a booth for recruitment
    iv. Site visit schedule
f. FL – Allan
    i. FTF, virtual, FTF
    ii. Action research
    iii. Had fellows read NSTA journals about Action Research
    iv. Structured sharing (similar to warm/cool)
    v. FAST – Fellows presenting

2. Dallas Leadership February Retreat – 2/2-4/24 – Please place on calendars (don't book tix, yet)
3. Sweatshirts for 2023
    a. https://forms.gle/D8uixHvyVbxV9GLW9
4. New updates and requests on Slack
    a. Press release – sample from AE in Word
    b. Press Release package – Dallas (outcome – Wipro)
    c. Regina on Instagram – link
5. Wipro Website – help on seeding

Partner University page:
Please update the spreadsheet below with:
Site; School District; Address – these are mandated to make the maps.
You can also include other information about the sites and a url for the districts' home page.
https://docs.google.com/spreadsheets/d/1Rqi4q6alOgi9sJezLozCvMh6ymVZAedlLY-jUZ4R8wI/edit?usp=sharing
We will then upload this to the Partner University page.

Meet Our Community page:

https://forms.gle/ZEGhVsDaE5gdFEcD9

Please copy this survey in your own drive so that you can ask your Fellows, etc to complete it and you can keep track of it. When completed, you can send the link or an excel file to me.

6. Upcoming site visits – MO and CA – One other to attend? Interest and availability?
    a. MO (11/15-11/16) and CA (12/8-12/9)
7. Wipro Fellows Cross-site Topic Meeting
    a. Gardening: Kristen take the lead
    b. Emergent bi-lingual – Preetha take lead
8. DSC meetings - Topics
    a. How to run a meeting? Effective meetings? Bread and butter.
        i. Sharing? Running meeting as a means to demystify TL
        ii. research on running meetings
        iii. Defusing conflict at meetings
        iv. Ask DSCs for choice – others? Rank them?
    b. Demystifying Teacher Leadership and/or District Transformation (or district change)
        i. Why? What are benefits?
        ii. Great recent podcast about meetings: https://podcasts.apple.com/us/podcast/why-meetings-suck-and-how-to-improve-them/id1346314086?i=1000629095374
    c. Let's ask DSCs for their preferences or other ideas
    Please send this survey to your DSCs.

https://forms.gle/uhhG3vYRjyaaj5257

9. Annual report/evaluation (Attached)
    a. Anne can walk us through.
    b. Discuss the Logic Chart on p11
        i. Input-Fellows, not just Alumni Fellows and Teachers (with their experience)
        ii. Outputs – MO – math/science; TX- individual; collaboration within a district but not a school project; school project focusing on
        iii. a district initiatives; ; cross-district
        iv. Is Logic Model – Inputs/Outputs/Outcomes OR AN ALTERNATIVE: Inputs/Activities/Outputs/Outcomes
10. Are dissemination efforts captured
        1. Quarterly reports
        2. Press
        3. Website
        4. Papers presented
        5. Research
11. King's College – climate change collaboration
    a. Action research
12. NSTA – Kansas City lunch – anybody presenting or attending
13. Other items???

Monthly Meeting Agenda – Follow Up
Tuesday, November 21, 2023
11 AM – 1 PM (EDT)

PLEASE SEE ACTION ITEMS AND RESPOND

MO – Linda
MA – Arthur
TX – Ratna
FL – David
NJ – Monica
NY – Kristen
CA – Preetha

ZOOM Recording
https://umassboston.zoom.us/rec/share/Kb_2-bOOmVeW2uNmoSO5S6_I_E3Gh5vHCAlWA5-Orhf1nEPdSk1Xzf-yYFpqEzn6.TIMz6hi6LQHe9FYJ
Passcode: %@*9ZiFz

1. Updates from each site
   a. MO – Arthur visit; C5 presentations in Dec
   b. NY – 6 exciting proposals that all met goals (VT); Engineering; Tarrytown proposal; Elem STEM Ed conference; We will accept 5 and fund 18 teachers
   c. Ratna – 9 projects with meeting Dec 4 with principals; 24 Wipro Fellows at CAST; midterm project – to discuss with Arthur; This year, back to Wix instead of google sites
   d. FL – 3 projects going well with individual research; Dec meeting; quarterly reports; upcoming conferences; Action Research; Arthur will attend
   e. MA – VT; Chat GPT;
   f. NJ – Oct meeting with Arthur; Grad students; 8 districts; Jan 19 – Wipro retreat; 1 paper at AERA and 1 paper on NARST; invited chapter for special issue on teacher leadership; Please share agenda for Jan retreat for Dec quarterly report
   g. CA – C4 – GPS with projects; Most have started; school wide projects; site visit by Arthur
2. Sweatshirts for 2023 – shipping addresses
3. New updates and requests on Slack
   a. Response spreadsheet for New Teacher community
   b. Web page
4. Wipro Website – help on seeding

Meet Our Community page: Progress? Check "copy"
Photos: https://www.dropbox.com/scl/fo/pzzkxkgc6kp9sofcj3tln/h?rlkey=rvjway4i3hwqkuomixao1g0wz&dl=0
Also – name, position and photo for leadership
Please send Arthur excel ss with information on Fellows and photos for those for which you have gathered information. We can add more later.
Please send Arthur similar information for Site Leaders in a separate excel ss. You can have this info repeated in the larger excel that includes all Fellows, etc.
Post the spreadsheets to both on SLACK under Website.
Wipro SEF 4 minute video:
https://drive.google.com/file/d/1jAUEDkya0DXUScXGp80spTiXK0WPXfBM/view?usp=sharing
Generate FAQ for Wipro Site –
- Present Wipro Program
- How does my university/district/school/teacher get involved
- How is it funded?
- Define district transformation; teacher leadership;
- Impact of program

Current Projects
- Highlights GPS - Posters
- Research
- Innovation Phase
- Conference participation
- Social media
- (How often updated) – Let's assume quarterly
- Leadership workshops DSC + picture cards

5. Wipro Fellows Cross-site Topic Meeting – New Teacher Community
   a. Gardening: Kristen (structure) take the lead with Marcia (questions that will be asked)
      i. The 1-hour meeting will take place on Thursday, December 7th from 6-7 PM (EST)/3-4 PM (PST). How involved is your gardening project.
      ii. Marcia – finding the weeds in your gardening project? Insurance, funding, the future
      iii. (7 maybe, 12 yes)
   b. Emergent bi-lingual – Preetha take lead
      i. How to define; NJ comment: Asset based approach; literature; what is integrated content and science. District transformation – how are you approaching?
      ii. The 1.5-hour meeting will take place on Wednesday, Dec 13 from 6-7:30 PM (EST)/3-4:30 PM (PST)
      iii. (6 maybe, 12 yes)
   c. Response spreadsheet on Slack
   d. SEND out dates and times with RSVP for link
      i. Kristen and Preetha – please provide and each site can then I will create a note with an RSVP link that we can all send out.
6. DSC meetings - Topics – 10 responses (CA-3, MA -3, NY-1, NJ-0, FL-3, TX -0, MO -0)
   a. How to run a meeting? 5 positive
   b. Demystifying Teacher Leadership and/or District Transformation – 9 positive
      i. Set up this session. Time and RSVP for link (Arthur)

7. Site visits – MO (11/15-11/16)
    a. How to set up feedback form for Fellows and Administrators???
        i. As we continue our efforts to support and promote the work of our Wipro Fellows, it has become increasingly clear that there is a need for a systematic approach to gather feedback continuously from teachers and administrators. This feedback mechanism should focus on a few key areas:
        ii. Sharing of Efforts and Insights: We want to encourage our teachers and administrators to regularly share their experiences, successes, and learnings with others in their schools and districts. Their journey holds immense value and can serve as a source of inspiration and practical knowledge for their peers.
        iii. Enhanced Communication: It's crucial that we foster more active communication about the impact and outcomes of our Fellows' work. By sharing these achievements within the larger school and district community, we can elevate the profile of our program and its participants, and also provide valuable insights to other educators.
        iv. Recognition and Support: Highlighting the contributions of our Wipro Fellows in various communication channels, including meetings with principals, district officials, and school newsletters, is essential. Public recognition not only acknowledges their hard work but also boosts morale and encourages a continuous pursuit of excellence.
    b. The purpose of this agenda item is to brainstorm and develop a framework for this continuous feedback mechanism. This initiative is intended to not only gather valuable insights but also to strengthen the ties between our program and the broader educational community.
    c. Please come prepared with ideas and suggestions on how we can effectively implement this system. Your input will be invaluable in shaping a mechanism that is both efficient and impactful.
    d. Dosage – how much and how often; once we get these, we can share within sites and across sites.
        i. Monica – let's not overburden them?
        ii. Meera - on agenda at meetings to collect; former Fellows – what we do to maintain contact by asking to be involved in the new phase;
        iii. Expand the level of the community;
        iv. What are Fellows doing? Do principal's know? Do principal's share this?
        v. Some Fellows will step up. Others must be "asked".
        How do we get closer to district change?
        vi. Value of site visits – does it have to be Arthur or could it be another IHE.
8. Annual report/evaluation
    a. Last month we had a helpful discussion regarding the Logic Chart on p11
    b. This month, we will discuss the evaluation questions on p12-13 (and reproduced below)
    c. Postponed until December meeting when Anne will be joining us
9. Hold the date: Dallas Leadership February Retreat – Feb 2-4, 2024
10. King's College – climate change collaboration
    a. Saturday, March 9; 1:30 PM EST
    b. an introduction to the seminar and talk about her work and then some discussion of implementation of climate change education in both our contexts could be a useful activity.
11. Upcoming site visits
    a. CA (12/8-12/9)
    b. FL (12/2)
12. REMINDER: Quarterly Report Due Dec 15

13. Other items???
14. Happy Thanksgiving

Website Development

With the support and guidance of Wipro, we have been working on a Wipro SEF website. It is shaping up and will be released soon.

Wipro Research Initiative

Professor Brooke Whitworth, Professor Julian Wenner and colleagues are initiating research regarding teacher leadership and how the Wipro SEF program aligns with current knowledge regarding this field. What follows is the September 2023 report summarizing progress on the research questions.

Wipro Progress Report
October 25, 2023 through November 29, 2023
Proposed Timeline

Summer 2023/Fall 2023
- Finish data collection
- Finish data analysis
- Outline papers
- Submit conference proposals as appropriate (e.g., AERA, NARST, ASTE)
- Write/finish papers and submit
- Flesh out accepted conference proposals
- Create a proposal for next year's Wipro studies

Proposed Research

Study #1: Explore the social networks associated with science education teachers, DSCs and administration. The goal of this research is to understand the network intricacies of science educators which can be used for insight to how new policies, standards and curriculum is disseminated.

Study #2 (REVISED 8/1/2023): Explore the perceived applicability and effectiveness of the Wipro PD in light of basic psychological needs theory (which is a component of self-determination theory). Examine alignment of components of the Wipro PD with components of needs theory (autonomy, competence, relatedness) and explore for relationships (if any) with teachers' perceived applicability and effectiveness of the PD.

Study #3 (REVISED 8/1/2023): Examine the relationships (if any) between science education fellows' (SEFs') demographic characteristics and their 1) perceptions of their own leadership, 2) their choice of GPS topic, and 3) experiences of Wipro PD.

Progress 10/25/2023-11/29/2023

General Updates:

● Three weekly meetings (90 min. each) have been held with our group (2 faculty and 4 graduate students)
● One writing retreat (4 days) with our group (2 faculty and 4 graduate students)
● Reflecting on the last year, it has been more difficult to obtain access to the data and

organize it and to collect new data than originally anticipated. As a result, there have been many pivots in our original plan and proposal. For these reasons, we anticipate finalizing and submitting papers for publication by March 15, 2024 at the latest.
● Given our experience, at this point, we are not sure about pursuing another proposal for conducting Wipro studies in 2024. We would be happy to have a conversation about moving forward and other ways we might support the Wipro work if that might be useful.

Study #1 Update:

● The data was disaggregated, cleaned, and analyzed. Unfortunately, it was determined that the response rate was too low. Multiple reminders and requests were data were sent but the response rate did just not meet the needs to make this a meaningful research paper.
● We have decided to pivot this paper and write it up as a case for methodology using the data we do have as examples of what SNA data analysis could be for and how it could support DSCs and/or other administrators at the district level. We are in the process of writing up this paper to be submitted to NSELA's Science Educator journal.

Study #2 Update:

● We submitted this as a work-in-progress session for ASTE, but it was not accepted.
● We are still planning to do it as part of the Graduate Student Forum work-in-progress session as ASTE which did not require a submission.
● Survey questions were aligned with the basic psychological needs theory and categorized appropriately.
● Quantitative analysis is being run to examine the degree of needs being met at the beginning and end of the PD.
● The literature review for this paper has been drafted and additional sections are being written as completed. We are thinking this may be submitted to School of Science Mathematics or Journal of Science Teacher Education.

Study #3 Update:

● The model developed through analysis is being confirmed this week.
● Findings and Discussion will be written following confirmation of the model.
● The conference poster and paper for ASTE are being developed and will be completed by 1/3/2024 with the poster presentation on 1/11/2024.
● A paper for publication will be submitted following ASTE and after receiving feedback from the presentation of the poster. The goal is to submit it to JRST or JSTE

Cross Site Collaborations

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.

