


Let's Talk: Critical Participatory Action Research and Improvement Science-Guided Research Comparing Our Approaches to Improve Education

Joy Howard 
Western Carolina University
joyhowardwcu@gmail.com

Tori Colson
University of Southern Indiana
tshoulders@usi.edu

Kim Derk
University of Southern Indiana
kaderk@usi.edu

ABSTRACT

The purpose of this paper is to identify key characteristics and forms that both research approaches use within the applied field of education. In this paper, we ask—how are CPAR and IS-GR similar and different? And, can tools or propositions from each be used in tandem within a research project? We invite readers to consider useful frameworks created to address problems of practice. Drawing strength from our diverse backgrounds (fields of study and professional roles), we aim to identify clear overlaps and divergent perspectives between the two approaches to aid scholarly practitioners in making informed decisions about the research frameworks they choose to take up to address pressing problems of practice in education.

KEYWORDS

critical participatory action research, improvement science, educational research

Research as public science – for the public good, has been taken up across many fields including psychology, education, urban planning, sociology, and interdisciplinary areas (e.g., gender studies and ethnic studies). Both Improvement Science Guided Research (IS-GR) and Critical Participatory Action Research (CPAR) frequently make claims to be forms of public science. As co-authors from diverse fields and with affiliations across a wide array of professional organizations, we have noticed many similarities between these two frames of research in our scholarly reading and conversations. The purpose of this paper is to identify key characteristics and forms that both research approaches use within the applied field of education. In this paper, we ask—how are CPAR and IS-GR similar and different? And, can tools or propositions from each be used in tandem within a research project?

From the onset, we want to acknowledge that while we focus the present discussion specifically on the term, CPAR, it is important to note that there are strong connections to community-engaged research (CER), community-engaged participatory action research, critical participatory action research, engaged research, and public sociology that share characteristics of CPAR. To allow for a clear and concise review, we focus on three primary fields – psychology, sociology, and education in our discussion of CPAR.

We are three authors who have several shared commitments around equity in education, but we have distinct educational backgrounds and experiences. Joy is an associate professor who works with EdD and masters' students at a Carnegie Project on the Education Doctorate (CPED) institution, engages in diverse research projects (e.g., CPAR, arts-based, ethnographic, and poetic inquiry) most frequently collaborative projects, identifies as a motherscholar, and has taught qualitative research. Holistically, Joy's research seeks to find spaces of humanization in education in a racist society. Kim is completing her EdD program, and Joy and Tori have been her mentors since the start of her EdD program where both were her instructors and advisors in the program. Joy's focus is punitive and exclusionary discipline practices from the perspective of public-school principals and more broadly a search for methods to humanize schooling spaces for all children. Tori works with EdD students and was the program director in a CPED Educational Leadership program. Tori is now the Assistant Dean of Pott College Science, Engineering, and Education. Tori's research interests include assessment, teacher preparation, educational research, and inclusion.

Throughout this paper, we use pronouns strategically. We is indicative of a collective and agreed-upon proposition or position on



New articles in this journal are licensed under a Creative Commons Attribution 4.0 United States License.



This journal is published by Pitt Open Library Publishing.



This journal is supported by the Carnegie Project on the Education Doctorate: A Knowledge Forum on the EdD (CPED) cpedinitiative.org

impactinged.pitt.edu
Vol. 8 No. 1 (2023)

ISSN 2472-5889 (online)
DOI 10.5195/ie.2023.285

a topic or issue. As researchers with different political and philosophical leanings as well as academic training, when one of us uses our name followed by personal pronouns, we are indicating a voice of dissent or particularity. We represent this strategically as we do not intend to indicate that these frameworks are oppositional or that those who use them cannot be in conversation or share many ideals and purposes in research. We believe this is an important standpoint to explain and demonstrate as we aim to lead conversations about these terms in an inviting yet distinctive way for scholarly practitioners who are wading through the work of making distinctions between these research approaches. Despite that intention, we also emphasize that this effort is only intended to extend necessary conversations that may inform emerging scholars in their research efforts. We invite readers to consider useful frameworks created to address problems of practice. Beyond the scope of this paper is a comprehensive or definitive articulation of CPAR or IS-GR; however, we aim to identify clear overlaps and divergent perspectives between the two approaches to aid scholarly practitioners in making informed decisions about the research frameworks they choose to take up to address pressing problems of practice in education.

THE CONTEXT OF THE CONVERSATION: KEY CONCEPTS AND HISTORY

Our goal in this paper is to explain key characteristics and forms that are distinct and shared between CPAR and IS-GR both frequently taken up within the applied field of education. To begin, we emphasize the last word of each term (research and science) and consider how each may be taken up by scholarly practitioners, who are focused on significant problems of practice within educational communities, in the field of education.

Research and Science

Critical Participatory Action Research (Baum, 2006; Fine & Torre, 2021; Mirra & Rogers, 2016; Pain et al., 2011) and Improvement Science (Bryk et al., 2017; Langley et al., 2009; Perry et al., 2020) are often taken up by distinctly diverse groups of educational researchers. In the pursuit of training scholarly practitioners within EdD programs, however, these distinct frameworks for research have converged in conversation about how to approach everyday problems that affect students, educators, and families. Therefore, we aim to engage both frameworks and point to the shared characteristics and major differences. We do this to offer clarity about the context of each so that educational researchers can engage in conversation and make informed decisions about research frameworks best suited to take on complex problems of practice.

