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Improving Equitable Student Outcomes: A Transformational and Collaborative Leadership Development Approach

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Abstract
Building on exploratory research (Braun et al., 2017), this study assessed how Core Leadership Practices (CLP), implemented through leadership development training, related to increased equity in student learning. Results confirmed a significant (p<.05, medium to large effect sizes) positive increase in student learning for students who had been underserved (i.e., focal groups) and their peers at 93% of school data sets. Correlation analyses revealed a significant (p<.05) relationship between the presence of the CLPs and increases in learning outcomes and educational equity. Findings suggest that development of shared leadership focused on continuous improvement can be used to increase equitable outcomes for students.
Key words: Educational Equity, Leadership Development; Continuous Improvement; Shared Leadership

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Introduction

"Learning to see the structures within which we operate begins a process of freeing ourselves from previously unseen forces and ultimately mastering the ability to work with them and change them" (Senge, 2006, p. 94)

Educators Must be Prepared to Transform Our Schools

Students in the United States who exist within the boundaries of groups that have been systemically discriminated against in their educational experiences (i.e. Black, Indigenous, People of Color, residing in low income households, receiving special education services, and receiving English language services) have, on average, disproportionally lower academic outcomes than their peers who exist outside these marginalized groups (Darling-Hammond, 2010; Fry, 2008; Reardon et al., 2015). The disparities in outcomes are often referred to as 'achievement gaps'; however, these gaps are not represented in the abilities or efforts of students who identify with or are categorized into marginalized groups. Instead, these gaps reside within the current capacity of adults, educators and policy makers, to manifest the conditions and practices needed to allow students who have been systemically oppressed to be successful. Gloria Ladson-Billings refers to this as the "education debt" (2006) that is owed to oppressed groups. Preparing educators to transform education, as the work represented in this study aims to do, represents one way to invest in repaying this debt.

The state where this study took place mirrors the national data on disproportional outcomes and associated educational debts owed to marginalized groups of students (Reardon, 2019; RIDE, 2019). Not only has the degree of educational equity for underserved students failed to increase over many decades of reform aimed to improve student outcomes, but in particular, the state demonstrates the lowest outcomes for students who identify or are identified as Latinx (Annie E. Casey, 2017). Therefore, the context for this study's work was one in which statewide educational reform efforts have not led to increased educational equity and where students in marginalized groups remain at a disadvantage. For the purposes of this study, educational equity means eradicating disproportionality in educational outcomes by ensuring all students have the access and support in the learning environments they need to thrive.

Since "every system is designed to get the results it gets" (The W.Edwards Deming Institute, 2019), it is critical to scrutinize the ways the educational system in the United States was designed to manifest deep inequities, evidenced by the results in student outcomes. This design has been established throughout a long history of racial oppression, segregation, economic discrimination, non-English language suppression, and low expectations for the academic success of marginalized students (Kincheloe et al., 2000; Ladson-Billings, 2016; Love, 2018). Yet, every child from groups who have been oppressed has the brilliance, unlimited potential, and immense

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resilience to achieve outcomes as high and higher than their more privileged peers (Ladson-Billings, 2006; Love, 2018).

Educators have inherited the complex work of rapidly and vastly transforming a system that manifests educational inequity into one in which each child in each classroom has their potential unleashed, rather than narrowly defined and restrained. This is not a task that should be left solely to policymakers and those far-removed from the communities in which youth reside. Rather, for change that is real, lasting, and designed to best create learning environments where all students thrive, change must happen inside the school with those for whom it matters most – namely, students, parents, and educators (City et al., 2009).

Limited Success in Addressing the Problem

Many decades of effort to transform the United States educational system in the name of 'school reform' has assumed that if resources (e.g., curriculum, professional development, programs) are provided and their impact observed by averaging results for students measured across a grade level, school, district, even a state, then the intended improvements to educator practice and student outcomes will manifest. This flawed theory of improvement (Fahey et al., 2019) has failed to greatly change instructional practices, and has had little influence on increasing inequitable outcomes for students from minoritized subgroups (Darling-Hammond, 2010; Fry, 2008; Reardon et al., 2015).

The education field has produced decades of research on effective practices, invested heavily on training for educators to use it, and implemented accountability measures to determine the impact on students (Bryk et al., 2015). And yet, persistent and significant inequities in education (Reardon et al., 2015) remain. One reason for this failure is that this common approach to improve the educational system and practices assumes that giving educators access to information and resources will motivate adaptive changes (Heifetz et al., 2009) (e.g., examining values, expanding assumptions, shifting belief systems) about effective practice (Fahey et al., 2019). Further, this predominant approach assumes that the education field has not addressed inequities or vastly improved practice because educators have not had access to effective practices or are not interested in honing their craft to reach each and every student. These assumptions lead to interventions that focus on telling educators what to do and holding them accountable for doing it. However, the transformative changes needed to improve the complex and rapidly changing knowledge, skills, and dispositions educators need in the 21st century requires an approach that nurtures growth in educators' knowledge, skills, and most importantly, dispositions (beliefs, mindsets, assumptions).

