Improvement Scholars Network

Introduction to Improvement Project:

Syllabus Blueprint

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Overview of this document

Across the world, interest is growing in integrating improvement research and collaborative, continuous improvement into new or existing courses across a variety of educational programs. The Improvement Scholars Network developed an adaptable, flexible syllabus prototype that faculty can use to introduce students to improvement research and collaborative, continuous improvement within a course or across a program. This syllabus follows the following design principles.

📚 Designed to be relevant to multiple kinds of learners, including:

- Certificate and Master's students applying improvement science in an internship, capstone project, or educational practice,
- EdD students considering an 'improvement science dissertation in practice, or ISDiP',
- PhD students designing improvement research, or
- Other graduate or undergraduate students learning about continuous improvement methods.

🔓 Created with options that work for what you need to include improvement research in their course:

- Designed to be modular, so that faculty can draw on particular units, readings, assignments, or activities as relevant to their needs, and
- Designed to be collaborative, so that faculty adaptations can easily be shared with one another.

📑 Organized around five central units that align with an underlying 'grammar' of collaborative continuous improvement in education (CCIE), allowing for the integration of other approaches to CCIE (e.g., design-based implementation research, lesson study, action research):

1. Building foundational conditions
2. Mapping the improvement space
3. Identifying a theory of and ideas for improvement
4. Methods for iterating and measuring

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5. Spreading and sustaining improvement

🖨️ Developed with 2-4 lessons within units, including:

- Core objectives for each lesson
- Readings and resources related to improvement science, with multiple options to select from books or resources available online
- Additional resources/extensions that align with the type of learner (e.g., MA, EdD, PhD): and the interest/needs of a particular course, including:
    - Connections and extensions to other disciplines (e.g., coaching, educational leadership, change management)
    - Connections to equity and justice in ways that can inform improvement science
    - Empirical or theoretical articles relate to a particular phase of improvement science
    - Artifacts, reports, or examples from improvement work
- Opportunities for collaborative practice: questions and activities that are geared to the type of learner:
    - Discussion questions
    - Prompts to support students in applying these ideas to their own contexts.

Suggestions for Engagement with this Material

- Whenever possible, the students should work on their own problems of practice from their setting and form teams within the class or their organizations to work on them. Suggestions for engaging with a case are ideally to be used as a supplement to students' actual improvement efforts, but, when that is not possible, we suggest relying on simulations, cases, and other examples to help build understanding of these processes.
- If your class is intended to prepare students to complete an independent research project, such as a capstone or dissertation in practice, there are certain considerations for learning. These are addressed in the last section on **Culminating Products and Research.**
- If your students don't have a clear way to learn by applying ideas from the course to their own practice, you might choose to

select a case students can engage with. Here are a few options to consider:

- The case from the Transforming Education in an Interconnected World MOOC.
    - Lesson 2 case narrative aligns with **Unit 2: Mapping the improvement space**
    - Lesson 3 case narrative aligns with **Unit 3: Identifying a theory of and ideas for improvement**
    - Lesson 4 case narrative aligns with **Unit 4: Iterating and Measuring**
    - Lesson 5 case narrative aligns with **Unit 5: Spreading and sustaining improvement**
- Or, use a published case, such as this case which focuses on using improvement science to improve K-2 literacy for students of color in an elementary school. This case was used in Practicing Collaborative, Continuous Improvement unit of the Transforming Education in an Interconnected World MOOC series and there are associated videos and activities available in the MOOC platform. Here are a few slides associated with the case.

Core Textbooks

There are many books faculty can use as core textbooks that they can assign throughout the different lessons and units. Some faculty choose to pick just one book to work from, some assign multiple books for students to read across. We have tried to note which selections from each of the oft-used textbooks can be assigned for each lesson. Below is a brief overview of each of the books we refer back to as potential 'core textbooks':

- Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2015). *Learning to improve: How America's schools can get better at getting better*. Harvard Education Press.
    - This is the foundational text that introduces improvement science to an education audience.
- Hinnant-Crawford, B. N. (2025). Improvement science in education: A primer. 2nd Edition. Myers Education Press.
    - This book was specifically developed as an introduction to improvement science for graduate students who are planning to use these methods for a dissertation or capstone.
- Anderson, E., Cunningham, K. M., & Eddy-Spicer, D. H. (2023). *Leading continuous improvement in schools: Enacting leadership standards to advance educational quality and equity*. Routledge.
    - Introduces improvement science with a specific emphasis on school-based leadership standards and practices.

- Grunow, A., Park, S., & Bennett, B. (2024). *Journey to improvement: a team guide to systems change in education, health care, and social welfare*. Rowman & Littlefield.
    - This book draws on education and healthcare examples, and focuses on the work of leading teams through the improvement science process.
- Perry, J. A., Crow, R., & Zambo, D. (2020). *The improvement science dissertation in practice: A guide for faculty, committee members, and their students.* Myers Education Press.
    - This book introduces improvement science, but focuses specifically on how to integrate improvement science into a dissertation in practice.
- Mintrop, R. (2015). *Design-based school improvement: A practical guide for education leaders*. Harvard Education Press.
    - This book develops an approach called 'design-based school improvement', which aligns closely with improvement science principles and processes. It focuses greater attention, relatively speaking, on design principles and the human side of change management.

There are also some books that we have not used as student-facing textbooks; however, we have found these books helpful in a) building faculty knowledge about improvement science and the wider field of collaborative continuous improvement in education and b) providing chapters or selections for 'further reading' for students. These books include:

- Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance*. John Wiley & Sons.
    - This is perhaps the most widely used guide for non-educational contexts. Bryk et al (2015) drew heavily on this book when developing *Learning to Improve.*
- Peurach, D. J., Russell, J. L., Cohen-Vogel, L., & Penuel, W. R. (2022). *The foundational handbook on improvement research in education*. Rowman & Littlefield.
    - Provides theoretically rich in-depth chapters from leaders in the wider field of improvement research that goes in-depth on different areas of improvement research.
- Provost, L. P., & Murray, S. K. (2022). *The health care data guide: Learning from data for improvement*. John Wiley & Sons.
    - A similar foundational guide focused specifically on using data of improvement, focused both on conceptual foundations and practical use.

- Wilcox, K. C., Zumpe, E., & Eddy-Spicer, D. H. (Eds.). (2026). *Teaching and learning for collaborative continuous improvement in education: Challenges and possibilities across the educational system*. Myers Education Press

How These Materials Reflect the Instruction of the Designers

In this syllabus, we focus primarily on the application to a Certificate/Master's or EdD program in educational leadership because that is our experience, but our intention for this syllabus to be flexible and able to be used in these various educational settings. To illustrate the ways this syllabus could be used, we wanted to share some reflections from our own teaching. Across the team, we have three different models of how a CCIE class fits into a curriculum. Sam teaches a course that is embedded in the Master's/Certificate program and is intended to prepare the students to complete an improvement project in their internship where they will complete multiple PDSA cycles. Erin teaches a class that is part of a series of methods courses for students pursuing either an EdD or Phd degree in a combined doctoral program where students can select improvement science as one of a menu of models for their dissertation or dissertation in practice. Max teaches in an EdD program where improvement science is the signature methodology for the dissertation practice (ISDiP) and where the learning is spread across multiple courses. These different models lead to different pedagogical decisions.

Dr. Samantha Viano, Master's/Certificate course on integrating improvement science into school improvement.
My course is in the second semester of our Master's/Certificate course titled *Using Research to Lead School Improvement*. This class has traditionally focused on using data to identify problems and research for solutions to those problems, and I integrated improvement science as the structure for this exploration when I began teaching the course in 2018.

- The performance-based assessment for this course is an ***internship improvement project plan*** that they implement as part of the required internship for principal licensure in Virginia. Consequently, I contributed to this syllabus the kinds of readings and activities my students engage with to plan an improvement project that they will be implementing in their school within the following 12-18 months after the completion of my course.

- In addition, I group students in the course with similar problems of practice into networked improvement communities (NICs). In these NICs, students collaborate to build a shared understanding of the problem and a theory of practice improvement that integrates all of their internship change ideas. They produce a ***NIC charter*** at the end of the semester reflecting this collaboration.

Because of the level of the course and the required elements of the internship improvement project plan, my syllabus primarily reflects the listed discussion questions and the Applying to a DiP or Internship activities. I have assigned Hinnant-Crawford (2025) as a core text for many years and recently integrated Grunow et al. (2024) as well. I have very few supplementary readings given that my student population is full-time educators who have limited capacity to engage with significant amounts of reading or texts that do not give practical tools/advice. I am unlikely to have my students significantly engage with a case. Instead, students focus on chartering a NIC focused on similar problems of practice across schools, building shared understandings of problems, serving as resources to each other when identifying solutions to test, and drafting a shared theory of improvement. Students are required to build out an initial PDSA cycle in this course, and complete at least two PDSA cycles in the internship.

Dr. Max Yurkofsky, Doctor of Education Program organized around an improvement science Dissertation in Practice (ISDiP). Rather than having a specific *improvement science* course, my team and I have embedded improvement science throughout our 3-year EdD program. Our teaching of IS is intended to align with the ISDiP, wherein students inquire into and address a problem of practice in their organizations. The ISDiP consists of three papers:

- **Benchmark I** (Completed at the end of the first year of the program): Involves introducing the context where the problem exists, defining the problem, convening a team to inquire into the problem, and engaging in a causal analysis of the problem (represented by a fishbone diagram).
- **Benchmark II** (Completed in the middle of the second year of the program): Involves developing a theory of improvement (represented by a driver diagram) that interweaves local knowledge and formal research to address the problem of practice, as well as a plan to conduct at least two plan-do-study-act (PDSA) cycles, supported by a practical measurement system (that includes process, balance, driver, and outcome measures).
- **Benchmark III** (Completed at the end of the third year of the program): Involves describing the implementation of the tests of change, data analysis, assessing progress, adjusting as needed, spreading change, and reflecting on the lessons learned.

Students' learning about improvement science typically involves the following structure:

- They are introduced to a specific topic or unit related to improvement science as part of a practitioner inquiry or leadership course. Typically, they will read about the topic using the Bryk et al.,, Hinnant-Crawford, and Grunow et al. texts.
- Through pre-work and in-class activities, they will begin engaging with the corresponding ideas and tools from that unit. For example, they might develop a first draft of a process map or fishbone diagram, or a list of individuals for empathy interviews, along with an interview protocol.
    - In some cases they may have a low stakes "check for understanding" assignment where they apply the ideas or topics to a case (e.g., from section two of the Bonney et al volume). We do this for more challenging topics related to analyzing variation, theories of improvement, and driver diagrams.
- Then, students will be tasked with going out and applying the tool or idea more systematically to their problem of practice (PoP). This might involve conducting empathy interviews, building an improvement team, reviewing the research to develop a driver diagram, etc. Typically, students will be guided through and then prompted to describe and reflect on this process via a set of journal assignments.
- Finally, students will incorporate what they learned via this and related inquiry into their ISDiP.

Below is a sample flow of these activities related to the work of *empathy interviews* in a course, practitioner inquiry I, that students take in the first semester of their EdD program.

- Week 4 & 5: Learn the foundations of listening and about how empathy interviews are approached in improvement science. In class, engage in mock interviews with a classmate and begin developing plans for who to interview and what questions to ask.
- Weeks 5-7: As part of a journal assignment, students conduct three empathy interviews, transcribe or write down the conversation, and reflect on what they learned about their problem of practice and/or their methods of inquiry. Students are expected to keep engaging in empathy interviews beyond this specific assignment.
- Week 7-14: Students incorporate evidence from empathy interviews into a first draft of Benchmark I. They use interview data to a) establish their problem of practice or b) illuminate key factors that are contributing to the PoP.

Dr. Erin Anderson, One off Class in Doctoral Program for EdD and PhD students

I teach an improvement science class, entitled *Leading Design Improvement for Equity,* that is one of a series of classes (qualitative research methods: beginner and advanced, introduction to statistics, action research, program evaluation, critical policy analysis) in a combined EdD and PhD doctoral program. Students may choose to use an improvement science methodology for their dissertation in practice or they may want to use concepts from the class to improve their school, district, or organizational leadership. This course is taught in the summer and includes both students embedded in organizations and students who are not currently teaching or leading an education organization. For those reasons, I rely heavily on simulated learning. This is done in two ways. First, I start the class with a three-hour simulation, built in partnership with a local district and based on the chronic absenteeism session offer at the Carnegie Improvement Summit. This simulation leads the class through the phases of improvement science and provides an overview of the whole process. I found that providing an overview is helpful for their future learning. After I kick off the class with this simulations, the students have a series of asynchronous assignments where they read and reflect on what is improvement science and how is it similar or different that what you currently do; what does equity-oriented improvement look like; and how to identity a problem and learn more about that problem. Then, we come back together as a class and do the second round of simulation. I either work with a local school or present a district level problem (e.g., chronic absenteeism, Latine student success, recovering from the pandemic) that the students explore in teams. The class functions as a networked improvement community and moves through the process of reviewing data to formulate a problem, conducting root cause analyses on the problem, developing both individual and a group theory of improvement, and designing the Plan phase of a Plan-Do-Study-Act cycle for a change idea that could be tested as part of a bundle of ideas that will help to solve the problem. The class assignments also include an annotated bibliography on their problem of practice and a personal PDSA project. The class culminates with a 8-10 page proposal that reflects the three chapters of a dissertation or dissertation in practice proposal at my university. The students complete this assignment based on their current role. For students currently leading organizations, they may work with team members from their school on their own problem formulation and root cause analysis and share the tools they created in their proposal. If they are not currently in a role that makes doing improvement science possible, they present a plan for what it would look like to do improvement science in an organization that they are familiar with.