We begin by emphasizing the last word used in both terms—research and science. These frames for inquiry are not interchangeable. Understanding these terms as not synonymous is a linguistic artifact pointing to the genesis of each approach and the journey each took on the way to being applied to problems in education. The terms set up an immediate, yet subtle differentiation that can muddy discourse around the two approaches. We offer the following propositions to help extrapolate the differences and similarities between CPAR (Torre et al., 2012) and IS-GR (Langley et al., 2009).

To begin this conversation about research and science, we acknowledge the entanglement of the two terms, yet we point to the

signifiers of each as useful in framing CPAR and IS-GR. The behavior of researching, a verb, eventually produces a body of work that some refer to as the research, a noun. Science is often framed from the traditional perspective of a subject (e.g., biology, astronomy, and physics) taught in middle and high schools. We synthesize multiple definitions to describe this perspective of science as the construction and organization of knowledge. Science implies that data is gathered in a prescriptive manner to document observations and experiments to improve the theory and/or practice. Said differently, the purpose of science is to develop testable explanations and predictions. Traditional science evolves when such bodies of work, or research (the noun), link together around a common area of inquiry and produce similar outcomes that are convincing enough to offer explanations and develop predictive abilities for specific areas of interest (Aken, 2004; Romme, 2003).

There are two distinct branches in the sciences (Dresch et al., 2014). The natural sciences (e.g., astronomy, biology, botany, oceanography, and zoology), are a study of living things and their interactions with and within their environments (Fischer et al., 2011). The social sciences (e.g., anthropology, history, economics, psychology, and sociology) focus on areas such as human interaction, behavior, and societies (Fischer et al., 2011). Both branches rely on empirical evidence to formulate a hypothesis about our natural and social world. The gold standard within traditional research has been dominated by double-blind randomized control studies (Bartman et al., 2018; Misra, 2012).

Beyond this traditional scope of natural and social sciences, there are also the formal sciences. These fields consider abstract concepts, such as logic, philosophy, mathematical reasoning, and symbolism (Aken, 2004; Franklin, 1994). Relevant to this discussion, some scholars do not consider the formal sciences as a separate branch because they rely on conceptual systems, theories, and axioms, rather than empirical evidence. For instance, Albert Einstein's well-known axiom, Theory of General Relativity, and John Nash's Prisoner Dilemma may be considered examples of this branch of science. Formal sciences can enhance and challenge empirical traditional sciences, but they cannot replace or duplicate them.

Holistically, the natural, social, and formal sciences are considered fundamental sciences. Researchers from these fields conduct fundamental, or basic, research to improve human understanding and the ability to predict natural and other phenomena (Fischer et al., 2011). These sciences tend to spend a lot of time on theory and explanation, which can decrease their value to those directly experiencing the problem and seeking workable solutions (Aken, 2004). This disconnection between theory and real-world application necessitates the applied sciences, such as engineering, architecture, applied behavior analysis, and medicine (Holtzman, 1994). Applied sciences take place in non-pristine, often chaotic real-life environments. This is quite different from sterile labs or controlled research populations, and as a result, applied sciences tend to rely heavily on empirical evidence.

Researchers from applied sciences often utilize formal science to gain insight that informs highly practical goals, many of which evolve into subspecialties. For example, neuroscience is a subspecialty that has developed within the applied science of medicine. It merges knowledge gained from the natural sciences of biology and chemistry with information from the social science of psychology (Jamaludin, 2019). In the field of education,



neuroscience informs many strategies being developed for trauma-responsive classrooms and social and emotional learning curricula (Imad, 2021). It is at the intersection of formal, traditional, experimental, and applied knowledge that the challenge of differentiating CPAR from IS-GR emerges. In the following section, we provide a brief history and overview of CPAR and IS-GR.

The Evolution of Critical Participatory Action Research

The historical background of CPAR research informs present-day engagements with terminology and assumptions. Torre et al. (2012) provide a detailed history of what they call CPAR. In their review, they emphasize diverse legacies that laid the scholarly foundation of this work. In this historical backdrop, Torre et al. (2012) highlight the influence of Paulo Freire, the tradition of liberation theology, and postcolonial studies such as the revolutionary praxis of Orlando Fals Borda in South America and Anisur Rahman in Asia. In the field of psychology, they credit Kurt Lewin (1946) and several other scholars who contest what Ignacio Martin-Baro (1994) called the collective lie or the meaning of the dominant constructions of injustice within research. In sum, they describe that CPAR scholars, who are broadly defined and not limited to scholars within the academy, work to mobilize everyday people for social change movements toward justice.

Additionally, the influence of W.E.B. DuBois (1898) on CPAR cannot be overstated. His work critically examines what he refers to as the Negro Problem (meaning the condition under which African American people are forced to live – not to be confused with any innuendo of a deficit within this ethnic/cultural group) (Dubois, 1898). As a forerunner in community-engaged work, DuBois (1898) demonstrated innovative ways to position social science as a method for social change by creating large-scale community surveys to explore the impact of social and economic conditions on Black communities as a means of quantitatively describing structural racism to change these conditions. Over a century later, the field of sociology (and a broad array of academic fields) still struggle to adopt or even fully comprehend the importance of CPAR or what Hartman (2022) describes as community-engaged research. Framing this work as public sociology, Hartman (2022) argues that responsiveness to community needs and questions should drive sociological inquiry not only as applicable to implementation into practice but also to inform theory. This proposition points to a strong position about what it means to not just observe the world, but to forward epistemological questions researchers must assume. In short, Hartman (2022) describes the nature of this public work as inclusive of any sociological research, writing, and work happening outside of the academy for not only disseminating and applying general knowledge, but also to construct new knowledge, ideas, and approaches (Hartmann, 2016). Sociology is a discipline in need of constant reinvention and renewal. Working with concrete, community-based initiatives, organizations, and advocates provides academic sociologists with opportunities to put theories and methods to the test (Jefferson & Kirshner, 2021; Warren, 2021).

