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Inaugural Special Issue on The Gordon Paradigm of Inquiry and Practice (GPIP)

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## Special JELPS Issue Honoring Dr. Edmund W. Gordon

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Journal of Educational Leadership and Policy Studies

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# **Southern Connecticut State University School of Education Department of Educational Leadership and Policy Studies** ISSN#: 2473-2826 **JELPS Call for Manuscript** www.southernct.edu/jelps/

The Journal of Educational Leadership and Policy Studies (JELPS) ISSN#: 2473-2826, sponsored by Southern Connecticut State University is a peerreviewed electronic journal dedicated towards establishing a global network that will serve as a platform for researchers, policymakers, educators and school leaders who are concerned with moving educational issues forward. More importantly, the journal will provide readers with an enhanced awareness of strategies and policies for improving educational outcomes and method for improving school success for all students.

JELPS seeks manuscripts that address best practices and school policies in the four leadership domains: Instructional, Leadership,

Comprehensive Talent Management, Instructional Leadership, School Climate Culture and School Climate. Organizational Systems. The journal welcomes articles based on practice and research with an explicit educational leadership, or components that examine the function of school and or district leadership from a variety of wellbalanced perspectives. All theoretical and methodological approaches are welcome (e.g., qualitative quantitative; empirical VS. vs. conceptual; discipline-based vs. interdisciplinary). Authors will receive initial review decision notifications within a 4 to 6 week.

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### **JELPS Call for Manuscript** www.southernct.edu/jelps/

Inaugural Special Issue on The Gordon Paradigm of Inquiry and Practice (GPIP)

### Editorial: Providing Social Equity and Social Justice for All through The Gordon Paradigm of Inquiry and Practice (GPIP)

### Norris Haynes and Olcay Yavuz Southern Connecticut State University

Professor Edmund W. Gordon was born in Greensboro North Carolina in 1921. Through his academic and professional work he has had immeasurable impact on the fields of psychology, education and human development, and especially on the personal and professional lives of dozens of younger mentees who have gone on to distinguish themselves as scholars, practitioners, researchers, policymakers, and academicians and in other fields... Recently many of Professor Gordon's mentees met to honor him and to form what is being called, "the Gordon Paradigm for Inquiry and Practice (GPIP). The Gordon paradigm in our view is a critical-theory informed and driven analytic approach to engaging and addressing the prominent educational, psychological, sociological and social justice issues of our time. GPIP is dialectic, formative and heuristic and emphasizes the maximization of human potential and performance.

In figure 1, the three primary areas and major foci of Gordon's work are represented by the three major circles: scholarship, mentorship and advocacy. These three foci, together overlap to inform practice implications. Gordon's mentorship and emphasis on scholarship have led to significant research in diverse and related areas of interest among his mentees. The intersection between Gordon's advocacy work (intellectual activism) and his insistence on high levels of scholarship has influenced policy considerations including for example his work with the Gordon Commission and the contributions of his protégés to this important policy initiative. Gordon's lasting legacy in cultivating and promoting dynamic leadership grows out of his dedication to inspiring advocacy (intellectual activism) and through his dedicated mentorship of young scholars and leaders. Together, the seven interconnected components of Gordon's work: scholarship, mentorship, advocacy, research,

practice, policies and leadership, serve as the basis for the contributions to this special issue.



*Figure 1*. The Focus and Impact of Professor Edmund Gordon's Work

It is fair to say that because of his significant and transformative ideas and work Professor Gordon would be seen by many in the fields of education, child development and education as a living legend. For over seven decades, he has contributed extensively and substantially to discourse, policy and practice in education and psychology. His earlier ground breaking achievements included his influence, with Dr. Edward Zigler, on the development and formulation of legislation and policies in support of head start. Throughout his distinguished career, he has passionately addressed critical issues on equity, social justice, educational disparities in opportunities and outcomes including the achievement gap and has offered deep insightful analyses on factors that influence student academic performance, and on the challenges and need for developing meaningful educational assessments.

Professor Gordon's scholarship and academic credentials are exceptional. In addition to having held endowed professorships at Teachers College, Columbia University where he also directed the

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Institute for Urban and Minority Education (IUME) and at Yale University where he served as Chairperson of the African American Studies Department, he published extensively and has keynoted at many conferences. Professor Gordon has served on and chaired many commissions including the most recent Gordon Commission supported by the Educational Testing Service (ETS).

The work of this commission and the papers included in the commission's report underscore what is a core driver of Professor Gordon's most recent scholarly inquiry and search for a practical and more salient way forward in student assessment. Professor Gordon argues that current student assessment approaches are inadequate because they do not reflect the synergy and implacability of the, situative, physiological, affective and intellective influences on student learning. Professor Gordon advocates for educational and assessment approaches that are dynamic, authentic, humanistic, formative, and student-centered. The challenge has been and continues to be the lack of a clear, unified vision for this transformative, revolutionary approach among educational thinkers, leaders and practitioners. Professor Gordon is futuristic and transformative in his thinking while the educational establishment remains transactional and incremental in its approach to education. But this tension can be good because ever so slowly, as the papers in this volume reflect, research and practice continue to move in the direction of Professor Gordon's vision.

This special issue of JELPS is dedicated to Dr. Edmund Gordon's lifelong interest, dogged inquiry and professional legacy of advocating for sensitivity and responsiveness to social and cultural diversity in education. This special issue includes 10 article to acknowledge and honor Dr. Edmund W. Gordon's contribution to the field. In the first article "Assessment for Learning: What is to be done?" Edmund W. Gordon presents the challenges facing assessment and considers some possible ways forward toward formulating an assessment paradigm that is authentic, and relevant.

In the second article of the special issue "Ecomentation: The Synergy of Ecological Influences on Learning", Dr. Haynes and Dr. Gordon provide a historical overview of the concept of learning and point out the limitations of major learning theories leading us to advocate for an ecomentation" construct that in our view most accurately captures the integrated nature of learning.

In the third article "An Integrative Model of Assessment, Curriculum and Instruction in the Service of Learning" Dr. Eleanor Armour Thomas focuses on the future directions for research and educational policy on assessments to improve learning and teaching. Dr. Catherine Kramarczuk Voulgarides's article "The Relentless Pursuit for Equity: The Educational Importance of Educational Leadership When Addressing Racial Inequities in Special Education" connects the equity implications of racial disproportionality in special education with the power that educational leaders have to make systemic changes to practice.