Other Examples and Resources

Example syllabi from friends of the Improvement Scholars network: Shared Syllabi Folder

Other resources may be found here: https://improvementscholars.org/instructional-resources/

Outline of Units

Unit 1: Building Foundational Conditions

A. Defining collaborative continuous improvement in education (CCIE)
    a. Differences in CCIE from other approaches to improvement
B. Overview of the Improvement Science Process
C. Defining equity-oriented CCIE
    a. Power and CCIE (Who's Impacted? Who's Involved?)
D. Personal and relational conditions for improvement and collaborative structures
    a. Teaming
    b. Learning Routines
        i. Roles, Routines, and Relationships

Unit 2: Mapping the Improvement Space

A. Problem formulation
    a. Defining the local problem
    b. Problem formulation
    c. Problem criteria: scale and scope
    d. Being user-centered and empathy interviews
    e. Inclusion of the voices of users, multiple perspectives
B. Understanding variation

a. Identifying local data sources
b. Graphical data analysis for variation
c. Equity audits

C. Systems
    a. Recognizing local systems
    b. Systems thinking
    c. Systems mapping
    d. Recognizing root causes

D. Root cause analysis
    a. The five whys
    b. Fishbone diagrams
    c. Interrelational diagrams
    d. Auditing root causes for deficit mindsets

Unit 3: Identifying a theory of and ideas for improvement

A. Theories of Improvement
    a. Moving from analysis of the problem to a theory of improvement
    b. Aim Statements: Choosing appropriate measures of success
    c. Determining drivers
        i. Primary and secondary drivers
        ii. Tracking progress through driver measures

B. Identifying and designing effective change Ideas
    a. Evidence-based sources of effective change ideas
    b. Design thinking and innovation

Unit 4: Methods for iterating and measuring

A. Measurement for improvement

a. System of measures
b. Types of measures
c. Implementation measures
d. Outcome measures
e. Measuring outcomes
f. Measurement and the theory of improvement

B. Engaging in PDSAs
    a. Designing experiments & measures to maximize learning [plan - do]
    b. Learning quickly from experiments [study - act]
    c. Anticipating the trajectories and evolution of PDSA cycles

Unit 5: Spreading and sustaining improvement

A. Spreading & sustaining change
    a. Spreading change to a new context
    b. Working towards a change package
    c. From incremental spread to scaling up
    d. Sustaining change
B. Spreading & sustaining improvement
    a. Stepping outside IS: The wider field of CCIE
    b. Models of organization-wide CI
    c. Human Capacity Building
        i. Habits, dispositions, and mindsets
        ii. Developing routines

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    a. Teaming
    b. Learning Routines
        i. Roles, Routines, and Relationships

Memo: *This unit includes four sub-units that can be taught at the start of a course or incorporated throughout a course. You may choose to teach these sub-units at the beginning of the course, spread them throughout the course, or teach these sub-units at the end of the course.*

This unit builds the foundational conditions for collaborative continuous improvement in education (CCIE) with a focus on improvement science. First, the unit defines collaborative improvement in education, taking a broader approach in conversation with other versions of improvement research (e.g., design-based improvement research, participatory action research, community-based research, etc.) and continuous improvement approaches (e.g., Data Wise, lesson study, etc.). Then it explores how CCIE approaches differ from past traditional, evidence-based, reform initiatives. The next sub-unit focuses on an overview of the improvement science process. From experience, it is helpful to have the full schema of the process presented upfront, often through a simulation and/or case example, before learning more deeply about how to engage in the process. We believe it is important to do CCIE with an equity-orientation, so the next sub-unit focuses on defining and exploring what it means to do improvement with equity situated at the center of the process, not only in the outcomes, including developing equity mindsets, inclusive practices, and social processes that operate with equity and justice at the center. We would encourage an equity orientation throughout the whole syllabus. Lastly, to work collaboratively, there are certain important learnings, including how to develop a team with shared working agreements and how to establish collaborative learning routines. The last sub-unit focuses on those skills, processes, and structures.

Topic	Objectives	Improvement Science Reading	Activities
Defining collaborative continuous improvement in education (CCIE)	**Students will be able to:** Define CCIE and describe it as an approach to practice and research Recognize a range of approaches to CCIE Compare CCIE to other approaches to reform and improvement	**Core textbooks** Anderson et al. (2023). Chapter 2. *Describes shared principles of continuous improvement approaches* Anderson et al. (2023). Conclusion *Lays out how we have traditionally done research against the equity-oriented improvement model presented in the book* Bryk et al. (2015). Introduction. *Defines improvement science and juxtaposes it with traditional reform practices* Hinnant-Crawford (2025). Chapter 1. *Defines improvement science and juxtaposes it with traditional research methods and emphasizing its roots in equity and justice* **Articles** Yurkofsky et al. (2020). *Provides a comparative review of these methods* Peurach and Russell (2026). Coming soon. . . Piece on the "grammar." *Describes the commonalities across CCIE*	**Discussion Questions:** How would you define CCIE in 5 sentences (or one minute) or less? What changes in education practice have been introduced in your setting? How were those changes ushered in? By whom? Did they result in a fundamental shift in practice? Why or why not? What do you see as the relationship between CCIE and equity? Can there by CCIE that does not further equity and how can you avoid those pitfalls? What makes CCIE distinct from other forms of improvement? How is CCIE different from traditional, evidence-based reform? **Engaging with a Case:** Reviewing the case, why is this an example of continuous improvement? What characteristics or commitments are present in this case? Reviewing the case, how would this improvement have looked in a traditional "reform:? **Applying to a DiP or Internship:** In what ways do the principles of CCIE show up in the organization you are working in? In what ways does your organization stray from these principles? What are the consequences? do Write a brief explainer for your colleagues, defining CCIE and explaining how CCIE is different from other improvement initiatives your

Topic	Objectives	Improvement Science Reading	Activities
		processes and research methodologies	organization has engaged in.
Overview of the Improvement Science Process	**Students will be able to:** Describe the stages of improvement science as a process Explain the six core principles of improvement science and the role they play in improvement	**Core textbooks** Grunow et al. (2024). pp. 1-20 *Describes the domains and foundations of improvement methods* Hinnant-Crawford (2025). Chapter 2. *Provides an overview of the improvement science process with an equity orientation* **Articles** Zhao, Anderson, Lochhead, & Vasta (2020). *Presents an example that can be used to introduce the improvement science process*	**Discussion Questions:** How would you define improvement science in 5 sentences (or one minute) or less? How does improvement science relate to other concepts, processes, practices, and ideas you have learned or experienced during the last year in this program or in your professional life? In what ways does improvement science support educational equity? **Engaging with a Case**: Simulation of the process using chronic absenteeism as an example. Walk the students through the process of doing CCIE using a full example. **Applying to a DiP or Internship:** Describe what the DiP/Internship process might look like using an improvement science methodology. What are the phases of the work? What tools would you use? What questions, concerns, or ideas does this raise?

Equity-Oriented Improvement Science	**Students will be able to:** Define equity-oriented improvement science and evaluate the different ways equity has been conceptualized in improvement work Build social conditions that enable equity-oriented improvement work Recognize asset-based versus deficit thinking in improvement work and identify strategies to disrupt the latter Articulate a set of mindsets, dispositions, and interpersonal, humanizing skills that are essential to equity-oriented improvement work	**Core textbooks** Anderson et al. (2023). Chapter 4. *Explores the definition of equity-oriented continuous improvement using the Liberatory Design mindsets (National Equity Project, 2021) and Culturally Responsive School Leadership (Khalifa et al., 2016)* Hinnant-Crawford (2025). Chapter 10 *Practical advice and tools for pursuing equity within systems where it is not the primary focus* Epilogue *Personal reflection on the tension between equity and improvement science* **Articles and chapters** Eddy-Spicer and Gomez (2022). Chapter 5. *Describes meaningful equity as a strong equity and shares the elements of meaningful equity focused on process in addition to outcomes* Hinnant-Crawford et al. (2023). Chapter 7. *Presents a theory of ImprovCrit based on the tenets of critical race theory as a guiding model for CCIE* Biag (2019). Chapter 5. *Describes moving from technical to student-centered systems, processes, and norms*	**Discussion Questions/In-Class Activities**: 1. What are the dispositions that enable equity-centered, continuous improvement work? How might leaders foster these dispositions among their staff? What types of structures, activities, rituals, and support might be useful? 2. How might leaders engage students, families, and community members to play a greater role in supporting continuous improvement? What types of opportunities might leaders design and provide to build their improvement capacity and, at the same time, leverage their unique strengths and assets? 3. Where do you see opportunities for disrupting inequities and advancing social justice in this improvement work? Include at least one quote from the readings. 4. Reflect on at least six of the mindsets. Answer in your own words, what do those mindsets mean to you? Give an example of what it would look like if those mindsets were applied to addressing your problem of practice through DI4E. **Engaging with a Case:** Review the case and take notes. Look for evidence of equity in this work. Where do you see critical reflection through an equity lens? Where do you see promoting inclusion? Where do you see an emphasis on the whole child? Where were there missed opportunities? How

Topic	Objectives	Improvement Science Reading	Activities
			could they have pushed the work further? What would your next steps be? **Applying to a DiP or Internship:** Imagine an improvement project that promotes strong equity? What does that look like? How is DEIJ considered in the social relations, processes, tools, and outcomes of the work? Write a short description (1-3 paragraphs) of what an equity-oriented improvement project would need to include. Use Anderson et al. (2023) Action Inventory 4.7 to guide your work. How does this compare to an improvement project that does not promote strong equity? Now, anticipate the challenges they will experience in engaging in equitable improvement in your context. How would you navigate those challenges? What do you need to be prepared for? Add a paragraph summarizing the challenges and a plan to address the challenges.
Collaboration: Teaming	Students will be able to form improvement teams that will be able to work together and engage in CCIE	**Core Textbooks** Grunow et al. (2024). Journey To Improvement Part I: Chapter 2 “Improvement Teams”; Chapter 3 “Leadership: Setting up Teams for Success”; and Chapter 4 “Team Formation” (21-45).	**Discussion Questions/In-Class Activities:** What are the most important considerations when you create an improvement team? What kinds of equity considerations do you keep in mind when structuring the roles and responsibilities of team members?

Topic	Objectives	Improvement Science Reading	Activities
		Explains how to get the right people on the team, how to form and set up teams for success, and team infrastructure.	**Engaging with a Case:** In the case example, who is on the team? Why are those people included? Who else could have been enlisted for the team? How did they distribute the work? **Applying to a DiP or Internship:** How will you form a team to do your CCIE work? What are the considerations for forming your team, how will you set it up, and what will the roles be?

Topic	Objectives	Improvement Science Reading	Activities
Collaboration: Learning Routines	Students will be able to establish roles, habits, and collaborative learning routines that support human-centered CCIE	**Core textbooks** Grunow et al. (2024). Chapter 13 *Describes team improvement routines for getting a rhythm to collaboration, learning, data, and consolidation* **Chapters and articles** Biag, M., & Sherer, D. (2021). *Describes five dispositions needed for CCIE* Resnick (2023). Chapter 10 *Addresses the attention to the role and role identities needed for CCIE* Zumpe & Aramburo (2023). Chapter 11. *Describes the habits of mind that a team needs for CCIE*	**Discussion Questions/In-Class Activities:** Why do routines, roles, and habits matter for CCIE? If they aren't considered, where can you see the improvement work mimicking previous improvement work and/or not reaching full potential? How have you seen leaders integrate learning routines and what areas of improvement have you noticed? What risks are there to not integrating learning routines in supporting improvement? **Engaging with a Case:** Describe the routines established by the team in this case. What are their role identities and habits of mind? Where were there opportunities to improve the team's roles, structures, and routines? **Applying to a DiP or Internship:** What routines will you establish for your team? What is your plan for developing habits of learning and role identities that foster the success of your CCIE improvement project?

Extension Readings:

Defining collaborative continuous improvement in education (CCIE)

Anderson et al. (2023). Chapter 3: Enacting leadership through continuous improvement
Explains how engaging in improvement science enacts successful leadership practices

Bryk, A. S. (2015). 2014 AERA Distinguished Lecture
Describe a new paradigm for improvement with a focus on NICs

Park et al. (2013). Continuous improvement in education
Maps the terrain of early CCIE by identifying and describing organizations engaged in continuous improvement

Overview of the Improvement Science Process

Bonney et al. (2024). Improvement Science in the Field.
Presents cases of EdD students' use of improvement science to address a problem in their organization.

Lewis, C. (2015). What Is Improvement science? Do we need it in education? *Educational Researcher, 44*(1), 54-61. https://doi.org/10.3102/0013189X15570388
Provide an overview of improvement science and how it can be used in education

Orr (2025). Leading Equity-Focused Inquiry for Continuous School Improvement
Presents cases of EdD students' use of improvement science to address a problem in their organization.

Equity-Oriented Improvement Science

Bush-Mecenas, S. (2022). "The business of teaching and learning": institutionalizing equity in educational organizations through continuous improvement
Explores institutional logics of equity-oriented improvement work.

Diamond, J. B., & Gomez, L. M. (2023). Disrupting white supremacy and anti-Black racism in educational organizations.

Combines critical perspectives on race with organizational improvement approaches

Harrison, R., & Stevenson, I. (2024). Equitable school improvement
Focuses on the human side of change and provides guidance and tools

Jabbar, H., and Childs, J. (2022). Critical perspectives on the contexts of improvement research in education, Chapter 11, 241–261.
Moving from a technical focus of traditional improvement research to a more transformative and racially just approach

Sandoval C and Neri RC (2024) Toward a continuous improvement for justice
Explores continuous improvement for justice that: (a) confronts dominant outcomes rather than uncritically prioritizing them; and (b) aims to use its tools to create systems that prioritize outcomes that grant comfort, agency, and dignity to minoritized students and communities

Asset-Based
Hinnant-Crawford et al., (2021). "Who is involved? Who is impacted? Teaching Improvement Science for Educational Justice."
pp. 17-39
Offers a valuable framework focusing on how to collaboratively develop fishbone diagrams in a way that avoids deficit thinking.

Practical Measures
Takahashi et al. (2025). Practical measurement for equity and justice.
5 measurement routines that may position practical measurement as a resource for more equitable and just organizational processes

Networks
Iriti et al. (2024). Adapting improvement science tools and routines to build racial equity in out-of-school time STEM spaces
How networks can embed equity into improvement practices

Research Practice Partnerships
Welsh & McGraw (2025). Advancing equity via research-practice partnerships
Explores *partnership dynamics and activities of equity-centered RPPs*

Bang, M., and Vossoughi, S. (2016). Participatory design research and educational justice: Studying learning and relations within social change making.