The first of these "birds of a feather" meetings was on the topic of Gardening and its impact on science education. Kristen and Marcia (NY) took the lead. The 1-hour meeting will take place on Thursday, December 7th from 6-7 PM (EST)/3-4 PM (PST). Initially, we expected attendance of 12 "yes" and 7 "maybe". The actual attendance was 5. They had an engaging discussion. We will now consider plans for a follow-up.

The second of these meetings was on the topic of emergent bilingual approaches in the classroom. Preetha (CA) took the lead. The 1.5-hour meeting was to take place on Wednesday, Dec 13 from 6-7:30 PM (EST)/3-4:30 PM (PST). Once again, 12 people said they would attend with an additional 6 "maybe." Only one person ended up showing and the meeting was postponed. We suspect that a reminder would have been helpful.

Wipro SEF (USA) and King's College (UK)

We have initiated conversations with Richard Brock and his team at King's College. Our website initiative will now be part of a wider effort that will include both King's College and Sheffield University. We will also be hosting, via Zoom, a meeting among MA students at King's College with Fellows across the USA, that will focus on teaching climate change in secondary schools. The initial meeting will take place on Saturday the 9th of March, 4:30-5:30pm (London time). We will have an equal number of participants from the US and UK.

Wipro Book Contract

We have entered into a book contract with Routledge (Taylor and Frances Group). The book should be completed by December 2024 and published June 2025. The working title is, "*A Roadmap for Transformative Science Teacher Leadership: Building Meaningful Professional Development in Districts.*"

Wipro SEF Site Visits

Site visits took place at the California and Missouri sites. Arthur Eisenkraft attended both and Anne Gurney attended California. Both site visits included visits to the schools and meetings with Fellows at the schools as well as principals, District Science Coordinators, and other administrators.

Site visit reports were shared with the sites. In addition, letters to Fellows and Administrators were composed to be shared by the sites with their team.

In addition, Arthur Eisenkraft was able to attend sessions in Texas (Sep 18), New York (Sep 30), New Jersey (Oct 12), Texas (CAST meeting) (Nov 9-11) and Florida (Dec 2).

MISSOURI SITE VISIT

1. **<u>Schedule for Wipro Site visit by Arthur Eisenkraft and Anne Gurnee, Nov 15-16, 2023</u>**

School schedules:
Hallsville : 8 am – 3:25 pm
Boonville: 8 am – 3 pm
Columbia: HS: 8:55 am – 4:05 pm
MS: 7: 25 am – 2:35 pm

Wednesday, Nov 15

Time Slot	Site	Address	Driving time to next location
1:30 pm – 3:00 pm	Sophia's, Lunch with Andrew Kinslow (Columbia DC) Linda, and Meera	3915 S Providence Rd, Columbia, MO 65203	20 min to MU
5 – 8 pm	Cohort 4 meeting at Univ of Missouri, Physics Building Rm 223a	Parking: University Ave Garage, 1101 University Ave, Columbia	

Thursday, Nov 16

Time Slot	Site	Address	Driving time to next location
8:45 – 9:15 am	Smithton Middle School Principal: Chris Drury Fellows: Nicole Campbell, Susan Elliott, Matt Wightman	3600 W. Worley St, Columbia.	45 min to Boonville
10:00 -10:30 am	Boonville, Hannah Cole and David Barton Elementary Principals: Chelsea Jackson and Kim Walker Fellows: Lynn Salzman, Amy Rapp, Becky Eckerle, Jessica White	1700 W. Ashley Road, Boonville. Meet at Hannah Cole School	
10:30 – 11:00 am	Boonville, Booneville High School - visit Brea James' AP Physics class	1690 W. Ashley Road, Boonville	45 min to Columbia for lunch
11:45 – 1:30 pm	Lunch, Ozark Mountain Biscuit and Bar Linda and Meera	1204 Hinkson Ave Columbia	20 min to Oakland
2:00 – 2:30 pm	Columbia, Oakland Middle School Principal: Jeff Mielke Fellows: Jamie Metcalf, Sherry Schaefer	3405 Oakland Pl, Columbia. Park in East circle drive. Meet Dr. Mielke in the main office.	15 min to Hallsville
3:00 – 3:45 pm	Hallsville: Middle and High Schools	421 MO-124 E, Hallsville Room 100. Come in through middle school	30 min to MU

	Principal: Ty Sides (MS) and Matt Cooley (HS) Fellows: MS: Bryan Bolton, Kelli Anthes HS: Erin Snelling, Melissa Hough	entrance. Try to arrive around 2:50 to avoid buses.	
5:00 – 8:00 pm	Cohort 4 meeting at Univ of Missouri, Physics Building Rm 223a	Parking: University Ave Garage, 1101 University Ave, Columbia	

CALIFORNIA SITE VISIT
Friday Dec 8th
SL= School leader (Principal or Vice-Principal)
DSC = District Science Coordinator
C1 to C4 = Cohorts 1 to 4 Wipro Science Fellows

District Time Slot	Attendees	Site	District	Address	Driving Distance
8-9:30 am	Arthur Anne Preetha Tammy	Leland HS -Anu Sarkar (C2) -Jessica Paulsen (C3) -Sarah Lofgren (C4) Purpose: Talk with Anu, who will also be a guide in Jessica and Sarah's classrooms (30 - 45 min)	SJUSD	6677 Camden Ave, San Jose	From Anne and Arthur's place of stay to Leland High.
9:50-11:15 am	Arthur Anne Preetha	Gunderson HS - Diane Aronson (DC) - Yichang Liu (C3) - Anisha Dalal (SL) - Renee Rice (SL) Purpose: No classroom observations, as Yichang has prep time. Possibly classroom walkthrough. Talk with Diane, Anisha, Renee, and Yichang. (45 min)	SJUSD	622 Gaundabert Ln, San Jose, CA	Driving distance from Leland High to Gunderson HS is 5 miles - map

11:45-12:45 - lunch with teachers 12:45-1:15 - touch base with admin/SL	Arthur Anne Preetha Tammy	Lunch- Baker (Elem) -Joanne Endo (C2) -Sierra Vance (C3) -Brenda Valine (C4) - 11:55-1:40 -Erica Paisley (C4) -Chris Barbara (SL) -Christine Wang (SL) ***CSET order box lunches sent to Baker Purpose: There will be no classroom observations since it is lunch or prep time. Conversations with teachers first followed by school leaders (SL)	Moreland	4845 Bucknall Rd, San Jose, CA 95130	Driving from Gunderson to Moreland - 19 min Map
2:30- 4:00 pm	Arthur Anne Eric Preetha Tammy?	Alice Fong Yu (MS) -Stephanie Yue (C3) -Jennifer Lim (C2) -Lisa Ernst (C4) -Eric Lewis (DSC) Purpose: Lisa - Class Observation and Visit Jennifer & Stephanie (prep time) - Talk Eric Lewis - Will be the main guide and lead the talk. This school has done tremendous work despite facing challenges from the constant changes at the SFUSD district.	SFUSD	1541 12th Ave, San Francisco, CA 94122	Driving from Moreland to Alice Fong Yu - 60 min Map

CALIFORNIA- STANFORD UNIVERSITY

Authors: Preetha Menon, Tammy Moriarty

Statement:
The CA Wipro Team's vision for developing teacher leadership in the Wipro SEF Program focuses on developing leadership practices and broadening educators' perspectives beyond the classroom by applying their leadership skills within their school and district contexts. To meet these goals, the CA Wipro Site will continue to offer the traditional Wipro SEF Program to two more cohorts of science teachers from our partner school districts.

In addition, the CA Team is investing in the five partner school districts by creating specific plans that meet the needs of each district. These plans have been co-constructed with District Coordinators and often include the participation of past Wipro fellows. The goal of this work is to develop each team's collective capacity to advance high-quality science teaching and learning in their districts that align with NGSS and reduce the persistent inequities that pervade science education.

Finally, the CA Team is launching its first Wipro School Leaders Program, which will bring together school leaders from across the five districts and build their capacity to support high-quality teaching and learning, increase equitable opportunities, and support the goals of the Wipro Program.

By addressing the work from these three levels- teachers, district teams, and school leaders- the CA site is working towards the goal of district transformation.

FLORIDA- UNIVERSITY OF SOUTH FLORIDA

Our goal in this project is to continue our empowerment of the Wipro Fellows. It is unusual for educators to choose their professional development path, much less spearhead a project with it. In this phase, fellows are able to further enhance what they have learned from Phase 1 to increase the district wide impact. The continued personal vested interest in their Phase 2 projects make them the champion for it, as well as involving other individuals (administrators and additional teachers) to help them work towards the overarching goal of district transformation.

Summary of Current Project(s) and Goals

In our pursuit of district transformation, our site has adopted a comprehensive three-pronged strategy to catalyze change in three participating districts. Through these three ways, Wipro Science Teacher Fellowship (traditional), District Partner work and Wipro School Leaders program, we envision a way to showcase how distributed leadership, collaborative endeavors, including professional learning, and science teaching coalesce to steer districts towards transformational progress.

Wipro SEF Cohort 4

In the second year of our program, our cohort of 15 dynamic fellows has embarked on their GPS projects, the majority of which are classroom-based initiatives designed to advance student learning. During this phase, our Wipro Professional Learning Sessions delve into a spectrum of crucial topics. This includes expanding the concept of teacher leadership as a practice and fostering the mindsets and skill sets necessary to support multilingual learners, thereby advancing equity in education. Through these sessions, we arm our educators with the knowledge, tools, and strategies essential for driving substantial change in their classrooms, school sites, and districts.

The fellows have started their GPS projects. Three teachers have focused on projects that enable them to work with other teachers at their grade level or all the teachers at the school, for example, using science curriculum materials, leading the science department at their school site and supporting science teachers at their school site. Three teachers have chosen projects that focus on projects involving the entire school or elementary grades., for e.g science fair/night, composting and recycling efforts, and outdoor Maker space. The remaining projects focus on classroom-based science projects with a focus on multilingual learners, community-based projects and helping students become mentors in science. Throughout the second year, our approach involves providing individual mentoring and delivering differentiated support intentionally. Our goal is to empower each teacher to thrive in their GPS project, ensuring they receive ample support tailored to their unique needs. This emphasis on individual empowerment contributes to the effectiveness of our transformative initiatives.

District Partner Work

One particular project we would like to highlight is the professional learning initiative we hosted at one of our districts. As a continuation of supporting participating teachers with an explicit focus on newcomers in middle school, we held a full-day professional learning session with all middle school (grades 6-8) teachers in the Moreland School District on October 6, 2023. This session focused on three main themes: a) providing a historical perspective on policies leading to supporting

multilingual learners, b) the importance of designated and integrated English Language development, and c) how to integrate science and language learning, particularly with newcomer multilingual learners, using their district science and math curriculum. Our PL session was co-planned and co-implemented with one of the Wipro Cohort 1 fellows we have worked with at Moreland Middle School. This approach enabled us to showcase how these strategies could be easily implemented using the district's curriculum materials. What was notable was how the teachers engaged in supporting each other, especially in the use of technology to help newcomer multilingual learners.

Wipro School Leaders Program
Participants in the Wipro School Leaders program continued their learning in whole group professional learning sessions and individual leadership coaching calls. The first learning session took place at the Moreland School District Office and the following two sessions took place virtually. Professional Learning sessions focused on supporting teacher transformative professional learning. The remainder of the sessions will focus on supporting science specific instruction.

Plan for the Next Two Quarters

Date	**People**	**Activity**
Jan 2024	Wipro Team + Fellows + School Leaders	Virtual PL sessions
Feb 2024	Wipro Team + Fellows	In-person PL sessions
March 2024	Wipro Team + Fellows + School Leaders	Virtual PL sessions
April 2024	Wipro Team + Fellows	In-person PL sessions
May 2024	Wipro Team + Fellows + School Leaders	Virtual PL sessions
Jan - March 2024	Wipro Fellows + Preetha + Tammy	Ongoing coaching with Support in GPS projects
Jan - May 2024	Tammy	Coaching School Leaders
Ongoing till May 2024	Tammy + Preetha	District Coordinator meetings
April-June 2024	Wipro Fellows + Stanford Coaches	Support with Wix portfolio and posters
June 2024	Wipro Fellows	End-of-Year Conference with Presentations

May 2024	School Leaders	Attend End-of-Year Conference with Presentations

Jonathan Lee
Wipro Cohort 4
7th Grade Science, Presidio Middle School
San Francisco Unified School District

During the application and interview process for becoming a Wipro Fellow, I was asked the question "If you are selected to be a Fellow, what would you like to get out of the program?" The only feedback I had heard previously was from another teacher in the district who was finishing up their Wipro work, and they said, "You can be a great teacher, Wipro will make you better." At the time of my application, I was a 14-year veteran science teacher with experience at both the high school and middle school levels, and my fear was that of being stagnant in my teaching. I didn't want to fall into the trap of being too comfortable, and I wanted to challenge myself to examine my own practices and see if I could develop better outcomes for students. The Wipro program and its leaders have gone above and beyond my expectations of what a truly impactful and worthwhile professional development program should be.

One aspect of Wipro that I have appreciated is that our learning is grounded in educational research. This is rather refreshing because being a classroom teacher, we don't normally have time or opportunities to evaluate educational research and therefore apply any of its findings to our own teaching practices. For example, our V-CCLS group decided to apply our learning from the research centered on how students engage in science processes such as recording and analyzing data, drawing conclusions, and providing evidence to develop better activities and investigations to support students' skills in Claim, Evidence, and Reasoning. I was able to bring our findings back to my science department and together our science team developed a better series of lessons that scaffolded the C.E.R. skills throughout the grade levels. This type of work has been invigorating because I enjoy being creative and trying to develop new activities that will strengthen student engagement and learning in science.

