Using improvement science to support educators during the COVID-19 crisis

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Washington University in St. Louis — Institute for School Partnership

mySci — inspiring the next generation of scientists

Background & Rationale

At the Institute for School Partnership at Washington University in St. Louis, we promote STEM educational equity and improve student outcomes by providing professional development, coaching, curriculum, and consulting to partner schools throughout the region. In January of 2020, a core team at ISP began the Introduction to Networked Improvement Basics course to build internal capacity for improvement science. Then COVID-19 hit, and our organization frantically sought to develop new ways to support our partners. At the same time, we knew that teachers and parents were already being inundated with resources they didn't have time to make sense of.

OUR GOAL: Apply the process and tools of improvement science with a novice team to support our partner educators' shift to distance learning during the COVID-19 pandemic.

Problem & Seeing the System

Initial Phase of Data Gathering, March 2020

To learn more about the problem and combat solutionitis, the ISP team gathered data from several sources:

- 35 empathy interviews with teachers and other partners
- Social media artifacts shared by our district partners and other educators
- Brief surveys and anecdotal data collected via social media outreach
- User data from the mySci website

Twitter poll by an ISP Instructional Specialist

User data showing decrease in teacher use of mySci curriculum website

Social media artifact shared by a district partner

Sample Feedback From Empathy Interviews

"We have not received much guidance from our administration on how to approach this." - mySci teacher

"I have to now teach my daughter, and also teach my students, and trying to take care of myself too! Wearing all the hats I wear is overwhelming. The last thing on my mind is how Google classroom works. I feel so stuck..." - mySci Instructional Coach

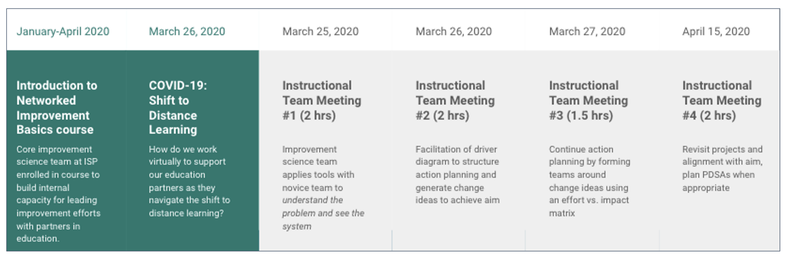
"It's been difficult and frustrating to say the least. Outside of the general work that has to be done I am rather worried about a good section of my student population…. The school is offering food to the students, but I know some of them cannot get to it because they have no transportation or things like that. That part has been difficult to hear, but it's a reality that our kids are dealing with." -mySci teacher

Making Sense of the Data

Using Carnegie's Data Conversation Protocol, we reviewed our findings in small groups and as a team. We summarized our learning in three categories:

District Expectations of Teachers	Parents/ & Teachers' Daily Reality	Access to Resources
- Each district is different, but districts are creating general expectations (# of minutes/week, # of lessons/week) - Big range of expectations, from 'maintain relationships' to highly structured & specific	- Overwhelmed / Need to be heard - Teachers are often parents too (being pulled in lots of directions)	- Many districts are relying on technology, especially Google Classroom - There are students who lack access to virtual learning because they do not have internet or devices/computers at home

The process continued after our initial phase of data gathering - in May 2020, we released a distance learning survey, which helped the team further refine our COVID response planning.



Timeline demonstrating how we led our instructional team through the improvement science process to respond to our education partners' distance learning needs.

Theory of Improvement

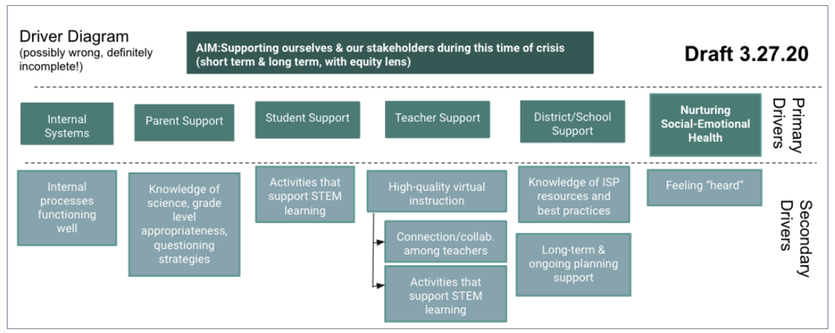
Developing a Theory of Improvement in a Time of Crisis

A core component of the improvement science methodology is the aim or overarching goal the team is working towards. A strong aim should answer four questions: What will be improved? By how much? By when? And for what or whom?

As we drafted our aim, we struggled to operationally define the way we & our partners felt, let alone specify a numerical goal or time frame. The trauma and uncertainty of the pandemic made it difficult to move forward with business as usual. To develop our aim, we drew on research on trauma and focused on the aspects of the pandemic that were within our locus of control (SAMHSA, 2014). Our aim was not a traditional aim statement, but it was crucial to helping guide our work.