In the field of education, CPAR work has been growing in its various translations and applications. Like in other fields, the way that research projects get taken up varies. Given the educational focus of the readership of *Impacting Education*, we offer a few examples that may be especially relevant. In a recent special issue of *The Assembly*, Jefferson and Kirshner (2021) highlighted PAR

work in the field of education where the community drives inquiry and researchers collaborate on the development and design of research projects that take on equity issues in education – in this case issues of displacement. To illustrate, Ferman et al. (2021) utilized participatory observation, coalition-building, and community collaboration to uncover how universities contribute to or exacerbate the displacement of low-income communities and students. Ferman et al. (2021) described a book club that evolved into a CPAR collective to understand factors contributing to Black students withdrawing from school in Atlanta. They used community listening sessions to locate the importance of teachers being at the center of education policy conversations. Other exemplary research topics that exemplify community-engaged research include actively challenging university epistemologies that commodify knowledge for private interests, competition, and standardization (Mirra & Rogers, 2016) and interrupting the move toward corporate management of Chicago public schools (Gutierrez & Lipman, 2016).

The Evolution of Improvement Science

As a body of knowledge focused on the science of solving problems of practice, IS-GR is at its core a framework within the applied sciences. IS-GR initially utilized small, rapid tests of change cycles to produce momentum-building outcomes that allowed researchers to learn fast and make a measurable impact toward a desired aim (Bryk et al., 2017). The science behind IS-GR has been evolving for decades. Although it was initially envisioned to improve schools, its potential was ignored by education scholars (Langley et al., 2009). Thus, for several decades, it was utilized primarily in Japanese businesses (Add Source). Notably, Walter Shewhart, a 1920s polymath used IS-GR to apply his expertise in statistics, engineering, and physics and ultimately develop numerous process control tools (Deming, 1967). His work developed the prototype for today's Plan-Do-Study-Act or PDSA Model (Best & Neuhauser, 2006). Shewhart shared his work with his mentee, William Edwards Deming, who went on to become known as the father of quality improvement (Peden & Rooney, 2009). While the cycle sometimes is referred to as the Deming Cycle, Deming (1986) credited Shewhart for the original model and inspiring his interest in systems and variation reduction. The Deming (1986) Cycle principles are at the foundation of improvement science as it is referred to in education research. Although Shewhart's PDSA Model was largely ignored by educators during his lifetime, the learning and improvement tools are at the center of what has been adopted as IS-GR in education (Moen & Norman, 2010; Nilsen et al., 2022) and have also found traction in Japanese business and American manufacturing (Add Source).

Practitioners facing quality and process problems in a wide variety of other fields soon took notice of the improvement leaps happening in the business sector (Gawande, 2009). For example, airlines brought in process improvement experts to reduce variation in how consistently pilots followed their preflight checklists, and safety rates improved dramatically. The fast-growing tech sector also built continuous improvement processes into operations from the ground up to rapidly deploy product improvements in the hyper-competitive environment (Impruver, 2020; Langley et al., 2009). While initially applied to systems, equipment, and processes, improvement projects also emerged from within the soft side of business in areas such as human resources, sales, customer responsiveness, and workplace safety. These areas grew alongside company profits. For example, Disney borrowed Deming's PDSA cycle which transformed into the Dream-Believe-Dare-Do cycle

described by Capodagli and Jackson (2016). This articulation of that framework is credited as a key ingredient in the magic behind the company's famous customer experiences. In each example above, measurable improvement projects influenced both individual outcomes and larger processes within systems.

During this evolution, depending on the setting, application, and practitioners, the core elements were included under many labels, such as quality improvement, continuous quality, and continuous quality improvement (Langley et al., 2009). Often, the tools and processes supporting the science, as measurable outcomes based on theories derived from research findings, were built into commercial packages that masqueraded as new and unique approaches to problem-solving. These approaches have taken on stand-alone identities such as: Six Sigma, Lean for Manufacturing, Lean for Education, Implementation Science, Organizational Behavior Management, and many other consultant-friendly frameworks (Brethower et al., 2021; Langley et al., 2009; LeMahieu et al., 2017). Despite the various labels, the unifying theme of IS-GR is a charge to instigate effective and efficient positive change on problems of practice.

Improvement Science can arguably be applied to any setting or profession and can involve people from all occupations (Improvement Science Research Network, n.d.). It can be used to improve individual, small group, or societal performance, or it can drive systemic change. As understanding and application of the framework moved through several fields of study toward education, the IS-GR collective now offers a deep and wide collection of tools, processes, guides, job aids, analysis, and experience narratives to drive measurable change appropriate for each specific situation and setting (Langley et al., 2009). These methods provide the ability to identify, control, and test variables to ensure that change leads to measurable improvement, as opposed to change that drains valuable resources or adds unnecessary complexity to problems of practice (Bryk et al., 2017). Langley et al. (2009) explain the significance of this cumulative knowledge in the seminal tome on improvement research, *The Improvement Guide*. A noteworthy resource is included in the appendix which lists the 72 most common change concepts. The list provides prompts for practitioners to consider in application to their problems of practice (Langley et al., 2009). These concepts are then sorted into categories, followed by a synthesis of the tools and processes that have proven successful in the case examples offered. Despite the different names and nuances, all approaches to IS-GR, regardless of the problem or setting, share core commonalities (LeMahieu et al., 2017). LeMahieu et al. (2017) described each one as:

- uses a scientific approach to address problems,
- develops a hypothesis regarding what will lead to positive change,
- gathers empirical evidence that substantially reduces or eliminates as much variation as possible,
- tests the hypothesis against the empirical evidence,
- provides transparency throughout, and
- encourages collaborative inquiry, particularly with those living closest to the problem.