Dr. Cynthia McCallister's contributions to this special issue of the JELPS come in the form of reports of the two studies described. They mark the then and now points in her relationship with her mentor. The now is presented first. It is an investigation into the question of sufficiency of educational opportunity in relation to equity and a report of the efficacy of the equity-based intervention,

Learning Cultures www.LearningCultures.net. This investigation suggests a more assertively democratic and just approach to education achieved through administration and enforcement of rights to certain educational opportunities as opposed to the more traditional implementation of behavioral. The second article is a discussion of a relational theory of teaching, which reports findings from a study that sheds light into how relationships between learners and teachers impact learning outcomes. It reveals the powerful influence that teachers have on the destinies of students, and it also helps explain how the deeply influential press of teachers' implicit biases shape the extent to which students have access to educational opportunities.

In the seventh article "The Marginalization of the "Any" Learner, Dr. Lori Grace reports case study of a full-time implementation and evaluation of the Student Centered Adaptable Learning Environment (SCALE) in a secondary level science classroom. This investigation provides school leaders with important insights as it attempts to understand the

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minimum number of 'any' learners who would be at risk of marginalization in traditional classrooms. Next, Dr. Cynthia McDaniels and Dr. Norris Haynes contribute to this special issue of the JELPS with two article. In their first article, they point out that educational inequality has widened; school segregation has increased, discrimination has grown and the problems of poor, linguistic and gender minority children have become more acute in America's schools. In light of the challenges facing the country, they focus on school leadership's commitment to social justice. In their second article in this issue "Social Justice in Higher Education: Interdisciplinary Approaches Across the Curriculum" Dr. McDaniels and Dr. Havnes explore and discuss ways to integrate social justice instruction across the preservice curriculum and field experiences in educational preparation programs.

In the final article "School Climate and Social Emotional Learning Measurement Systems: Trends. Contributions. Challenges and Opportunities" Dr. Jonathan Cohen, Dr. Amrit Thapa, and Dr. Ann Higgins-D'Alessandro summarize the development of prosocially informed tools from the National School Climate Center (NSCC) as well as use of these metrics by others: School climate surveys, Readiness, Process, and Community surveys, as well as a Quality of Sustainable and Independent Learner. They also focus on trends in school improvement and transformative leadership informed by school climate and to a lesser extent, on individual socialemotional measures.

As the articles presented in this special issue, The Gordon Paradigm has not adhered to disciplinary boundaries but instead has been purposively transdisciplinary, theoretically embracive, and methodologically flexible. In other words, The Gordon Paradigm has been marked by a particular type of intellectual hunger, habits of mind, and scholarly orientation that is a perspectives posture toward knowledge production for social understanding, with the paramount concern for trying to better the lives of the marginalized. Papers included in this special issue of JELPS address the significant implications of GPIP for educational leadership, policy and practice.

Inaugural Special Issue on The Gordon Paradigm of Inquiry and Practice (GPIP)

### Assessment for Learning: What is to be done? Edmund W. Gordon Emeritus Professor, Yale University and Columbia University

In a brilliantly provocative essay written for the Gordon Commission on the Future of Assessment, Herve Varenne problematized the relationship between assessment and education by calling attention to the constraining impact of the confluence of the state's assumption of responsibility for the education of its citizens and the use of education testing to determine access to education, accountability for the quality of education achievement and certification that certain levels of education have been achieved. So seriously does he take the possibility of constraint, that he proposes a separation of the control of education and the authority of the state, comparable to the constitutionally mandated separation of the control of religion from the authority of the state? Varenne reminds us that expectations of, and standards for education tend to reflect values that have gained hegemony in the society.

Despite the positive influence of the state's enabling some of its members, at least, to meet the common standards of the society, the canonizing of what is to be learned and the control of certification that it has been learned appear to be inconsistent with iconic conceptions of what education is about. Varenne invokes John Dewey, Lawrence Cremin, and the long tradition of local control of education in support of this assertion. Varenne's observations are consistent with the central thrust of the Commission's recommendations. The Gordon Commission included that standardized approaches to testing in education do not serve the purposes of education as well as they could. Not only are they limited in their capacity, to reflect revolutionary changes that are occurring in education, our tests are almost useless when it comes to informing pedagogical intervention. The Commission concluded that assessment in the future should be more informative of teaching and learning processes, implying that tests have the capacity to improve the outcomes of teaching and learning.

I have begun this summation and commentary concerning the work of the Commission, with an excerpt from the Varenne essay, excerpted from the papers of the Gordon Commission. Varenne paraphrases Horace Mann, raising the question of where it leaves those of us who have been given the State sponsored responsibility "to provide for all the means of the education"? What other means can we imagine to achieve this? The puzzle is how to leverage what we are learning about everyday assessment in order to reorganize school-based assessments. We who advise policy makers must keep wondering who may assess, what performance, when, and with what effect. We must seek not simply to reform current answers to the question, but to come up with other ways to arrange who may assess, and what is assessed, when and how this is done. We must keep in mind that we are talking about assessments that change people's lives.

At this moment many if not most of these high-stake assessments are conducted in State certified institutions that report results officially to the administrators who have been granted by the State the authority to grant degrees. Other ways to produce such assessment are possible. In many nooks and crannies of modernity, employers or clients do not delegate assessment or depend on school certification. They do it themselves and everyday make judgments about each other. What seems to gain little attention however, concerns how learners and their teachers intervene to change the quality of teaching and learning that should be informed by these tests.

Not alone are we neglecting a possible responsibility of assessment to better inform intervention, the political need for a re-imagination of assessment for career or citizenship purposes is all the more pressing now that the School may be losing much of its educational function. With all the attention given to multi-billionaire captains of industry, it is surprising that few have noted that they and their networks are not particularly interested in education as the disinterested pursuit of enlightenment. They appear mostly concerned with ensuring that school certification through degrees and the like only be given to people with the skills they imagine industry and commerce require, (thus the emphasis on the STEM topics).

As the School centralizes around this narrowing of its historical mission, degrees become more valuable in term of future earnings. But the specific contribution of schooling to the education of people may be narrowing with the consequence that much that a child should experience ("learn") on the route to adulthood is getting to proceed through other means than state curricula. On many matters of personal significance, from art and music to health and, say, global warming or evolution, peers, the media, politicians, are becoming stronger and stronger voices. The new technologies only multiply these trends. The School is becoming less and less Common even as education may be getting even more "public" in the sense that it takes place in the "commons" where people meet as subjects and, together, deliberate about their future, as well as make judgments concerning the competencies of each other.