When the common approach to improvement (e.g. give teachers resources and information so they can improve practices) is used, the system that is creating the current results is not changed. Systems are made up of structures (e.g., guidelines, rules, schedules) and accepted practices, as well as created, maintained, and enacted through the beliefs and assumptions of the people who hold the power. Currently, in

the case of schools, the people with the power outside the school walls are policymakers and inside the school walls are educators. This reality is especially troublesome because the majority of educators in the U.S. identify as the racial category, White, and are middle-class (NCES, 2019). Due to the lack of focus on understanding the history and sociological impacts of racial and other forms of systemic oppression in K-12 schools and in educator preparation, educators, and especially White educators, often hold unexamined socialized beliefs and assumptions about students from racial and economic backgrounds that are different from their own (DiAngelo & Sensoy, 2017). To vastly change the structural inequities in our schooling systems, we must address the visible structures and shift the beliefs and assumptions of the people upholding the structures of inequity (CampbellJones et al., 2010; Fahey et al., 2019; Scharmer, 2016) toward ones that support unlimited human growth, interconnection, and equity.

A Method to Develop Transformed Educators and a Transformed Educational System

The method of leadership development investigated in this study is designed to enable educators to see and understand systemic inequities, as well as their own and others' beliefs and assumptions, in order to implement strategies that address the underlying causes of inequities to transform both learning and schooling systems. The method moves beyond the common approach to school reform (Fahey et al., 2019) and is supported by decades of leadership development research (Hallinger, 2011; Leithwood et al., 2010; Leithwood et al., 2004) and adult developmental theory (Kegan & Lahey, 2016; Lave & Wenger, 1991).

An exploratory study (Braun et al., 2017) affirmed that the leadership development method taught to school leaders and teams was yielding a positive response for shifting educator practices and mindsets and for student learning, including increasing equity for underserved students. The essence of what leaders and educators shared in interviews was correlated with the initial student outcomes and became measurable through the creation of a survey tool used in this study. Subsequently, the implementation of the leadership development method was scaled and data were collected to assess the degree of effectiveness of the method. The results are presented in this study.

Theoretical Framework for the Leadership Development Method

Building on the exploratory phase, this confirmatory study investigated the outcomes of a leadership development method for school transformation that engages school leaders and teams to implement cycles of improvement aimed at eliminating inequities within schools. The development of the method is grounded by two theories of how adults learn. The first is Kegan and Lahey's (2016) conceptualization of the levels of adult mental complexity (or ways of knowing), which Kegan and Lahey

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describe in four key plateaus: instrumental, socialized, self-authoring, and transformational. The leadership development method uses facilitative leadership practices (CLEE, 2019), which are akin to the conceptions of shared or distributive leadership practices (Elmore, 1999; Spillane & Diamond, 2015), to intentionally move people through the levels of complexity toward self-authoring and transformational learning. Further, the model engages teams in a key strategy that Kegan and Lahey advocate as a way to move toward transformational ways of knowing by identifying and addressing assumptions and beliefs that need to be surfaced and expanded in order for substantial shifts in practices and mindsets to manifest. The strategy is enacted in the leadership development method by using cycles of improvement to identify a focus (e.g., addressing an inequity within a school), enact change practices, and examine the impact of changing behavior to challenge assumptions that may hold a team back from attaining a goal (e.g., equitable student outcomes).

The second theory that informs the leadership development method is Lave and Wegner's situated learning in a community of practice (1991). It is through this lens that the leadership development model continuously engages leaders and leadership teams in authentic experiences to actively implement their learning (situated learning). Further, participants are supported in communities of practice (in the school and between schools) to create dynamic learning amid learners of varying levels of experience and expertise.

The method of leadership development under investigation builds the capacity of school and teacher leaders to improve their school through practitioner-based improvement cycles (Bryk et al., 2015). In the model, the improvements are aimed at strengthening educator practices in the instructional core (City et al., 2009) and at reorganizing school systems to both increase learning for all students and equitable outcomes between the focal and peer groups. Leaders are trained to facilitate collaborative cycles of improvement by implementing six Core Leadership Practices: Setting Direction, Monitoring Progress, Building Capacity to Teach, Building Capacity to Collaborate, Building Capacity to Lead, and Reorganizing Systems established in the exploratory study (Braun et al., 2017). The steps of the model include: (a) setting direction by identifying an inequity within the school between a focal group of students (i.e. not currently being served well by the school) and their peers and subsequently setting goals to remedy the inequity, (b) building the capacity for teams to collaborate and lead together to increase equity using facilitative leadership practices that empower shared leadership, (c) building the capacity for educators to improve practices in the instructional core, (d) reorganizing systems to achieve the best outcomes, and (e) monitoring progress data and adjusting efforts to continue improvements. For a more detailed description of the improvement method and the rationale, see the results of the preliminary study (Braun et al.) The results reported in this study contribute toward the ongoing effectiveness research on the implementation of the leadership model across a growing number of schools to both

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further validate the method and to inform the field of effective leadership development practices to transform schools and advance equity.

Methodology

Research Design and Questions

This study furthered the findings of the exploratory mixed method design of the preliminary study (Braun et al., 2017). The survey and protocol for data collection and analysis created in the preliminary study were employed with a larger data set in this study to investigate the following research questions that were approached in two data analysis phases:

Phase 1 Data Analysis of Student Outcomes

- RQ1: To what extent did the equity audit process identify critical inequities to remedy?
- RQ2: To what extent and in what ways did student learning outcomes improve for both the focal groups and the peer groups?
- RQ3: To what extent do differences (inequities) in student learning outcomes remain between focal and peer groups after controlling for initial differences?