In short, IS-GR is the scientifically oriented discipline that guides how improvement research (often referenced as projects or cycles) is conducted (Hinnant-Crawford, 2020). A practitioner utilizing IS-GR is interested in determining the most effective and efficient ways to move from the current state (with a measurably

defined problem of practice) to the desired state, using interventions that make a measurable and identifiable improvement, not just a change. Within this paradigm, almost any research method, process, or tool that demonstrates measurable improvement to the targeted outcomes is allowed. As a result, IS-GR often fits into the category of applied mixed methods, although it is not constrained exclusively to that research structure.

A COMPARATIVE ANALYSIS OF CRITICAL PARTICIPATORY ACTION RESEARCH AND IMPROVEMENT SCIENCE-GUIDED RESEARCH

To make connections and comparisons about the ways that CPAR and IS-GR have been applied, we focus on nine basic categories that we identified in our analysis of the literature and how these frames have been applied to real-world problems. In what follows, we introduce a comparison table (Table 1) that offers a synthesis of work from numerous authors operating within these research specialties. While it is beyond the scope of the present paper to offer a more detailed description of either, we suggest that readers review Fine and Torre (2021) as a primer for CPAR. Additionally, a substantial number of articles and examples of IS-GR can be found on the Carnegie Foundation for the Advancement of Teaching's website, www.carniegefoundation.org.

Our aim is to offer a starting place for academic discussions (e.g., through research, in EdD research courses) about the relationships between the research structures (shared features and tools) and the ideological convergence and divergence of projects taken up under either banner. To encourage dialogue, we offer a brief discussion of the epistemological leanings and methodologies within each. Given the complexities of the task, we offer Table 1 as a comparison of several categories including: definitions, the foundational influences, applications, methodologies, engagement with participants, process, tools, data collection norms, and how findings are used. In the center of the table are some of the characteristics shared between the two paradigms that we identified based on our review of literature. We do not proposit that this table captures all differentiators or commonalities between the two. Instead, we offer this comparison to help guide readers as we move through this discussion of the background and application of both approaches, and to serve as a catalyst for scholarly conversations about one or both approaches to educational research.

Epistemologies and Methodologies

Core Characteristics

Drawing from Fine and Torre (2021), CPAR operates as an epistemology, not just a methodology. Further, it can encompass theories of change that counter what Tuck (2009) calls "damage-centered research" or "research that operates, even benevolently, from a theory of change that establishes harm of injury to achieve reparation" (p. 413). The danger of such work is that focusing on the oppression alone, or what hooks (1990) describes as research on oppressed people groups that asks them to "only speak your pain" (p.152), negates a humanizing perspective of the hope, joy, resilience, and strength present in communities that are robbed of human rights and dignity.



Table 1. Comparing CPAR and IS-GR Frameworks

	CPAR (Sources include Fine & Torre, 2021; Fine et al., 2021; Hartman, 2022; Meyer et al., 2018; Pain et al., 2011; Torre, 2009).)	SHARED	IS (Sources include Bryk et al., 2017; Langley et al., 2009; Perla et al., 2013)
Definition	Research is conducted in collaboration with communities, groups, and individuals. Generally the problem identified problematizes injustice and directly critiques sociopolitical power dynamics that limit or prevent political, medical, professional, economic, educational, nutritional, etc. access in ways that deny human rights and/or ignore the dignity of targeted groups of people.		A research paradigm built on decades of continuous improvement interested in determining the most effective and efficient ways to move from the current state (with a measurably defined problem of practice) to the desired state, using an intervention(s) that makes a measurable and identifiable improvement; not simply a change.
Foundational Influences	Theoretically guided by critical, participatory/advocacy/emancipatory	Philosophy Psychology	Guided primarily by theories of systems, variation, & knowledge Focused on making interventions work effectively with unique implementors across different settings & situations
Primary Applications To Date	Social justice concerns	Education Healthcare Community concerns	Business & industry Individual & group performance improvement
Methodological Trends	Avoids starting with a hypothesis Process evolves organically Collective research design Research with – not on - participants	Seeks improvement of current conditions Values & accepts multiple scientific methodologies – qualitative, quantitative, & mixed methods and related sub-categories In the realm of applied sciences – research, action, decisions are informed by doing	Assigns a fundamental relationship to change & improvement Uses data-based decision-making such as process maps, root cause analysis, & baseline data to select starting point
Participant Engagement	Research teams with diverse levels of societal power, interests, issues, experience, and expertise analyze qualitative and quantitative data, while maintaining the central focus on the perspectives of those most impacted by injustice. Participants considered expert co-researchers Distributed leadership with no participation commitments	Central focus is on those closest to the concern.	Subject(s) can be self, individuals, small or large groups, organizations, or systems Can be independent, small group research, but NICs are encouraged NICS thrive on transparency, but it is not required Members commit to take specific actions toward a measurable goals
Processes	Democratizes knowledge production Ideologically and occupationally diverse research teams read and critique academic and popular articles and media about the topic of interest. Researchers watch, listen, and record activity related to the topic of interest	Engages participants early and often Welcomes challenging and difficult conversations at all stages of the process	Studies the system that created the current conditions Requires proof of variability control Starts with: “What specifically is the problem we are trying to solve.” Often, but not always, uses Plan-Do-Study-Act cycles. Utilized consecutive rapid cycles to test change ideas and inform direction
Tools	Creative presentations accepted: art, poems, music, theater Research collectives	Often uses surveys, interviews, & observations	Fishbones, driver diagrams, root cause analysis, process & other systems maps, and traditional change measurements Validity and reliability measurements.
Data Collection	Data can take many forms Is not limited to that which is measurable Variability control not required	Data informs direction Requires information comes from those most impacted by the problem	Measures key outcomes and processes, as well as potential unintended consequences. Should answer the following questions: “What changes might we introduce & why?” “How will we know that a change is actually an improvement.”
How findings are used	Challenges dominant narratives to illuminate hidden realities that are often not brought into public view. To be used as a catalyst for social change.		Determines next step in PDSA cycle. Guides whether to Act-Adapt-Abandon Contributes to improvement along multiple components of a problem.