I am most excited for the second year of Wipro because of the opportunity to work on the GPS project. Being able to pursue a project that I have thought about since my early years of teaching but never had the impetus to implement has been energizing, and I cherish this opportunity to offer not only my students but the

entire school community a chance to make a difference at the school. My GPS project involves creating and maintaining a food waste education and management program at my school, and through my experiences and learning at Wipro I have developed a better sense of how to engage and empower students through experiential learning while trying to make impactful changes at our school.

I feel it is safe to say that Wipro has been the best professional development I have experienced in my teaching career. I feel very fortunate to be in this program where I can grow as an educator with collaborative, like-minded colleagues with various experiences from across all grade levels in a non-judgmental and supportive environment. Thank you for everything Wipro!

Lisa Ernst
Wipro Cohort 4
6th Grade Teacher, Alice Fong Yu Alternative School
San Francisco Unified School District

As an educator for over 30 years, I continue to strive to create a culture of inclusion, engagement and inquiry through the lens of Science. When I was selected to participate in the Wipro Fellowship in 2022, the three pillars of improving instructional practice, developing teacher leaders, and increasing student achievement in science are all of the areas where I could become a "Steward of Change." But what would that look like in the practice?

During the fall of 2023 VCCLS, I collaborated with a high school fellow and an elementary school fellow from outside of my school district. We identified "Adaptation," and "Science Literacy"as our project. With the guidance of a graduate student, we selected a research article which set the stage. Viewing each other in a video format, within a small group setting, enabled us to identify the scaffolding of how students have their own bias or how they receive biased information. This specific authentic approach enabled the team to identify that there is more work to be done from elementary to high school.

During the spring of 2023 HCCLS, I worked with two other middle school educators from SFUSD. Our study was centered around a research-based article on analyzing data, drawing conclusions, and providing evidence–based arguments. We found from classroom observations and data, that teaching how to analyze and interpret graphs in multiple modes takes practice. We developed an Infographic poster, which we have shared with our school site Math and Science teachers. Along with sharing the research tool, my HCCLS group has expanded multiple lessons centered around student abilities analyzing and interpreting data.

Presently, during the fall of 2023, I have begun working on a project to enhance the outdoor classroom footprint. At my school, I am fortunate to have two former fellows of Wipro. Each with their expertise, and they have been helping me

navigate and enhance the key components of the project. The team approach is an essential component of the three pillars. Along with the fellows, my students are an intricate part of the process through the lens of "Growth Mindset," with the engagement and exploration. As the students become the "Agents of Change," and experts at our school site, they will be overseeing this specific space.

The Wipro program with the facilitators, and fellows have ignited my critical consciousness to leadership and how professional development can create authentic experience, which can be initiated in the classroom, school site, school district to statewide venues. Each meeting whether virtual or in person, the structure of the inquiry approach, has enhanced my classroom lessons. As a Wipro Fellow, I am looking forward to continuing my experience with the Alumni and Stanford Wipro Team.

Calendar
Please provide dates for all upcoming meetings for the 2023-2024 year. Note the place, date and time and whether the meeting will be virtual or face-to-face.Please also provide possible dates for Anne and me to make a site visit (e.g. visits to schools). Assume a 2-day site visit. (NJ and FL only)

Master Calendar for 2023-2024 Academic Year - Wipro SEF

September 23	9:00 AM - 2:30 PM	Wipro Kick-Off PL Session | In Person-Stanford
October 12	4:30 PM - 6:00 PM	PL Session | virtual
November 9	4:30 PM - 6:00 PM	PL Session | virtual
December 9	9:00 AM - 2:30 PM	PL Session | In Person - Stanford
January 18	4:30 PM - 6:00 PM	PL Session | virtual
February 10	9:00 AM - 2:30 PM	PL Session | In Person - Stanford
March 14	4:30 PM - 6:00 PM	PL Session | virtual
April 20	9:00 AM - 2:30 PM	PL Session | In Person - Stanford
May 16	4:30 PM - 6:00 PM	PL Session | virtual
June 1	9:00 AM - 2:30 PM	End of Year Conference| In Person - Stanford

Master Calendar for 2023-2024 Academic Year- School Leader Program

September 13	4:30 PM - 6:30 PM	PL Session | In Person-Moreland District Office
October 25	4:30 PM - 6:30 PM	PL Session | Virtual
November 29	4:30 PM - 6:30 PM	PL Session | Virtual
January 10	4:30 PM - 6:30 PM	PL Session | Virtual
March 6	4:30 PM - 6:30 PM	PL Session | Virtual
May 1	4:30 PM - 6:30 PM	PL Session | Virtual

SITE VISITS 2023 – CALIFORNIA SUMMARY 12.14.23

Introduction

This report summarizes a site visit to the Wipro SEF partner site in California December 8-9, 2023. For this site visit, program director, Arthur Eisenkraft, and Wipro SEF independent evaluator, Anne Gurnee, visited multiple schools, learning the impact of the program from active Wipro SEF Fellows and administrators. While the conversations with program participants on Day 1 of the site visit were brief and conversational in nature, we sought to hear about the frontline experiences in participating in the program and to discern impacts on both the participants, their schools and districts. On Day 2, we participated in a Fellows meeting on the Stanford campus which included both Fellows and District Science Coordinators. This summary (produced by Anne Gurnee Consulting, LLC) includes an overview of the sites visited, observations, and brief insights gleaned from the diverse and dynamic Wipro SEF Fellows and District Science Coordinators with whom we conversed.

California Site Visit Information

Date	*Schools Visited*	*District*	*Visit Highlights*
December 8, 2023	Leland High School	San Jose USD	• Met briefly with Jessica (C3) to hear about her past project • Observed Sarah Lofgren's (C4) classroom (APES) to see her administer a survey of her students on the actions matched with each unit taken during the first semester (her GPS); next semester will attempt group actions
	Gunderson High School	San Jose USD	• Yichang Liu (C3) shared her own growth as a teacher leader through her work with Wipro SEF • Leadership team and Diane Aronson (DSC) discussed the impact that the School Leaders program is having on their team and impact (*very* positive)
	Baker Elementary	Moreland	• Met with 4 Fellows and 2 administrators (both involved in the School Leaders Program) over lunch to hear about their projects and the overall impact of the program • One of the more significant impacts has been a school-wide focus on teaching science more consistently and throughout several grade levels

	Alice Fong Yu	San Francisco USD	• In a district characterized by tumult, Alice Fong Yu is a steady, successful school (Chinese immersion program, long history, dedicated teachers) • Some Fellows here are more diverse (language arts, music) but dedicated as former science teachers exploring how to integrate science with these subject areas
December 9, 2023	Fellows Meeting	Various	• Focus of the meeting was working with multilingual learners; great overview of the history which offered context for CA's current status • Great discussions and ideas from participants on newcomer strategies for math/science – practical and promoted group sharing • Ended with good discussion of "rightful presence"

Key Takeaways from California

School culture – The importance of a strong school culture was evidenced and mentioned by many. The culture, if supportive and positive, has a ripple effect through the teachers and the students at the school making teamwork more cohesive and productive.

- Development of cadre of teacher leaders – Related to the culture, several sites mentioned the value of the "critical mass" of teacher leaders being developed by their involvement in Wipro SEF in the schools visited. These leaders find support in each other, but they also become the "go-to" teachers for additional work needed at the schools (e.g. curriculum selection/implementation, professional development, etc.)
- School leaders – The new School Leaders program is providing much needed professional development and coaching for involved school leaders, especially in the post-COVID educational landscape where offerings for administrators are thin.
- Multilingual learner focus – This is clearly needed and appreciated by the Fellows. For most, it is an everyday need to learn how to better serve these learners and for many districts, it is also a priority. Preetha's facilitation of the topic during the Fellows Meeting was sensitive, impactful, and clearly benefited from her deep knowledge of how best to serve these learners.

Challenges In California

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

FLORIDA – UNIVERSITY OF SOUTH FLORIDA

Author:
David Rosengrant, Allan Feldman, and Nancy Islam

Statement:

Our goal in this project is to continue our empowerment of the Wipro Fellows. It is unusual for educators to choose their professional development path much less spearhead a project with it. In this phase, fellows are able to further enhance what they have learned from Phase 1 to increase the district wide impact. The continued personal vested interested in their Phase 2 projects make them the champion for it, as well as involving other individuals (administrators and additional teachers) to help them work towards the overarching goal of district transformation. We have increased the number of projects in our second cohort which has also resulted in every district having a project which helps us achieve the desired district transformation.

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. They will disseminate their work to other elementary schools in Pinellas County, and through conference presentations.

Title: Gifted but 'Off Track': Serving the Gifted Students of a Title 1 High School Team
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. They will disseminate their work to other high schools in Pasco County, and through conference presentations.

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

Team: Tara McClintick, Phase 1 Fellow, Floyd Howze, classroom teacher, and Nicole LeGrant, Assistant Principal.
Abstract: The team for this project is meeting bi-weekly to look at their standards and curriculum across grades 3-5. Since the state of Florida doesn't have a clear vertical progression of the Science standards, we will work together to discuss the content knowledge the students should have

received in previous grade levels, what they need to know in their current grade level and what they will learn in the next grade. They are looking closely at the grade level standards by Big Idea (Florida Standard) and identify vocabulary that students need to know for each grade level. They then identify where the foundation begins for concepts we feel students have a difficult time grasping, and strategies and resources we can use to help fill in gaps or to help to progress their knowledge on a particular concept. Each teacher has an open-door policy with the other members of the group, specifically during science instruction. Time are scheduled twice per amonth for each teacher to go observe other members of our team. Tara McClintick will cover classes for classroom teachers as needed. In their meetings they discuss strategies, activities, etc. that they feel were effective during the science instruction when we were in our colleague's classroom. They also have conversations around areas for growth in our science teaching and how to support each other throughout the year. The team is looking for technology to help enhance our science instruction that we can all use. We will disseminate their work to other elementary schools in Pinellas County, and through conference presentations.

Title: Flipped classroom in Science courses @ Middleton High School

Team: Bhagyashree Kulkarni, Steven Velez Hernandez, Khadijah Gaskins-Jones (District Science Coach).

Abstract: This professional learning experience aims to implement flipped classroom strategy by using available videos or videos made by the teachers. The focus of this project is flipped classroom for advanced courses like AP, and Honors classes for this upcoming year and a goal to extend this to other classes in year 2. The goal for Phase 2 is to involve and extend this teaching strategy to other teachers in our school and district by conducting training sessions for teachers. Students in the flipped classroom will view video or online lectures as homework and take notes, teachers will be using programs like Edpuzzle or Nearpod or YouTube or canvas where students will have to answer questions within the video. This will ensure students accountability. In class students will be involved in active learning experiences such as discussions, peer teaching, presentations, labs, hand-on activities projects, problem solving, computations, and group activities.
Using this method can help in implementing science and engineering practices effectively and consistently in the classroom. This will help students develop cognitive and problem-solving skills which are very important for students' success in these advanced and honors courses.

Progress and Highlights

In this past quarter we are navigating the best way to move forward with two cohorts simultaneously. Much like in Phase 1, what we do for participants in our first cohort are not applicable to those in our second phase. What we have done is include our Phase 1 participant in key meetings so that they can work collaboratively with each other.

For our Phase 2 participants, since we started a little bit earlier in the year, we used this time to tweak and fine tune their projects. We found that ideas changed as the beginning of the semester started once they learned new things from one another and had more in-depth

conversations with us. Thus, we incorporated this into our actual meetings. Though changes may not have been significant from the original proposal, the slight changes made are enough to enhance the quality of what will be delivered.

We also are including part of our normal meeting times to have the leadership committee meet with the individual teams during their team meetings. We are looking at various ways to get all of the team members actively involved in different capacities and to help with that, we are going to their individual team meetings.
As we start next year, we will be looking at ways to recruit new folks into our 3rd and final phase. We are starting our brainstorming on how to increase our number of applicants and to retain those that do apply.

We also want to highlight (which you will read about further) one of the teams who recently received a write up about this award.

Lealman Avenue Elementary staff awarded science education grant

Congratulations to fourth-grade science teacher Emily Hanten, third-grade teacher Monica Torres, fifth-grade science teacher Floyd Howze, Assistant Principal Nichole LeGrant, and Science Coach Tara McClintick. The staff members from Lealman Avenue Elementary were awarded a two-year science education grant from the Tampa Bay Wipro Science Education Program. McClintick, the team leader, has been a fellow within the program since 2019. She continues to be an educational leader, advancing the science education curriculum in our district.

Plan for the Next Two Quarters – David

Date	People	Activity
January 8th or 22nd	Project Members	Monday Virtual (polling folks, will decide next week on all events with multiple dates listed)
February 10th, 2024	General Public	St. Petersburg Science Festival
March 4th	Project Members	Monday Virtual
April 15th	Project Members	Monday Virtual
May 4, 11, 18	Project Members	Saturday In-Person – Location TBD

In addition to the above meeting dates, the authors of this paper meet every other week. This team then meets with the DSCs and other senior leaders monthly.

Vignettes

Lealman Avenue Elementary School Team Vignette
Tara McClintick (phase 1 Fellow), Nichole LeGrant (Assistant Principal), and Floyd Howze and Emily Hanten (teachers).