Phase 2 Data Analysis of Leadership Practices and Student Outcomes

- RQ4: To what extent is there a relationship between educators' leadership practices and student learning outcomes for the focal groups and the peer groups?
- RQ5: To what extent is there a relationship between educators' leadership practices and reducing educational inequity in student learning outcomes?

Data Collection and Participants

School leaders and teams who were trained through a series of institutes and coaching sessions to implement the Core Leadership Practices (CLP) (established through the Braun et al. (2017) exploratory study) over two school years were included in the analyses. Across both years of the study a total of *N*=3233 students in the focal groups and *N*=8193 students in the peer groups from seven elementary schools, four middle schools and four high schools participated, resulting in *N*=32 sets of data. Many of the schools had more than one team focusing on more than one area. Each team and focus resulted in data set for each year in which they participated (represented by rows in Tables 1-3). All the schools except one middle school and one elementary school, are located in urban settings. By conducting an equity audit using local assessment data, each school leadership team identified a critical inequity in student learning outcomes between a focal group of students who had been underserved in the school

and their peers (e.g., students who receive English language services (focal group) and students who do not receive English language services (peer group). The leaders and teams then set a goal and a plan to increase equity for the focal group; they subsequently implemented the plan, collected student assessment data to study the impact of their efforts, and provided the pre and post (i.e., beginning and end of the same year) student outcomes data for inclusion in the study. Schools also administered a survey (Braun et al., 2015) that each educator in the school completed at the end of the school year, around the same time as the student outcomes post-assessment was administered to monitor the degree that educators were using the CLPs to increase equity. The assessment data and survey are described in the next section.

Variables Studied and Instrumentation

The student achievement assessment data were mostly from the same assessment, the STAR assessment of ELA or math (Renaissance, 2019); however, other assessments that generated a scaled score were also included. The use of effect sizes allowed data from different sources to be compared. School teams submitted beginning and end of year assessment results for all the students in the focal and peer groups for each year they were in the study.

All trained school teams that worked to close an inequity within the school required their entire staff to take the Learning Community Survey (LCS) in the spring of the year they implemented their improvement efforts. The 35 item LCS was used to obtain data on the following Core Leadership Practices: Setting Direction, Monitoring Progress, Building Capacity to Teach, Building Capacity to Collaborate, Building Capacity to Lead, and Reorganizing Systems established in the exploratory study (Braun et al., 2017). The response format for the survey was 1=*Strongly Disagree*, 2=*Disagree*, 3=*Agree*, 4=*Strongly Agree*. The construct validity of the survey dimensions was initially determined through the use of a confirmatory factor analysis (Braun et al., 2015). The alpha reliabilities for the dimension-level data were found to be between .72 - .84 and support the use of the data to address the research questions pertaining to the relationship between implementation of the Core Leadership Practices and learning outcomes for the peer and focal groups.

Data Analysis Plan: Two Phases

The first phase of data analysis answered Research Questions 1-3. To analyze the degree of growth in student learning for the focal and peer group, as well as the increase in equity for the focal group, a three-step process was used. First, an independent samples *t*-test was used to compare the pre-test results for the focal and peer groups to determine if they began in significantly different places. Only school teams that did focus on a significant difference between the focal and peer groups were included in the remaining analyses. Next, a related *t*-test was conducted to compare

the pre and post-test means of the focal and peer groups to determine if both groups' scores showed significant growth, evidencing significant learning. Finally, an ANCOVA analysis using the pre- and post-test data for the focal and peer groups provided the degree to which a significant difference (inequity in outcomes) remained between the groups after the teams implemented the actions to improve both instructional practices and Core Leadership Practices, after controlling for the initial differences on the fall pre-tests. Effect sizes were calculated for each step to allow for comparability.

The second phase of data analysis addressed Research Questions 4 and 5. For each of the 32 school data sets, means were created for each of the six dimensions on the LCS. For Research Question 4, correlational analysis was used to examine the relationship between the degree of implementation of the six Core Leadership Practices and student learning outcomes for the peer and focal groups. The dimension-level LCS means were correlated with the focal and peer group learning outcome effect sizes determined in phase 1. Finally, Research Question 5 addressed the important issue of reducing educational inequity in student outcomes. The means for the six dimensions in the LCS were correlated with the effect sizes (eta squared) derived from the Analysis of Covariance (ANCOVA) used in phase 1 of data analysis to examine the differences in the adjusted post-assessment student outcomes between the focal and peer groups, after controlling for initial differences on the fall pre-assessments.

Limitations and Delimitations

A few limitations and delimitations posed threats to the generalizability of the study's findings. All but two of the schools included in the study were in urban settings in the same state and were trained and supported using the same resources, instructors, and coaches. However, the degree of implementation of the model differed at the schools for a variety of reasons. For example, school teams differed in how frequently they could meet outside of the training sessions. Further, some schools experienced a change in school leadership and team members. Future research will seek to understand the relationship between these factors and the outcomes under study.