Although there is a wide variety of methods of data collection and analyses that appropriately fall under the umbrella of CPAR, there are some common threads that are shared among researchers ascribing to this way of inquiring into our social world. Our review of the literature on CPAR yields the following characteristics as core to all descriptions of CPAR. Pain et al. (2010) describes seven themes central to CPAR: collaboration, knowledge, power, ethics, theory building, action, emotions, and well-being. To summarize, we found across all the studies that we reviewed, authors shared a consensus that CPAR must be:

1. **About social justice.** A focus on in(justice) (Fine & Torre, 2012) and explicitly stated commitments to action-oriented change as the expected outcome of the work. "Critical PAR commits at once to human rights, social justice, and scientific validity" (Torre et al., 2012, p. 182).
2. **Participant driven.** Research "with" and alongside community members whose knowledge is respected and who inform the research process and product; not on (as an outsider) or for (as patronizing or all-knowing). This way of research is founded on an approach that undertakes the "science of the oppressed rather than for the oppressed that called for research designed from the perspective of those most affected by injustice" (Torre et al., 2012, p. 175).
3. **Characterized by the democracy of knowledge.** Deep commitments to an ethical pursuit of knowledge that will improve social injustices where the entire design of the project is carefully planned and revisited not just by the lead researcher but by the research team (e.g., research questions, data collection, data analysis, reporting of findings, and research goals are all co-constructed by the group).
4. **Change and action-oriented.** A wide variety of theories can be applied to CPAR projects, but they tend to be oriented to critical theories and indigenous ways of knowing.

In our review of the literature, we found that IS-GR also has key features consistent across projects, regardless of whether the research subject is an individual, group or organization, or system. This is particularly true when multiple researchers collaborate on a project, such as one involving a Networked Improvement Community, or NIC. When considering IS-GR, Perla et al. (2013) constructed the epistemology for IS-GR using the following propositions:

1. Testing and learning cycles anchor the science of improvement.
2. Conceptualistic pragmatism provides the philosophical foundation.
3. Psychology and logic can co-exist in IS-GR.
4. Justification and discovery provide context for the science of improvement.
5. Operational definitions are required in IS-GR.
6. Improvement Science utilizes Shewhart's theory of cause systems, which requires tracing sources of variation and accurate identification of statistically normal processes to recognize and address the abnormal.
7. Systems theory feeds IS-GR.

Participation

By definition, CPAR cannot be conducted by a solo researcher. IS-GR can be conducted solo, with groups and organizations of all sizes, and on systems (Langley et al., 2009). The potential of IS-GR is best optimized when built upon and within a body of knowledge developed within a NIC (Bryk et al., 2017).

Protocols and Processes

In general, under a CPAR framework groupings may be loosely constructed and member actions and outcomes are not predetermined. When a NIC conducts IS-GR, processes and procedures are organized in a more prescriptive way around a central problem. Members are expected to identify and explicitly state what they are working together toward (Bryk et al., 2017). The target is operationally defined, and members commit to follow-up actions specific to their interests and needs related to the problem. Those commitments often change depending on the cycle, currently expressed target, and each member's available resources at the time. What remains consistent from one improvement cycle to the next is transparency, shared data gathering, and reporting, followed by group analysis (Bryk et al., 2017). This is similar to CPAR projects. Multiple perspectives contribute to the interpretation of data and crafting steps forward and committing to future actions. NIC project outcomes are often fast-paced by comparison.

The Genesis of the Work

There are no set rules on how a NIC evolves. In some cases, a researcher may tap into an existing workgroup or scientists that have been actively publishing on the topic of interest or a group of volunteers that has been tackling a problem in the community. If a connected group of people already working on the problem cannot be found, a researcher can intentionally develop a NIC to address a specific problem of practice (Bryk et al., 2017) as part of an IS-GR project.

Researchers intending to do CPAR should have a strong connection with the community they plan to work within. Indeed, CPAR is ideally a response to a community-identified problem, and the researcher is selected for partnership because of the skills and commitments they can offer to the community. Sustainability and careful ethical thought work will allow researchers to be authentically accepted and useful to the problems they claim to address.