Our team consists of three science teachers, an assistant principal and a Science Coach who work at Lealman Avenue Elementary in Pinellas County, FL. The PI for the project is from the Tampa Bay Wipro Science Education Fellowship Program, Tara McClintick, currently a K-5 school imbedded Science Coach, and a phase 1 Fellow. Nichole LeGrant is the assistant principal who oversees Science teaching and learning. Floyd Howze is a science teacher for all the 5th graders at the school. Emily Hanten is the science teacher to all the 4th graders at the school, and Monica Torres teaches on of the 3rd grade classes.

The goal of our project is to build science teacher leaders within our school, which will lead to increased student achievement in science. Since the state of Florida doesn't have a clear vertical

progression of the Science tandards, we meet biweekly to discuss the content knowledge the students should have received in previous grade levels, what they need to know in their current grade level and what they will learn in the next grade. We look closely at the grade level standards by Big Idea and identify vocabulary that students need to know for each grade level. Each teacher has an open-door policy with the other members of the group, specifically during science instruction. We have scheduled days/times to observe other members of our team. We have discussed strategies, activities, etc. that we felt were effective during the science instruction when we were in our colleague's classroom. We also have conversations around areas for growth in our science teaching and how to support each other throughout the year. We are also looking for resources and or technology to help enhance our science instruction as well as work on a school wide vocabulary routine for increased knowledge and recognition of those vocabulary words.

Lealman Elementary School Team

<u>Flipped Classroom Project – King HS</u>

Chelsey Swats (phase 1 Fellow), Alan Sherburn (biology teacher), and Khadijah Gaskins-Jones, Science Coach.

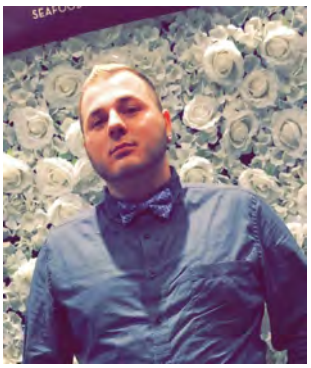
The aim of our project is to create more class time for classroom activities, which will facilitate learning and using traditional homework time for notes/lectures. We are all working in different content areas, so many of us are utilizing different modes of note taking strategies for content knowledge. The idea is to give them this homework/notes a few days before they need to use them. We have chosen to do this because students also have very busy lives, as we all know, so we want to give them the opportunity to succeed by giving them a few days to complete it and the notes should not take longer than 10-20 minutes a night.

The team members are using different modes of note taking. Ms. Swats teaches Cambridge AICE Environmental Management. She used the book created by Cambridge AICE to guide students in their note taking at home. Their end of year exam is based on this text. Mr. teaches Anatomy and Physiology Honors. He has been using the PowerPoints that were provided by the Hillsborough County Public Schools district to create fill in the blank notes. Our class time is now spent using science and engineering practices for students to develop cognitive and problem-solving skills in the classroom for students to be successful in the real world.

Mrs. Gaskins-Jones brought a very good point in one of our meetings that we have just been using these in our accelerated classes. She has challenged us to think of ways to do this in our on-level classes (regular level). Mr. Sherburn and I have one course in common, on-level biology. We have decided to team up in the next semester to decide how we will do the flipped classes in our on-level classes. Because it is difficult to get the on-level students to complete work outside of school, we will use the first two or three days of a unit for several assignments on note taking, and then the rest of the unit will be used for developing cognitive and problem-solving skills in the classroom for students to be successful in the real world.

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.





Chelsey Swats, Khadijah Gaskins-Jones, and Alan Sherburn

MISSOURI- UNIVERSITY OF MISSOURI

Author: Meera Chandrasekhar and Linda Godwin

Statement:

As we end the first semester for Cohorts 4 and 5, we are pleased with their participation and diligence. The goal for both cohorts remains the harmonization of the teaching of science and math so that students and teachers see them as complementary subjects. Cohort 4 has begun working on their lesson plans. Cohort 5 has completed the first semester of CCLS work and has made their end-of-semester presentations.

Summary of Current Project(s) and Goals

The current project is an expansion of the teacher network, providing opportunities for collaboration and leadership, and focusing on collaboration between science and math teachers in middle and high school. The project will address the challenges of teaching science and math in a harmonious manner at the middle and high school grade levels. Students often think of math as a set of rules used to manipulate abstract concepts. Several factors contribute to this thinking. Examples include terminology used in math vs science, the sequencing of math units with relation to science, the infrequency of discussion about the relevance of science topics in math units, and the differences in graphing methods used in math and science classes. The collaboration between math and science teachers is essential to the

implementation of successful science and math curricula. This project will focus on having teachers develop such a culture in a systematic manner using appropriate research articles and paired Science and Engineering Practices and Common Core Math Practices.

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

In Year 2 of each cohort (beginning fall 2023 for cohort 4) elementary teachers are recruited from Year 1 fellows' districts as associate fellows. Elementary teachers typically teach both math and science. The purpose of having them work with middle and high school teachers is to have them learn content and methods as well as work on vertical collaboration across the K-12 spectrum so that they can integrate science into their math classes and vice versa. K-5 teachers for Cohort 5 will be recruited for fall 2024. For Cohort 6, however, we plan to recruit from the entire K-12 spectrum for the 2-year program, allowing us to observe the differences among the two groupings.

Selected/Highlighted Projects

October 19, 2023: Cohort 5 meeting

During the October meeting cohort 5 fellows made a presentation of their research paper. District coordinators Melissa Fike and Adym Cooney attended the segment of the meeting where they made their presentation. This presentation provided a vehicle for the fellows to articulate their understanding of the paper, and how they plan to apply their learning to their classroom teaching.

Following their presentation, Meera Chandrasekhar presented a talk on examples of math integration and the lessons learned on that topic during the Physics First project. The purpose of this talk was to provide examples of math and science collaboration at one grade level.

The final segment of the meeting was to begin a discussion of teacher leadership using the article "A systematic approach to elevating teacher leadership." Fellows will discuss the 10 assumptions in this article over the academic year, starting with Assumptions 1 and 2 discussed in October.

Nov 15-16, 2023: Site visit by Dr. Arthur Eisenkraft and Cohort 4 and Cohort 5 meetings

Dr. Eisenkraft visited schools in three Missouri districts on Nov 15 and 16. (The evaluator, Anne Gurnee was scheduled the visit as well, but had to cancel for medical reasons). During his visit he met with principals from several schools, district coordinators, and met with cohort 4 and 5 fellows during the evening, since their monthly meetings were scheduled on

those days. This provided ample time for him to conduct discussions and ask questions. The PI and co-PI, Meera Chandrasekhar and Linda Godwin were present at all but one of the school visits. The table below lists the sites visited and people met.

Wednesday, Nov 15	**Site and people meeting with Dr. Eisenkraft**
1:30 pm – 3:00 pm	Sophia's, Lunch with Andrew Kinslow (Columbia DC), Linda and Meera
5 – 8 pm	Cohort 4 meeting at Univ of Missouri, Physics Building Rm 223a Fifteen cohort 4 fellows, Linda and Meera; Dr. Eisenkraft attended the proceedings of the meeting. During the meeting he conducted two small-group discussions with fellows (30 minutes with each group).
Thursday, Nov 16	
8:45 – 9:15 am	Smithton Middle School (Columbia Public Schools), with Linda, and Meera Principal: Chris Drury
10:00 -10:30 am	Hannah Cole and David Barton Elementary (Boonville R-1), with Linda and Meera Assistant Principals: Robin Bishop (former Wipro fellow) and Lynn Painter
10:30 – 11:00 am	Booneville High School, with Linda and Meera - visited Fellow Brea James' AP Physics class
11:45 – 1:30 pm	Lunch, Ozark Mountain Biscuit and Bar, with Linda and Meera
2:00 – 2:30 pm	Oakland Middle School (Columbia Public Schools), with Linda and Meera Principal: Jeff Mielke Fellows: Jamie Metcalf, Sherry Schaefer
3:00 – 3:45 pm	Hallsville R-IV Middle and High Schools Principals: Ty Sides (MS) and Matt Cooley (HS)
5:00 – 8:00 pm	Cohort 5 meeting at Univ of Missouri, Physics Building Rm 223a Four cohort 5 fellows, Linda and Meera. Dr. Eisenkraft attended the proceedings of the meeting. During the meeting he conducted a small-group discussion with fellows (30 minutes).

The meetings with principals and the district coordinator were open and detailed, and provided insights into the successes and challenges faced in the past two years. Several fellows mentioned how valuable it was for them to meet with Dr. Eisenkraft directly and discuss their responses to the Wipro program and the challenges they face post-covid in their regular dealings with students and the district. They described the value of self-reflection while videotaping their lessons for the Wipro CCLS phase, and the opportunities to observe the classrooms of their peers and follow it up with a discussion of the lessons. Collaboration across and among districts was discussed repeatedly.

The detailed notes provided by Dr. Eisenkraft after his visit are included below:

> Thank you for the excellent preparation for the site visit. Your agendas, which included the lists of Fellows in each district were very helpful.
>
> Sophia's – Lunch with Andrew – It's always so good to have a relaxing meeting with a district coordinator and to hear how things are going. (I was also so impressed with how he takes long bus rides with middle school students in stride.)
>
> It was a delight to meet the Cohort 4 Fellows. During our informal conversations with the secondary school group, I was able to learn:
>
> - The value of the videos
> - That some Fellows still have contact with Cohort 1
> - That this initiative provides a valuable opportunity for self-reflection
> - The overlaps of math and science are providing new links. For example, learning how "walking the graph" can become a worthwhile learning approach for both disciplines.
> - The Wipro program gives the Fellows time to explore the intersection of math and science
> - They are able to see how other schools do things
> - The accountability of the program is seen as a welcome push to keep moving forward
> - As one example of the silos that exist at the high school level, a physics teacher in a 2,000-student high school was in the math wing and asked if she was lost.
> - High school teachers most often identify with their disciplines (e.g. math, English, science) while middle school teachers identify with their teams. Given that the middle school teams have both math and science teachers, it was interesting to find that the team meetings mostly focus on students rather than on curriculum overlaps. The Wipro program provides the focus on the curriculum.
> - They value the requirement to read and focus on research articles.
>
> Some of the needs expressed at the meeting included:
>
> - The present professional learning that takes place at the schools could be improved. Is there a way to share the work that these teams are doing with their principals and the rest of the staff? This will be a necessary component of school and district transformation.
> - Is there a way to have a greater focus on means by which to become a better teacher leader. Can we provide readings and exercises along these lines?

- Often the research articles are too esoteric and don't speak to the practitioners in schools. There are research groups that also write for practitioner journals and these articles can be shared. There is also the novel idea of these teams guiding university researchers to stronger research. If these teams share what they have accomplished and found, they can drive the research community to explore the "whys" of the successes and challenges.
- How do the teams share their learning with the larger community of teachers and administrators in their schools and teachers at other Wipro sites and then the larger educational community?

The Elementary School Cohort 4 group also shared:

- The value of having Brea's high school students attend the elementary schools
- The valuable insights into how to teach graphing
- The communication of the high school and elementary teachers in sharing common vocabulary (e.g. vertices vs corners) and help prepare students for high school
- This is possible because of the vertical integration meetings
- There is also a need to respect the young students' view of the world and how our goal is to get them to see numbers and exclaim, "we can graph that."
- Although the elementary teacher has responsibilities for both math and science instruction, there is always a math block and there is only occasionally time for science. The collaboration is providing ways in which to merge these two leading to more science instruction.

The site visits to the schools were all rewarding. In some, we were able to see how actively involved the principals are in the Wipro program and how aware they are of the work of the Fellows. This includes the time, effort and value of the math/science collaborations. At one school, the site visit raised awareness of the Wipro Fellows' efforts. Some of the schools have well-articulated and organized professional development for their teachers.

It was also quite informative to hear from the 4 Cohort 5 Fellows and how they have found value in the small size of the Cohort while also recognizing that there are aspects of their work that are limited given that size restriction.

Some suggestions:

- Find ways to remind the principals of the work of the present Fellows in math/science collaboration. Encourage these principals to communicate the value of this work to the larger school and district community. Take note of any communications of the principals with others and share these among all the principals. For example, did the principals mention the value of the program and the potential resource of Wipro Fellows to the district. (Some Fellows will step up on their own, while others may need the encouragement of the principal or assistant superintendent.) As another example, did the principals find a way to highlight the work of this cohort of Fellows and/or the GPS work for prior Fellows. Sharing ways in which principals recognized the program can assist principals who don't know how to do this.

· There may be opportunities to have Cohort 4 and Cohort 5 meet together in the spring. This will provide some needed vertical articulation for Cohort 5.
· In recruitment for Cohort 6, you may want to consider having a tiered Fellow structure where some teachers commit to the intense program while others commit to a smaller time commitment and a third tier may just sign up for some brief exposures of this work
· How can we incentivize the Fellows to share their work with other teachers and the district?

The co-PIs, Linda and Meera, thank Dr. Eisenkraft for his visit and his valuable insight. And we thank the principals for their time and involvement.

The Nov 15-16 monthly fellow meetings also included the following:

During the Cohort 4 meeting K-5 and 6-12 fellows met separately and together for their regular discussions (apart from meeting with Dr. Eisenkraft).and finalized 2024 meeting dates.

During the Cohort 5 meeting Linda Godwin, a retired NASA astronaut, gave a talk titled "Exploring Space, Where would we be without the Moon?" This talk encouraged discussions about the Moon, energy aspects of space travel and the upcoming Artemis missions to the Moon in 2024 and 2025. Following this talk, the discussion of teacher leadership continued.