Results

Analysis Phase 1: Research Questions 1-3

To answer the first three research questions, this section first presents the analyses of: (1) pre-test achievement differences between focal and peer groups, (2) the fall-spring growth in student achievement outcomes for the focal and peer groups, and (3) the post-test achievement differences between focal and peer groups (i.e., inequities), after controlling for initial pre-test differences.

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Degree of Initial Differences Between Identified Focal and Peer Groups: Research Question 1

Independent samples *t*-tests were used to examine the difference in student learning on a pre-test taken in the fall between the focal group identified by each school and a group of their peers. School teams engaged in an equity audit, looking within their own school, to analyze student assessment data for the degree to which there was disproportionality in outcomes between student groups within a school. From the audit, school teams identified a focal group and an area of learning (either English Language Arts (ELA) or math) that was most in need of improving educator and school practices in order to increase equity between focal and peer groups. The school teams were from elementary (ES), middle (MS) or high schools (HS). All but two school teams (HS 11 and ES 13) correctly identified a statistically significant difference with large effect sizes between focal and peer group outcomes during the audit stage (see Table 1). These two schools are not included or reported in later analyses because the subsequent analyses rely on the presence of a statistically significant difference between the focal and peer groups in order to draw meaningful conclusions. Further, three teams (HS 11, ES 14, and MS 15) did not use an assessment that resulted in scaled scores; therefore, they were not included in subsequent analyses and tables.

Table 1
Results of t-test to Determine Significance of Inequity Between Focal and Peer Groups Within Schools

Data Sets	Focal Group		Peer Group				
	N	*M*	***N***	*M*	***t***	***p***	***d*[a]**
MS 1 - ELA	102	361	562	553	8.11	**.00**	**.97**
HS 2- Math	50	632	308	753	9.54	**.00**	**1.27**
HS 3-ELA	98	237	163	689	17.86	**.00**	**2.22**
ES 4- Math	18	313	412	470	4.45	**.00**	**1.25**
ES 5- Math	90	329	410	488	11.97	**.00**	**1.27**
ES 6- ELA	174	128	265	343	20.15	**.00**	**1.94**
MS 7- ELA	118	250	521	478	14.40	**.00**	**1.30**
ES 8- ELA	91	177	293	223	2.64	**.00**	**.35**
ES 9- ELA	66	181	81	266	4.40	**.00**	**.73**
MS 10- ELA	50	539	308	747	7.86	**.00**	**1.05**
HS 11- ELA	7	3	39	5	1.90	.10	.28
ES 12- ELA	8	436	48	527	2.57	**.00**	**1.20**
ES 13- ELA	69	155	70	163	1.09	.30	.09
ES 14- ELA	67	2	67	3	4.01	**.00**	**.69**
MS 15- ELA	27	26	281	52	6.70	**.00**	**1.78**

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HS 16-ELA	207	270	117	701	17.06	**.00**	**1.90**
ES 17- ELA		244		375	6.14	**.00**	**.86**
ES 18-Math	116	429	214	477	2.54	**.01**	**.29**
HS 19-ELA	78	511	262	721	6.72	**.00**	**.88**
HS 20-ELA	223	226	262	721	26.75	**.00**	**2.45**
ES 21-ELA	62	183	153	442	12.04	**.00**	**2.03**
MS 22- Math	158	553	538	666	10.61	**.00**	**1.01**
MS 23- ELA	153	254	535	528	18.98	**.00**	**1.56**
HS 24 - Math	26	701	102	773	3.17	**.00**	**.68**
ES 25- Math	308	399	288	519	10.84	**.00**	**.89**
ES 26- ELA	376	212	115	412	15.23	**.00**	**1.56**
MS 27- ELA	25	316	233	475	4.63	**.00**	**.88**
MS 28- ELA	55	224	213	514	12.06	**.00**	**1.49**
ES 29- Math	22	322	192	466	4.35	**.00**	**.95**
ES 30- ELA	16	162	158	324	3.77	**.00**	**1.18**
MS 31- Math	75	555	190	596	3.23	**.00**	**.43**
MS 32- Math	95	557	168	597	3.47	**.00**	**.43**
MS 33- ELA	76	343	338	421	4.20	**.00**	**.53**
MS 34-ELA	127	301	287	453	10.03	**.00**	**.71**

Note. Effect size (d^a) guidelines were as follows: .20 = small, .50 = medium, .80 = large. **Bolded** statistics indicate the ideal outcome that the schools chose a statistically significant inequity within their school to close. Sample sizes (*N*) represent individual students.

Degree of Growth for Focal and Peer Groups After School Teams Implemented: Research Question 2

In addressing the extent to which growth for the focal and peer groups occurred, related samples *t*-tests were used to detect the degree of difference (growth) between the fall pre-tests and the spring post-tests (see Table 2). While many of the schools used the STAR assessments (Renaissance, 2019) as the pre- and post- test, schools were encouraged to use any measure that best assessed the curriculum they were teaching. Only assessments that resulted in scaled scores were included in the remaining analyses. The calculation of the effect size allowed the results to be compared across sites in the subsequent analyses. All but two school teams' data sets (HS 19, and MS 33) demonstrated statistically significant achievement gains from the pre to the post test for both the focal and the peer groups. Many of the differences were associated with medium to large effect sizes.