The writing and publication of Knowing What Students Know (Pellegrino, Chudowsky, and Glaser, 2001) was a monumental achievement and testament to the excellence of the thinking and work that has been produced by measurement science. However, this excellent achievement may function as an anchor that prevents this science from drifting or deliberately moving in new and needed directions. From this work, it is obvious that we know how to measure, very well, the status of a rather narrow range of developed academic abilities in students, under some very limited conditions. We do not know how to measure other related mental abilities or potentials and their contextual correlates. Even more serious is the fact that what we know how to measure is not exactly what education practitioners most need to know about how to inform and improve teaching and learning. We are preoccupied with the more and more accurate measurement of the status of what has been learned. while the field of pedagogy is crying for better information concerning the processes by which effective teaching and learning proceed.

While we measure "what students know," changing student and parent demographics, changing technologies, and changing conceptions of what it means to know and understand are demanding that we improve our capacities to cultivate intellective competence in very diverse populations, in addition to our ability to measure the status of developed intellective abilities. In addition, in our pursuit of standardization, reliability and validity, what we measure and the ways that we measure it are decontextualized, even though post- modern epistemologies and empirical research findings scream out concerning the critical importance of context, attribution and perspective as influences on human performance.

The members of the Gordon Commission on the Future of Assessment spent two years exploring these issues and several others. The Commission generated a rich body of research findings and thought related to the issues identified. Among those issues are such as these that follow:

a. The idea that the measurement of developed ability (achievement) may itself be part of the problem. The Commission argued that the major function of assessment in education should be to inform and improve teaching and learning. If we buy into that assertion, the current strength of measurement science - the precise measurement of developed ability, may be standing in the way of the development of the capacity to analyze, document, appraise and understand the processes of teaching and learning by which developed abilities are achieved. This idea suggests a role for government in the support of understanding and improving pedagogical intervention, as an alternative to its current efforts at monitoring outcomes and penalizing or rewarding those results. This idea suggests that we study the processes of teaching and especially learning in addition to the focus on the status of achievement.

b. The knowledge that attributions, contexts, perspectives and situations so greatly influence human behavior that these correlates of human performance must be factored into the calculus of educational assessment. This suggests that the

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validity of data from any test is, in part, dependent upon these contextual factors that currently are excluded from consideration, as traditional psychometrics have privileged the decontextualization of assessment probes in the interest of objectivity, reliability and validity.

c. The idea that our traditional concern with student mastery of specific subject matter content may limit our concern with the learner's developing command of the mental abilities and capacities that are thought to be the by-products of one's having mastered such subject matter. The focus of the Common Core on such underlying mental abilities - critical thinking, logical reasoning, cause and effect, taxonomy and problem solving - is absolutely on target, even though we cannot ignore subject matter mastery. My colleagues advise that questions related to transfer in learning are involved here, and should be more productively addressed as we search for the targets of assessment. This line of thought challenges traditional notions concerning the primacy of subject matter mastery as the primary goal education and the major target of assessment.

d. The idea that "dropped in from the sky" and standalone tests, decontextualized and standardized, may not produce evidence that is adequate and appropriate to the confirmation or disconfirmation of the inferences that are implicit in the decisions we must make. The Commission considered the advisability of differentiated systems of assessment, that are distributed throughout teaching and learning transactions, with real time feedback to learners, teachers parents and administrators. Relationally analyzed data from these systems of process and status-sensitive assessments could thus be used to inform learner adaptation, pedagogical intervention and even, administrative decisions.

e. Prevailing measurement models are anchored to our traditional commitment to meritocratic values in pursuit of democratic opportunity, while some advanced thinking questions the functionality of meritocracy in the service of the democratization of the cultivation of intellective competence, in societies where the opportunity to become meritocratic is unequally distributed. This set of ideas suggests the need that we privilege differentiated criterion referenced standards over norm-referenced standards in our treatment of assessment data. This concern with honoring meritocracy will stand in contradiction to a decision to switch to capacity building instead of stock taking as the central function in assessment for education. In the course of our deliberations we realize that measurement science has not been asleep at the wheel but is concerned with much of the advanced thinking around such issues. However, a preoccupation in public policy with the important problem of accountability seems to have captured the policy demand and dominant practice in a time warp that privileges measurement of status and neglects analysis, appraisal and documentation of the processes of teaching and learning and the contextual correlates of their effectiveness. This problem area begs for attention as we continue to struggle with the juxtaposition of such values in education as diversity, equity and excellence in a democratic society.

f. It is an implicit principle of educational assessment that from an inventory of the content of a learner's knowledge and skills, we can infer capacity to learn as well as what one needs to learn. When one uses measures of the status of one's developed abilities to actively guide continued learning, we tend to refer to the process as formative assessment as opposed to summative. In both cases, we make summative judgments. In the latter, the judgment tends to be about status, prediction or placement. In the former, the judgment concerns active intervention to shape continued learning. The implicit assumptions in this tradition hold that: 1) what one has been able to learn in the past is indicative of what one will learn in the future; and 2) what one demonstrates that she does not know is an indicator of what needs to be taught. Neither of these assumptions nor the inferences drawn from the resulting evidence provides guidance for determining what might be needed to better ensure learning in the future or what might be possible were the conditions of teaching and learning to change. I am a fan of formative assessment. Compared to summative assessment it represents a more dynamic and progressive approach to pedagogy, but it does not get measurement of the status of developed ability.

We do not have solutions with which to approach these issues. However, we are convinced that such issues as these will need to be better understood before we can field what the Gordon Commission

has called "Assessment For (in the service of) Education)" in addition to maintaining excellence in our assessment Of education. Given my recently begun, informal relationship with one of the fellows at the Regents Research Fund, I would be delighted to be asked to exercise some leadership with a continuation of inquiry and thought concerning the implications of emerging research and thought concerning the future of assessment for education.

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**Ecomentation:** The Synergy of Ecological Influences on Learning

Norris M. Haynes Southern Connecticut State University

Edmund W. Gordon, Emeritus Professor Yale University and Columbia University

### Abstract

The search for a term to adequately describe the synergistic, and dynamic interactions among the forces that influence cognition has led us to the term "ecomentation". The consideration of the ecology of cognition speaks to the idea that there are reciprocal relationships among environmental, emotional and physical influences that cannot be separated in any discourse on teaching and learning and in any attempts at authentically assessing cognition and learning. In this paper we provide a brief historical overview of the concept of learning and point out the limitations of major learning theories leading us to advocate for an "ecomentation" construct that in our view most accurately captures the integrated nature of learning.