December 7, 2023 meeting:

As always, the December meeting was a time for V-CCLS presentations. While all four fellows were part of the same team in that they collaborated, watched each other's videos, and used the same research article, the Hallsville and Columbia fellow groups wanted to present their own hands-on activities and results to the attendees, and were therefore granted longer times for their presentation. Both sub-teams brought interesting activities and student-discussion techniques for argumentation to the presentations.

The Hallsville team of Kelli Anthes and Bryan Bolton brought an activity on rolling a ball down an incline, with groups of audience teams testing different variables, and each presenting reasons why "their" variable was the one that influenced the result the most. The Columbia team used oobleck in their classroom at the end of a states-of-matter module. At the presentation the audience got to examine the oobleck and had to come up with arguments as to why oobleck was liquid, or why it was a solid. Members of the audience then chose sides and had to argue why they were "right."

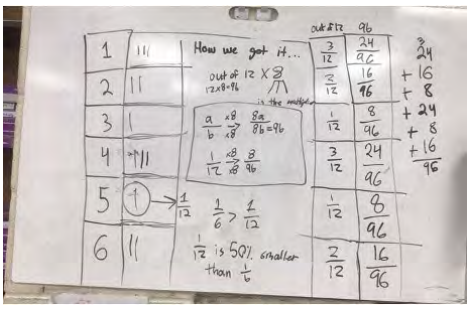
In addition, we invited Karen King (Cohort 4), Jamie Foulk and Stephanie Harman (Cohort 2) from Rock Bridge High School (Columbia Public Schools) to present a reprise of their NSTA presentation, "Sense-making in Physics." A description of this presentation is above in the section highlighting a Wipro team.

Plan for the Next Two Quarters

Date	People	Activity
January 10, 2024	Cohort 4	Continue collaboration and discussion. Presentation by Linda Godwin "Exploring Space, Where would we be without the Moon?" Finalize plans for year 2 lessons.
January 11, 2024	Cohort 5	Finalize H-CCLS research paper; begin discussion on lesson plans and lessons they plan to write in years 1 and 2; continue discussion of teacher leadership.
February 15, 2024	Cohort 5	Present research paper. External presenter.
March 14, 2024	Cohort 5	Continued discussion of lesson plan for year 1. Possible external presenter
April 3, 2024	Cohort 5	Finalize year 1 lesson plan. Finalize plans for Year 2 lessons. Begin preparation for May presentation.
April 4, 2024	Cohort 4	Present one of year 2 lesson plans. Begin preparation for May presentation.
May 2024	Cohort 4 and 5	Conference

Vignettes

Sherry Schaefer, Oakland Middle School



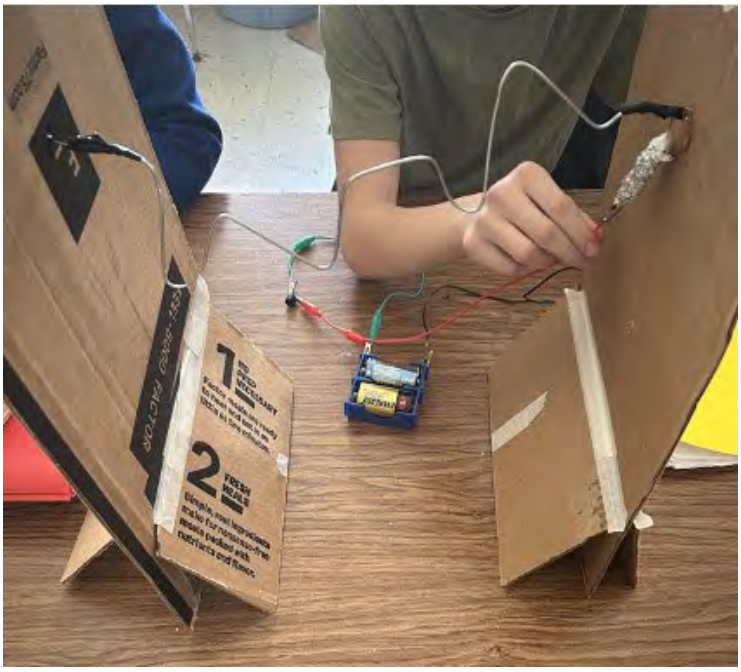
Imagine, if you can, a medium-sized town in the middle of Missouri, a state in the middle of the US. Picture inside this town a middle school full of 6th, 7th and 8th grade students ranging in ages from 11 to 14 years old. Students from all walks of life - those with true potential, those that need extra supports, those who experience homelessness and those who have more than one home. Mixed families, split families, families that are incarcerated or "whole" and "traditional".

My name is Sherry Schaefer and I have taught middle schoolers for about 15 years I went to school to be an English teacher, but then became certified in Math and Science. I have found that teaching Math is my passion; Science is equally gratifying as it provides many opportunities for students to work with real-world data and conduct experiments where they can apply concepts they are learning.

In the Wipro SEF Program, we are looking at how students' learning increases when situated inside dialogue and argumentation. In my math classes we have been learning about probability and conducting "experiments" in order to explore theoretical and experimental probabilities. We started with a heads/tails coin toss. Then we rolled a number cube 12 times and recorded our data. We then considered two tasks: 1) predict how many times you would

roll each number if you rolled the cube 96 times instead of 12, 2) compare your experimental probability with the theoretical probability of rolling the same number (which is more likely? less likely?). For each of these tasks, students needed to use the data from their experiments as evidence for their claim.
This may sound fairly straightforward and simple, but for 7th graders applying probability concepts for the first time, these activities were challenging.

Bryan Bolton, Hallsville Middle School



My name is Bryan Bolton, I teach 8th grade science at Hallsville Middle School. Currently in our classroom students are working on determining the relationship between current and resistance in a circuit. To achieve this, students are taking an engineering approach. They started by figuring out how to make a light bulb light up using a battery, 2 alligator clips, and a screw-in light bulb. After students got the bulb to light up, they were tasked with adding a second light bulb into the circuit they just created. As students constructed two bulb circuit, they pondered on questions such as "Wait… why are the lights dim, why's it not as bright as before?". After the initial "explore" phase, students moved on to using a simulation to look at the inversely proportional relationship between the current and resistance of a series circuit. Students started to see that if they add more resistors into the circuit, the amount of current decreases. At this point, students are realizing the relationship between resistance and current. Taking this a step further, they then took measurements of resistance, current, and voltage in series circuits containing different numbers of resistors. From this, they start to recognize patterns such as "if the resistance is doubled then the current is cut in half". Lastly, the students took this newfound knowledge to construct a game which included a circuit that they had to calculate the total resistance for by using the inversely proportional relationship between resistance and current. To do this, they took the known voltage and current to find the total resistance. Student projects varied from simple operation style games to more complex games such as Ski Ball, Pop-a-Shot and even Jeopardy Buzzers.

Calendar

Upcoming meetings for the 2023-2024 year.

Location: Physics Building Rm 223a University of Missouri, Columbia

All meetings will be face-to face unless it snows (snow location: online)

Date	People
January 10, 2024	Cohort 4
January 11, 2024	Cohort 5
February 15, 2024	Cohort 5
March 14, 2024	Cohort 5
April 3, 2024	Cohort 5
April 4, 2024	Cohort 4
May 2024	Cohort 4 and 5

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

Statement:
The Montclair State University site has made progress through the initial stages of its Phase III project. As stated in the previous report, the project involves 12 Alumni Fellow working on district-related initiatives and one Fellow working on publicizing the program. Each of the alumni Fellows has recruited a team of district teachers. Together, these teams will work towards their respective goals as a new cadre of teacher leaders are nurtured.

Summary of Current Project(s) and Goals

In September, the faculty advisors met with their Fellows to discuss upcoming plans and initiatives. The first meeting with all Fellows, including Alumni and New Fellows, was on October 12 from 4:30–6:30pm. After an activity meant to encourage self-reflection and goal setting, the doctoral students led the Fellows through stations designed to lead to discussions about the different forms of teacher leadership. The group will come together again on January 19th, for a half-day retreat focused on collaboration and student learning.

The current projects being undertaken by the Fellows range from interdisciplinary projects to partnerships with local community programs. The table below offers a snapshot into the Fellows' work.

First Name	Last Name	Wipro Initiative
Alison	Mahfouz	Collaborating on PD and Teacher Ed Using Number Strings
Patricia	Hester-Fearon	Career Day for Grade 7
Jessica	McMasters	Career Day for Grade 8
Susan	Bartol	Improving Teacher Capacity to Deliver Elementary Science Instruction
Kristen	Scrivens	Collaborating on Professional Development and Teacher Education using Number Strings
Frances	Carlo	Arts Integration and STEAM Club
Megan	Graziano	Identifying and Supporting Science Teacher Leaders
David	Kleiner	Improving and Facilitating Effective Math Stations
Mary	Goffredo	Data Analysis and Collaboration
Janine	Hogel	Family STEAM and Makerspace
Colleen	Nolan	Roosevelt Community Garden 2023-24
Kristen	Trabona	Fostering Teacher Leadership

Progress and Highlights

We received acceptances to present at AERA and NARST. The following are the titles of the presentations:

- Reimaging Teacher Leadership through Social Network Mapping: A Collaborative Self-Study. (Self-Study SIG, AERA, April, 2024)
    - Shanna Anderson, Timothy Aberle, John O'Meara, Ursula Derios, Emily J. Klein, Monica Taylor, Mika Munakata

- Developing a social network tool to support and characterize STEM teacher leadership (NARST, March 2024)
    - John O'Meara, Shanna Anderson, Timothy Aberle, Ursula Derios, Mika Munakata, Monica Taylor, Emily J. Klein

Plan for the Next Two Quarters:

Date	People	Activity
Friday, January 19, 1-6pm	Alumni + new fellows	Half-day retreat
TBA/May	Alumni + new fellows	Culminating event

Vignettes

Susan
Bartol
Montclair
Science, grades 3-5
Improving Teacher Capacity to Deliver Elementary Science Instruction
With Jim Wallace - Retired, Michele Gorcica - 4th grade
The goals of this project include assessing and understanding teacher professional development needs in science; increasing teacher's familiarity of the NGSS/SEP'S/CCC's; explore and share new curriculum options and best practices (including own self-generated materials); analyze the NJSLA testing data for areas of weakness; improve student science proficiency. One of the additional things we are looking at are ways to develop a science mindset in

teachers and students by looking at how we can integrate science and engineering practices across math and ELA.
Teachers are starting to get engaged with the process of science instruction. They collectively created a Why Teach Science statement that drives what we do this year. Teachers are also sharing what works for them, developing notebook masters because FOSS doesn't work well for us. We have a new principal who fully supports this work and allows me release time to meet with teachers during PLC'S. I also now meet with Math/Science Teachers monthly. In addition, I wrote and received 2 grants to provide trade books to Math/Science Teachers as well as ELA teachers. I also created a Google Classroom that contains all kinds of background information and resources for teachers. The Wipro team at my school meets bi-monthly to discuss progress and prepare for the next meetings with staff. It has been very helpful to meet on this regular basis and I attribute that to Jim. A retired science teacher is an excellent partner to have. He asks the right questions of me to keep this project on track. He also can put in extra time and effort because of his schedule. He is also a lifelong learner who approaches this work with expertise and humility at the same time. Jim is a true asset to this project. Working with Michele helps me to be sensitive to teacher needs and their capacity to take in more information. I appreciate her spirit when approaching tasks for this project. She thinks her lack of science expertise is a negative, but it is just the opposite. She can give me honest reactions and feedback so that we can better design our work to be accepted by our colleagues.
I appreciate all that you have done to continue this fellowship program and further grow it. I hope that you will be able to continue this for years to come.

Frances Carlo

Frances
Carlo
Clifton
Grade 3
Elementary - Reading, Writing, Math, Science, Social Studies
Arts Integration and STEAM Club
Monica Honis -ESL/Bilingual Teacher Fay Tokel - ESL/Bilingual Teacher Tracy Duff - Resource Teacher; Grade 3-4
The Arts Integration and S.T.E.A.M. Club aims to provide students with opportunities to utilize art in exploring science, engineering, technology, and math. Students will apply the scientific method and the creative process as they engage in arts-integrated learning activities. The experience would empower students to seek out opportunities in the sciences that they may not otherwise pursue and express their understanding of science through art. Another goal of the Arts Integration S.T.E.A.M. Club is to offer teachers and administrators opportunities to develop ways of adding relevance and depth of learning for students through arts integration.

By authentically integrating art with science, technology, engineering, and math through hands-on investigations, we will meet the district's plans that support the NGSS and the National Arts Standards. Our students will be better prepared to collaborate, communicate, think critically, and problem-solve, which are essential 21st Century skills.
The Arts Integration and S.T.E.A.M. Club increased its membership from 7 students and two teacher advisors in its inaugural year (2022-2023) to 26 students and four teacher advisors in the current year. Of the 26 students, 17 are females (2 of whom are English Language Learners), and 9 are males (4 of whom are English Language Learners). All the members from last year's group signed up to be part of the club this year. Due to the large amount of student interest, the group had to be divided into two groups – fifth and fourth graders, meeting on different days of the week. So far, both groups have done similar projects to explore simple circuits using Bristle Bots and Scribble Bots. The students examined how their "bots" created works of art through vibrations. In addition, the students also collaborated to assemble and code a LEGO WeDo robot. The students had a friendly competition to determine which robot could move in a straight path the fastest. Currently, the fifth graders are creating a Fluttering Butterfly toy using a rubber band, paperclip, safety pin, and paper. The students are learning about potential and kinetic energy (science) and line and symmetry (art). For their next project, the fifth graders will create an automata toy to further explore potential and kinetic energy, and function and form. In the meantime, the fourth graders have created flip books as an introduction to animation. In the next few weeks, the fourth graders will explore how to design and produce a three-frame animation and a digital flip book. In January 2024, Sciencebuddies.org will be announcing its 2024 Engineering Challenge. I plan to have our fifth graders enter the contest.