Emphasizes the need to explicitly address power dynamics, critical historicity, and relationality within research partnerships to achieve transformative ends

Equity in Practice

Stosich (2024). Working toward transformation: educational leaders' use of continuous improvement to advance equity.
Critical case for understanding educational leaders' use of CI approaches as a lever for equity-focused school reform

Resnick et al. (2025). Practicing equity-centered improvement: a design tensions perspective.
Introduces design tensions as a conceptual tool for naming and navigating ongoing tradeoffs that arise in equity-centered change efforts

Additional Formats

Unboxed Podcast with Brandi Hinnant-Crawford

National Equity Project: Liberatory Design Deck June 2021

Collaboration: Learning Routines

Boudett & Bocala (2025). *Data Wise: Third Edition.* Chapter 1: Organizing for Collaborative work.
Walks through helpful goals and tasks for building collaborative capabilities in an improvement team.

Safir. (2017). The Listening Leader. Introduction (pp. xxiii - xxxiv)
A "Listening Leader" builds trust and a culture of improvement by prioritizing relationships, collaboration, and a people-first approach, which is essential for sustainable school transformation

Senge (2002). The Leader's New Work: Building Learning Organizations
Leaders in learning organizations design new systems, build shared visions, and nurture new thinking to get results

Penuel et al. (2020). Principles of collaborative education research with stakeholders

Interconnected principles related to collaboration, problem solving, and research based on Community-based Design Research, Design-based Implementation Research, Improvement Science in Networked Improvement Communities, and the Strategic Education Research Partnership.

Unit 2: Mapping the Improvement Space

A. Problem formulation
B. Understanding variation
C. Seeing systems and identifying root causes
D. Root cause analysis

Memo:
This unit moves our thinking to the system-level to move outside of our own day-to-day experiences in school to think about the system that produces the outcomes we experience. We examine the system and how it is organized. We then discuss how to use our understanding of the system to identify problems of practice. We introduce tools to understand user experience to identify problems of practice and then transition to building an understanding of variation in opportunities and outcomes in educational systems by using multiple sources of data. This unit will provide several different tools for understanding variation and provide preparation for basic data analysis to understand variation, and then transition to root causes that underlie the problems identified through this analysis. The unit concludes with root cause analysis, which brings together knowledge gained through systems thinking and understanding variation to describe problems in ways that can lead in future units to identify changes to address those root causes.

Topic	Objectives	Improvement Science Reading	Activities
Problem formulation	**Students will be able to:** Explain how to take a user-centered approach to understanding a problem Include multiple stakeholder perspectives in formulating a problem Engage in multiple forms of inquiry (e.g., empathy interviews) to identify and define problems from the perspective of those involved and impacted	**Core textbooks** Hinnant-Crawford (2025). pp.43-50 *Building understanding of problems through stakeholder voice.* Bryk et al. (2015). Chapter 1: Make the Work Problem-Specific and User-Centered *Making the work focused on the users in the system.* Grunow et al. (2024). pp. 55-60 *Qualitative data for understanding the problem.* Hinnant-Crawford & Anderson (2022). Chapter 13 *Presents a 5S model for problem formulation.* Mintrop et al. (2015). Chapters 1-4. *Offers an overview of how to select, define, and frame problems within a design-based school improvement tradition.* Perry et al. (2020). Chapter 3. *Offers guidance on how to develop actionable problems of practice within the context of an EdD program.*	**Discussion Questions/In-Class Activities:** How do you select a problem to explore through an improvement science methodology? What does problem identification entail? How do you know if the problem you are solving is really the problem to be solved? How do you center equity in the problem identification process? What ways have you seen school leaders define problems and what could have been improved? **Engaging with a Case:** Have the students explore the problem embedded in the case. Have them consider how this is a problem of practice and have them apply the 5S framework to the case. How did the team formulate the problem? What data did they explore?

Topic	Objectives	Improvement Science Reading	Activities
			Applying to a DiP or Internship: Whose perspective do you need to better understand to further refine your problem of practice? Write a protocol for an empathy interview with this key user to understand the problem. Select relevant users, write a protocol, conduct at least one empathy interview, and write a summary of the interview afterwards. **Activity 2** Select a problem that you would like to explore in your organization. Here are two planning guides to support problem formulation. Planning Guide 1 Planning Guide 2

Topic	Objectives	Improvement Science Reading	Activities
Understanding variation	**Students will be able to:** Identify, analyze, and display quantitative data to illuminate a problem Analyze multiple forms of variation (e.g., across time, subgroups, organizational units) to identify problems and bright spots	**Core textbooks** Hinnant-Crawford (2025). Chapter 4 *Analyzing data for variation in processes and outcomes.* Bryk et al. (2015). Chapter 2 *Examples of understanding variation from non-education settings and applying that thinking to schools.* Grunow et al. (2024). pp. 60-65, 221-229 *Using quantitative data for understanding variation, including guidance on run charts and process behavior charts (also known as Shewhart or control charts)*	**Discussion Questions / In-Class Exercises:** When you think about variation, what types of variation come to mind? In what ways, if at all, does your school (or organizational) system currently leverage variation to better understand a problem? What approaches from the readings would be helpful to incorporate more into how your organization works? What is the relationship between equity and understanding variation? In what ways are they synonymous or different? Data search, find data that will help to define problems. How to create tables and graphs in Excel. **Engaging with a Case:** In the case, how does understanding variation help to orient the problem of

Topic	Objectives	Improvement Science Reading	Activities
			practice towards equity and justice? **Applying to a DiP or Internship:** Find data from your site that sheds light on your problem of practice. Create a graphical data analysis that tells a story that motivates focus on the problem. Develop displays that illuminate multiple forms of variation (e.g., over time, across specific subgroups, across organizational units).

Seeing systems & identifying root causes	**Students will be able to:** Define what the term "system" means within the context of education Recognize how existing systems contribute to problems Understanding the multi-level nature of the problems within the system (macro, meso, micro factors) Use inquiry (e.g., five whys) and visualization tools (e.g., process and systems mapping, fishbone diagrams) to analyze the root causes of problems Evaluate whether root causes reflect deficit-based assumptions or are	**Core Textbooks** Grunow et al. (2024), pp. 47-55, 66-83 *What it means to "see the system" and how to surface the system in your work.* Bryk et al. (2015), pp. 57-72 *Examples of systems thinking and tools for seeing the system. Overview of tools and processes, including causal systems analysis, fishbone diagrams, and system improvement maps.* Hinnant-Crawford (2025). Chapter 3, pp. 97-116 *Tools for root cause analysis, including fishbone diagrams and equity audits. Defines systems thinking and explains how to use various tools to surface the system.* Podcast: We Not They with Luke Wood	**Discussion Questions / In-Class Exercises:** Think about an improvement effort you engaged in over the past few years. What was the problem you were trying to address? What were some of the root causes contributing to the problem? To what extent did your improvement efforts address those root causes? What is the difference between root causes and blaming people for problems? How do we avoid deficit mindsets when engaging in root cause analysis? Not **Engaging with a Case:** Using the case example, identify potential root causes and drill down to be more specific using the Five Whys. **Applying to a DiP or Internship:** Practice applying some of the inquiry & visualization methods to your own problem of practice. Consider the problem of practice, brainstorm on causes, sort causes into categories, and then place those

Topic	Objectives	Improvement Science Reading	Activities
	outside an organization's control		causes on a fishbone diagram. Critique fishbone diagrams (gallery walk of each other's or an example fishbone)

Extension Readings:

Coghlan, D., & Brannick, T. (2014). *Doing action research in your own organization*, Chapters 1, 9, and 10
An example of problem formulation in action research including navigating the dual position of insider-outsider researcher and contending with the politics of change within an organization,

Unit 3: Identifying a theory of and ideas for improvement

Topics

A. Theories of improvement
B. Designing effective change Ideas

Objectives: To learn how to identify a theory of improvement that serves as a roadmap for an improvement journey

This unit focuses on articulating a theory of improvement that maps onto the improvement space identified in the previous unit, articulating a theory of how to address a problem of practice through specific change ideas. The unit begins with identifying the theory of practice improvement, including writing an aim statement for the goal of the work and connecting the aim to change ideas through primary and secondary drivers on a driver diagram. The unit concludes with specific tools and routines for identifying potentially transformative small, but meaningful, changes that can be change ideas embedded in the theory of improvement.

Topic	Objectives	Improvement Science Reading	Activities
Theories of Improvement	**Students will be able to:** Explain how theories of improvement are developed from the work of mapping of the improvement space, as well as available research	**Core textbooks** Bryk et al. (2015). Chapter 3 Learning to Improve. *Developing a working theory of improvement based on previous analysis of the problem.* Grunow et al. (2024). Journey to improvement. Part III (Chapter 7) and Park IV (Chapter 10).	**Discussion Questions / In-Class Exercises:** Explore examples of aim statements. Which ones are specific, measurable, and ongoing? What element(s) are missing from each one? Write an aim statement for something in your life that you would like to improve (real or fictitious).

Topic	Objectives	Improvement Science Reading	Activities
	Develop an appropriate aim statement in collaboration with impacted community members Describe the differences between aims, primary drivers, secondary drivers, and change ideas Create a driver diagram that aligns with their theory of improvement	*Developing a shared aim, components of an effective aim statement. Developing a driver diagram based on the theory of improvement.* Hinnant-Crawford (2025) Chapter 6 *Components of a driver diagram and how to move from theory to the driver diagram.* Mintrop et al. (2015). Chapters 5-8. *Offers a deeper overview of the change process and provides guidance on leveraging the knowledge base and co-design principles.* Perry et al. (2020). Chapters 4 & 5 *Provides an overview of how to review the literature to develop a driver diagram.*	Does the driver diagram as a graphic organizer remind you of any other type of activity you have done before in schools? What are the benefits of articulating the theory of improvement through the driver diagram? What are the risks? You will have heard the phrase “possibly wrong, definitely incomplete”, and the driver diagram is one place that we definitely believe there will be changes over time as you learn. Discuss how to make this continuous improvement mindset motivating for the work and not discouraging. What kinds of theories of improvement underlie recent initiatives at your school? How can a theory of practice improvement address an area of justice in a productive manner? **Engaging with a Case:** Based on your understanding of the

Topic	Objectives	Improvement Science Reading	Activities
			problem, write an aim statement related to the case. **Activity**; You have an unsorted list that includes the aim statement, primary drivers, secondary drivers, and change ideas. Sort these into the right category and place them in what you believe is the most logical case for a driver diagram. Consider the complete driver diagram you created. What is missing, or what do you believe could be improved upon prior to testing? **Applying to a DiP or Internship:** Draft an aim statement for your problem of practice. Share your aim statement with your critical friends for feedback. Complete a driver diagram with your aim statement and primary drivers from your fishbone diagram/interrelational diagram that you want to target. Then, identify secondary drivers and draft some change

Topic	Objectives	Improvement Science Reading	Activities
			ideas that could backwards map onto the secondary drivers, primary drivers, and then potentially assist in meeting the aim.
Identifying and designing effective change Ideas	**Students will be able to:** Prioritize change ideas that have a greater impact and address the root causes Select and design high-leverage change ideas that align with primary and secondary drivers Draw on available research, analogous settings, creative/design thinking processes and principles, and insights from users in developing	**Core textbooks** Grunow et al. (2024). Journey to improvement. Part IV (Chapter 9). *Selecting change ideas and identifying which ones to test.* Langley et al. (2009). Chapter 6 The Improvement Guide, Developing a Change *Different kinds of changes and how they relate to the theory of improvement.* Mintrop et al. (2015). Chapters 9 - 10. Offers a more in-depth discussion of how to go about designing change ideas.	**Discussion Questions / In-Class Exercises:** Consider school improvement in your setting over the last five years. What would you say have been the specific change ideas put in place? How would they compare to the advice on identifying change ideas you read about this week? Consider a change that had a positive impact on your organization. How did the characteristics of this change align with or depart from the ideas from the reading? What kinds of changes are positive and help to reach equity-driven goals versus changes that undermine equity? Consider how changes might expand opportunity gaps instead of lessening them? **Engaging with a Case:** You are given the results of a brainstorm on the case. Identify which change ideas

Topic	Objectives	Improvement Science Reading	Activities
	high-leverage change ideas		hold promise and should be tested, and justify these decisions based on the discussed criteria. **Applying to a DiP or Internship:** Conduct a literature review of 3-5 articles, read to look for change ideas. The change ideas need to be shown in the literature to address the root causes you identified in your root cause analysis Discuss findings from the literature review, hold a design session to brainstorm change ideas.

Extension Readings

Change Management

Berger & Johnston (2015). Simple habits for complex times.
Offers three core practices for leaders: taking multiple perspectives, asking different questions, and seeing the system

Berwick, D. M. (2003). Disseminating innovations in health care.
Explores in detail 3 clusters of influence on the rate of diffusion of innovations within an organization: the perceptions of the innovation, the characteristics of the individuals who may adopt the change, and contextual and managerial factors within the organization

Heath, D., (2025). Reset: How to Change What isn't Working, Chapters 6-10
Discusses successful transformations require leaders to identify constraints, remove bottlenecks, and redistribute effort strategically

Heath, C.,& Heath, D. (2010), Switch: How to Change Things When Change is Hard (pp. 5-48). ; [available as audiobook].
Focuses on bright spots, but also simple strategies for leading change.

Research/DiPs
Perry et al. (2020). Driver Diagrams and a Theory of Improvement- Chapter 5
Focuses on how to develop at theory of practice for a dissertation in practice (DiP)

Unit 4: Methods for iterating and measuring

A. Measurement
B. Engaging in PDSAs

Memo:
Previous units guided us through building an understanding of the system and theories to drive improvement. We now consider how to actually begin the process of improvement by making sure we are ready to understand whether our theories work in practice. We first discuss measurement in order to be prepared to understand whether our plans are being implemented as intended and working as theorized. We then discuss how to engage in short-cycle inquiry to get into the real work of improvement through plan-do-study-act cycles.

Topic	Objectives	Improvement Science Reading	Activities
Measurement	Students will be able to: Recognize the purpose and characteristics of different types of measures Design implementation and outcome measures that can be used to assess and adjust each aspect of their theory of improvement.	**Core Textbooks** Hinnant-Crawford (2025). Chapter 7 Practical measurement that aligns with the theory of improvement. Bryk et al. (2015). Chapter 4 *Different types of measures and how they can be useful for different aspects of the improvement work.* Grunow et al. (2024). Chapter 12 *Family of measures, how to design measures, and integrate measures into improvement work.*	**Discussion Questions / In-Class Activities:** Let's think about when you mapped the improvement space and identified your theory of improvement. What have you identified in that process that could be measured? What advantages are there to measuring those aspects? What could go wrong with something that you do not measure? What makes a good measure? What kinds of measures do leaders use in your setting? What could be measured that is not or would be too difficult to measure?