### Introduction

There is no doubt that the dynamic interplay among situational experiences, physiological processes, affective states and intellectual development influences an individual's capacity to demonstrate academic mastery and competence on intellectually challenging tasks. For some time, there has been a recognized need to more accurately describe and to more fully understand the nature of the influences of environment, emotions and cognition on learning. The term "metamentation" has sometimes been used in an attempt to describe how individuals think and learn. It refers to how the individual's mind or brain works and how the individual processes and manages information. It has been used to refer to uniquely human mental capacities that connote intentionality and based on three analytical threads: psychological conceptual, and evolutionary (Bogdan, 2001). However, the term metamentation still does not fully embody what we see as the essential dynamic interactions among the array of

internal and external factors that influence and shape mentation. We need a concept that fully describes and captures the confluence of forces that impact how the mind works for any given individual. We believe that there is an ecology of learning given that each individual learns not in a vacuum but in a social and developmental context mediated by physiology. Ecology speaks to the complex, interdependent and reciprocal forces that shape an individual's thinking and behavior. The prefix "eco" as used in this paper embodies the full array of and interactions among influences on the person. Ecomentation, therefore suggests the working of the individual's mind as a result of the full array of influences on the person's development and present existence.

The offering of ecomentation as a viable construct in Education is not unlike the use of the term ecopsychology in Psychology. APA Division 34 notes that "ecopsychology explores humans' psychological interdependence with the rest of nature and the implications for identity, health and well-being". (APA, 2017). Ecomentation considers and embraces the full effects of the individual's phenomenological life experiences on his or her mental and intellectual orientation and abilities. We urge in this paper that serious attention be given to the real undeniable significant importance of ecomentation in the education of today's and future generations of students. This concept of ecomentation is developed much more later this paper as we offer a multicomponential framework but first we explore the concept of learning and briefly review several of the key theoretical and conceptual strands that evolved over time as a backdrop to our offering of what we see as a significantly new and different paradigm. It is a widely held view that educational institutions, public and non-public have largely failed to address the diverse learning needs of large numbers of

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students, mainly students from culturally diverse and marginalized groups (Chambers, 2009; Noguera & Wing, 2006; Delpit, 1995). As limited as they are, comparative data on school achievement, measured by traditional measures of student performance support this educational failure hypothesis.

The widely documented achievement disparities between majority and marginalized student groups are not due solely to teaching style-learning style disconnects. It is more deeply rooted in a more fundamental misunderstanding of what constitutes learning; in an outdated educational paradigm that operates as if there is a universal collective underlying set of principles that govern how all students should learn based on mainstream cultural standards, and in an inherently inadequate invalid methodology for determining student achievement and success. What learning is or is not, how people learn and how to measure or determine what is learned have been a source of debate for a very long time. In its very simplest reductionist sense, learning has been viewed as a measurable change or adaptation in the learner's response to some identifiable, observable change in the learner's experience.

Schunk (2012) defined learning as "an enduring change in behavior" (p.3). Piaget viewed learning as change in physical, cognitive or behavioral schemas or structures based on adaptation to new stimuli. For a very long time and even up to the present day, educational practices have been informed and influenced by theoretical perspectives that emphasize behavioral performance changes that are measurable on standardized or criterion referenced tools. Admittedly, educational constructivists have attempted to move the science of teaching and learning along a path to a more developmentally holistic paradigm that reflects the essential interplay that our concept of "ecomentation" seeks to capture. They have generally advocated for and supported educational practices that engage students in meaningful learning .experiences in which students discover and construct knowledge with help and guidance from adults. Constructivists recognize and incorporate situated learning and cultural influences on learning unlike most other perspectives.

It is clear then, that increasingly learning has come to be viewed as a multifaceted process influenced by multiple interacting factors. Yet, still learning is too often confused with knowing. We posit that knowing is the acquisition of specific content (factual knowledge) or procedures (procedural knowledge). Someone may know but may not have learned. Learning includes knowing and results in meaningful sustained change. Knowing does not necessarily include learning and may not result in meaningful sustained change.

We argue that what we must continuously strive for in education is learning and not just knowing. We further argue that learning is the result of dynamic interactive processes involving context in which learning occurs, the material to be learned and the internal cognitive and affective states of the learner. This dynamic, interactive, dialectic process we refer to in this paper as "ecomentation". The concept of ecomentation presents a significant departure from two-dimensional historically and somewhat delimiting views of learning, many of which emphasized knowledge acquisition as opposed to learning as a significant shift in the dynamic interrelationship among learner, environment and material learned.

Metamentation also extends and scales up the constructivists notions of learning by emphasizing and seeking to understand the dynamic, dialectic interplay among socio-cultural, physiological, social-emotional, contextual and evaluative factors. Ecomentation seeks to offer an ecological, holistic, heuristic, recursive, phenomenological perspective that recognizes underlying social, cognitive and physiological changes that affect student attitudes and engagement. It requires and demands more syncopated, synchronized, synergistic, integrated assessment systems than now currently exist. Ecomentation accepts that learning is a continuously longitudinal seamless and multicomponential process.

It acknowledges that learning does not end at grade level transitional points and start again at the beginning of another grade level. This seems like a very tall order we know, but without a shift to this kind of "ecomentatative" approach, the challenge that we identified of effectively and meaningfully engaging all students in learning will not be realized on the scale needed to effect more universal intellective competence that leads to authentic academic success and more positive life outcomes. Greeno and colleagues (1996) noted that human

thought is a product of cognitive, affective, social, environmental and situative factors. Greeno (2007) and Gordon (2007) have posited the continuing development of intellective competence as the central purpose of education. At the heart of such character/competence, Gordon asserts, is а componential developing human condition that he refers to as ecomentatative, i.e. consisting of the tendency to dialectically process information referable to one's sense of what is experienced, adapting the environment, as well as oneself; and solving problems. (Gordon, 2007). Given the intellective competence goals posited as the core purpose of education, it is clear that one of the biggest challenges facing us today, is the ability to educate all children efficiently and effectively and to eliminate the wide disparities in educational opportunity that addresses the character competence goals for education.

In this paper we emphasize that educators must pay attention also to the existentialist and phenomenologist notions that students' perceptions of their experiences might be as important as the external objective organized learning experiences that we design for them. Gordon has consistently argued that the traditionalist mainstream positivistic approaches to teaching and assessing learning do an injustice to many students whose socio-cultural backgrounds and psycho-emotional experiences demand a new paradigm for understanding how, what, where and why students learn or fail to learn. Educational leaders and policy makers are just as accountable, and perhaps more so, for heeding this challenge as classroom teachers are, because educational leaders are in effect not only instructional leaders but are expected and required to be leaders of change; to be transformational agents of educational practice.