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Table 2

Results of t-test for Pre and Post Assessments for the Focal and the Peer Groups After School Teams Implemented Improvements

Data Set	Group	Pre-test		Post-test			
		N	*M*	*M*	***T***	***p***	***d*[a]**
MS 1- ELA							
	Focal	102	361	421	5.09	**.00**	**.50**
	Peers	562	553	612	10.87	**.00**	**.46**
HS 2- Math							
	Focal	50	631	657	2.57	**.01**	**.36**
	Peers	308	753	773	2.15	**.03**	**.12**
HS 3- ELA							
	Focal	98	237	279	3.80	**.00**	**.38**
	Peers	163	689	740	3.83	**.00**	**.30**
ES 4- Math							
	Focal	18	313	476	6.71	**.00**	**1.58**
	Peers	412	470	555	26.90	**.00**	**1.33**
ES 5- Math							
	Focal	90	329	513	16.52	**.00**	**1.74**
	Peers	410	488	615	34.93	**.00**	**1.73**
ES 6- ELA							
	Focal	174	128	259	15.16	**.00**	**1.15**
	Peers	265	343	492	22.78	**.00**	**1.40**
MS 7- ELA							
	Focal	118	250	352	10.10	**.00**	**.93**
	Peers	521	478	601	20.20	**.00**	**.88**
ES 8- ELA							
	Focal	91	177	271	11.33	**.00**	**1.19**
	Peers	293	223	336	18.63	**.00**	**1.09**
ES 9- ELA							
	Focal	66	181	280	12.07	**.00**	**1.49**
	Peers	81	266	367	9.67	**.00**	**1.07**
MS 10- ELA							
	Focal	50	539	669	6.76	**.00**	**.96**
	Peers	308	747	834	11.30	**.00**	**.64**
ES 12- ELA							
	Focal	8	436	711	13.70	**.00**	**4.84**
	Peers	48	527	749	17.13	**.00**	**2.47**
HS 16-ELA							

	Focal	207	270	296	2.56	**.01**	**.24**
	Peers	117	701	746	4.02	**.00**	**.28**
ES 17- ELA							
	Focal		244	341	11.20	**.00**	**1.20**
	Peers		375	473	13.04	**.00**	**1.02**
ES 18-Math							
	Focal	116	429	539	12.62	**.00**	**1.17**
	Peers	214	477	565	21.36	**.00**	**1.46**
HS 19-ELA							
	Focal	78	511	524	1.03	.31	.12
	Peers	262	721	770	3.83	**.00**	**.24**
HS 20-ELA							
	Focal	223	226	257	4.88	**.00**	**.33**
	Peers	262	721	770	3.83	**.00**	**3.83**
ES 21-ELA							
	Focal	62	183	248	7.83	**.00**	**.99**
	Peers	153	442	521	10.32	**.00**	**.83**
MS 22- Math							
	Focal	158	553	624	11.07	**.00**	**.90**
	Peers	538	666	720	17.04	**.00**	**.73**
MS 23- ELA							
	Focal	153	254	319	7.29	**.00**	**.59**
	Peers	535	528	616	15.76	**.00**	**.68**
HS 24- Math							
	Focal	26	701	734	2.33	**.03**	**.46**
	Peers	102	773	803	4.69	**.00**	**.49**
ES 25- Math							
	Focal	308	399	485	19.64	**.00**	**1.16**
	Peers	288	519	574	17.21	**.00**	**.98**
ES 26- ELA							
	Focal	376	212	284	15.44	**.00**	**.80**
	Peers	115	412	470	5.55	**.00**	**.52**
MS 27- ELA							
	Focal	25	316	340	1.82	**.08**	**.31**
	Peers	233	475	538	8.97	**.00**	**.59**
MS 28- ELA							
	Focal	55	224	298	6.11	**.00**	**.82**
	Peers	213	514	567	7.27	**.00**	**.50**
ES 29- Math							

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	Focal	22	322	415	5.47	**.00**	**1.17**
	Peers	192	466	563	20.87	**.00**	**1.51**
ES 30- ELA							
	Focal	16	162	200	1.90	**.08**	**0.48**
	Peers	158	324	431	13.22	**.00**	**1.05**
MS 31- Math							
	Focal	75	555	589	3.99	**.00**	**.46**
	Peers	190	596	652	9.20	**.00**	**1.00**
MS 32- Math							
	Focal	95	557	600	5.29	**.00**	**.54**
	Peers	168	597	652	8.35	**.00**	**.64**
MS 33- ELA							
	Focal	76	343	339	0.36	.72	.04
	Peers	338	421	468	7.05	**.00**	**.38**
MS 34-ELA							
	Focal	127	301	335	4.37	**.00**	**.39**
	Peers	287	453	493	4.99	**.00**	**.29**

Note. Effect size (d^a) guidelines were as follows: .20 = small, .50 = medium, .80 = large**. Bolded s**tatistics indicate the ideal outcome where the schools increased the learning of the focal and the peer group a statistically significant amount. Sample sizes (*N*) represent individual students. Note that while many of the schools used the same assessment for the pre- and post-test, schools were encouraged to use any measure that best assessed the curriculum they were teaching and provided scale scores.