Overarching Similarities and Differences

Given these foundational principles and approaches to research, both frameworks offer tools to affect change. IS-GR only acts after systemically studying the variables contributing to a problem of practice: gathering insight from a widely defined set of stakeholders, studying the system that gave birth to the problem, and explicitly defining the primary desired outcomes in measurable ways. A key focus is identifying and attaining control over variability within the process. Settings vary from individual institutions to communities inside intensely complex systems, such as hospitals and schools. Conversely, CPAR begins, continues, and ends within the community and takes a more democratic approach to the research design and activities.

Another area of both convergence and divergence involves the relationship with participants. CPAR thrives on researchers breaking down barriers and developing a rapport that enables them to share



the experience as they learn from each other. In every project, participants are intentionally engaged from the beginning to the end, frequently blurring the lines wherein participants also become researchers (Baum, 2006; Breda, 2014). Improvement Science accepts flexibility in the role of the researcher to maximize the improvement opportunity. For instance, during the planning and analyzing phases of a study, the researcher may take a more detached and objective position of an expert while designing and measuring. However, while in the field interviewing, measuring, collecting data, or implementing an intervention, IS-GR researchers may work beside study participants as a peer in the same way as a CPAR researcher. A critical distinction is in situations where an IS-GR researcher may determine that it is best to remain detached for the entire study if it allows more improvement.

The resulting power dynamics may also mirror each other or be vastly different. CPAR advocates for intentionally shared power. The experience is impacted by the researcher's engagement (Baum, 2006). CPAR researchers consistently interrogate issues of power—how it was attained, who benefits from the power, and who is suffering because of the existing power dynamic (Baum, 2006). As with CPAR, fundamental to effective IS-GR projects are the stories, experiences, and knowledge provided by those who live the closest and are most impacted by the problem of practice. Neither can identify effective resolutions without candid and authentic input from those who know the issue the most (Baum, 2006; Breda, 2014).

Problem Identification and Potential Solutions

CPAR and IS-GR both identify gaps between what is and what should be and use an action to solve problems. While CPAR centers on problems of social injustice, IS-GR projects could engage in such problems, but often do not. Still, we found that IS-GR researchers can be motivated and/or informed by an equity lens and can amplify outcomes when applied to social justice initiatives (Bryk et al., 2017; Crow et al., 2019; Hinnant-Crawford, 2020; Peterson & Carlile, 2021). The operative verb related to IS-GR is improving both outcomes and processes concerning specific populations. By contrast, CPAR fits cleanly under the social science umbrella with a much narrower focus. It typically utilizes both qualitative and mixed methods research designs because its primary concern is community improvement which impacts the quality of life of both groups and individuals.

While the two approaches share some commonly used tools and techniques, such as observations, surveys, interviews, and so on, they may diverge at implementation. For instance, IS-GR leans into practices and processes that follow a disciplined approach to inquiry and supported by scientific and/or empirical evidence. In the absence of specific data, evidence and knowledge may be collected via successive improvement cycles. These cycles are dictated by clear, measurable targets, known as aims, which are agreed upon by those conducting the research. It is up to those researching to decide to what extent and in what way to engage research participants. This prescriptive approach to problem-solving biases changes toward improving the outcome or at least minimizes the resources and potential negative impact should the resulting change not be an immediate improvement. This embeds a certain level of predictability and control into the process of change. Conversely, CPAR relies upon a collective, ongoing, and reflexive response to seeking answers to real-world problems. Participants as researchers collect and study the data, then determine what next action to take (Baum,

2006). Outcomes are dependent on the choices made by the group and individuals involved and the variables in play.

Purpose and Outcomes

CPAR and IS-GR projects both seek improved outcomes for those most impacted by socially constructed problems. In CPAR, those most impacted should drive the response to social injustice. Although IS-GR projects could effectively help tackle those concerns, Tori's recent literature review indicates that has rarely happened so far. There is, however, a growing awareness and interest in the topic as evidenced by recent publications (e.g., Bryk et al., 2017; Crow et al., 2019; Hinnant-Crawford, 2020; Perry et al., 2020; Peterson & Carlile, 2021).

Both approaches consider it important to name and describe a needed change, identify the variables contributing to current conditions, and analyze whether a change has occurred and in what direction. However, the stores of knowledge used to do that have developed from various sources. In CPAR, knowledge comes from those who are oppressed by unjust policies, practices, and systems (e.g., educational exclusion; food deserts; criminalization by police targeting). The applied knowledge of IS-GR was originally implemented within the business sector, driven by a constant push to exceed promised financial targets and enhanced by projects designed to keep employees safe and focused on their job. The range of improvement projects that address issues of quality, effective measurement, organizational learning, leadership development, individual performance, quality matters, and other business buzzwords (Langley et al., 2009; Peden & Rooney, 2009; The Health Foundation, 2011) quickly increased as it jumped to multiple fields and occupations, including education.

Implications

Based on our review of literature and experience as researchers we found that CPAR and IS-GR share many commonalities while there are critical distinctions between them. We do not view these approaches to educational research as incompatible or contradictory as a whole. Rather, we see opportunities for the frameworks to complement each other and push scholarly practitioners toward a shared goal of improvement in the field of education. Opportunities to develop this awareness further abound, as examples of the use of any version of participatory action research along with IS-GR in the methodology of the same study remain limited. While some call out the value of specific IS-GR tools, such as the PDSA Cycle, for use with PAR (Magnuson et al., 2020), they are rarely explicitly named (Meyer et al., 2018). Future research designs might explore a melding of explicit tools and strategies especially as they pertain to problems of practice involving issues of social justice and educational equity. Another direction may be to build on Table 1 as a means for working toward a decision tree for emerging scholars looking for a framework to begin addressing their problems of practice.