### **Overview of Evolving Views of Learning**

As an important backdrop to understanding and appreciating the importance and significance of our focus on ecomentation, it is important for us here to provide a succinct overview of the delimiting and narrow theoretical perspectives that have informed educational practices for long periods of time and to see the progression from very mechanistic views of learning as represented by behaviorism to more progressive dynamic views as a historical struggle for deeper understanding of intellective competence. Learning theories have traditionally presented learning processes in discrete, disconnected, mechanistic and mechanical ways with theorists appearing to stake out parts of the learning process they choose to emphasize. Yet there has been, over time, a progression among learning theories and perspectives from more narrow, linear and limited views of learning to more expansive, inclusive and interactive views of learning. This progression in how we understand learning represents an increasing desire to consider the multiple factors that affect how students learn, when they learn best and why many students seem not learn much at all when assessed by standard measurements of learning. It is this desire that has led us to consider and introduce, the concept of ecomentation.

Behaviorism chooses to focus on external observable behavior and the consequences that reinforce and sustain behavior. Learning to behaviorists is viewed as the establishment of connections between stimuli and consequences through practice, reinforcement and associations. Information processing perspectives focus on individual perception and the individual experiences of the person who is exposed to given stimuli. Information processing perspectives focus also on describing how information is processed from the sensory receptors through the sensory register and makes its way through working memory and into long term memory for further processing. Learning is described in terms of inputs, process and outputs, terms similar to how we describe the way a computer works. Cognitivism focuses on executive cognitive processes such as metacognition and problem solving. It goes beyond the information processing perspective by not just describing what happens to information in the brain but by explaining how information in the brain is organized, manipulated and managed to produce meaning. Social Cognitivism posits that learning is the result of a triadic interaction among an individual, his/her behavior and the environment in which the behavior occurs. Individuals learn by observing others (models) behave in certain ways and by observing the consequences of these behaviors. This is referred to as modeling and vicarious learning. For vicarious learning and modeling to occur, an individual must attend to the model and to the behavior that is being modeled, must observe the consequences of the modeled behavior (motivation) and be able to perform the

observed behavior. Social cognitivism is seen as an attempt to bridge the gap between behaviorism with its emphasis on stimulus response connections and consequences, and information processing and cognitivism with their emphases on sensory input, sensory processing, perception, memory and understanding. Constructivism proposes that knowledge is most meaningful and enduring when it is constructed by the learner through interactions with the environment, and with guidance from significant others in that environment.

Vygotsky's zone of proximal development makes it clear that the interaction between the young learner and the more experienced adult is important for the child to achieve optimal learning. Children progress through Piaget's stages of development through a process of equilibration (adaptation) as a result of assimilation and accommodation to new stimuli. Children, according to Bruner use enactive, iconic and symbolic processes to construct new Material of varying degrees of knowledge. difficulty can be leared if spiraled based on existing prior knowledge. For constructivists scaffolding and engagement in learning are essential to meaningful They emphasize situated learning learning. according to which the importance of the context in which learning occurs is emphasized.

Contemporary Eclecticism incorporates many elements of earlier learning and developmental theories while emphasizing the critical role that schools, families, communities and policy makers must play in providing the organizational context and developmental experiences required, such as supplemental learning experiences, to nurture and support student growth and achievement. These perspectives place much more emphasis, than earlier perspectives, on the importance of proximal and distal influences, including early developmental experiences, school culture and climate as well as national, state and local social and educational policies on shaping practices that influence learning children.(Comer 1980; Bronfenbrenner, 1977) Despite the clear progression among the perspectives described above from a more external mechanistic view of learning to a more integrated and holistic view, there still lacks the dynamic, integrated, organic view of learning that we seek to advance in this paper All of these perspectives provide keen insights into how individuals learn but do not offer, in our view, a compellingly integrative and interactive perspective that captures the implacable, reciprocal interrelatedness among the cognitive, emotional and situative aspects of learning.

### Ecomentation: An Integrative Alternative Perspective

We believe that we have come a long way and that we have been moving in the right direction but that we still have a significant way to go toward a more viable and authentic learning framework. In an attempt to get there, we offer here, the fully integrated concept of "ecomentation' that refers to an understanding of learning that embraces the synergistic, reciprocal, intersecting of sociocultural, psycho-emotional, physiological and cognitive-intellectual influences on academic learning and performance. Ecomentation is a continuing dialectical process that engages the multi-componential capacity to progress from one state of being to a higher state of being

The comprehensive multi componential framework of ecomentation is presented in Figure 1, There is a dynamic, interactive interplay among the physiological, socio-cultural, psycho-emotional (social and emotional learning), and cognitive – intellectual components. These four components are interconnected and reciprocally affect and shape one another. The dialectic intersections and dynamic interactions among the ecomentation components are influenced by developmental experiences and require on-going continuous authentic informative assessments.

There may appear to be a paradox in describing and representing "ecomentation" as consisting of four interlocking components. There may seem to be an inherent contradiction in the very basic assumption of synergistic integration underlying the concept of "ecomentation" by conducting a componential analysis and we are aware that this may be a basis for critique. However, from a practical and applied perspective, it is important to be able to understand the concept fully and to be able to identify the natural components of the integrated concept, while recognizing that the whole is greater than the sum of the parts.

Indeed analysis and synthesis are two of the higher levels of cognitive activity. In analyzing the components of the whole we are better able to

understand the whole and to appreciate the importance of the dynamic interplay among components that make the whole much more than the sum of the constituent components. Our analysis here leads us to an understanding of how ecological influences synchronize and synthesize to constitute "ecommentation" The ecomentation construct builds on Gordon's (2006) notion that the continuing development of intellective character and competence is the central purpose of education. By recognizing the individual's tendency to dialectically process and respond to information based on the ecology of one's experiences.

### **Basic Research**

Physiological basic scientific research provides strong support for one of the key assumptions of metamentation, and offers important support for the concept of ecomentation, which is that brain processes are shaped by the external environment in which the individual learns and that there is a reciprocal effect on the environment that changes the environment that in turn influences mental processes and brain capacities. Recent work in brain development indicates that interactions of chemicals on the surface of molecules that occur during cell migration establish the basis for synaptic connections and cytoarchitectural organization (Casaer, 1993). Hebb (1949 ) cell assemblies position provides early support for the biological bases of learning. The occurrence of cell death neural development is during genetically determined. However, the pattern of synaptogenesis, pruning, and death is influenced by functional



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experiences of the organism, including both motor activity and inactivity.

Figure 1: Ecomentation Framework

There is substantial evidence for the influence of enriched environments and learning activities on neuronal and no neuronal tissue development in rats (Greenough, Alcantara, Hawrylak, Anderson, Karr & Weiler, 1992). Rats placed in enriched ( environments at the time of weaning (25-30 days) have more blood vessels per neuron and greater numbers of synapses in the visual cortex compared to rats raised in impoverished or standard laboratory environments. Rats show reduced responsiveness to the effects of enriched environments with age. However, some adult rats showed increased synapses per neuron in enriched learning conditions. In other instances, adult rats show increased blood supply to the involved neurons, but no increases in synapses. The increased blood flow was shown not to be simply a response to hormonal fluctuations, metabolic processes or general activity.