Degree of Inequity (Difference Between Focal and Peer Group Outcomes) After Controlling for Pre-test Differences: Research Question 3

To measure the remaining difference in scores between the focal and peer groups, ANCOVA was used to detect the degree of difference (inequity) on the adjusted post assessments between the focal and peer groups within schools, after controlling for initial differences on the fall pre assessments. Of the schools that had a significant inequity detected on the pre-test (Table 1), over half (those data sets that are bolded in the far left column in Table 3) showed the most optimal result – greater rate of improvement for the focal group, while also increasing the achievement for the peer group (see Table 3). That is to say that the lack of statistical significance noted by the bolded *p* values in Table 3 indicate that after controlling for initial differences on the pre assessment, there was no longer a significant inequity (difference) within one year between the focal groups and their peer groups in their adjusted post assessment scores. This is a major finding.

Table 3

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Results of ANCOVA Degree of Difference (Inequity) Between Focal and Peer Groups on the Adjusted Post-Assessment After Controlling for Initial Differences on the Pre-Assessment

Data Set	**Focal Group**		**Peer Group**				
	Pre-test	**Post-test[a]**	**Pre-test**	**Post-test[a]**	**ANCOVA**		
	M	***M***	***M***	***M***	***F***	***P***	η^2
MS 1- ELA	360	573	553	584	0.54	**.46**	
HS 2- Math	631	721	753	738	1.11	**.29**	
HS 3- ELA	237	528	688	590	5.56	.02	.65
ES 4- Math	313	603	469	549	11.94	**.00**	.03
ES 5- Math	328	601	487	595	0.37	**.54**	
ES 6- ELA	127	371	342	418	11.76	.00	.03
MS 7- ELA	250	544	478	556	0.68	**.41**	
ES 8- ELA	177	300	222	326	5.06	.03	.01
ES 9- ELA	181	314	265	324	0.47	**.49**	
MS 10- ELA	539	829	746	807	1.10	**.30**	
ES 12- ELA	435	739	526	744	0.04	**.85**	
HS 16-ELA	270	296	701	746	4.93	.00	.03
ES 17- ELA	244	341	375	473	0.50	**.48**	
ES 18-Math	429	539	477	565	2.33	**.13**	
HS 19-ELA	511	524	721	770	16.50	.00	.05
HS 20-ELA	226	257	721	770	33.75	.00	.07
ES 21-ELA	183	248	442	521	12.18	.00	.05
MS 22- Math	553	624	666	720	0.01	**.92**	
MS 23- ELA	254	319	528	616	9.79	.00	.01
HS 24- Math	701	734	773	803	1.31	**.26**	
ES 25- Math	399	485	519	574	1.55	**.21**	
ES 26- ELA	212	284	412	470	0.17	**.68**	
MS 27- ELA	316	340	475	538	8.16	.01	.03
MS 28- ELA	224	298	514	567	0.01	**.92**	
ES 29- Math	322	415	466	563	1.31	**.25**	
ES 30- ELA	162	200	324	431	7.87	.01	.04
MS 31- Math	555	589	596	652	8.79	.00	.03
MS 32- Math	557	600	597	652	4.00	.05	.02
MS 33- ELA	343	339	421	468	14.10	.00	.03
MS 34-ELA	301	335	453	493	1.82	**.18**	

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Note. Effect size for eta squared (η^2) guidelines were as follows: .01 = small, .06 = medium, .14 = large. **Bolded *p* values** indicate the ideal outcome that the schools increased the learning of the focal group at a greater rate than the peer group thereby reducing the inequity so that there was not a statistically significant difference on the adjusted post assessment. Sample sizes *(N*) are listed in Table 2.

Analysis Phase 2: Research Questions 4-5

Using correlational analyses, relationships were examined between the Core Leadership Practices and three student learning outcomes: growth in learning of the focal groups, growth in learning of the peer groups, and the reduction in inequity between the focal and peer groups.

Research Question 4: Relationship Between Core Leadership Practices and Focal and Peer Group Growth

To answer Research Question 4, correlations were run between the means of the six Core Leadership Practices, as well as the mean of all the CLPs, and the student pre-post growth (see Table 2) expressed in effect sizes (i.e., post – pre divided by the average standard deviation) for the students in the focal and peer groups. Table 4 contains the correlations in the center two columns.

Inspection of the correlations suggests that for the focal group significant relationships were present for the following CLPs: Setting Direction, Monitoring Progress, Building Capacity to Collaborate, and Reorganizing Systems. For the peer group significant relationships were found for Setting Direction, Building Capacity to Teach, Building Capacity to Lead, and Reorganizing Systems. Notably, two of the Core Leadership Practices, Setting Direction and Reorganizing Systems, had a significant relationship with both the focal and peer groups. Further, the correlations between the CLPs and the focal group growth (.445-.619) were stronger than between the correlations between the CLPs and the peer growth (.310 - .441). This is a significant finding that suggests that the CLPs with significant correlations to student outcomes may increase equity by having a greater benefit to the focal group of underserved students.