Topic	Objectives	Improvement Science Reading	Activities
		Anderson et al, (2023). Chapter 6: Data for Improvement and Disciplined Inquiry *Designing measures for improvement and short-cycle continuous improvement in particular.* Perry et al. (2020). Chapter 6. *Provides an overview of how to develop measures to inform improvement. .* Mintrop et al. (2015). Chapters 11-13. *Offers an approach* to *rigorously collecting impact and process data to evaluate change efforts, framed as part of an action research approach.*	How can measurement support addressing opportunity gaps? **Engaging with a Case:** Consider the measures you might need to measure implementation/process and outcomes within the context of the problem of practice and driver diagram for the case. What measures did they use? How could those measures be improved? **Applying to a DiP or Internship:** Design at least one measure for implementation/process and at least one measure for an outcome. Align these measures with your driver diagram.
Engaging in PDSAs	Students will be able to: Explain the essential components of a plan-do-study-act (PDSA) cycle. Develop plans to engage in an initial PDSA cycle.	Hinnant-Crawford (2025). Chapter 8 (pp. 155-194). *Provides an overview of the PDSA process and how learning from the first cycle can inform later cycles.* Grunow et al. (2024). Chapters 11 & 13 (pp. 134-151, 169-185). *Offers guidance on testing change ideas and practice and developing*	**Discussion Questions / In-Class Exercises:** Think of a time when you learned something through experimentation in your professional or personal life. To what extent did your process align with or depart from a PDSA cycle? Does your organization have any routines or processes that resemble a PDSA cycle? In what ways are they successful in enabling continuous improvement? In what ways do these processes

Topic	Objectives	Improvement Science Reading	Activities
		improvement routines. Bryk et al. (2015). Chapter 5. *Provides strategies for scoping and engaging in a PDSA process, as well as an in-depth illustration of how one network evolved a change idea over time.* Mintrop et al. (2015). Chapters 10-12. *Focuses on the process of implementing change ideas.* Perry et al. (2020). Chapter 7. *Provides an overview of how students can engage in iterative tests of change as part of an EdD dissertation.*	fall short? How might you approach incorporating PDSA cycles into your daily work? What would be a good opportunity for continuous improvement in the weekly activities of a school leader? How might PDSA cycles be particularly well suited for improvement for equity? **Engaging with a Case** Identify the PDSA cycles/cycles in the case. What did the team do? What did they learn? **Applying to a DiP or Internship:** Develop a plan for a first PDSA cycle for each of the change ideas you are experimenting with. Make sure to include specifics: who will try what, when, and with whom? What measures will you use in the short-term to gather feedback and assess if the change is an improvement? Consider using one of the PDSA templates included in the extension readings & additional resources.

Extension readings

Hannan et al. (2015). Using improvement science to better support beginning teachers
Describes a successful improvement NIC known as Building a Teaching Effectiveness Network (BTEN)

LeMahieu, P. G., & Cobb, P. (Eds.). (2025). Measuring to improve: Practical measurement to support continuous improvement in education.
Best practices for the design and implementation of practical measurement for improvement in K-12 education

Lewis, C. (2015). What is improvement science? Do we need it in education?.
Provide an overview of improvement science and how it can be used in education

Takahashi, et al. (2022). Measurement for improvement
Overview of measurement for improvement and the system of measures

Takahashi et al (2024). Practical measurement for equity and justice
How to integrate practical measures that are aimed specifically at working towards equity and justice.

Tichnor-Wagner, et al. (2017). Continuous improvement in the public school context
Examines how innovation design teams took up PDSA in their work to improve high school student outcomes, and their perceptions of PDSA as an approach to innovation development, adaptation, and implementation

Walston, J., & Conley, M. (2022). Practical measurement for continuous improvement in the classroom: A toolkit for educators
Report with detailed descriptions and examples of practical measurement

Unit 5: Spreading and sustaining improvement

A. Spreading and sustaining change
B. Spreading a culture and practice of continuous improvement

C. Capacity Building
    a. Individual
    b. Team
    c. Organizational

Memo:
This unit focuses on what we do *after* we have had some initial success with our PDSA cycles. What do we do next? We first examine the guidance on how to iteratively and carefully test change ideas on a larger scale, as well as how to move from one change idea to a larger change package that has a better chance of achieving our aim. We then consider a larger question: How do we spread continuous improvement across our organizations, so that we make progress not just on a single problem, but continuously get better in all respects as a system. Here, we consider the affordances and limitations of different approaches to CI, and consider the novel ways scholars and leaders have conceptualized CI when focused explicitly on the work of organization-wide improvement. Additionally, to successfully lead CCIE in schools and districts, there must be capacity built within individuals, teams, and organizations that support the work. This capacity building includes foundational improvement dispositions and habits, developing norms and values, and engaging in adaptive practices.

Topic	Objectives and Skills	Improvement Science Reading	Activities
Spreading & sustaining change	**Students will be able to:** Explain the characteristics and purpose of a change package. Evaluate different approaches to scaling up successful changes	**Core textbooks** Grunow et al., 2024, chapters 14-16 (pp. 185-215). *Introduces change packages, drivers of diffusion of innovations, and methods of spread* Bryk et al. (2015). Chapters 5 & 6. *Provides a framework for assessing organizational readiness for spread (p. 120), a detailed case study of spreading change*	**Discussion Questions (for anyone):** Reflect on an initiative that you have been involved in that was spread or scaled up in some way. In what ways, if at all, was the spread or scale-up process aligned with the principles described in this unit? In what ways, if at all, did they depart from the principles in this unit?

Topic	Objectives and Skills	Improvement Science Reading	Activities
	from early PDSA cycles. Describe the different approaches to sustaining successful change ideas.	*(122-139), PDSA Ramps, and a developmental continuum for reliable change.* Hinnant-Crawford (2025). Chapter 9 (pp. 195-207). *Introduces the idea of networked improvement community (NIC) and a framework for initiating a NIC,* Anderson et al., 2024 Chapter 7. *Discusses systems change leadership, implementation of spread and scale, networks, and collaborative research partnerships* Mintrop et al., 2015. Chapter 13. *Focuses on how to extract design principles from implementation.* Transforming education series, Practicing collaborative continuous improvement, module 6. *Introduces ideas related to spreading across your theory of improvement, change packages, approaches to spreading, key questions to consider when spreading*	What were the consequences of these spreading or scaling processes for the success of the initiative? **Engaging with a case** Based on your understanding of implementing spread and scale, how did the team in the case approach spread and scale? What would you do next? What would you do differently? **Applying to a DiP or internship** Consider your current problem of practice and/or theory of improvement. If you were to begin to lead a change effort, where might you start to ensure that you are engaging in a 'safe-to-fail' experiment? Imagine that, after a few PDSA cycles, you begin to identify some promising change ideas you are ready to spread. What factors are you going to want to consider as you spread change in this context? What challenges do you foresee? What strategies do you want to remember?

Topic	Objectives and Skills	Improvement Science Reading	Activities
		change, designing for adaptation, adaptive integration, and safe-to-fail experiments. Perry et al., 2020. Chapter 8. *Supports learners in reflecting on challenges and lessons learned from their improvement work*	
Spreading a culture and practice of continuous improvement	**Students will be able to:** Analyze the extent and ways in which school systems operate under an improvement logic. Explain how the work of spreading CI in a school district is similar to and different from the work of addressing a specific problem of practice. Evaluate different	**Core textbooks** Bryk et al. (2015). Chapter 7 *Offers advice for how to carry CI into one's daily work.* Hinnant-Crawford (2025). Chapters 10, 11, and epilogue. *Provides final reflections on how to lead the work of CI, particularly in ways that advance racial equity in contexts where such work is politicized.*	**Discussion Questions (for anyone):** In what ways does your organization operate in accordance with the principles of CI? Where and how does it depart from these principles? What are the consequences? What principles, methods, or approaches that you have been introduced to in this course are most applicable to the work of leading a school system? What approaches may be less appropriate to leading school districts? What are 2-3 specific changes you might make to your leadership to better hardwire CI into your organization?

Topic	Objectives and Skills	Improvement Science Reading	Activities
	models of CI for their affordances as an organization-wide approach to improvement.		Imagine a superintendent comes to you for advice. Members of the department of curriculum and instruction have been part of a NIC for the past 3 years, along with a few principals and teachers from 5 of their 15 schools. Funding for the NIC has ended, but the superintendent is interested in making CI systemic across the district. How would you advise the superintendent on how to go about this work? **Engaging with a Case:** What did they learn about their change idea or bundle/package of change ideas that is important to consider when spreading to new contexts? **Applying to a DiP or internship** Consider your current problem of practice and/or theory of improvement. How might your district/organization's current approach to organizing for improvement hamper your change efforts? How might you address these barriers?

Topic	Objectives and Skills	Improvement Science Reading	Activities
Capacity Building: Individual, Teams, and Organizations	**Students will be able to:** Discuss and begin to consider how to build capacity for CCIE in schools, districts, and organizations	**Core textbooks** Anderson et al., (2023). Chapter 8 *Explains how to establish conditions (dispositions, structures, culture, priorities) for leading CCIE* Anderson et al. (2023). Chapter 9 *Explains how a leadership team can create the organizational conditions that support the learning process*	**Discussion Questions/In-Class Activities:** What does it mean to build capacity for CCIE? What needs to be considered? How is capacity building different for CCIE than other kinds of reform or improvement initiatives? What does it look like to build capacity as a school leader? What would a school leader do to build teams that can create effective organizational conditions? **Engaging with a Case:** In what ways did the improvers in the case build capacity? What did they do well? What would you have focused on if you were a member of this improvement team? What opportunities did they miss to build additional capacity? **Applying to a DiP or Internship:** What do you need to have in your “toolbox” to lead improvement?” How

Topic	Objectives and Skills	Improvement Science Reading	Activities
			will you build capacity for your improvement project? What will it look like? What activities, structures, and norms will you develop? Refer to the action inventories in Anderson et al. (2023) Chapter 8 and 9.

Extension Readings

Berwick, D. M. (2003). Disseminating innovations in health care
Explores in detail 3 clusters of influence on the rate of diffusion of innovations within an organization: the perceptions of the innovation, the characteristics of the individuals who may adopt the change, and contextual and managerial factors within the organization

Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change
Scale as spread, depth, sustainability, and/or shift in ownership

Cohen-Vogel et al (2022). A framework for scaling for equity.
Read the Executive Summary and Components 1-3 (pp. 1, 6-20).

Park et al.. (2023). Weaving and stacking
Crafting coherence, weaving versus stacking

Sutton, R. I., & Rao, H. (2016). Scaling Up Excellence: Getting to More Without Settling For Less
Identifies key scaling challenges across a range of disciplines

The wider field of improvement research

Cohen-Vogel et al., 2025, Improvement Research in Education
A chapter in the *Handbook of Education Policy Research, 2nd Edition* focused on introducing the field of improvement research to the

wider educational policy community.

Penuel et al., (2020), Principles of collaborative education research with stakeholders
A review of research focused on 'collaborative problem-solving research', framing improvement science as one part of this field.

Yurkofsky et al., (2020). Research on Continuous improvement
A review of research focused on the wider field of continuous improvement methods, framing improvement science as one part of this field.

CI as an operating logic for school districts

Chu et al., (2025) The Learning Hive
Focuses on how school districts can organize as 'evolutionary learning' systems that hardwire CI into the DNA of how the system operates.

Bryk, 2020. Improvement in action
Describes successful networked improvement communities. Focus specifically the chapter on Menomonee Falls

Peurach et al., (2019), From Mass Schooling to Education Systems
A review of research on how school districts are moving towards instructionally focused educational systems; outlines five domains of work related to how school systems organize and manage instruction.

Yurkofsky, Honig, et al (In Press). Pursuing equitable education and learning systems:
A review of whether and how improvement science and expansive learning methods can advance fundamental systemic and equitable change in school districts

Models of organization-wide CI

Chu et al., (2025) The Learning Hive
Focuses on how school districts can organize as 'evolutionary learning' systems that hardwire CI into the DNA of how the system operates.

Forman et al.. (2021). The internal coherence framework

Describes a framework for developing internal coherence in instructional change and includes rubrics and a survey

Spear (2010) The High Velocity Edge
An influential book on an approach to continuous improvement that comes out of organizations like Toyota and Alcoa.

Rother (2009) Toyota Kata
An influential book on an approach to continuous improvement rooted in Toyota. Strong emphasis on coaching.

Capacity Building: Individual, Teams, and Organizations

District Capacity Building
Anderson, E., Cunningham, K. M. W., & Richardson, J. W. (2023), Chapter 9. Sustaining Continuous School Improvement: A Framework for Transformative Organizations
Presents five sustaining practices for schools and districts, including (a) learner stance, (b) learning culture, (c)adaptive change, (d) data for improvement, and (e) organizational routines

Anderson, E., Cunningham, K. M. W., & Richardson, J. W. (2024). Framework for Implementing Improvement Science in a School District to Support Institutionalized Improvement.
Describes how districts can support schools in organizing, implementing, and sustaining improvement science methods

Coaching Improvement
Anderson, E., & Davis, S. (2024). Coaching for equity-oriented continuous improvement: Facilitating change.
Provides five coaching stances for coaching continuous improvement

Khachatryan et al., Chapter 12. How Coaches Support Improvement Teams: Challenges and Considerations
Categories to describe the practice of coaching improvement teams in education

Additional Formats
High Tech High Graduate School of Education repository of change packages.

Culminating Products and Research

EdD

Project For Class

Dissertation in Practice Template

Master's/Certificate-Level with a Required Improvement Project for Principal Internship

Internship Improvement Project Proposal

The NIC Charter

Research/DiPs/ Capstones Readings

- Anderson et al. Chapter 1: Ava's Story of Equity-Oriented Improvement
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Additional Resources

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5. Spreading and sustaining improvement

🖨️ Developed with 2-4 lessons within units, including:

- Core objectives for each lesson
- Readings and resources related to improvement science, with multiple options to select from books or resources available online
- Additional resources/extensions that align with the type of learner (e.g., MA, EdD, PhD): and the interest/needs of a particular course, including:
    - Connections and extensions to other disciplines (e.g., coaching, educational leadership, change management)
    - Connections to equity and justice in ways that can inform improvement science
    - Empirical or theoretical articles relate to a particular phase of improvement science
    - Artifacts, reports, or examples from improvement work
- Opportunities for collaborative practice: questions and activities that are geared to the type of learner:
    - Discussion questions
    - Prompts to support students in applying these ideas to their own contexts.