Other examples from animal data include the inducement of male-like song in female canaries. Devoodg, Nixdorf and Nottebohm (1985) reported that systemic testosterone in adult females induced male-like song and doubled the size of the forebrain, which is known to control song. The treatment resulted in a 53 percent increase in the number of synapses formed on involved neurons. The authors suggest that the formation of new synapses on existing neurons is important for the acquisition of new behavior. The behavioral and anatomical changes were greater when treatment was given under spring-like than under fall-like housing conditions. The findings suggest that seasonal cues from the environment also mediate the development of new song behavior.

### **Biological and Socio-Contextual Interactions**

A focus on culture and expectations for the future is found in many interactionist and socio-cultural approaches to development. Other researchers stress the role of experience within cultural historical frames. They argue that it is the experience of developing organisms and their social networks that have the greatest impact on phenotype. Experience reflects both the environment and the experiencing person's makeup (McGue, Bouchard, Lykken & Finkel, 2011). Immediate experience, or the result of microgenetic development, influences subsequent experiences. McGue et al. call this influence of experience the third factor in phenotypic variance, with genes and environment being the other two

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factors. Bronfenbrenner and Ceci (1993) highlight the importance of local and cumulative influences. Ceci (1993) stresses the importance of context in performance. He states, "If basic psychological and biological processes are the 'engines' that drive intellectual development, then context provides the fuel and steering wheel to determine how far and in what direction it goes" (p. 404).

Gordon crediting Ceci, (2007) pointed out that accounts of individual differences and the outcome of various levels of interaction yield greater explanatory evidence when they are grounded in physical, social, historical and mental contexts (Ceci, & Bruck 1993). A contextual processing theory accounts of performance are unable to explain differences due to circumstances "existing at the time processes are initially acquired as well as later when they are deployed in the service of mentation" (p. 405). The introduction of contexts demands a parallel concern with hermeneutics (interpretation of meaning)

Gordon noted that Ceci does not question the role that biological and intellectual resources play in cognitive performance, rather he highlights the mediating role of context for those factors. This mediating role is realized through "proximal processes" (Bronfenbrenner & Ceci, 1993) "through which genotypes are transformed into phenotypes." The notion of proximal process is based on current research and theory in behavioral genetics and a bioecological perspective on development. Heritability can be shown to vary as a direct function of the magnitude of proximal processes and the quality of the environments in which the processes occur. Proximal processes are mechanisms that connect individual properties and potentials with outside factors in a two-way process that occurs over time. The processes are not self-propelling or selfdirected. Their form, power, content, and direction vary systematically as a joint function of the characteristics of the developing person and the environment (both immediate and more remote) in which the processes are taking place and the nature of the developmental outcomes under consideration (Bronfenbrenner & Ceci, p.317).

This notion of proximal processes subsumes the interaction of previously mentioned factors (genes, environment, experience, and context) within a socially, culturally and individually meaningful framework as the basis for the development of intellect. Recent work in neurology and neuroscience suggests that cognitive deficit and sparing of function following brain trauma depends on an individual's personal history as much as on which part of the brain was damaged. Interpreting function from dysfunction following specific damage continues to be a difficult task.

Recognition that the brain has a modular structure as opposed to a hierarchical structure was an important conceptual breakthrough. However, we are as yet unable to explain how a conscious individual "emerges from the cooperative, coherent activity of neurons in many brain modules" (Rose, 1994). We do know however, that cognition alone is not the defining feature of intelligent human functioning. Some integration of emotional and cognitive responses, which depend on various electrochemical responses, is the more likely dominant force. The interpretation assigned to a given task or environmental circumstance impacts both the cognitive strategies and resources that may be applied. For example, children's performance on cognitive tasks were shown to vary as a function of their perception of the task as a game or a laboratory test (Ceci & Bruck, 1993).

The task required children to discover the correct algorithm for combining several sources of information (color, shape) about an object to predict the next move of that object in terms of direction (left or right and up or down) and distance. Children failed to complete the task when it involved only colored geometric shapes. However, when the task was embedded in a meaningful cultural context, i.e. when the task was designed to look like a video game involving attempts to capture flying animals (birds, bees or butterflies), ten-year-olds were about 90 percent accurate on average. The influence of context was further supported by the fact that children could transfer their game algorithm to abstract tasks similar to the one involving geometric shapes, but only if tested within a few hours of the game experience and with the same laboratory examples equipment. These illustrate the importance of meaningful, emotionally inscribed, and personally relevant circumstances to the expression of intellective behavior. Thus even if the cognitive components of intelligence were solely programmed by genetics, the expression of the potential that resides in such components would be influenced by affective phenomena which most of us agree are ecologically and experientially determined. The argument being advanced is that for such organized behaviors as intellective function an interactionist perspective provides the greatest explanatory power.

Traditionally, approaches studying cognition have emphasized an information-processing view in which the role of emotions has been generally excluded or given scant attention. Recently, the significant contributions of neuroscience in advancing the understanding of human cognition cognition-emotions have underscored the interactions. The evidence is clear and strong that emotions influence cognition and vice-versa. The limbic system has a significant role in the processing of emotions and memory. Specifically, the amygdala, which is the principal structure in the limbic system, made up of two almond shaped finger-nailed size structures, helps to filter sensory information and initiate an appropriate response. It influences early sensory processing and higher levels of cognition. The amygdala adjoins the hippocampus that helps to convert shorter memory into long-term memory and influences its functioning. Thus emotional responses affect memory. Research has shown that the emotional centers of the brain are linked to the neurocortical areas, where cognitive learning takes place (Goleman, 2010). Some individuals suggest that the emotional centers of the brain in times of stress tend to "hijack" the cognitive centers of the brain making it difficult for individuals to think, concentrate or problem solve effectively.