Calendar

Please provide dates for all upcoming meetings for the 2023-2024 year. Note the place, date and time and whether the meeting will be virtual or face-to-face.

Date	People	Activity
September (online)	Alumni Fellows	Meet with MSU mentors about projects.
October 12	Alumni + new fellows	Wipro workshop at PRISM 4:30—6:30. All other meeting dates to be confirmed with Fellows on this day
January 19	Alumni + new fellows	Half-day retreat
May 30 (tentative)	Alumni + new fellows	Culminating event

Agenda for January 19th retreat:

1:00 Arrival. Give them their self-assessments back

1–1:45 Three Ice breakers led by Monica and Emily: Theatre of the Oppressed

1. Name Gumbo
2. Opposite of Jackson
3. Image of the Word- Teacher and then Teacher Leader

1:45–2:30 Driving Initiatives in the Districts- Kristen, Megan, Jenna, and Stephanie

2:30–4 workshops–35 minutes including transition time

Choose one per session

2:30–3:15

- Collaboration
    - Ursula - Team 1
        - Susan
        - Janine
        - Aarti
    - Tim - Team 2 Kearny–will reach out before break, even briefly
        - Jess M. (not heard back from yet)
        - Mary G
        - Jayme

3:15-4

- Student learning
    - John - Team 1
        - Kristen S
        - Jim W
        - Pat
    - Shanna -Team 2–all responded. Will meet 12/14 evening
        - Alison
        - Justine
        - Frances
        -

Break for snacks and coffee
4–5 Case studies–Mika to facilitate

5 Break for getting dinner
5:15–6 Closure + enjoy dinner
Closure: Doc students will decide which assessment to give back and what discussion to engage them in during closure

NEW YORK -MERCY COLLEGE

Author: Kristen Napolitano

Statement: The first cohort of Wipro Reimagined Fellows presented their posters or gave talks on their 2022-23 projects at the Mercy Center for STEM Education's Annual STEM Educators Conference (September 30, 2023). The conference was well-attended, with 75 educators visiting the Fellows posters or presentations throughout the day. Through their work at the conference, Cohort 1 Fellows showed others in our area how they had helped push their districts towards change in a) increased community/family relationships with and involvement in STEM; b) increased time and resources for STEM curriculum at the elementary school level, and; c) increased online presence and dissemination through digital, teacher-created STEM lessons.

Also, during the conference, foundation Fellow, Leana Peltier (Tarrytown) led a special session on collaboration and community building for current and prospective Wipro Fellows. This interactive session allowed newly participating teachers to gain insight on the Wipro program and consider proposal ideas for the 2023-24 AY.

In November, Mercy received six project proposals representing four out of the five partner districts (White Plains, Port Chester, New Rochelle, and Tarrytown). Mercy accepted five of the proposals and will fund these projects for the 2023-24 AY.

Summary of Current Project(s) and Goals

The Mercy University Greater New York (GNY) Wipro Science Education Fellowship, in partnership with University of Massachusetts at Boston and other colleges, has successfully supported a new iteration of Wipro, that the Mercy University Center for STEM Education calls, "Wipro Reimagined." This innovation phase of Wipro involves teacher-led, collaborative projects that are designed to enact district change in STEM education. These projects, created by Wipro Fellows and newly participating teachers, receive buy-in from administrators as associate group members, as well as in-district support from DSCs. Over the course of 4 years, MCSE aims to establish a norm of collaborative action towards district change in the five existing Wipro districts. Year 1 was largely successful as 30 teachers and 1 retired teacher worked with 11 administrators to increase accessibility to and interest in STEM education across the New Rochelle, Port Chester, and White Plains school districts. These Fellows implemented leadership projects including designing STEM instructional materials and resources for elementary school teachers, creating outdoor learning units focused on increasing student access and participation in community green spaces, and providing professional development to teachers on integrating engineering into their STEM curriculum.

Year 2 is off to a strong start with an additional five funded-projects underway representing four of our five partner districts. New to this year, projects reflect a distinct vertical alignment with each teacher team gaining partnerships across district schools (elementary, middle, and high school). This vertical articulation is anticipated to contribute significantly to district change and sustainable outcomes.

MCSE plans to equip participating teachers with the tools and practices necessary to carry on transformative efforts even when Wipro funding is gone. In Year 1, Wipro Reimagined Fellows and the MCSE team established and strengthened relationships with district administrators to ensure sustainability. Year 2 will continue to foster these relationships to help both Fellows and administrators to meet district goals. Mercy reached teachers in more grade levels this year (expanding from Year 1 to include secondary level teachers) and reached four of their five partner districts.

Progress and Highlights

Year 2 has just begun, but Cohort 2 Fellows are already hard at work planning their implementation for 2024. In New Rochelle, a group of four newly participating teachers, led

by Cohort 1 Fellow, Johanna Vasquez, are creating a STEM curriculum for their elementary school. This project was deferred from last year and exemplifies how enthusiastic and motivated the elementary teachers are to embed more STEM activities into their everyday scope and sequence. Looking ahead to next quarter, there will be developments happening across the other four projects on which Mercy will be eager to report.

Key highlights:

- Five new projects accepted as part of Cohort 2. This includes 18 teachers (9 new to the program, 8 foundation Fellows, 1 Cohort 1 advisory member).
- Four of the five projects integrated vertical articulation as part of their design and implementation. This will increase reach across the district and sustainability beyond Wipro funding.
- One project focuses on math integration (calculus across grades 5-12). One project focuses on engineering (high school/middle school engineering design challenge). One project is focused on high school/elementary school robotics collaboration. One project is focused on a district-wide STEM teacher conference. One project is focused on improving the elementary STEM curriculum.
- Expanded representation from Year 1 to include Tarrytown.

Plan for the Next Two Quarters

Date	People	Activity
December 15, 2023-January 15, 2024	MCSE	Funding requests roll in – purchasing begins for Cohort 2
January 17, 2024	MCSE	IN-PERSON Cohort 2 meeting (administrators invited). This meeting will allow for collaboration, brainstorming, trouble shooting, etc. across Wipro districts.
February 2024	Kristen Napolitano	Site visit 1 – KN will visit all five project sites (in-person or over video conference at the Fellows' convenience)
May 2024	MCSE	Site visit 2 – MCSE IHE team will attend all five project site events in-person. Virtual Cohort 2 meeting – final debrief, highlights, info for 2024 MCSE Conference
June	MCSE	Funding period concludes – Cohort 2 prepares for MCSE Conference in the fall

Vignettes

Leana Peltier, DSC, Tarrytown

This fall, Leana Peltier led a special Wipro session at the MCSE STEM Educator Conference for current and prospective Wipro Fellows. During this session, Leana presented ways to encourage community building both in the classroom and with colleagues across schools to celebrate individuality and cultivate equity in STEM education. Leana's work created a welcoming and collaborative environment and spurred interest in new projects for Cohort 2 of Wipro Reimagined. Below is a photo of Leana presenting her work at the conference:

TEXAS - UNIVERSITY OF NORTH TEXAS - DALLAS

Author: Dr. Ratna Narayan

Statement:
This year, (Phase 3, year 2) is a critical year for us in which we continue to work towards the goal of District Transformation through Teacher Leadership. It is my endeavor to constantly provide opportunities where our Wipro Fellows can advance their development as Teacher Leaders which in turn facilitates District Transformation. I hope you will see evidence of this in the narrative.

Summary of Current Project(s) and Goals: Phase 3, year 2 at UNT Dallas

S. No	Title of Project and ISD	Project goal	Number of participants
A	**School Projects**		
1	Professional Learning Communities Lancaster ISD	This collaborative project will focus on developing Professional Learning Communities (PLC) for elementary science and STEAM teachers in Lancaster ISD.	1 DSC 4 Alums 1 New 5 elementary schools
2	Effects of Collins Writing in Science Cedar Hill ISD	The goal for this project is to improve 5th grade, 8th grade Science and Biology STAAR (State of Texas Assessment of Academic	1 DSC 3 alums 3 new

		Readiness)/(EOC)End Of Course scores across Cedar Hill Independent School District using Collins Writing (a district Initiative)	2 elementary 2 middle 1 high school
3	From Seed to Flower: The Growing Project DeSoto ISD	The project aims to establish an edible garden that will serve as an interactive classroom for students in Pre-K through 5th grade at 4 different schools in DeSoto ISD.	1 DSC 7 new 4 elementary schools
4	Exploring STEM Wonders with 3D Printing: First Graders Unleash Innovation Irving ISD	The project goal is for first grade students to gain a better understanding of how we use products of STEM, construct solutions to world problems, design a prototype, and create a device using a 3D printer.	1 DSC 1 alum 2 new 1 elementary school
5	Gamifying Forces Grand Prairie ISD	The goal of the project is for students in grades 3 to 5 opportunities to explore the connections between the Energies and Forces by creating a game using engineering and investigative design	1 DSC 2 alums 3 new 1 elementary school
6	Savvy Sphero Sisters Grand Prairie ISD	Savvy Sphero Sisters is a project designed to address the gender gap in the technology industry by creating a supportive environment for girls to learn and succeed in coding.	1 DSC 1 alum 2 new 2 elementary schools
B	**Collaborative Projects**		
1	All Hands-on Deck Lancaster ISD, Trinity Basin Prep	The project participants aim to collaborate to provide equitable outcomes for students in grades 4, 5, and 6 that will allow them to develop a deeper understanding of science through hands-on activities.	3 alums 4 new 3 elementary 1 middle school
C	**Individual Projects**		
1	STEMtastic Club Denton ISD	The goal is to develop an after-school STEM program for my campus for 4th and 5th grade students, who will conduct PBL's, STEM challenges, and hands-on learning to enhance their knowledge and skills.	1 alum 1 elementary school
2	Exploring Science Concepts Using PBL Strategies and Activities to Engage Struggling High School Learners Irving ISD	The project is designed to explore IPC student's science content, engagement, creative thinking, collaboration, increased literacy, and problem-solving skills using PBL (Problem Based Learning) strategies and activities.	1 alum 1 high school

Progress and Highlights

I would like to mention that there are three school projects and 1 collaborative project that are building on the previous year's projects. I would like to highlight two of those.

Professional Learning Communities is a Lancaster ISD Phase 3, year 2 school project. Last year (22-23), the Lancaster ISD DSC, Faith Milika, led a PLC with 3 Wipro Fellows, all 5th grade science teachers. This year, (23-24) Faith and her three participants have added 2 more participants, and each of them is leading a PLC through grades 3-6 and STEAM for their teachers.

22-23 Phase 3, year 1	23-24 Phase 3, Year 2
Faith PLC coordinator 5 grade (DSC)	Faith 3rd grade 5 new teachers
Preston 5th Grade Science Teacher (alum)	Medford 4th grade (alum) 7 new teachers
Mosley 5th Grade Science Teacher (alum)	Preston & Mosley 3 new teachers
Burkhalter 5th Grade Science Teacher (alum)	Burkhalter 6th grade 3 new teachers
	Monica STEAM (new) 3 new STEM teachers

Effects of Collins Writing in Science is a Cedar Hill ISD School project, Using Collins writing is also a district initiative. During Phase 3, Year 1, (22-23), The Cedar Hill DSC, Jeremy Hesse led a project to improve 8th grade Science STAAR scores across CHISD using Collins Writing. The project had very impressive results and Jeremy and his team have broadened the scope of their project from just 8th grade to include 5th, 8th grades and Biology. Moreover, based on their performance last year, all other content areas are using their process.

2022 – 2023(Phase 3, year 1)	2023 – 2024 (Phase 3, year 2)
Students Impacted:606	Students Impacted:1516

Progress and Highlights

In this section I will bring you up to date with the work accomplished by each project, CAST presentations and the Wipro dinner and meeting on Dec 5th, 2023

I. Phase 3, year 2 funded projects:

I funded a total of 9 projects, projects were of three types a) School projects, (6) b) Collaborative Projects (1) and c) Individual projects (2)

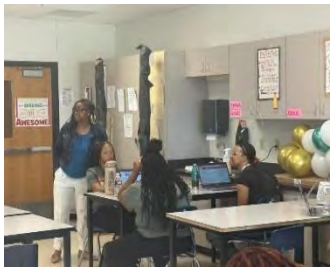
School Projects

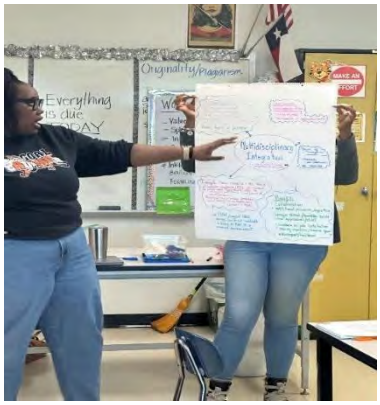
1. Professional Learning Communities: Lancaster ISD School Project

Brief Description of the proposal: This collaborative project will focus on developing Professional Learning Communities (PLC) for elementary science and STEAM teachers in Lancaster ISD. This PLC process is intended to create the conditions (improve their own content knowledge and pedagogical knowledge) that help educators become more skillful in facilitating student learning to a greater degree.