Suggestions for Engagement with this Material

- Whenever possible, the students should work on their own problems of practice from their setting and form teams within the class or their organizations to work on them. Suggestions for engaging with a case are ideally to be used as a supplement to students' actual improvement efforts, but, when that is not possible, we suggest relying on simulations, cases, and other examples to help build understanding of these processes.
- If your class is intended to prepare students to complete an independent research project, such as a capstone or dissertation in practice, there are certain considerations for learning. These are addressed in the last section on **Culminating Products and Research.**
- If your students don't have a clear way to learn by applying ideas from the course to their own practice, you might choose to

select a case students can engage with. Here are a few options to consider:

- The case from the Transforming Education in an Interconnected World MOOC.
    - Lesson 2 case narrative aligns with **Unit 2: Mapping the improvement space**
    - Lesson 3 case narrative aligns with **Unit 3: Identifying a theory of and ideas for improvement**
    - Lesson 4 case narrative aligns with **Unit 4: Iterating and Measuring**
    - Lesson 5 case narrative aligns with **Unit 5: Spreading and sustaining improvement**
- Or, use a published case, such as this case which focuses on using improvement science to improve K-2 literacy for students of color in an elementary school. This case was used in Practicing Collaborative, Continuous Improvement unit of the Transforming Education in an Interconnected World MOOC series and there are associated videos and activities available in the MOOC platform. Here are a few slides associated with the case.

Core Textbooks

There are many books faculty can use as core textbooks that they can assign throughout the different lessons and units. Some faculty choose to pick just one book to work from, some assign multiple books for students to read across. We have tried to note which selections from each of the oft-used textbooks can be assigned for each lesson. Below is a brief overview of each of the books we refer back to as potential 'core textbooks':

- Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2015). *Learning to improve: How America's schools can get better at getting better*. Harvard Education Press.
    - This is the foundational text that introduces improvement science to an education audience.
- Hinnant-Crawford, B. N. (2025). Improvement science in education: A primer. 2nd Edition. Myers Education Press.
    - This book was specifically developed as an introduction to improvement science for graduate students who are planning to use these methods for a dissertation or capstone.
- Anderson, E., Cunningham, K. M., & Eddy-Spicer, D. H. (2023). *Leading continuous improvement in schools: Enacting leadership standards to advance educational quality and equity*. Routledge.
    - Introduces improvement science with a specific emphasis on school-based leadership standards and practices.

- Grunow, A., Park, S., & Bennett, B. (2024). *Journey to improvement: a team guide to systems change in education, health care, and social welfare*. Rowman & Littlefield.
    - This book draws on education and healthcare examples, and focuses on the work of leading teams through the improvement science process.
- Perry, J. A., Crow, R., & Zambo, D. (2020). *The improvement science dissertation in practice: A guide for faculty, committee members, and their students.* Myers Education Press.
    - This book introduces improvement science, but focuses specifically on how to integrate improvement science into a dissertation in practice.
- Mintrop, R. (2015). *Design-based school improvement: A practical guide for education leaders*. Harvard Education Press.
    - This book develops an approach called 'design-based school improvement', which aligns closely with improvement science principles and processes. It focuses greater attention, relatively speaking, on design principles and the human side of change management.

There are also some books that we have not used as student-facing textbooks; however, we have found these books helpful in a) building faculty knowledge about improvement science and the wider field of collaborative continuous improvement in education and b) providing chapters or selections for 'further reading' for students. These books include:

- Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance*. John Wiley & Sons.
    - This is perhaps the most widely used guide for non-educational contexts. Bryk et al (2015) drew heavily on this book when developing *Learning to Improve.*
- Peurach, D. J., Russell, J. L., Cohen-Vogel, L., & Penuel, W. R. (2022). *The foundational handbook on improvement research in education*. Rowman & Littlefield.
    - Provides theoretically rich in-depth chapters from leaders in the wider field of improvement research that goes in-depth on different areas of improvement research.
- Provost, L. P., & Murray, S. K. (2022). *The health care data guide: Learning from data for improvement*. John Wiley & Sons.
    - A similar foundational guide focused specifically on using data of improvement, focused both on conceptual foundations and practical use.

- Wilcox, K. C., Zumpe, E., & Eddy-Spicer, D. H. (Eds.). (2026). *Teaching and learning for collaborative continuous improvement in education: Challenges and possibilities across the educational system*. Myers Education Press

How These Materials Reflect the Instruction of the Designers

In this syllabus, we focus primarily on the application to a Certificate/Master's or EdD program in educational leadership because that is our experience, but our intention for this syllabus to be flexible and able to be used in these various educational settings. To illustrate the ways this syllabus could be used, we wanted to share some reflections from our own teaching. Across the team, we have three different models of how a CCIE class fits into a curriculum. Sam teaches a course that is embedded in the Master's/Certificate program and is intended to prepare the students to complete an improvement project in their internship where they will complete multiple PDSA cycles. Erin teaches a class that is part of a series of methods courses for students pursuing either an EdD or Phd degree in a combined doctoral program where students can select improvement science as one of a menu of models for their dissertation or dissertation in practice. Max teaches in an EdD program where improvement science is the signature methodology for the dissertation practice (ISDiP) and where the learning is spread across multiple courses. These different models lead to different pedagogical decisions.

Dr. Samantha Viano, Master's/Certificate course on integrating improvement science into school improvement.
My course is in the second semester of our Master's/Certificate course titled *Using Research to Lead School Improvement*. This class has traditionally focused on using data to identify problems and research for solutions to those problems, and I integrated improvement science as the structure for this exploration when I began teaching the course in 2018.

- The performance-based assessment for this course is an ***internship improvement project plan*** that they implement as part of the required internship for principal licensure in Virginia. Consequently, I contributed to this syllabus the kinds of readings and activities my students engage with to plan an improvement project that they will be implementing in their school within the following 12-18 months after the completion of my course.

- In addition, I group students in the course with similar problems of practice into networked improvement communities (NICs). In these NICs, students collaborate to build a shared understanding of the problem and a theory of practice improvement that integrates all of their internship change ideas. They produce a ***NIC charter*** at the end of the semester reflecting this collaboration.

Because of the level of the course and the required elements of the internship improvement project plan, my syllabus primarily reflects the listed discussion questions and the Applying to a DiP or Internship activities. I have assigned Hinnant-Crawford (2025) as a core text for many years and recently integrated Grunow et al. (2024) as well. I have very few supplementary readings given that my student population is full-time educators who have limited capacity to engage with significant amounts of reading or texts that do not give practical tools/advice. I am unlikely to have my students significantly engage with a case. Instead, students focus on chartering a NIC focused on similar problems of practice across schools, building shared understandings of problems, serving as resources to each other when identifying solutions to test, and drafting a shared theory of improvement. Students are required to build out an initial PDSA cycle in this course, and complete at least two PDSA cycles in the internship.

Dr. Max Yurkofsky, Doctor of Education Program organized around an improvement science Dissertation in Practice (ISDiP). Rather than having a specific *improvement science* course, my team and I have embedded improvement science throughout our 3-year EdD program. Our teaching of IS is intended to align with the ISDiP, wherein students inquire into and address a problem of practice in their organizations. The ISDiP consists of three papers:

- **Benchmark I** (Completed at the end of the first year of the program): Involves introducing the context where the problem exists, defining the problem, convening a team to inquire into the problem, and engaging in a causal analysis of the problem (represented by a fishbone diagram).
- **Benchmark II** (Completed in the middle of the second year of the program): Involves developing a theory of improvement (represented by a driver diagram) that interweaves local knowledge and formal research to address the problem of practice, as well as a plan to conduct at least two plan-do-study-act (PDSA) cycles, supported by a practical measurement system (that includes process, balance, driver, and outcome measures).
- **Benchmark III** (Completed at the end of the third year of the program): Involves describing the implementation of the tests of change, data analysis, assessing progress, adjusting as needed, spreading change, and reflecting on the lessons learned.

Students' learning about improvement science typically involves the following structure:

- They are introduced to a specific topic or unit related to improvement science as part of a practitioner inquiry or leadership course. Typically, they will read about the topic using the Bryk et al.,, Hinnant-Crawford, and Grunow et al. texts.
- Through pre-work and in-class activities, they will begin engaging with the corresponding ideas and tools from that unit. For example, they might develop a first draft of a process map or fishbone diagram, or a list of individuals for empathy interviews, along with an interview protocol.
    - In some cases they may have a low stakes "check for understanding" assignment where they apply the ideas or topics to a case (e.g., from section two of the Bonney et al volume). We do this for more challenging topics related to analyzing variation, theories of improvement, and driver diagrams.
- Then, students will be tasked with going out and applying the tool or idea more systematically to their problem of practice (PoP). This might involve conducting empathy interviews, building an improvement team, reviewing the research to develop a driver diagram, etc. Typically, students will be guided through and then prompted to describe and reflect on this process via a set of journal assignments.
- Finally, students will incorporate what they learned via this and related inquiry into their ISDiP.

Below is a sample flow of these activities related to the work of *empathy interviews* in a course, practitioner inquiry I, that students take in the first semester of their EdD program.

- Week 4 & 5: Learn the foundations of listening and about how empathy interviews are approached in improvement science. In class, engage in mock interviews with a classmate and begin developing plans for who to interview and what questions to ask.
- Weeks 5-7: As part of a journal assignment, students conduct three empathy interviews, transcribe or write down the conversation, and reflect on what they learned about their problem of practice and/or their methods of inquiry. Students are expected to keep engaging in empathy interviews beyond this specific assignment.
- Week 7-14: Students incorporate evidence from empathy interviews into a first draft of Benchmark I. They use interview data to a) establish their problem of practice or b) illuminate key factors that are contributing to the PoP.

Dr. Erin Anderson, One off Class in Doctoral Program for EdD and PhD students

I teach an improvement science class, entitled *Leading Design Improvement for Equity,* that is one of a series of classes (qualitative research methods: beginner and advanced, introduction to statistics, action research, program evaluation, critical policy analysis) in a combined EdD and PhD doctoral program. Students may choose to use an improvement science methodology for their dissertation in practice or they may want to use concepts from the class to improve their school, district, or organizational leadership. This course is taught in the summer and includes both students embedded in organizations and students who are not currently teaching or leading an education organization. For those reasons, I rely heavily on simulated learning. This is done in two ways. First, I start the class with a three-hour simulation, built in partnership with a local district and based on the chronic absenteeism session offer at the Carnegie Improvement Summit. This simulation leads the class through the phases of improvement science and provides an overview of the whole process. I found that providing an overview is helpful for their future learning. After I kick off the class with this simulations, the students have a series of asynchronous assignments where they read and reflect on what is improvement science and how is it similar or different that what you currently do; what does equity-oriented improvement look like; and how to identity a problem and learn more about that problem. Then, we come back together as a class and do the second round of simulation. I either work with a local school or present a district level problem (e.g., chronic absenteeism, Latine student success, recovering from the pandemic) that the students explore in teams. The class functions as a networked improvement community and moves through the process of reviewing data to formulate a problem, conducting root cause analyses on the problem, developing both individual and a group theory of improvement, and designing the Plan phase of a Plan-Do-Study-Act cycle for a change idea that could be tested as part of a bundle of ideas that will help to solve the problem. The class assignments also include an annotated bibliography on their problem of practice and a personal PDSA project. The class culminates with a 8-10 page proposal that reflects the three chapters of a dissertation or dissertation in practice proposal at my university. The students complete this assignment based on their current role. For students currently leading organizations, they may work with team members from their school on their own problem formulation and root cause analysis and share the tools they created in their proposal. If they are not currently in a role that makes doing improvement science possible, they present a plan for what it would look like to do improvement science in an organization that they are familiar with.

Other Examples and Resources

Example syllabi from friends of the Improvement Scholars network: Shared Syllabi Folder

Other resources may be found here: https://improvementscholars.org/instructional-resources/

Outline of Units

Unit 1: Building Foundational Conditions

A. Defining collaborative continuous improvement in education (CCIE)
    a. Differences in CCIE from other approaches to improvement
B. Overview of the Improvement Science Process
C. Defining equity-oriented CCIE
    a. Power and CCIE (Who's Impacted? Who's Involved?)
D. Personal and relational conditions for improvement and collaborative structures
    a. Teaming
    b. Learning Routines
        i. Roles, Routines, and Relationships

Unit 2: Mapping the Improvement Space

A. Problem formulation
    a. Defining the local problem
    b. Problem formulation
    c. Problem criteria: scale and scope
    d. Being user-centered and empathy interviews
    e. Inclusion of the voices of users, multiple perspectives
B. Understanding variation

a. Identifying local data sources
b. Graphical data analysis for variation
c. Equity audits

C. Systems
    a. Recognizing local systems
    b. Systems thinking
    c. Systems mapping
    d. Recognizing root causes

D. Root cause analysis
    a. The five whys
    b. Fishbone diagrams
    c. Interrelational diagrams
    d. Auditing root causes for deficit mindsets

Unit 3: Identifying a theory of and ideas for improvement

A. Theories of Improvement
    a. Moving from analysis of the problem to a theory of improvement
    b. Aim Statements: Choosing appropriate measures of success
    c. Determining drivers
        i. Primary and secondary drivers
        ii. Tracking progress through driver measures

B. Identifying and designing effective change Ideas
    a. Evidence-based sources of effective change ideas
    b. Design thinking and innovation

Unit 4: Methods for iterating and measuring

A. Measurement for improvement

a. System of measures
b. Types of measures
c. Implementation measures
d. Outcome measures
e. Measuring outcomes
f. Measurement and the theory of improvement

B. Engaging in PDSAs
    a. Designing experiments & measures to maximize learning [plan - do]
    b. Learning quickly from experiments [study - act]
    c. Anticipating the trajectories and evolution of PDSA cycles

Unit 5: Spreading and sustaining improvement

A. Spreading & sustaining change
    a. Spreading change to a new context
    b. Working towards a change package
    c. From incremental spread to scaling up
    d. Sustaining change
B. Spreading & sustaining improvement
    a. Stepping outside IS: The wider field of CCIE
    b. Models of organization-wide CI
    c. Human Capacity Building
        i. Habits, dispositions, and mindsets
        ii. Developing routines

Unit 1: Building Foundational Conditions

A. Defining collaborative continuous improvement in education (CCIE)
    a. Differences in CCIE from other approaches to improvement
B. Overview of the Improvement Science Process
C. Defining equity-oriented CCIE
    a. Power and CCIE (Who's Impacted? Who's Involved?)
D. Personal and relational conditions for improvement and collaborative structures
    a. Teaming
    b. Learning Routines
        i. Roles, Routines, and Relationships

Memo: *This unit includes four sub-units that can be taught at the start of a course or incorporated throughout a course. You may choose to teach these sub-units at the beginning of the course, spread them throughout the course, or teach these sub-units at the end of the course.*

This unit builds the foundational conditions for collaborative continuous improvement in education (CCIE) with a focus on improvement science. First, the unit defines collaborative improvement in education, taking a broader approach in conversation with other versions of improvement research (e.g., design-based improvement research, participatory action research, community-based research, etc.) and continuous improvement approaches (e.g., Data Wise, lesson study, etc.). Then it explores how CCIE approaches differ from past traditional, evidence-based, reform initiatives. The next sub-unit focuses on an overview of the improvement science process. From experience, it is helpful to have the full schema of the process presented upfront, often through a simulation and/or case example, before learning more deeply about how to engage in the process. We believe it is important to do CCIE with an equity-orientation, so the next sub-unit focuses on defining and exploring what it means to do improvement with equity situated at the center of the process, not only in the outcomes, including developing equity mindsets, inclusive practices, and social processes that operate with equity and justice at the center. We would encourage an equity orientation throughout the whole syllabus. Lastly, to work collaboratively, there are certain important learnings, including how to develop a team with shared working agreements and how to establish collaborative learning routines. The last sub-unit focuses on those skills, processes, and structures.