Sylvester (1995) noted that many more neural fibers project from the brain's emotional center or limbic system, into the cortical or logical/rational center than the reverse. This strongly suggests that emotion very often more powerfully determines our behavior than do the brain's cortical logical/rational center and related processes. In other words, the influence of the emotional brain center is greater on the logical cognitive brain center than the reverse. When a child's emotional distress interferes with a child's attempt to learn, the centers where learning occurs are temporarily vulnerable; as a result, the child's attention is mainly focused on the distressful event or situation, rather than what is being taught (Goleman, 2010).

imaging studies provide scientific Brain confirmation of, and underscore the role that emotions play in cognition. Phelps (2006) in reporting on some brain studies noted "traditional approaches to the study of cognition emphasize an information-processing view that has generally excluded emotion. In contrast, the recent emergence of cognitive neuroscience as an inspiration for understanding human cognition has highlighted its interaction with emotion." (p i). She concluded from her review of neuroscience evidence that emotions and cognitions are intertwined from perception to reasoning, and an understanding of human cognition requires that emotions be considered. Bush, Luu and Posner (2000) noted that neural-imaging studies indicate that areas of the anterior cingulated cortex (ACC), part of the brain's limbic or emotional system are involved in cognition. Gray, Braver and Rachel (2001) used functional MRI to test the hypothesis that "emotional states can actively influence cognition-related neural activity in lateral prefrontal cortex (PFC), as evidence for an integration of emotion and cognition." They concluded that "emotion and higher cognition can be truly integrated, i.e., at some point of processing, functional specialization is lost, and emotion and cognition conjointly and equally contribute to the control of thought and behavior."

### **Affective and Intellective Processes**

In the present conceptualization of social and emotional learning and academic learning the cognitive and affective aspects of learning are treated as separate and distinct forms of learning. However, as noted earlier, ecomentation suggests a developmental more integrated ecological framework presented later in this paper, suggests that SEL competencies and academic competencies are related, interdependent and should be coupled when taught and when assessed. At present, when taught, the SEL competencies are taught in most cases separate from academic content and not integrated into academic content. Given the strong evidence that within the brain, the emotional and cognitive processes are interdependent and intertwined, it seems to make practical sense that in and classrooms cognitive content schools (academic) and SEL competencies (social and

emotional) should be integrated in the curricula, instruction and assessment truly reflecting the integration of SEL learning. (SEL) .Goleman (1995) asked and answered two basic and compelling questions about the most essential factors that contribute to success in school and in life.

Some research also indicate that EQ can be equal to or a better indicator of life success than IQ (Ross, Powell, Elias 2002). SEL then may be viewed as the actuation or activation of EQ in measurable and teachable skill sets that "enable the successful management of life tasks such as learning, forming relationships, solving everyday problems, and adapting to the complex demands of growth and development" (Elias, Zins, Weissberg et al. 1997, p.2).

Five groups of inter-related core SEL competencies that social and emotional learning programs should address and that can and that should inform the strengthening and development of more robust assessment tools have been identified and described. When students practice these five basic competencies and integrate them effectively into their educational experiences, they are highly likely to enjoy a successful school experience. The competencies are: (1) Self-awareness (2) Selfmanagement (3) Social awareness (4) Relationship skills (5) Responsible decision making.

Self-Awareness involves being able to identify and describe one's feelings, needs, desires and motivations. For example, a student who is being called names and is being picked on by his peers is able to recognize his feelings of sadness and describe what it feels like to be picked on and called names. He will also be able to think about and express a different narrative about himself or herself that reflects who he or she truly is as a person. Also, a student who is more aware of his or her learning needs, and academic strengths and weaknesses, is a student who is perhaps much better positioned to maximize strengths and seek and get the help needed to remediate weaknesses thus these individuals are more likely to succeed academically. Self-Management involves the ability to monitor and regulate one's feelings and one's behavior. A student who practices effective self-management is able to monitor and regulate her emotions and impulses and demonstrate self-regulatory behaviors. These self-regulatory practices may include but are not limited to: good anger management, effective time-management skills, the ability to establish short and longer-term goals, delay gratification and show the self- control and self-discipline needed to succeed academically. Social Awareness involves sensitivity to one's social environment and knowledge of how to recognize, empathize with and respond appropriately to the feelings and behaviors of others. The implications of social awareness for academic success and as an inherently important aspect of teaching and learning are significant. Students who are aware of how their behaviors affect others in schools and classrooms; who are able to regulate and modify their interactions with teachers and other adults in their schools are more likely to succeed academically than those students who do not. Relationship skills involve the ability to interact effectively and establish healthy reciprocal relationships with others. Building relationship skills among students in early grades helps students learn how to cooperate with others in performing learning tasks.

They develop friendships and avoid negative feelings of being socially isolated which can impact love for school and learning. In high school, relationship skills are critical to gaining acceptance, influencing and leading others and building the kinds of networks that can be very useful beyond high school. Students who are able to work cooperatively with other students; and who respect and are to learn from adults are better positioned to succeed academically than students who do not.

Responsible Decision Making involves students' making thoughtful, constructive and healthy decisions based on careful consideration and analysis of information. When students make responsible decisions about studying, managing their time well, completing and submitting academic assignments on time, preparing for tests and doing what it takes to succeed in school, they are more likely to experience academic success than if they do not.

From an ecomentation perspective the practice of these five competencies occurs in, is influenced by, and influences the contexts in which the practice of these competencies occurs. The integration of context, and SEL learning is multifaceted, focusing on culture and climate, curriculum, instruction,

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assessment and educational policy. As noted earlier, the advancement in brain imaging techniques has enhanced understanding of the structural and chemical relationship between emotions and cognitions. Some authors have taken what has been learned from neuroscience about the relationship between emotions and cognitions and advanced the practical applications of this knowledge by identifying critical social and emotional learning skills that are tied to successful academic and social performance indicators. These performance indicators are often based on expectations and standards set by authoritative sources. The issue of performance indicators and standards gets into the area of assessment that will be discussed in another section of this paper.

The relationship between emotions and cognition occurs in context, influences and is influenced by the dynamic relationship between the individual and the environment in which that individual grows and lives. It is this dialectic and dynamic interchange involving emotional and cognitive development and contextual-cultural experiences that must be recognized, that informs the proposed framework and that so far existing assessment efforts have failed to consider. Vygotsky noted that in order for children to realize their full potential (represented by the internal brain structural and chemical processes) and to succeed academically and in life generally they must be supported in their development which is nurtured by the dynamic relationships between individual and the environment.

For those social and emotional learning programs that have established assessment measures, the growing evidence seems to indicate a clear linkage between growth in social and emotional competencies and improvements in academic outcomes (Zins et al ., 2004). The authors established clear and strong linkages between social and emotional competencies and academic The achievement. authors examined the relationships between social-emotional education and school success in various contexts. They focused specifically on interventions that improve student learning. They provided scientific evidence and examples that support the important impact of social and emotional learning on academic achievement. By helping to build skills connected to cognitive development, achievement motivation, and positive interpersonal relationships.