Rationale for the Proposal: Since the pandemic, Lancaster ISD has had an increase in teacher turnover. The national teacher shortage has impacted Lancaster ISD significantly. To fill teaching positions the district has moved some teachers into unfamiliar grades and content areas, as well as hired long term substitutes with the hopes of them working towards their alternative teaching certification. This is alarming as we want to ensure teachers have the content and pedagogical knowledge necessary to equip students to be successful in secondary level STEM courses, and beyond.

Developing grade level Professional Learning Communities (PLCs) for the science teachers as well as for the elementary STEAM teachers will provide the means to support the development of these specific educators. By developing their content of science/STEAM and instructional pedagogy, we anticipate an increase in the students' content knowledge. We hope that the impact will also be evidenced by the percentage of students performing at the Meets and master's on the cumulative state assessment administered at the end of the 2023 school year as well as the following two years as the 3r and 4th grade students matriculate through elementary school.

Goals and Timeline for Phase 3, year 2	**We have been able to complete two PLC sessions so far with teachers within the district at all grade levels.** Everything has gone as planned so far.
Project photos	Medford leading PD session session  Mosley facilitating PD 
	Teacher PLC artifact, anchor chart explaining Multidisciplinary STEAM instruction.

2. Effects of Collins Writing in Science

Brief Description: Our goal for this 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.

Rationale: Cedar Hill Science STAAR scores in 5th grade, 8th grade Science and Biology have gone down since the start of Covid by 24 percentage points. With the new constructed response questions on the Texas 5th Grade, 8th Grade STAAR and Biology EOC it is imperative that the scholars have opportunities to write in science and this proposal will give us data on the scholar's ability to write and how to better help our students write in science. Collins writing is a district initiative put in place by the district to increase writing and reading comprehension and this will give us a good opportunity to see if the prompts achieve what we intend. Based on our performance last year, all other content areas are using our process.

Project photos	 

	5th grade scholars working on their Short-Constructed Responses

3. From Seed to Flower: DeSoto ISD School Project

Brief Description of the proposal: Our project aims to establish an edible garden that will serve as an interactive classroom for students in Pre-K through 5th grade at 4 different schools in DeSoto ISD. These gardens will provide a unique and engaging opportunity for students to learn about plant and animal life cycles, the importance of sustainable agriculture, and the benefits of healthy eating (Farm to Table). It will also provide students with an outdoor learning environment for teachers and counselors to conduct science and social emotional lessons.

The four schools in this project currently have overgrown gardens or garden space that are being underutilized. With the growing number of obesities in children, we would like to teach students how to grow and while providing them with science lessons aligned to the current state standards.

4. Exploring STEM Wonders with 3D Printing: First Graders Unleash Innovation: Irving ISD School Project

Brief Description of the proposal: Our project will consist of a STEM project that will provide opportunities to explore what STEM is, how it impacts their everyday life, and how they can improve someone else's quality of life through STEM.

5 Gamifying Forces: Ellen Ochoa School Project, Grand Prairie ISD

Brief Description of the proposal: This collaborative proposal is an extension of last year's project for 2nd and 3rd grades. Last year, 2nd and 3rd grade students invented a useful tool using the efficiency of the properties of matter of the object they invented. Our 2nd and 3rd graders were able to improve their communication skills, their ability to problem solve during science investigations, and increased their content knowledge. These anecdotal data points were collected through observations of students during the activities as well as by analyzing the entries in their science journals. This year, students are creating a game that uses forces and the students' ability to reengineer strategies to win. For example, their game can use a variety of energy sources that will transfer FROM circuits.

Rationale: The rationale for this proposal is to support our STEM campus into developing community through multi-grade collaboration. This collaboration will help promote the connection needed between teachers and eventually parents, as TEA has added this STEM Framework (link) which becomes effective with the new TEKS in 24-25 (

https://tea.texas.gov/academics/college-career-and-military-prep/science-technology-engineering-and-mathematics-education-stem).
Developing a collaborative environment will take time and begins with teacher alignment between different grades. It will be teacher facilitated, and student led. In addition, this project will give students the opportunity to apply their knowledge and learning about energy and forces to create something new that they can take ownership of.

6. Savvy Sphero Sisters: Grand Prairie ISD School Project

Brief Description of the proposal: Savvy Sphero Sisters is a project aimed at fostering girls' confidence and increasing interest in the world of coding. This proposal is designed to address the gender gap in the technology industry by creating a supportive environment for girls to learn and succeed in coding.

Rationale: The gender disparity in the technology world is a well-known concern. Despite significant progress in women empowerment, women remain underrepresented in coding and other technology roles. This initiative seeks to address this gap by providing girls with the opportunity to learn and tap into the world of coding. Research shows that girls' interest is significantly influenced by the presence of an inspirational teacher and the perception that coding is suitable for girls.

All Hands-on Deck:

Brief description of the proposal: Educators from Trinity Basin Preparatory and Lancaster ISD will collaborate to provide equitable outcomes for students in grades 4, 5, and 6 that will allow them to develop a deeper understanding of science through hands-on activities. This will be done through strategic planning, instructing, using intentional strategies to support ESL students, and providing hands-on activities to increase Science awareness amongst all students. We will collaborate vertically with three major Science themes being our focus that will allow students an opportunity to have hands-on experiences. This project is a continuation of the work that has been implemented in our schools over the last two years, which has allowed us to see significant gains with our students' academic growth in science.
Rationale: The rationale of this proposal is for our 4^{h}, 5th, and 6th Grade classes collaborate virtually twice for every unit with each other during project experiments which will be facilitated by the collaborative team of teachers. For each experiment, the collaborative teachers will administer a pre and post survey, as well as track student assessment data.

C. Individual Projects

1 STEMtastic Club

Brief Description of the proposal: I am developing an after-school STEM program for my campus for 4th and 5th grade students. I want to track how this program helps build interest and academic progress in the students that consistently attend this program. The students

will conduct PBL's, stem challenges, and hands-on learning to enhance their knowledge and skills that are being taught in their science classrooms.

What is your rationale for this proposal: At my campus we have two types of rotations, a two-way split, and a three-way split. On the two-way split the students are getting significantly less science education time as the three-way split. Also, the students are coming into 5th grade with not much background knowledge from previous grade levels. So, this after-school program is to help bridge the gap of the participants in as many of the hardships that are faced with science education in the upper elementary levels. Including 4th grade students will hopefully develop a deeper understanding of the standards and help give the 5th grade students an edge to what they are learning in class.

2 Exploring Science Concepts Using PBL Strategies and Activities to Engage Struggling High School Learners

Brief Description of the Proposal: This proposal is designed to explore IPC student's science content, engagement, creative thinking, collaboration, increased literacy, and problem-solving skills using PBL (Problem Based Learning) strategies and activities. This proposal is designed to link real world problems with a curriculum that will explore how students learn to use 21st century skills which includes creative and critical thinking, communication, and problem-solving skills. The purpose is to explore how problem based learning activities and using 21st century skills will impact student learning. My IPC and Biology classes at the Student Reassignment Center [SRC] contain students that may range from struggling to reluctant learners.

Rationale: My rationale for this research proposal is to explore how IPC students can learn 21st century skills that will impact their learning abilities to focus on real-world problems that will promote the development of problem-solving, critical and creative thinking, and communication skills. The students will also experience the opportunity to engage in groups and participate in finding and evaluating research information.

II Phase 3, Year 1 Presentations at the annual Conference for the Advancement of Science Teachers, CAST, Houston TX Nov

A requirement of the grant is that each Wipro project funded at UNT Dallas must send a proposal to present at CAST or an equivalent conference. Ten Phase 3 year 1 proposals involving 20 Wipro Fellows were accepted for presentation at CAST in Houston, TX, Nov 9th to 11th 2023. Below is the schedule of presentations.

Day and date	Time and Location	Presenters	Title
Thursday Nov 9th 2023	8:00 AM - 9:00 AM CST Location: 380B Max capacity 30	Gayla Davidson	Engaging Science Instruction for the Redesigned STAAR: Strategies for Interactive Learning and Assessment

Thursday Nov 9th 2023	11:30 AM - 12:30 PM CST Location: 352F Max capacity 60	Tamara Butler, Lindsay Reeves, Deanna Chapman, Megan Hunt	Big, Fun, Outdoor Eighth-Grade Science! Using Campus-Based Informal Science to Review Key Concepts
Thursday Nov 9th 2023	11:30 AM - 12:30 PM CST Location: 352B Max capacity 40	Ian Talemantes, Guillermo Lozano	Can We Stay in for Recess?!
Thursday Nov 9th 2023	11:30 AM - 12:30 PM CST Location: 382AB	Candace Edmerson	I CER You!
Thursday Nov 9th 2023	1:00 PM - 2:00 PM CST Location: 352A Max capacity theater style for 80	Megan Hunt, Kristin Martinez, Ragina Taylor, Sharon Thornton	STEMtastic Mornings: Stairsteps to Success
	1:00 PM - 2:00 PM CST	Dr. Eisenkraft	
	2:30 PM - 3:30 PM	Dr. Eisenkraft	
Friday Nov 10th 2023	8:00 am - 9:00 am	Dr. Eisenkraft	
Friday Nov 10th 2023	11:00 AM - 12:00 PM CST Location: 382AB Max capacity 160	Marsha Bolden Donna Bolden	Exploring Science Concepts Using Social Studies in a Cross-Curriculum Research Study
Friday Nov 10th 2023	11:00 AM - 12:00 PM CST Location: 350A Max capacity 40	Marquita Muhammad, Rhenett Ingram	Investigating Climates Impact on the Environment
Friday Nov 10th	3:30 PM - 4:30 PM CST	Tamesha Brown, Markus	All Hands-on Deck: The Impact of Hands-on Activities in Science

2023	Location: 350E Max capacity 50	Burkhalter, Jennifer Mosley	
Saturday Nov 11th 23	12:30 PM - 1:30 PM CST Location: 350F Max capacity 50	Brittney Preston	Hands-on STAAR Review Using Stations
Saturday Nov 11th 23	12:30 PM - 1:30 PM CST Location: 352A Max capacity theater style for 80	Shelby Allen	Classroom Educational Website for Science Content

Gayla Davidson : " I felt my presentation was well received and participants walked away with usable materials. Thank you for the opportunity."

Guillermo Lozano: first time attendee at CAST: "Experiencing CAST as a 1st year presenter has opened my eyes to the benefits of this program. Mr. Talamantes and I had the opportunity to be the 1st presenters on the 1st day. We were so nervous! Our presentation room held available table seats for approximately 45 to 50 attendees. Unexpectedly we turned away interested attendees so our room could have been larger with more seating space. Nevertheless, our presentation was welcomed with interest and inquiries. The hands-on

activities contributed to a deeper understanding and appreciation of our presentation theme, “Is It Time for Recess Yet?”. After our presentation, we had the opportunity to attend more sessions and visit the vendor’s floor. Lastly our luncheon gathering on the last day before leaving was filled with camaraderie and opportunities to meet and share new faces. In perspective It was a successful learning experience. Thank you so much Wipro and UNT Dallas”.

Thursday Nov 9th 2023	1:00 PM - 2:00 PM CST	Megan Hunt, Kristin Martinez, Ragina Taylor, Sharon Thornton	STEMtastic Mornings: Stairsteps to Success


Friday Nov 10th 2023	11:00 AM - 12:00 PM CST	Marsha Bolden Donna Bolden	Exploring Science Concepts Using Social Studies in a Cross-Curriculum Research Study


Marsha Bolden: “Presenting at CAST was an amazing opportunity for me personally because it gave me an opportunity to share strategies with teachers searching for alternatives or out of the box activities to engage their students. I felt like an expert as teachers asked me questions concerning the how’s and why’s of my presentation. I love the process and would LOVE to present again as I enjoy teaching teachers. It was awesome that Dr. Eisenkraft attended CAST, thank you so much for the autographed book. As an IPC teacher I use it all the time. Also thank you Dr. E for the sumptuous Wipro Lunch”.

Friday Nov 10th 2023	11:00 AM - 12:00 PM CST	Marquita Muhammad, Rhenett Ingram	Investigating Climates Impact on the Environment



Friday Nov 10th 2023	3:30 PM - 4:30 PM CST	Tamesha Brown, Markus Burkhalter, Jennifer Mosley	All Hands on Deck: The Impact of Hands-on Activities in Science

Marquita Muhammad: “I truly enjoyed presenting at CAST and representing Wipro as well as my school district! It was an honor to have my proposal selected and present my project to fellow science teachers. Our audience showed interest in our topic and was very engaged during the session. I look forward to presenting again at CAST! “

Rhenett Ingram: “I was so honored to present at CAST for the second year in a row. The participants were very receptive of the information provided on Global warming and its impact on our daily life. Everyone was openly participating, asking questions, and sharing their thoughts. I also learned a lot of Physical and Life science activities from the other

sessions I attended that I plan to use in my own class. Thanks Dr. N for covering part of the CAST expenses.”.

Tamesha Brown: "This year was my second year to present at CAST. Each year I've grown more comfortable with presenting on such a large platform. It has impacted me and empowered me to continue growing. Being in that space amongst so many peers who are developing themselves is nothing short of refreshing"!