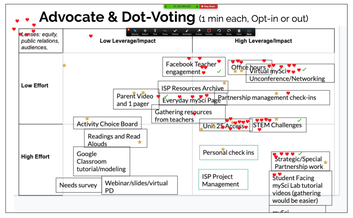
Our Aim: Supporting ourselves & our stakeholders during this time of crisis (short term & long term, with an equity lens)

- The core improvement team created a partially completed driver diagram, with primary drivers filled out
- The larger instructional team worked in small groups to complete the driver diagram by coming up with secondary drivers
- The improvement team synthesized the group's diagrams into a draft (see below)

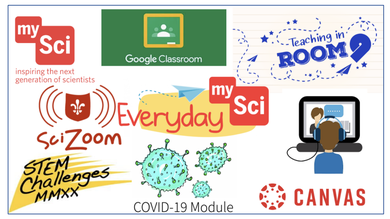


Change Ideas

Using the Driver Diagram above, the instructional team met to brainstorm change ideas. Using the effort vs. impact matrix, the team came to consensus about which ideas were highest leverage. Using an advocate and dot-voting process, the instructional team voted for the change ideas to start with. Action planning came next.



Effort vs. impact matrix with team votes using Zoom annotate



A selection of change ideas proposed and projects designed to meet the aim.

Not all change ideas were well suited to a PDSA. PDSA cycles were organized to study some of the change ideas, including:

- Office hours
- Facebook pages
- Adapting PD to a virtual environment
- Adapting mySci curriculum for distance learning

References:

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2. Darling-Hammond, L., Hyler, M. E., Gardner, M. (2017). *Effective Teacher Professional Development*. Palo Alto, CA: Learning Policy Institute.
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PDSA: Adapting PD to a Virtual Environment

Over multiple rapid PDSA cycles, we identified the needs of our teachers, gathered practice based evidence and evidence based practice to build consensus within our organization around our approach to virtual professional development.

Plan: Shared lessons learned from participating in and/or leading virtual PD. Learned what teachers needed, what we needed, and looked at best practices.

Do: Practiced and implemented PD virtually.

- Practiced internally
- Co-facilitated, observed
- Evaluated feedback
- Learned from other programs

Feedback given from internal practice of virtual PD using Jamboard

Study: Gave and received feedback to each other. Gathered feedback from teachers informally during PD and through a post-PD survey.

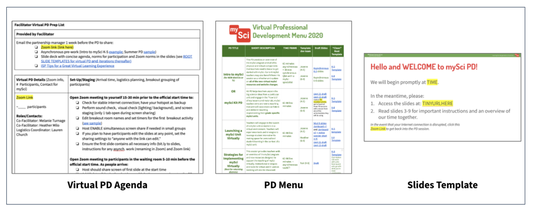
Data from PD survey (n=311):

- 99% Agrees/Strongly Agrees that they will incorporate what they learned in PD into their practice
- 98% Agrees/Strongly Agrees that they felt engaged in learning throughout the PD
- 98% Agrees/Strongly Agrees that the PD was valuable to their professional growth

Act: Continuously adapted and then adopted the new approach.

- Developed tools to promote consistency through our organization
- Utilized best PD practices in a tech environment
- Published a white paper to share best practices more widely

Templates and tools developed to embed best practices and promote consistency across the team



Virtual PD Agenda | PD Menu | Slides Template

White paper written to share our learning about high-quality virtual PD with others in our region and beyond

Key Learnings

Learning About the Problem

Both virtual learning and curricular adaptations were a much needed support for our partners as they transitioned to virtual learning.

"This was a super helpful session which gave me very practical tips about using MySci in a virtual environment. I don't think I necessarily grew in my knowledge of teaching science but it is EXACTLY what I needed. I really wish other curriculum companies had something like this." -mySci teacher

"Thank you for the quick addition of some virtual videos, assessments, and activities you gave us this year! I appreciate all that you have done to make teaching science a bit easier this year." - mySci teacher

Supporting our partners during a crisis looked different for different partners.

"We appreciate your continued support and thought partnership during COVID19. That has definitely been a bright spot that you continue to support our efforts with engaging students but supporting the teachers while they do their best to do so." - Administrator

Attending to variation and disaggregating data improved equitable focus of our work.

Learning About the Improvement Science Process

A novice team can learn by doing. The crisis forced us to jump in to using improvement science tools and applying principles which accelerated our learning.

- Use principles to guide the work - there is no one right way to do it
- Adopt a learning orientation - know enough to get started and embrace the "possibly wrong, definitely incomplete" mindset
- It wasn't comfortable or easy but having a team to lean on helped

Our team adapted the IS tools to fit our needs **and** achieve our aim. This made our work better and more focused, which was desperately needed to guide action during a pandemic.

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