Topic	Objectives	Improvement Science Reading	Activities
Defining collaborative continuous improvement in education (CCIE)	**Students will be able to:** Define CCIE and describe it as an approach to practice and research Recognize a range of approaches to CCIE Compare CCIE to other approaches to reform and improvement	**Core textbooks** Anderson et al. (2023). Chapter 2. *Describes shared principles of continuous improvement approaches* Anderson et al. (2023). Conclusion *Lays out how we have traditionally done research against the equity-oriented improvement model presented in the book* Bryk et al. (2015). Introduction. *Defines improvement science and juxtaposes it with traditional reform practices* Hinnant-Crawford (2025). Chapter 1. *Defines improvement science and juxtaposes it with traditional research methods and emphasizing its roots in equity and justice* **Articles** Yurkofsky et al. (2020). *Provides a comparative review of these methods* Peurach and Russell (2026). Coming soon. . . Piece on the "grammar." *Describes the commonalities across CCIE*	**Discussion Questions:** How would you define CCIE in 5 sentences (or one minute) or less? What changes in education practice have been introduced in your setting? How were those changes ushered in? By whom? Did they result in a fundamental shift in practice? Why or why not? What do you see as the relationship between CCIE and equity? Can there by CCIE that does not further equity and how can you avoid those pitfalls? What makes CCIE distinct from other forms of improvement? How is CCIE different from traditional, evidence-based reform? **Engaging with a Case:** Reviewing the case, why is this an example of continuous improvement? What characteristics or commitments are present in this case? Reviewing the case, how would this improvement have looked in a traditional "reform:? **Applying to a DiP or Internship:** In what ways do the principles of CCIE show up in the organization you are working in? In what ways does your organization stray from these principles? What are the consequences? do Write a brief explainer for your colleagues, defining CCIE and explaining how CCIE is different from other improvement initiatives your

Topic	Objectives	Improvement Science Reading	Activities
		processes and research methodologies	organization has engaged in.
Overview of the Improvement Science Process	**Students will be able to:** Describe the stages of improvement science as a process Explain the six core principles of improvement science and the role they play in improvement	**Core textbooks** Grunow et al. (2024). pp. 1-20 *Describes the domains and foundations of improvement methods* Hinnant-Crawford (2025). Chapter 2. *Provides an overview of the improvement science process with an equity orientation* **Articles** Zhao, Anderson, Lochhead, & Vasta (2020). *Presents an example that can be used to introduce the improvement science process*	**Discussion Questions:** How would you define improvement science in 5 sentences (or one minute) or less? How does improvement science relate to other concepts, processes, practices, and ideas you have learned or experienced during the last year in this program or in your professional life? In what ways does improvement science support educational equity? **Engaging with a Case**: Simulation of the process using chronic absenteeism as an example. Walk the students through the process of doing CCIE using a full example. **Applying to a DiP or Internship:** Describe what the DiP/Internship process might look like using an improvement science methodology. What are the phases of the work? What tools would you use? What questions, concerns, or ideas does this raise?

Equity-Oriented Improvement Science	**Students will be able to:** Define equity-oriented improvement science and evaluate the different ways equity has been conceptualized in improvement work Build social conditions that enable equity-oriented improvement work Recognize asset-based versus deficit thinking in improvement work and identify strategies to disrupt the latter Articulate a set of mindsets, dispositions, and interpersonal, humanizing skills that are essential to equity-oriented improvement work	**Core textbooks** Anderson et al. (2023). Chapter 4. *Explores the definition of equity-oriented continuous improvement using the Liberatory Design mindsets (National Equity Project, 2021) and Culturally Responsive School Leadership (Khalifa et al., 2016)* Hinnant-Crawford (2025). Chapter 10 *Practical advice and tools for pursuing equity within systems where it is not the primary focus* Epilogue *Personal reflection on the tension between equity and improvement science* **Articles and chapters** Eddy-Spicer and Gomez (2022). Chapter 5. *Describes meaningful equity as a strong equity and shares the elements of meaningful equity focused on process in addition to outcomes* Hinnant-Crawford et al. (2023). Chapter 7. *Presents a theory of ImprovCrit based on the tenets of critical race theory as a guiding model for CCIE* Biag (2019). Chapter 5. *Describes moving from technical to student-centered systems, processes, and norms*	**Discussion Questions/In-Class Activities**: 1. What are the dispositions that enable equity-centered, continuous improvement work? How might leaders foster these dispositions among their staff? What types of structures, activities, rituals, and support might be useful? 2. How might leaders engage students, families, and community members to play a greater role in supporting continuous improvement? What types of opportunities might leaders design and provide to build their improvement capacity and, at the same time, leverage their unique strengths and assets? 3. Where do you see opportunities for disrupting inequities and advancing social justice in this improvement work? Include at least one quote from the readings. 4. Reflect on at least six of the mindsets. Answer in your own words, what do those mindsets mean to you? Give an example of what it would look like if those mindsets were applied to addressing your problem of practice through DI4E. **Engaging with a Case:** Review the case and take notes. Look for evidence of equity in this work. Where do you see critical reflection through an equity lens? Where do you see promoting inclusion? Where do you see an emphasis on the whole child? Where were there missed opportunities? How

Topic	Objectives	Improvement Science Reading	Activities
			could they have pushed the work further? What would your next steps be? **Applying to a DiP or Internship:** Imagine an improvement project that promotes strong equity? What does that look like? How is DEIJ considered in the social relations, processes, tools, and outcomes of the work? Write a short description (1-3 paragraphs) of what an equity-oriented improvement project would need to include. Use Anderson et al. (2023) Action Inventory 4.7 to guide your work. How does this compare to an improvement project that does not promote strong equity? Now, anticipate the challenges they will experience in engaging in equitable improvement in your context. How would you navigate those challenges? What do you need to be prepared for? Add a paragraph summarizing the challenges and a plan to address the challenges.
Collaboration: Teaming	Students will be able to form improvement teams that will be able to work together and engage in CCIE	**Core Textbooks** Grunow et al. (2024). Journey To Improvement Part I: Chapter 2 “Improvement Teams”; Chapter 3 “Leadership: Setting up Teams for Success”; and Chapter 4 “Team Formation” (21-45).	**Discussion Questions/In-Class Activities:** What are the most important considerations when you create an improvement team? What kinds of equity considerations do you keep in mind when structuring the roles and responsibilities of team members?

Topic	Objectives	Improvement Science Reading	Activities
		Explains how to get the right people on the team, how to form and set up teams for success, and team infrastructure.	**Engaging with a Case:** In the case example, who is on the team? Why are those people included? Who else could have been enlisted for the team? How did they distribute the work? **Applying to a DiP or Internship:** How will you form a team to do your CCIE work? What are the considerations for forming your team, how will you set it up, and what will the roles be?

Topic	Objectives	Improvement Science Reading	Activities
Collaboration: Learning Routines	Students will be able to establish roles, habits, and collaborative learning routines that support human-centered CCIE	**Core textbooks** Grunow et al. (2024). Chapter 13 *Describes team improvement routines for getting a rhythm to collaboration, learning, data, and consolidation* **Chapters and articles** Biag, M., & Sherer, D. (2021). *Describes five dispositions needed for CCIE* Resnick (2023). Chapter 10 *Addresses the attention to the role and role identities needed for CCIE* Zumpe & Aramburo (2023). Chapter 11. *Describes the habits of mind that a team needs for CCIE*	**Discussion Questions/In-Class Activities:** Why do routines, roles, and habits matter for CCIE? If they aren't considered, where can you see the improvement work mimicking previous improvement work and/or not reaching full potential? How have you seen leaders integrate learning routines and what areas of improvement have you noticed? What risks are there to not integrating learning routines in supporting improvement? **Engaging with a Case:** Describe the routines established by the team in this case. What are their role identities and habits of mind? Where were there opportunities to improve the team's roles, structures, and routines? **Applying to a DiP or Internship:** What routines will you establish for your team? What is your plan for developing habits of learning and role identities that foster the success of your CCIE improvement project?

Extension Readings:

Defining collaborative continuous improvement in education (CCIE)

Anderson et al. (2023). Chapter 3: Enacting leadership through continuous improvement
Explains how engaging in improvement science enacts successful leadership practices

Bryk, A. S. (2015). 2014 AERA Distinguished Lecture
Describe a new paradigm for improvement with a focus on NICs

Park et al. (2013). Continuous improvement in education
Maps the terrain of early CCIE by identifying and describing organizations engaged in continuous improvement

Overview of the Improvement Science Process

Bonney et al. (2024). Improvement Science in the Field.
Presents cases of EdD students' use of improvement science to address a problem in their organization.

Lewis, C. (2015). What Is Improvement science? Do we need it in education? *Educational Researcher, 44*(1), 54-61. https://doi.org/10.3102/0013189X15570388
Provide an overview of improvement science and how it can be used in education

Orr (2025). Leading Equity-Focused Inquiry for Continuous School Improvement
Presents cases of EdD students' use of improvement science to address a problem in their organization.

Equity-Oriented Improvement Science

Bush-Mecenas, S. (2022). "The business of teaching and learning": institutionalizing equity in educational organizations through continuous improvement
Explores institutional logics of equity-oriented improvement work.

Diamond, J. B., & Gomez, L. M. (2023). Disrupting white supremacy and anti-Black racism in educational organizations.

Combines critical perspectives on race with organizational improvement approaches

Harrison, R., & Stevenson, I. (2024). Equitable school improvement
Focuses on the human side of change and provides guidance and tools

Jabbar, H., and Childs, J. (2022). Critical perspectives on the contexts of improvement research in education, Chapter 11, 241–261.
Moving from a technical focus of traditional improvement research to a more transformative and racially just approach

Sandoval C and Neri RC (2024) Toward a continuous improvement for justice
Explores continuous improvement for justice that: (a) confronts dominant outcomes rather than uncritically prioritizing them; and (b) aims to use its tools to create systems that prioritize outcomes that grant comfort, agency, and dignity to minoritized students and communities

Asset-Based
Hinnant-Crawford et al., (2021). "Who is involved? Who is impacted? Teaching Improvement Science for Educational Justice."
pp. 17-39
Offers a valuable framework focusing on how to collaboratively develop fishbone diagrams in a way that avoids deficit thinking.

Practical Measures
Takahashi et al. (2025). Practical measurement for equity and justice.
5 measurement routines that may position practical measurement as a resource for more equitable and just organizational processes

Networks
Iriti et al. (2024). Adapting improvement science tools and routines to build racial equity in out-of-school time STEM spaces
How networks can embed equity into improvement practices

Research Practice Partnerships
Welsh & McGraw (2025). Advancing equity via research-practice partnerships
Explores *partnership dynamics and activities of equity-centered RPPs*

Bang, M., and Vossoughi, S. (2016). Participatory design research and educational justice: Studying learning and relations within social change making.

Emphasizes the need to explicitly address power dynamics, critical historicity, and relationality within research partnerships to achieve transformative ends

Equity in Practice

Stosich (2024). Working toward transformation: educational leaders' use of continuous improvement to advance equity.
Critical case for understanding educational leaders' use of CI approaches as a lever for equity-focused school reform

Resnick et al. (2025). Practicing equity-centered improvement: a design tensions perspective.
Introduces design tensions as a conceptual tool for naming and navigating ongoing tradeoffs that arise in equity-centered change efforts

Additional Formats

Unboxed Podcast with Brandi Hinnant-Crawford

National Equity Project: Liberatory Design Deck June 2021

Collaboration: Learning Routines

Boudett & Bocala (2025). *Data Wise: Third Edition.* Chapter 1: Organizing for Collaborative work.
Walks through helpful goals and tasks for building collaborative capabilities in an improvement team.

Safir. (2017). The Listening Leader. Introduction (pp. xxiii - xxxiv)
A "Listening Leader" builds trust and a culture of improvement by prioritizing relationships, collaboration, and a people-first approach, which is essential for sustainable school transformation

Senge (2002). The Leader's New Work: Building Learning Organizations
Leaders in learning organizations design new systems, build shared visions, and nurture new thinking to get results

Penuel et al. (2020). Principles of collaborative education research with stakeholders

Interconnected principles related to collaboration, problem solving, and research based on Community-based Design Research, Design-based Implementation Research, Improvement Science in Networked Improvement Communities, and the Strategic Education Research Partnership.

Unit 2: Mapping the Improvement Space

A. Problem formulation
B. Understanding variation
C. Seeing systems and identifying root causes
D. Root cause analysis

Memo:
This unit moves our thinking to the system-level to move outside of our own day-to-day experiences in school to think about the system that produces the outcomes we experience. We examine the system and how it is organized. We then discuss how to use our understanding of the system to identify problems of practice. We introduce tools to understand user experience to identify problems of practice and then transition to building an understanding of variation in opportunities and outcomes in educational systems by using multiple sources of data. This unit will provide several different tools for understanding variation and provide preparation for basic data analysis to understand variation, and then transition to root causes that underlie the problems identified through this analysis. The unit concludes with root cause analysis, which brings together knowledge gained through systems thinking and understanding variation to describe problems in ways that can lead in future units to identify changes to address those root causes.