Brittney Preston: Being able to present at CAST is always a fun experience. Not only am I able to share knowledge I have acquired over the years, but I also get to enjoy sessions from other educators with great ideas that can be implemented in the classroom as soon as the following week. If I am afforded the opportunity, I will continue to present and attend CAST conferences in future years to come. Thank you, Wipro, for registering me for the conference and the partial stipend towards my conference expenses.

Ian Talamantes: First time at CAST: “The level of responsibilities and roles I have had as an educator have never brought me out of my shell the way that this project did. I constantly placed myself in uncomfortable situations by my own willingness to grow as a leader. Presenting at Cast was the catalyst that I needed for self-reassurance. It also felt great to know I could provide a form of positive influence that will span to other learners. Cast 2023 itself was such a refreshing experience that reminded me of the inquisitive nature I expressed myself in when I began my science teaching in elementary. It was a reinvigorating place that reignited my excitement for phenomena and curiosity. I had forgotten to really apply that component of investigation to my general pedagogy. I am thankful for the opportunities I have been given by this fellowship and can say that I am ready to elevate my discomfort. Thank you so much Wipro SEF @ UNT Dallas.”

Lunch with Dr. Eisenkraft:
Dr. Eisenkraft hosted lunch for the 21 Wipro Fellows, 3 District Coordinators and me at a local restaurant. I was happy that most of my fellows could attend the lunch. Dr. E has a knack for making everyone feel at ease, we truly like it when Dr E comes to visit us. One of my new fellows remarked with surprise that Dr. E knew the fellows’ names and could identify them. She also asked me “Next year when we present at CAST, I really would like Dr. E to be there. Can you please ask him to make sure he comes?” Her question spoke volumes to me!

Lessons learned from CAST 2023

Many of our sessions overlapped with as many as three sessions being presented at the same time. Moving forward, we will add Wipro SEF @ UNT Dallas as an identifier in the proposal so our sessions will not overlap.
Three of my DSCs attended the conference, and they helped me ensure that one of us attended each of the 10 sessions. Having sat through several sessions, debriefing with them, we discussed the following which we will be implementing for CAST 2024

- All projects will be required to submit a conference proposal to CAST or an equivalent conference.
- The fellows will submit their presentations to the DSCs for feedback.
- At the first meeting in September, projects accepted will be presented to the group along with the activity and warm and cool feedback will be given.
- We feel this will make the fellow more prepared and accountable presenting to a wider audience.

CAST 2024 is in San Antonio, funding teachers even partially to present at CAST especially when it is out of state is an expensive proposition. This year, we registered the fellows ($285) and reimbursed up to $500 of their expenses at CAST.

III Wipro meeting and Celebration dinner on Dec 4th at UNT Dallas

On Dec 4th, 2023, I hosted the Wipro meeting and celebration dinner for the current project participants. Their principals and admins were also invited, A total of 65 people attended, 9 principals and administrators from our partnering districts attended. President Mong was unable to attend, the Provost Dr. Stewart attended and gave the welcome address.

Wipro meeting and Holiday dinner

Dec 4th, 2023, 5:30 – 8:30 pm

FH, 138 AB

Agenda

Time	Activity
5:30-5:40 pm	Welcome address, Dr. Betty Stewart
5:40- 6:00 pm	Cast 2023 Updates: Presenting certificates to CAST 2023 presenters
6:00 – 6:15 pm	Dinner buffet
6:15- 7:15 pm	School Project Presentations Each project presentation will be 8 minutes Induction of new Wipro Fellows in the group
7:15-7:20 pm	Dessert and coffee break
7:20-7:30 pm	Collaborative Project Presentation: 8 minutes Induction of new Wipro Fellows in the group
7:30 – 7:45pm	Individual Project Presentations
7:45 – 7:55pm	New Collaborative STEM project
7:55-8:10 pm	Updates : Wix portfolio expectations, research articles, meeting dates Reminder Quarterly report due , Wipro website
8:15pm	Thank you

Fellows who had presented at CAST 2023 received a certificate presented to them by the Provost. Every project funded for Phase 3, year 2 made a presentation in which they introduced themselves, told the audience regarding the question they were investigating and the rationale for the project. A timeline for the project and some early data was also presented. Below is the link to the google slides used.
https://docs.google.com/presentation/d/1bb4BHMQnXrngfktHRFy9cCOovQQvoaBLPnWU7fimtZo/edit#slide=id.g262b89304e6_8_281

Photos from this event are in the link below.
https://www.dropbox.com/scl/fo/66f1q3yrevsxsal22uhtz/h?rlkey=7p23iz2290sv3iyih7b7noeyc&dl=0

Provost presenting CAST Certificate

Gamifying Forces, GPISD presentation.

Inducting New Wipro Fellows

Principals displaying their swag bags

IV. STEM Certification from the National Institute of STEM Education

In Texas, the standards are called the Texas Essential Knowledge and Skills,(TEKS). Unlike most of the United States, Texas has been largely resistant to the introduction of new standards such as the NGSS (Next Generation of Science Standards). The science Teks for all grades have been modified and the new TEKS will be implemented from Fall 2024.

Major changes to the science TEKS include the replacement of Process Standards with Scientific and Engineering practices, more prominence given to recurring themes and concepts, a more cohesive vertical alignment of the content and the emphasis on Phenomenon based learning. These changes bring the TEKS more in alignment to the NGSS.

These changes bring the focus on STEM to the forefront. There is a critical need for science teachers to understand and communicate what STEM is beyond STEM as an abbreviation: Science, Technology, Mathematics and Engineering. Many school districts, including my Wipro partnering districts, are seeking teachers with additional STEM qualifications.

Starting Jan 2024, 4 DSCs, 2 Wipro Fellows (5th grade teachers) and myself will start the STEM Certification offered by the National Institute of STEM Education. This is an online certification, 90 hours, self-paced. It targets 3 domains, 15 actions and 38 STEM indicators. Each indicator requires a written response, portfolio format, feedback will be provided by an advisor. The intention is not to evaluate the program, but through fortnightly meetings on zoom to develop our own STEM Pedagogical Content Knowledge and its implementation. In Fall 2024, the DSCs and the two 5th grade teachers will be involved in two separate STEM Wipro projects. CAST 2025 is in Dallas so I am planning for a big STEM presentation at the conference in addition to the DSCs presenting at PD at their ISDs and also at STEM Day at UNT Dallas.

I believe this is a great opportunity to facilitate District Transformation through Teacher Leadership!

V. Plan for the Next Two Quarters

Spring 2024 Phase 3, Year 2 (P3Y2)	Fall 2024 Phase 3,Year 3 (P3Y3)
Completing their P3Y2 Project Submit a Proposal to present at CAST 2024 Present their project at the Annual Wipro dinner & Meeting May 2024 STEM Certification cohort Fortnightly zoom meetings with STEM certification cohort	New approved projects for P3Y3 commence. Approved CAST 2024 presenters present and receive warm and cool feedback Sept 2024 CAST 2024 in San Antonio

V! Vignettes

Shelby Allen:

My name is Shelby Allen. I am a 5th grade science teacher in Denton ISD. I have been teaching for six years and have been a part of the WIPRO Fellowship for the past five years. I was lucky to be accepted into this program as a second-year teacher. I have completed the VCCLS, HCCLS, GPS, Phase Two, Phase Three year one, and currently a part of Phase Three year two. The projects that I've completed have given me such a deeper understanding of what it means to be an amazing science education leader.

The WIPRO Fellowship has been such an eye-opening learning experience for me as a young educator and as I have gotten more confident in my teaching abilities it has become a huge part in deepening my toolbox as well as my connections in the education world. When I started out, I was fresh into the teaching profession and during my first year with the program the Covid-19 pandemic hit which changed the world of education in many ways. Through this program I had a support system that helped transform the unknown into endless possibilities. I was surrounded by educators who not only were learning alongside me but had the experience to mentor me as well. I am eternally grateful to all the doors this program has opened for me.

Markus Burkhalter

At the onset of my WIPRO SEF journey, I viewed myself as a novice educator. Being new to the profession, I had yet to implement any practices and was grappling with the overwhelming amount of paperwork required. The realization of the extensive behind-the-scenes work in education hit me, involving numerous documents and intervention hours. It wasn't until the midpoint of my second semester that I began the shift towards becoming a proficient teacher. As we initiated our HCCLS projects, I adapted to the demands, meeting deadlines, and gaining the autonomy to perform my job without constant oversight. The transition felt empowering, bolstering my confidence and experience. Over time, I honed organizational skills as well.

WIPRO played a pivotal role in my transformation into a seasoned educator. It necessitated maturation, demanding a more serious approach than my previous year. With deadlines and meetings, the pace was rapid. This experience led me to evolve into an accomplished teacher, capable of working independently, offering guidance to colleagues, including fellow WIPRO participants. My GPS year, being a solo project, required self-reliance in setting deadlines and goals. WIPRO facilitated this transition, and upon completing Phase II, I envision reaching Hall of Fame status as an educator. Now occupying a leadership role within the district, my journey in WIPRO has equipped me with the support and skills to advance in my career. I am currently the Dean of Instruction at my school.

Calendar

Please provide dates for all upcoming meetings for the 2023-2024 year. Note the place, date, and time and whether the meeting will be virtual or face-to-face.

We have the following meeting dates for Spring 2024

- Feb 12th 5:30-8:30 pm FH 138AB
- This face-to-face dinner meeting will serve both as a workshop for P3Y2 participants to work on their Wix Portfolios. Each project will also present some of the research they have read and explain how it relates to their project and also the implications of their project for other teachers.
- Mar 5 Quarterly report is due.
- Mar 18th 5:30-8:30 pm FH 138AB
- This face-to-face dinner meeting will serve both as a workshop to help P3Y2 participants to work on their CAST proposals and learn about CAST. Each project will also present some of the research they have read and explain how it relates to their project.
- April 15th 5:30-8:30 pm FH 138AB
- This face-to-face dinner meeting will focus on participants' data collection and analysis and how to make sense of it and present it. Participants will work on their Wix portfolios updating them.
  CAST 2024 proposals due (depends on the due date announced by STAT Apr/May)

- May TBA: Annual Wipro Meeting and dinner
- We need to get the room and days Dr. E is free to attend. Project presentations.

- June 15th all wix portfolios completed and submitted.

PROGRAM EVALUATION ANNE GURNEE CONSULTING, LLC

ANNE GURNEE
CONSULTING, LLC

Wipro Science Education Fellowship
Evaluation Update
October 2023

Activities this Month

- Worked with research assistant, Brian Garrison, and Brooke Whitworth at Clemson to add all 2014 and 2015 Wipro SEF data to the shared research file on Drive.
- Continued work to finalize the IRB for the Wipro SEF project evaluation (delayed, in part, by a system change on their end).
- Reviewed Wipro SEF website pages to offer insights and suggested changes.
- Sent request to all IHE leads for updated contact information for all active Fellows and DSCs for 2023-2024.
- Planned and then cancelled travel to Missouri for site visit. ☹

What's Next?

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

- Collecting updated contact information for all active Fellows and DSCs for 2023-2024.
- Finalizing plans and itineraries for California site visits.
- Beginning revisions on mid-year survey to be administered in January 2024 (or earlier if possible).
- Finalizing the IRB for remaining Wipro SEF Innovation project work.
- Continuing to work with Brooke/Clemson team as needed for research project.
- Participating in any scheduled/needed meetings for the project and/or research.

Note: I will "out" from, at least November 1-7 to recover from knee surgery. I hope to be back to limited work November 7-14.

ANNE GURNEE
CONSULTING, LLC

Wipro Science Education Fellowship
Evaluation Update
November 2023

Activities this Month

- Arranged for travel for California site visit, December 7-9, 2023. Reviewed plans provided by CA IHE leads.
- Reviewed notes from Missouri site visit.
- Continued to work with all IHE leads for updated contact information for all active Fellows and DSCs for 2023-2024.
- Reviewed leadership call from November 21, 2023.
- Continued to work on revisions/updates for mid-year survey to be administered January 2024.
- Continued work to finalize the IRB for the Wipro SEF project evaluation (delayed, in part, by a system change on their end).

What's Next?

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

- Finalizing the collection of updated contact information for all active Fellows and DSCs for 2023-2024.
- Finalizing plans and itineraries for California site visits.
- Finalizing revisions on mid-year survey to be administered in January 2024 (or earlier if possible).
- Finalizing the IRB for remaining Wipro SEF Innovation project work.
- Continuing to work with Brooke/Clemson team as needed for research project.
- Participating in any scheduled/needed meetings for the project and/or research.

Note: I was out-of-office from November 1-7 to recover from knee surgery. I was back to limited work November 7-14.

Wipro Science Education Fellowship

Evaluation Update

December 2023

Activities this Month

- Traveled to California for site visit, December 7-9, 2023. Visited four schools on December 8 and the Fellows meeting on December 9.
- Produced site visit report submitted on December 14, 2023.
- Reviewed and updated the Wipro SEF logic model.
- Finalized the collection of updated contact information for all active Fellows and DSCs for 2023-2024.
- Continued to work on revisions/updates for mid-year survey to be administered January 2024.
- Continued work to finalize the IRB for the Wipro SEF project evaluation (delayed, in part, by a system change on their end).
- Planned travel for mid-year Leadership meeting February 2-4, 2024 in Texas.

What's Next?

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

- Finalizing revisions on mid-year survey and begin administration in mid-January.
- Finalizing the IRB for remaining Wipro SEF Innovation project work.
- Continuing to work with Brooke/Clemson team as needed for research project.
- Participating in any scheduled/needed meetings for the project and/or research.