CONCLUSION

For faculty and EdD students aiming to address educational inequities, it is essential to be clear about the origin, strengths, and limitations of research frameworks. Both CPAR and IS-GR can be strong approaches to research when used to address problems of

practice. While the paradigms, primary scholarly fields they draw from, and methods of data collection used are unique, we are living in a time where there is no shortage of problems faced by educators, leaders, students, and researchers alike. Therefore, while we do not claim this to be an exhaustive review of research literature, we propose that there is value in naming limitations, looking for potential collaborations, borrowing ideas, and seeking opportunities for the co-creation of designs between scholars who draw from either one or both. If our aim as scholarly practitioners is to address real-world problems, especially those that include educational injustices, as educational researchers we would benefit from considering both frameworks for their strengths, contributions to practice, and shared commitments to improvement.

REFERENCES

- Aken, J. E. (2004). Management research based on the paradigm of the design sciences: The quest for field-tested and grounded technological rules. *Journal of Management Studies*, 41(2), 219–246. <https://doi.org/10.1111/j.1467-6486.2004.00430.x>
- Bartman, T., DeWalt, D. A., Johnson, D. P., Mehr, D. R., Payne, A. S., & Provost, L. P. (2018). Improvement science takes advantage of methods beyond the randomized controlled trial. *Pediatric Quality & Safety*, 3(3). <https://doi.org/10.1097/pq9.0000000000000082>
- Baum, F. (2006). Participatory action research. *Journal of Epidemiology & Community Health*, 60(10), 854–857. <https://doi.org/10.1136/qjch.2004.028662>
- Best, M., & Neuhauser, D. (2006). Walter A Shewhart, 1924, and the Hawthorne factory. *Quality & Safety in Health Care*, 15(2), 142–143. <https://doi.org/10.1136/qshc.2006.018093>
- Breda, K. L. (2014). Participatory action research. In M. de Chesnay & de C. Mary (Eds.), *Nursing research using participatory action research* (pp. 1–12). Springer Publishing Company. <https://doi.org/10.1891/9780826126146.0001>
- Brethower, D. M., Dickinson, A. M., Johnson, D. A., & Johnson, C. M. (2021). A history of organizational behavior management. *Journal of Organizational Behavior Management*, 42(1), 3–35. <https://doi.org/10.1080/01608061.2021.1924340>
- Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2017). *Learning to improve: How America's schools can get better at getting better*. Harvard Education Press.
- Burghardt Dubois, W. E. (1898). The study of the Negro problems. *The ANNALS of the American Academy of Political and Social Science*, 11(1), 1–23. <https://doi.org/10.1177/000271629801100101>
- Capodagli, B., & Jackson, L. (2016). The Disney way: Harnessing the management secrets of Disney in your company (3rd ed.). McGraw Hill.
- Crow, R., Hinnant-Crawford, B. N., & Spaulding, D. T. (2019). *The educational leader's guide to improvement science: Data, design and cases for reflection*. Stylus Publishing.
- Deming, W. E. (1967). Walter A. Shewhart, 1891–1967. *Review of the International Statistical Institute*, 36(3), 372–375.
- Deming, W. E. (1984). *Out of the crisis*. Massachusetts Institute of Technology.
- Dresch, A., Pacheco Lacerda, D., & Cauchick Miguel, P. A. (2015). A distinctive analysis of case study, action research and design science research. *Review of Business Management*, 1116–1133. <https://doi.org/10.7819/rbgn.v17i56.2069>
- Ferman, B., Greenberg, M., Lee, T., & McKay, S. C. (2021). The right to the city and to the university: Forging solidarity beyond the town/gown divide. *The Assembly*, 3(1). <https://doi.org/10.33011/assembly.v3i1.1003>
- Fine, M., & Torre, M. E. (2021). Essentials of critical participatory action research. *American Psychological Association*. <https://doi.org/10.1037/0000241-000>
- Fine, M., Torre, M. E., Oswald, A. G., & Avory, S. (2021). Critical participatory action research: Methods and praxis for intersectional knowledge production. *Journal of Counseling Psychology*, 68(3), 344–356. <https://doi.org/10.1037/cou0000445>
- Fischer, A. R. H., Tobi, H., & Ronteltap, A. (2011). When natural met social: A review of collaboration between the natural and social sciences. *Interdisciplinary Science Reviews*, 36(4), 341–358. <https://doi.org/10.1179/030801811x13160755918688>
- Franklin, J. (1994). The formal sciences discover the philosophers' stone. *Studies in History and Philosophy of Science*, 25(4), 513–533.
- Gawande, A. (2009). *The checklist manifesto: How to get things right*. Metropolitan Books.
- Gutierrez, R. R., & Lipman, P. (2016). Toward social movement activist research. *International Journal of Qualitative Studies in Education*, 29(10), 1241–1254. <https://doi.org/10.1080/09518398.2016.1192696>
- Hartman, D. (2022, January 14). *Community-engaged research: What it is and why it matters*. American Sociological Association. <https://www.asanet.org/community-engaged-research-what-it-and-why-it-matters>
- Hartmann, D. (2016). Sociology and its publics: Reframing engagement and revitalizing the field. *The Sociological Quarterly*, 58(1), 3–18. <https://doi.org/10.1080/00380253.2016.1248132>
- Hinnant-Crawford, B. (2020). *Improvement science in education: A primer*. Myers Education Press.
- Holtzman, E. (1994). Science, philosophy, and society: Some recent books. *International Journal of Health Services*, 11(1), 123–149. <https://doi.org/10.2190/L5EU-E7PC-HXG6-EUML>
- Hooks, B. (1990). *Yearning*. South End Press.
- Imad, M. (2021). *Trauma-informed teaching*. Massachusetts Institute of Technology. <https://tl.mit.edu/trauma-informed-teaching/>
- Improvement Science Research Network. (n.d). *What is improvement science*. <http://www.improvementscienceresearch.net>
- Impruver (July, 2020). *10 Excellent enterprise continuous improvement examples*. <https://impruver.com/continuous-improvement-examples/>
- Jamaludin, A., Henik, A., & Hale, J. B. (2019). Educational neuroscience: Bridging theory and practice. *Learning: Research and Practice*, 5(2), 93–98. <https://doi.org/10.1080/23735082.2019.1685027>
- Jefferson, A., & Kirshner, B. (2021). Inquiry in place: Collaborative research as strategy for resistance to displacement. *The Assembly*, 3(1). <https://doi.org/10.33011/assembly.v3i1.1001>
- Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide*. Jossey-Bass.
- LeMahieu, P. G., Bryk, A. S., Grunow, A., & Gomez, L. M. (2017). Working to improve: Seven approaches to improvement science in education. *Quality Assurance in Education*, 25(1), 2–4. <https://doi.org/10.1108/qa-12-2016-0086>
- Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues*, 2(4), 34–46. <https://doi.org/10.1111/j.1540-4560.1946.tb02295.x>
- Magnuson, S., Kras, K. R., Aleandro, H., Rudes, D. S., & Taxman, F. S. (2019). Using plan-do-study-act and participatory action research to improve use of risk needs assessments. *Corrections*, 5(1), 44–63. <https://doi.org/10.1080/23774657.2018.1555442>
- Martín-Baró, I. (1994). *Writings for a liberation psychology*. Harvard University Press.
- Meyer, M. A., Hendricks, M., Newman, G. D., Masterson, J. H., Cooper, J. T., Sansom, G., Gharaibeh, N., Horney, J., Berke, P., van Zandt, S., & Cousins, T. (2018). Participatory action research: Tools for disaster resilience education. *International Journal of Disaster Resilience in the Built Environment*, 9(4/5), 402–419. <https://doi.org/10.1108/ijdrbe-02-2017-0015>
- Mirra, N., & Rogers, J. (2016). Institutional participation and social transformation: Considering the goals and tensions of university-initiated YPAR projects with K-12 youth. *International Journal of Qualitative Studies in Education*, 29(10), 1255–1268. <https://doi.org/10.1080/09518398.2016.1192697>
- Misra, S. (2012). Randomized double blind placebo control studies, the “gold standard” in intervention based studies. *Indian Journal of Sexually Transmitted Diseases and AIDS*, 33(2), 131–134. <https://doi.org/10.4103/0253-7184.102130>
- Moen, R. D., & Norman, C. L. (2010). Circling back. *Quality Progress*, 43(11), 22.
- Nilsen, P., Thor, J., Bender, M., Leeman, J., Andersson-Gäre, B., & Sevdalis, N. (2022). Bridging the silos: A comparative analysis of implementation science and improvement science. *Frontiers in Health Services*, 1. <https://doi.org/10.3389/frhs.2021.817750>