Research Question 5: Relationship Between Core Leadership Practices and Reduction in Educational Equity

In Table 3 the findings for the ANCOVA analyses were presented, which indicated that the ANCOVA adjustment (i.e., controlling for initial differences on the pre-assessment) found that for many data sets listed in the far left column there was no longer a significant inequity (difference) between the focal groups and their peer groups in their adjusted post-assessment scores. For Research Question 5, the Core Leadership Practices mean dimension scores were correlated with the ANCOVA effect sizes (eta squared). The findings presented in the far right column of Table 4 report the significant relationships that were found. The negative correlations indicate that increases in the CLPs were associated with a lower degree of difference (inequity)

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between the focal and peer groups, especially for Building Capacity to Collaborate and Building Capacity to Lead. Said another way, the greater the presence of these two CLPs, the lower the difference (inequity) between the focal and peer groups.

Further, two other practices, Setting Direction and Reorganizing Systems, were associated with nearly significant relationships with the inequity scores at the .056 and .057 *p* levels. These two CLPs were also significantly correlated with both the focal and peer group growth effect size data reported for Research Question 4 in Table 4.

Table 4
Correlations of Core Leadership Practices with Focal and Peer Group Effect Sizes and Degree of Inequity Remaining (eta squared)

Core Leadership Practices	Focal Group Effect Size[a]		Peer Group Effect Size[a]		Inequity Remaining (η^2)[b]	
	r	***p***	***r***	***p***	***r***	***p***
Setting Direction	.619	**.001**	.441	**.006**	-.286	.056
Monitoring Progress	.559	**.001**	.252	.082	-.188	.151
Building Capacity to Teach	.220	.113	.312	**.041**	-.262	.074
Building Capacity to Collaborate	.445	**.005**	.278	.062	-298	**.049**
Building Capacity to Lead	.226	.106	.327	**.034**	-.355	**.023**
Reorganizing Systems	.511	**.001**	.310	**.042**	-.285	.057
Mean of all Practices	.574	**.001**	.399	**.024**	-.309	.086

[a] Growth for the students in the focal and peer groups calculated in effect size units. [b]Degree of inequity remaining calculated as the effect size (eta squared) from ANCOVA.

Discussion

Overall, these data reveal a number of important findings. To answer the first research question, the equity audit process taught in the training resulted in nearly 95% of the schools being able to accurately identify a statistically significant inequity to focus their efforts on (see Table 1). This first step is important to subvert a practice that schools often turn to, focusing their limited time and resources in areas that may boost test scores for students close to proficiency (Isaacs et al., 2013). When schools focus heavily on students closest to proficiency, it does not require educators to look at the roots of inequities that are present and allows for an inequitable system and practices to persist (Skrla et al., 2009). The leadership method under investigation, similar to one implemented by Scharff and Talbert (2013), avoids this pitfall because it focuses first on students who are marginalized by the current inequitable system (the focal group) to bring about rapid and deep changes to practice and beliefs that address

the roots of inequity. The results in this study show that these changes can have a positive impact on learning for all students.

To answer the second research question, student learning outcomes improved significantly for both the focal group and the peer group in all but two schools (see Table 2). Further, a majority of the schools had medium to large effect sizes for the focal group learning growth. This key finding affirms that when leaders and teams use the Core Leadership Practices that are aligned with key actions referred to by Bryk (2015) (working together collaboratively, using data, and implementing research-based practices to improve the instructional core) to increase learning outcomes for students who have been underserved, the result is positive learning outcomes for both the focal group and the peer group. Considering that the inequities that are present in the schools (evidenced in Table 1) are due to the system not being organized or functioning to prevent such inequities (Deming, 2019), the large effect sizes associated with these results for the focal group learning shows promise that the actions taken disrupted the system toward serving, rather than oppressing the focal group, a trend necessary to reverse inequities.

Further evidence of this reversal can be seen in answering the third research question. The ANCOVA results in Table 3 include many data sets that show an insignificant difference (inequity) between focal and peer group, after implementation of improved leadership and instructional practices. This result may suggest that the training and use of the Core Leadership Practices enabled the educators involved "to see the structures within which we operate" (Senge, 2006, p. 94), including their own beliefs, assumptions and practices, in order to "work with them and change them" (Senge, p. 94) toward practices and assumptions that more equitably serve students who have been marginalized by the educational system.

In answering the fourth and fifth research questions, a number of significant relationships were found between specific Core Leadership Practices that were implemented by leaders and teams in schools and improved learning outcomes. Overall, it was found that when the leadership teams implement and increase the presence of the Core Leadership Practices in their schools (Table 4, last row of means of all the practices), there is a statistically significant positive increase in growth for the marginalized focal groups and for the peer groups. Importantly, there were stronger relationships found between specific Core Leadership Practices and achievement outcomes for the focal groups. This suggests that when the Core Leadership Practices are implemented and fully present throughout a school, they have the potential to accelerate growth and repay the educational debt owed to focal groups, thereby increasing equity.

The method of leadership development investigated in this study aims to empower educators to see and understand systemic inequities, as well as their own and others' beliefs and assumptions, in order to implement strategies to transform schools by addressing the underlying causes of inequities. The correlations uncovered a

number of findings that begin to unpack how the Core Leadership Practices can be used to achieve this important outcome.