Topic	Objectives	Improvement Science Reading	Activities
Problem formulation	**Students will be able to:** Explain how to take a user-centered approach to understanding a problem Include multiple stakeholder perspectives in formulating a problem Engage in multiple forms of inquiry (e.g., empathy interviews) to identify and define problems from the perspective of those involved and impacted	**Core textbooks** Hinnant-Crawford (2025). pp.43-50 *Building understanding of problems through stakeholder voice.* Bryk et al. (2015). Chapter 1: Make the Work Problem-Specific and User-Centered *Making the work focused on the users in the system.* Grunow et al. (2024). pp. 55-60 *Qualitative data for understanding the problem.* Hinnant-Crawford & Anderson (2022). Chapter 13 *Presents a 5S model for problem formulation.* Mintrop et al. (2015). Chapters 1-4. *Offers an overview of how to select, define, and frame problems within a design-based school improvement tradition.* Perry et al. (2020). Chapter 3. *Offers guidance on how to develop actionable problems of practice within the context of an EdD program.*	**Discussion Questions/In-Class Activities:** How do you select a problem to explore through an improvement science methodology? What does problem identification entail? How do you know if the problem you are solving is really the problem to be solved? How do you center equity in the problem identification process? What ways have you seen school leaders define problems and what could have been improved? **Engaging with a Case:** Have the students explore the problem embedded in the case. Have them consider how this is a problem of practice and have them apply the 5S framework to the case. How did the team formulate the problem? What data did they explore?

Topic	Objectives	Improvement Science Reading	Activities
			Applying to a DiP or Internship: Whose perspective do you need to better understand to further refine your problem of practice? Write a protocol for an empathy interview with this key user to understand the problem. Select relevant users, write a protocol, conduct at least one empathy interview, and write a summary of the interview afterwards. **Activity 2** Select a problem that you would like to explore in your organization. Here are two planning guides to support problem formulation. Planning Guide 1 Planning Guide 2

Topic	Objectives	Improvement Science Reading	Activities
Understanding variation	**Students will be able to:** Identify, analyze, and display quantitative data to illuminate a problem Analyze multiple forms of variation (e.g., across time, subgroups, organizational units) to identify problems and bright spots	**Core textbooks** Hinnant-Crawford (2025). Chapter 4 *Analyzing data for variation in processes and outcomes.* Bryk et al. (2015). Chapter 2 *Examples of understanding variation from non-education settings and applying that thinking to schools.* Grunow et al. (2024). pp. 60-65, 221-229 *Using quantitative data for understanding variation, including guidance on run charts and process behavior charts (also known as Shewhart or control charts)*	**Discussion Questions / In-Class Exercises:** When you think about variation, what types of variation come to mind? In what ways, if at all, does your school (or organizational) system currently leverage variation to better understand a problem? What approaches from the readings would be helpful to incorporate more into how your organization works? What is the relationship between equity and understanding variation? In what ways are they synonymous or different? Data search, find data that will help to define problems. How to create tables and graphs in Excel. **Engaging with a Case:** In the case, how does understanding variation help to orient the problem of

Topic	Objectives	Improvement Science Reading	Activities
			practice towards equity and justice? **Applying to a DiP or Internship:** Find data from your site that sheds light on your problem of practice. Create a graphical data analysis that tells a story that motivates focus on the problem. Develop displays that illuminate multiple forms of variation (e.g., over time, across specific subgroups, across organizational units).

Seeing systems & identifying root causes	**Students will be able to:** Define what the term "system" means within the context of education Recognize how existing systems contribute to problems Understanding the multi-level nature of the problems within the system (macro, meso, micro factors) Use inquiry (e.g., five whys) and visualization tools (e.g., process and systems mapping, fishbone diagrams) to analyze the root causes of problems Evaluate whether root causes reflect deficit-based assumptions or are	**Core Textbooks** Grunow et al. (2024), pp. 47-55, 66-83 *What it means to "see the system" and how to surface the system in your work.* Bryk et al. (2015), pp. 57-72 *Examples of systems thinking and tools for seeing the system. Overview of tools and processes, including causal systems analysis, fishbone diagrams, and system improvement maps.* Hinnant-Crawford (2025). Chapter 3, pp. 97-116 *Tools for root cause analysis, including fishbone diagrams and equity audits. Defines systems thinking and explains how to use various tools to surface the system.* Podcast: We Not They with Luke Wood	**Discussion Questions / In-Class Exercises:** Think about an improvement effort you engaged in over the past few years. What was the problem you were trying to address? What were some of the root causes contributing to the problem? To what extent did your improvement efforts address those root causes? What is the difference between root causes and blaming people for problems? How do we avoid deficit mindsets when engaging in root cause analysis? Not **Engaging with a Case:** Using the case example, identify potential root causes and drill down to be more specific using the Five Whys. **Applying to a DiP or Internship:** Practice applying some of the inquiry & visualization methods to your own problem of practice. Consider the problem of practice, brainstorm on causes, sort causes into categories, and then place those

Topic	Objectives	Improvement Science Reading	Activities
	outside an organization's control		causes on a fishbone diagram. Critique fishbone diagrams (gallery walk of each other's or an example fishbone)

Extension Readings:

Coghlan, D., & Brannick, T. (2014). *Doing action research in your own organization*, Chapters 1, 9, and 10
An example of problem formulation in action research including navigating the dual position of insider-outsider researcher and contending with the politics of change within an organization,

Unit 3: Identifying a theory of and ideas for improvement

Topics

A. Theories of improvement
B. Designing effective change Ideas

Objectives: To learn how to identify a theory of improvement that serves as a roadmap for an improvement journey

This unit focuses on articulating a theory of improvement that maps onto the improvement space identified in the previous unit, articulating a theory of how to address a problem of practice through specific change ideas. The unit begins with identifying the theory of practice improvement, including writing an aim statement for the goal of the work and connecting the aim to change ideas through primary and secondary drivers on a driver diagram. The unit concludes with specific tools and routines for identifying potentially transformative small, but meaningful, changes that can be change ideas embedded in the theory of improvement.

Topic	Objectives	Improvement Science Reading	Activities
Theories of Improvement	**Students will be able to:** Explain how theories of improvement are developed from the work of mapping of the improvement space, as well as available research	**Core textbooks** Bryk et al. (2015). Chapter 3 Learning to Improve. *Developing a working theory of improvement based on previous analysis of the problem.* Grunow et al. (2024). Journey to improvement. Part III (Chapter 7) and Park IV (Chapter 10).	**Discussion Questions / In-Class Exercises:** Explore examples of aim statements. Which ones are specific, measurable, and ongoing? What element(s) are missing from each one? Write an aim statement for something in your life that you would like to improve (real or fictitious).

Topic	Objectives	Improvement Science Reading	Activities
	Develop an appropriate aim statement in collaboration with impacted community members Describe the differences between aims, primary drivers, secondary drivers, and change ideas Create a driver diagram that aligns with their theory of improvement	*Developing a shared aim, components of an effective aim statement. Developing a driver diagram based on the theory of improvement.* Hinnant-Crawford (2025) Chapter 6 *Components of a driver diagram and how to move from theory to the driver diagram.* Mintrop et al. (2015). Chapters 5-8. *Offers a deeper overview of the change process and provides guidance on leveraging the knowledge base and co-design principles.* Perry et al. (2020). Chapters 4 & 5 *Provides an overview of how to review the literature to develop a driver diagram.*	Does the driver diagram as a graphic organizer remind you of any other type of activity you have done before in schools? What are the benefits of articulating the theory of improvement through the driver diagram? What are the risks? You will have heard the phrase “possibly wrong, definitely incomplete”, and the driver diagram is one place that we definitely believe there will be changes over time as you learn. Discuss how to make this continuous improvement mindset motivating for the work and not discouraging. What kinds of theories of improvement underlie recent initiatives at your school? How can a theory of practice improvement address an area of justice in a productive manner? **Engaging with a Case:** Based on your understanding of the

Topic	Objectives	Improvement Science Reading	Activities
			problem, write an aim statement related to the case. **Activity**; You have an unsorted list that includes the aim statement, primary drivers, secondary drivers, and change ideas. Sort these into the right category and place them in what you believe is the most logical case for a driver diagram. Consider the complete driver diagram you created. What is missing, or what do you believe could be improved upon prior to testing? **Applying to a DiP or Internship:** Draft an aim statement for your problem of practice. Share your aim statement with your critical friends for feedback. Complete a driver diagram with your aim statement and primary drivers from your fishbone diagram/interrelational diagram that you want to target. Then, identify secondary drivers and draft some change

Topic	Objectives	Improvement Science Reading	Activities
			ideas that could backwards map onto the secondary drivers, primary drivers, and then potentially assist in meeting the aim.
Identifying and designing effective change Ideas	**Students will be able to:** Prioritize change ideas that have a greater impact and address the root causes Select and design high-leverage change ideas that align with primary and secondary drivers Draw on available research, analogous settings, creative/design thinking processes and principles, and insights from users in developing	**Core textbooks** Grunow et al. (2024). Journey to improvement. Part IV (Chapter 9). *Selecting change ideas and identifying which ones to test.* Langley et al. (2009). Chapter 6 The Improvement Guide, Developing a Change *Different kinds of changes and how they relate to the theory of improvement.* Mintrop et al. (2015). Chapters 9 - 10. Offers a more in-depth discussion of how to go about designing change ideas.	**Discussion Questions / In-Class Exercises:** Consider school improvement in your setting over the last five years. What would you say have been the specific change ideas put in place? How would they compare to the advice on identifying change ideas you read about this week? Consider a change that had a positive impact on your organization. How did the characteristics of this change align with or depart from the ideas from the reading? What kinds of changes are positive and help to reach equity-driven goals versus changes that undermine equity? Consider how changes might expand opportunity gaps instead of lessening them? **Engaging with a Case:** You are given the results of a brainstorm on the case. Identify which change ideas

Topic	Objectives	Improvement Science Reading	Activities
	high-leverage change ideas		hold promise and should be tested, and justify these decisions based on the discussed criteria. **Applying to a DiP or Internship:** Conduct a literature review of 3-5 articles, read to look for change ideas. The change ideas need to be shown in the literature to address the root causes you identified in your root cause analysis Discuss findings from the literature review, hold a design session to brainstorm change ideas.

Extension Readings

Change Management

Berger & Johnston (2015). Simple habits for complex times.
Offers three core practices for leaders: taking multiple perspectives, asking different questions, and seeing the system

Berwick, D. M. (2003). Disseminating innovations in health care.
Explores in detail 3 clusters of influence on the rate of diffusion of innovations within an organization: the perceptions of the innovation, the characteristics of the individuals who may adopt the change, and contextual and managerial factors within the organization

Heath, D., (2025). Reset: How to Change What isn't Working, Chapters 6-10
Discusses successful transformations require leaders to identify constraints, remove bottlenecks, and redistribute effort strategically

Heath, C.,& Heath, D. (2010), Switch: How to Change Things When Change is Hard (pp. 5-48). ; [available as audiobook].
Focuses on bright spots, but also simple strategies for leading change.

Research/DiPs
Perry et al. (2020). Driver Diagrams and a Theory of Improvement- Chapter 5
Focuses on how to develop at theory of practice for a dissertation in practice (DiP)

Unit 4: Methods for iterating and measuring

A. Measurement
B. Engaging in PDSAs

Memo:
Previous units guided us through building an understanding of the system and theories to drive improvement. We now consider how to actually begin the process of improvement by making sure we are ready to understand whether our theories work in practice. We first discuss measurement in order to be prepared to understand whether our plans are being implemented as intended and working as theorized. We then discuss how to engage in short-cycle inquiry to get into the real work of improvement through plan-do-study-act cycles.

Topic	Objectives	Improvement Science Reading	Activities
Measurement	Students will be able to: Recognize the purpose and characteristics of different types of measures Design implementation and outcome measures that can be used to assess and adjust each aspect of their theory of improvement.	**Core Textbooks** Hinnant-Crawford (2025). Chapter 7 Practical measurement that aligns with the theory of improvement. Bryk et al. (2015). Chapter 4 *Different types of measures and how they can be useful for different aspects of the improvement work.* Grunow et al. (2024). Chapter 12 *Family of measures, how to design measures, and integrate measures into improvement work.*	**Discussion Questions / In-Class Activities:** Let's think about when you mapped the improvement space and identified your theory of improvement. What have you identified in that process that could be measured? What advantages are there to measuring those aspects? What could go wrong with something that you do not measure? What makes a good measure? What kinds of measures do leaders use in your setting? What could be measured that is not or would be too difficult to measure?

Topic	Objectives	Improvement Science Reading	Activities
		Anderson et al, (2023). Chapter 6: Data for Improvement and Disciplined Inquiry *Designing measures for improvement and short-cycle continuous improvement in particular.* Perry et al. (2020). Chapter 6. *Provides an overview of how to develop measures to inform improvement. .* Mintrop et al. (2015). Chapters 11-13. *Offers an approach* to *rigorously collecting impact and process data to evaluate change efforts, framed as part of an action research approach.*	How can measurement support addressing opportunity gaps? **Engaging with a Case:** Consider the measures you might need to measure implementation/process and outcomes within the context of the problem of practice and driver diagram for the case. What measures did they use? How could those measures be improved? **Applying to a DiP or Internship:** Design at least one measure for implementation/process and at least one measure for an outcome. Align these measures with your driver diagram.
Engaging in PDSAs	Students will be able to: Explain the essential components of a plan-do-study-act (PDSA) cycle. Develop plans to engage in an initial PDSA cycle.	Hinnant-Crawford (2025). Chapter 8 (pp. 155-194). *Provides an overview of the PDSA process and how learning from the first cycle can inform later cycles.* Grunow et al. (2024). Chapters 11 & 13 (pp. 134-151, 169-185). *Offers guidance on testing change ideas and practice and developing*	**Discussion Questions / In-Class Exercises:** Think of a time when you learned something through experimentation in your professional or personal life. To what extent did your process align with or depart from a PDSA cycle? Does your organization have any routines or processes that resemble a PDSA cycle? In what ways are they successful in enabling continuous improvement? In what ways do these processes

Topic	Objectives	Improvement Science Reading	Activities
		improvement routines. Bryk et al. (2015). Chapter 5. *Provides strategies for scoping and engaging in a PDSA process, as well as an in-depth illustration of how one network evolved a change idea over time.* Mintrop et al. (2015). Chapters 10-12. *Focuses on the process of implementing change ideas.* Perry et al. (2020). Chapter 7. *Provides an overview of how students can engage in iterative tests of change as part of an EdD dissertation.*	fall short? How might you approach incorporating PDSA cycles into your daily work? What would be a good opportunity for continuous improvement in the weekly activities of a school leader? How might PDSA cycles be particularly well suited for improvement for equity? **Engaging with a Case** Identify the PDSA cycles/cycles in the case. What did the team do? What did they learn? **Applying to a DiP or Internship:** Develop a plan for a first PDSA cycle for each of the change ideas you are experimenting with. Make sure to include specifics: who will try what, when, and with whom? What measures will you use in the short-term to gather feedback and assess if the change is an improvement? Consider using one of the PDSA templates included in the extension readings & additional resources.