- Pain, R., Whitman, G., Milledge, D., & Trust, L. R. (2011). Participatory action research toolkit: An introduction to using PAR as an approach to learning, research and action. *Building Adaptive Strategies for Environmental Change with Land Use Managers*, 1–8.
- Peden, C. J., & Rooney, K. D. (2009). The science of improvement as it relates to quality and safety in the ICU. *Journal of the Intensive Care Society*, 10(4), 260–265. <https://doi.org/10.1177/175114370901000409>
- Perla, R. J., Provost, L. P., & Parry, G. J. (2013). Seven propositions of the science of improvement. *Quality Management in Health Care*, 22(3), 170–186. <https://doi.org/10.1097/qmh.0b013e31829a6a15>
- 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.
- Peterson, D. S., & Carlile, S. P. (2021). *Improvement science: Promoting equity in schools*. Myers Education Press.
- Romme, A. G. (2003). Making a difference: Organization as design. *Organization Science*, 14(5), 558–573. <https://doi.org/10.1287/orsc.14.5.558.16769>
- The Health Foundation (2011). *Event report: Evaluating healthcare quality improvement a summary of learning from a health foundation roundtable*. <https://www.health.org.uk/publications/evaluating-healthcare-quality-improvement>
- Torre, M. E. (2009). Participatory action research and critical race theory: Fueling spaces for nosotras to research. *The Urban Review*, 41(1), 106–120. <https://doi.org/10.1007/s11256-008-0097-7>
- Torre, M. E., Fine, M., Stoudt, B. G., & Fox, M. (2012). Critical participatory action research as public science. *APA Handbook of Research Methods in Psychology, Vol 2: Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological.*, 171–184. <https://doi.org/10.1037/13620-011>
- Tuck, E. (2009). Suspending damage: A letter to communities. *Harvard Educational Review*, 79(3), 409–428. <https://doi.org/10.17763/haer.79.3.n0016675661t3n15>
- Warren, M. (2021). *Willful defiance: The movement to dismantle the school to prison pipeline*. Oxford University Press.