It is not surprising that significant correlations were found between the practice of Setting Direction and the focal and peer groups results, and a nearly significant correlation for reducing inequity between these groups (Table 4). The leadership development method under investigation requires teams to begin with the CLP of Setting Direction to center the purpose or 'the why'. The importance of this practice has been found over and over in leadership research, and is often referred to as establishing a vision, mission and/or goals (Leithwood et al., 2004; Leithwood, 2010). Importantly, the method under study requires educators to lead staff through more than a process to set a vision; these educators also uncover and investigate the reasons for the current reality of inequity to use the dynamics of creative tension (Senge, 2006) to dismantle inequitable practices and replace them with equitable ones. This process both motivates the urgency to take action, and points educators toward the most important actions they can take to increase equity. Setting Direction is the first step to develop an awareness of the school systems, which gives educators the insight and motivation needed to change it (Senge, 2006). The leadership development method requires educators to spend many months engaging in the work of Setting Direction, and this distinguishes it from many other reform models that assume a solution for an assumed problem (Fahey et al., 2019), and/or presume that bolstering instrumental ways of knowing (i.e. needing missing content or know how from experts) (Kegan & Lahey, 2016) are all that is needed to change outcomes. The leadership development method requires teams to engage in socialized and self-directed ways of knowing (Kegan & Lahey) by iteratively and collaboratively uncovering data through processes (protocols) that move them slowly up the ladder of inference (Senge, 2006) from observation, to meaning making, to action steps.

Similar to the practice of Setting Direction, the practice of Reorganizing Systems was significantly correlated with the focal and peer group outcomes, and nearly so with the outcomes that measures the degree of inequity remaining. Reorganizing Systems may seem on the surface what is most commonly understood to be the way we improve systemic inequities – add more time, more interventions, change the curriculum, etc. (Fahey et al., 2019). However, in the leadership method under study, this practice means more than these technical changes. It requires educators to change the way resources, including their attention and collaboration, are used toward increasing equity (Scharff & Talbert, 2013). Further, it requires educators to take visible action to increase equity, which requires some key assumptions to shift (CampbellJones et al., 2010), including: (a) that reorganizing all resources toward inequity is most important, and (b) that for practices and systems to increase equity, they must support the continuous, collaborative implementation of improvements that moves a school toward a climate and culture of shared leadership and ownership for educator efficacy and student learning (Braun et al., 2017).

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Finally, Building Capacity to Lead and to Collaborate were both significantly correlated with reducing inequity, and also with outcomes for the focal group or the peer group. Both of these practices build the capacity of educators to lead the work of improvement for equity using a shared or facilitative leadership approach (Braun et al., 2017; Spillane & Diamond, 2015). This approach is used to develop a community of practice (Lave & Wegner, 1991) to strengthen the knowledge and skills necessary to implement improvements, while at the same time fostering a culture of risk-taking, commitment and responsibility needed to for educators to see, understand, plan, take action and continuously learn and increase efficacy. Without these community-building practices, the collective ownership and creativity needed to address the dilemmas inherent in evolving the current educational system so that it serves each and every child, is suppressed under the weight of top-down mandates (Braun et al.; Fahey et al., 2019).

Implications

The leadership development method investigated in this study aims to increase high and equitable student learning outcomes in schools through implementation of facilitative leadership, which is operationalized in the Core Leadership Practices established through the preliminary study (Braun et al., 2017). In this model, leaders and teams guide schools through processes that use data to learn and to implement improvements in the instructional core that are focused on increasing equitable outcomes for students who have been not been well served. The preliminary exploratory research from which this model was developed (Braun et al.) indicates that through the implementation of the model, educator practices and beliefs are transformed toward those that support the reorganization of systems and practices that drive high and equitable outcomes.

In light of the current educational inequities in the U.S. (Reardon et al., 2015), there is a dire need for educational practitioners who are able to lead such efforts. Further, many reform efforts have tried to significantly impact equity but have largely failed (Fahey et al., 2019). The leadership development model under investigation takes a considerable amount of time, effort, and commitment of resources; however, as shown in the results of this study, it works to increase learning for students who have historically, and are currently, oppressed by their schooling experiences. Importantly, qualitative data (Braun et al., 2017) indicate that the model has the potential to shift the beliefs about student and adult abilities that underlie the structural mechanisms or root causes which maintain inequitable systems.

The exploratory study (Braun et al., 2017), combined with the significant outcomes of this investigation, provide support for the scaling of this leadership development method. Scaling can increase educational equity and will allow for the method to be studied in varied contexts. As scaling occurs, it will allow research on how the variation in conditions (e.g., the amount and type of training, the time

dedicated for educators to work together, the quality of assessment and data systems, the instructional practices being implemented, the ways and degree of financial investement) have an effect on student learning outcomes. Scaling the model, as well as continued research, have the potential to transform the educational systems in schools toward one that is designed to secure the desired outcome of educational equity.

Individual lives and communities rely on the U.S. education system to repay the debt owed to achieve educational equity. It is impertative to delve deeper than the large-scale, top-down accountability mandates undergirding most established reforms that have not addressed inequities in a sufficient manner (Fahey et al., 2019). In response to the common and inadequate approach, this study validates a practice toward creating equitable outcomes that places the focus and investment inward: within the control of students, educators, families, and communities. By doing so, we harness the unlimited potential located in all of us to transform the educational systems into ones that will serve each and every student in perpetuity, especially those that have been suppressed by injustice for far too long.

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