Extension readings

Hannan et al. (2015). Using improvement science to better support beginning teachers
Describes a successful improvement NIC known as Building a Teaching Effectiveness Network (BTEN)

LeMahieu, P. G., & Cobb, P. (Eds.). (2025). Measuring to improve: Practical measurement to support continuous improvement in education.
Best practices for the design and implementation of practical measurement for improvement in K-12 education

Lewis, C. (2015). What is improvement science? Do we need it in education?.
Provide an overview of improvement science and how it can be used in education

Takahashi, et al. (2022). Measurement for improvement
Overview of measurement for improvement and the system of measures

Takahashi et al (2024). Practical measurement for equity and justice
How to integrate practical measures that are aimed specifically at working towards equity and justice.

Tichnor-Wagner, et al. (2017). Continuous improvement in the public school context
Examines how innovation design teams took up PDSA in their work to improve high school student outcomes, and their perceptions of PDSA as an approach to innovation development, adaptation, and implementation

Walston, J., & Conley, M. (2022). Practical measurement for continuous improvement in the classroom: A toolkit for educators
Report with detailed descriptions and examples of practical measurement

Unit 5: Spreading and sustaining improvement

A. Spreading and sustaining change
B. Spreading a culture and practice of continuous improvement

C. Capacity Building
    a. Individual
    b. Team
    c. Organizational

Memo:
This unit focuses on what we do *after* we have had some initial success with our PDSA cycles. What do we do next? We first examine the guidance on how to iteratively and carefully test change ideas on a larger scale, as well as how to move from one change idea to a larger change package that has a better chance of achieving our aim. We then consider a larger question: How do we spread continuous improvement across our organizations, so that we make progress not just on a single problem, but continuously get better in all respects as a system. Here, we consider the affordances and limitations of different approaches to CI, and consider the novel ways scholars and leaders have conceptualized CI when focused explicitly on the work of organization-wide improvement. Additionally, to successfully lead CCIE in schools and districts, there must be capacity built within individuals, teams, and organizations that support the work. This capacity building includes foundational improvement dispositions and habits, developing norms and values, and engaging in adaptive practices.

Topic	Objectives and Skills	Improvement Science Reading	Activities
Spreading & sustaining change	**Students will be able to:** Explain the characteristics and purpose of a change package. Evaluate different approaches to scaling up successful changes	**Core textbooks** Grunow et al., 2024, chapters 14-16 (pp. 185-215). *Introduces change packages, drivers of diffusion of innovations, and methods of spread* Bryk et al. (2015). Chapters 5 & 6. *Provides a framework for assessing organizational readiness for spread (p. 120), a detailed case study of spreading change*	**Discussion Questions (for anyone):** Reflect on an initiative that you have been involved in that was spread or scaled up in some way. In what ways, if at all, was the spread or scale-up process aligned with the principles described in this unit? In what ways, if at all, did they depart from the principles in this unit?

Topic	Objectives and Skills	Improvement Science Reading	Activities
	from early PDSA cycles. Describe the different approaches to sustaining successful change ideas.	*(122-139), PDSA Ramps, and a developmental continuum for reliable change.* Hinnant-Crawford (2025). Chapter 9 (pp. 195-207). *Introduces the idea of networked improvement community (NIC) and a framework for initiating a NIC,* Anderson et al., 2024 Chapter 7. *Discusses systems change leadership, implementation of spread and scale, networks, and collaborative research partnerships* Mintrop et al., 2015. Chapter 13. *Focuses on how to extract design principles from implementation.* Transforming education series, Practicing collaborative continuous improvement, module 6. *Introduces ideas related to spreading across your theory of improvement, change packages, approaches to spreading, key questions to consider when spreading*	What were the consequences of these spreading or scaling processes for the success of the initiative? **Engaging with a case** Based on your understanding of implementing spread and scale, how did the team in the case approach spread and scale? What would you do next? What would you do differently? **Applying to a DiP or internship** Consider your current problem of practice and/or theory of improvement. If you were to begin to lead a change effort, where might you start to ensure that you are engaging in a 'safe-to-fail' experiment? Imagine that, after a few PDSA cycles, you begin to identify some promising change ideas you are ready to spread. What factors are you going to want to consider as you spread change in this context? What challenges do you foresee? What strategies do you want to remember?

Topic	Objectives and Skills	Improvement Science Reading	Activities
		change, designing for adaptation, adaptive integration, and safe-to-fail experiments. Perry et al., 2020. Chapter 8. *Supports learners in reflecting on challenges and lessons learned from their improvement work*	
Spreading a culture and practice of continuous improvement	**Students will be able to:** Analyze the extent and ways in which school systems operate under an improvement logic. Explain how the work of spreading CI in a school district is similar to and different from the work of addressing a specific problem of practice. Evaluate different	**Core textbooks** Bryk et al. (2015). Chapter 7 *Offers advice for how to carry CI into one's daily work.* Hinnant-Crawford (2025). Chapters 10, 11, and epilogue. *Provides final reflections on how to lead the work of CI, particularly in ways that advance racial equity in contexts where such work is politicized.*	**Discussion Questions (for anyone):** In what ways does your organization operate in accordance with the principles of CI? Where and how does it depart from these principles? What are the consequences? What principles, methods, or approaches that you have been introduced to in this course are most applicable to the work of leading a school system? What approaches may be less appropriate to leading school districts? What are 2-3 specific changes you might make to your leadership to better hardwire CI into your organization?

Topic	Objectives and Skills	Improvement Science Reading	Activities
	models of CI for their affordances as an organization-wide approach to improvement.		Imagine a superintendent comes to you for advice. Members of the department of curriculum and instruction have been part of a NIC for the past 3 years, along with a few principals and teachers from 5 of their 15 schools. Funding for the NIC has ended, but the superintendent is interested in making CI systemic across the district. How would you advise the superintendent on how to go about this work? **Engaging with a Case:** What did they learn about their change idea or bundle/package of change ideas that is important to consider when spreading to new contexts? **Applying to a DiP or internship** Consider your current problem of practice and/or theory of improvement. How might your district/organization's current approach to organizing for improvement hamper your change efforts? How might you address these barriers?

Topic	Objectives and Skills	Improvement Science Reading	Activities
Capacity Building: Individual, Teams, and Organizations	**Students will be able to:** Discuss and begin to consider how to build capacity for CCIE in schools, districts, and organizations	**Core textbooks** Anderson et al., (2023). Chapter 8 *Explains how to establish conditions (dispositions, structures, culture, priorities) for leading CCIE* Anderson et al. (2023). Chapter 9 *Explains how a leadership team can create the organizational conditions that support the learning process*	**Discussion Questions/In-Class Activities:** What does it mean to build capacity for CCIE? What needs to be considered? How is capacity building different for CCIE than other kinds of reform or improvement initiatives? What does it look like to build capacity as a school leader? What would a school leader do to build teams that can create effective organizational conditions? **Engaging with a Case:** In what ways did the improvers in the case build capacity? What did they do well? What would you have focused on if you were a member of this improvement team? What opportunities did they miss to build additional capacity? **Applying to a DiP or Internship:** What do you need to have in your “toolbox” to lead improvement?” How

Topic	Objectives and Skills	Improvement Science Reading	Activities
			will you build capacity for your improvement project? What will it look like? What activities, structures, and norms will you develop? Refer to the action inventories in Anderson et al. (2023) Chapter 8 and 9.

Extension Readings

Berwick, D. M. (2003). Disseminating innovations in health care
Explores in detail 3 clusters of influence on the rate of diffusion of innovations within an organization: the perceptions of the innovation, the characteristics of the individuals who may adopt the change, and contextual and managerial factors within the organization

Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change
Scale as spread, depth, sustainability, and/or shift in ownership

Cohen-Vogel et al (2022). A framework for scaling for equity.
Read the Executive Summary and Components 1-3 (pp. 1, 6-20).

Park et al.. (2023). Weaving and stacking
Crafting coherence, weaving versus stacking

Sutton, R. I., & Rao, H. (2016). Scaling Up Excellence: Getting to More Without Settling For Less
Identifies key scaling challenges across a range of disciplines

The wider field of improvement research

Cohen-Vogel et al., 2025, Improvement Research in Education
A chapter in the *Handbook of Education Policy Research, 2nd Edition* focused on introducing the field of improvement research to the

wider educational policy community.

Penuel et al., (2020), Principles of collaborative education research with stakeholders
A review of research focused on 'collaborative problem-solving research', framing improvement science as one part of this field.

Yurkofsky et al., (2020). Research on Continuous improvement
A review of research focused on the wider field of continuous improvement methods, framing improvement science as one part of this field.

CI as an operating logic for school districts

Chu et al., (2025) The Learning Hive
Focuses on how school districts can organize as 'evolutionary learning' systems that hardwire CI into the DNA of how the system operates.

Bryk, 2020. Improvement in action
Describes successful networked improvement communities. Focus specifically the chapter on Menomonee Falls

Peurach et al., (2019), From Mass Schooling to Education Systems
A review of research on how school districts are moving towards instructionally focused educational systems; outlines five domains of work related to how school systems organize and manage instruction.

Yurkofsky, Honig, et al (In Press). Pursuing equitable education and learning systems:
A review of whether and how improvement science and expansive learning methods can advance fundamental systemic and equitable change in school districts

Models of organization-wide CI

Chu et al., (2025) The Learning Hive
Focuses on how school districts can organize as 'evolutionary learning' systems that hardwire CI into the DNA of how the system operates.

Forman et al.. (2021). The internal coherence framework

Describes a framework for developing internal coherence in instructional change and includes rubrics and a survey

Spear (2010) The High Velocity Edge
An influential book on an approach to continuous improvement that comes out of organizations like Toyota and Alcoa.

Rother (2009) Toyota Kata
An influential book on an approach to continuous improvement rooted in Toyota. Strong emphasis on coaching.

Capacity Building: Individual, Teams, and Organizations

District Capacity Building
Anderson, E., Cunningham, K. M. W., & Richardson, J. W. (2023), Chapter 9. Sustaining Continuous School Improvement: A Framework for Transformative Organizations
Presents five sustaining practices for schools and districts, including (a) learner stance, (b) learning culture, (c)adaptive change, (d) data for improvement, and (e) organizational routines

Anderson, E., Cunningham, K. M. W., & Richardson, J. W. (2024). Framework for Implementing Improvement Science in a School District to Support Institutionalized Improvement.
Describes how districts can support schools in organizing, implementing, and sustaining improvement science methods

Coaching Improvement
Anderson, E., & Davis, S. (2024). Coaching for equity-oriented continuous improvement: Facilitating change.
Provides five coaching stances for coaching continuous improvement

Khachatryan et al., Chapter 12. How Coaches Support Improvement Teams: Challenges and Considerations
Categories to describe the practice of coaching improvement teams in education

Additional Formats
High Tech High Graduate School of Education repository of change packages.

Culminating Products and Research

EdD

Project For Class

Dissertation in Practice Template

Master's/Certificate-Level with a Required Improvement Project for Principal Internship

Internship Improvement Project Proposal

The NIC Charter

Research/DiPs/ Capstones Readings

- Anderson et al. Chapter 1: Ava's Story of Equity-Oriented Improvement
- Bonney, E. N., Capello, S. A., & Yurkofsky, M. (Eds.). (2024). Improvement science in the field: Cases of practitioners leading change. Bloomsbury
- Everson, K., Tamim, S., Torres, K. M., & Hemmer, L. (2024). The importance of the Dissertation in Practice (DiP): A resource guide for EdD students, their committee members and advisors, and departmental and university leaders involved with EdD programs.
- Orr, M. T. (2025). *Leading equity-focused inquiry for continuous school improvement*. Teachers College Press.
- Perry, J. A., Zambo, D., & Crow, R. (2020). *The improvement science dissertation in practice: A guide for faculty, committee members, and their students*. Myers Education Press.
- IHI Video: The difference between quality improvement and research.

Institutional Review Boards and Ethical Considerations

- Behavioral Research. (1979). The Belmont Report. U.S. Department of Health, Education, and Welfare.
- Hinnant-Crawford, B., Bonney, E. N., Perry, J. A., Bozack, A. R., Peterson, D. S., Crow, R., & Carlile, S. (2024). Continuous

Improvement, Institutional Review Boards, and Resistance to Practitioner Scholarship. Educational Researcher, 53(1), 46-53

- Bass, P. F. & Maloy, J. W. (2020). How to determine if a project is human subjects research, a quality improvement project, or both. Ochsner Journal, 20(1), 56-61.
- Lynn, J., Baily, M. A., Bottrell, M., Jennings, B., Levine, R. J., Davidoff, F., ... ; James, B. (2007). The ethics of using quality improvement methods in health care. Annals of internal medicine, 146(9), 666-673.

Action Research Dissertations

- Anderson, G. L., Herr, K. & Nihlen, A. S. (Eds.). (2007). Studying your own school: An educator's guide to practitioner action research. Corwin Press. Chapter 1.
- Herr, K. & Anderson, G. L. (2014). The action research dissertation: A guide for students and faculty. Sage. Chapter 7. "Ethical Considerations and Action Research."

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Boudett, K. P., & Bocala, C. (2025). *Data Wise: Educators collaborating so each learner thrives* (3rd ed.). Harvard Education Press

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