### Assessments

In today's educational environments assessments of students' performance tend to be static, driven by expediency, dictated by standards that are not inclusive of the all components of the ecomentation framework and that do not consider the dialectical relationships among them. Additional assessments for any given student tends to be cross-sectional rather than truly longitudinal. Assessments conducted on the same student over time continue to be sporadic, disjointed and disconnected from the student's life experiences, phenomenological experiences and expectations for the future. This limits the value of assessments in informing any given student's progress and developmental pathway over time. Therefore, there is a dire need for students' assessments to reflect students' growth over time. The assessment of academic performance separate from consideration of socio-cultural, psycho-emotional and physiological factors cannot be valid or meaningful for the student or for the wider group of stakeholders for whom assessments may hold some importance.

Looking toward the future, a comprehensive assessment system is needed including the contextual information. The contexts in which students live, grow and learn influence their development and impact the four ecomentation components. Having context assessment data can be informative from the standpoint of the social and cultural assets and challenges that students may bring to the learning situation. Additionally, the context assessment may include a narrative account of developmental and life and learning experiences in and outside of school. In this ecomentatatively driven assessment system, accountability is, first and foremost, to each student by honoring each student's right to be respected, to be treated with dignity and to be empowered to maximize his or her fullest potential. More emphasis is placed on the self-actualization of each student than on a punitively driven standards-based assessment system that over emphasizes numbers and conformity.

## Implications for Educational Leadership and Policy

Educational leadership in its fullest realization is meta-transformative. By this we mean that the imperative for educational leaders to transcend the

transformation of managerial, instructional or professional development mandates of the job. The imperative is for educational leaders to leverage their legitimate power, and all other power bases available, to elevate the total holistic development, understanding and dignity of every student, regardless of race or social class, to the preeminence required. The mission of the educational enterprise must be to transform the very core underlying assumptions of education itself. It is not enough then to be transformative in the sense of being a change agent by changing people's attitudes and behavior about the work or about curriculum but also about transforming the concept of leadership itself that is still grounded in inadequate operating assumptions and policies. Meta-transformative leadership subscribes to the ecomentatative multicomponential perspective that true change requires a paradigm shift in the way educational leaders think about and approach leading educational change.

Policies more often drive and shape practice than they are influenced and inspired by practice. Thus, policies at the national, state and local levels have tremendous impact on educational practice. Policy makers often are guided in making policies by political considerations and legislative mandates and not sufficiently by considerations about how best to maximize the learning potential of every child. The result is that educational policies are far too often not in sync with the evolving science of human learning and the imperatives regarding what must be done to assess what and how students learn. We urge that educational policy makers look past the blinding glare of politics and help to inform and shape legislative agendas to get to the core essential purpose of education, which in our view, is the full and total development of every student and his or her learning and success potential.

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### Dynamic Pedagogy: An Integrative Model of Assessment, Curriculum and Instruction in the Service of Learning

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#### Abstract

The argument advanced in this paper is that assessments must move closer to the classroom in search of evidence in real time of what teachers say and do to cultivate the mental processes of learners as well as what learners say and do to demonstrate awareness and use of mental processes in their own learning. Toward that end, a model of teaching and learning called Dynamic Pedagogy is proposed that assessment with curriculum integrates and instruction centered on learning. The conceptual foundation for the model is informed by theoretical constructs from the cognitive and socio- cultural literature on how children learn and develop. How these constructs are interwoven into three inseparable areas of curriculum, assessment and instruction are explored. The paper ends with a discussion on the future directions for research and educational policy on assessments to improve learning and teaching.

High quality teaching that improves learning outcomes of all students has become an issue of national concern. Policy makers are increasingly turning to standardized achievement tests to provide information on what students have learned in terms of the knowledge, skills mastered or not in a domain of interest (e.g. mathematics, history, science). However, mastery of knowledge and skills may not be enough for the ever-changing intellective demands of life in a modern democratic society of the 21st century. Today, self-regulatory, and other higher-order processes underlying learning in any domain or context are among the competencies expected of students in our K-12 schools. To be sure, measuring mastery of subject matter knowledge and skills or developed abilities has been and continues to be an important purpose of standardized tests. Data from such measures are used to predict future academic performance and make selection and placement decisions of students for different types of educational programs. However, understanding the qualitative differences in processes underlying developed abilities as well as the diagnosing, analysis and documentation of the processes that students use to learn are also worthy purposes of assessments. If we accept this assertion, then assessments must move closer to the classroom in search of evidence in real time of what the teaching person says and does to cultivate the mental processes of the learning person as well as what the learning person says and does to demonstrate his/her awareness and use of processes in learning.

The thesis of this article is that the processes of developing expertise are likely to be enabled when students consistently show active and sustained engagement in the learning opportunities that teachers make available for them through three key areas of their work: curriculum, instruction and importantly, continuous assessment. As differentiation in these three areas must occur in response to feedback from students' engagement in these learning opportunities until the desired outcomes are achieved. For example, to engage students in scientific and engineering practices and helping them to deepen their understanding of disciplinary core ideas and crosscutting concepts as envisioned by NGSS (2013), teachers will need to design the curriculum embodying these dimensions in ways that are developmentally appropriate to the learning needs and strengths of learners. Moreover, the intellective and science specific learning required by multi-dimensional science tasks must be considered in the design of the curriculum. However, how well students engage in the science -specific learning processes of the curriculum, depends, in part, on the use of instructional strategies teachers use to help them acquire the knowledge, understanding and skills of science but the simultaneous use of processes ( e.g. logical reasoning. inquiry and investigation, communication, argumentation, application of

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information, collection and analysis of evidence underlying knowledge acquisition, conceptual understanding) relevant for the mastery of knowledge, understanding and skills.

However, neither curriculum nor instructional decisions are likely to promote these dual outcomes independent of the role of assessment. It is only through assessments that we know whether the design of curricula activities and the instructional strategies used to help students engage meaningfully in those activities have resulted in the intended outcomes. Although each component plays a role in promoting learning, it is in the dynamic and reciprocal interplay among them components of teaching have its greatest impact on learning. In the section that follows these issues are explored in detail in a *Dynamic Pedagogy* model that integrates assessment, curriculum and instruction in the service of learning.

### The Dynamic Pedagogy Model

The Dynamic Pedagogy model (Armour-Thomas and Gordon, 2013) is based on Gordon's Troika's conceptualization of teaching, learning and assessment interactive, reciprocal as and dialectically processes that he introduced more than four decades ago (1970) and more recently in the work of the 2013 Commission on the Future of Assessment in Education that he chaired. The Dynamic Pedagogy (DP) model was used in previous efforts to explore the effectiveness of professional development in a study of improving the mathematics achievement of elementary-aged school children from underrepresented groups Armour-Thomas. (Armour-Thomas, 2008: Chatterji, Walker, Obe, Moore and Gordon, 2005; Gordon and Armour-Thomas. 2006).

The model consists of three interrelated areas of pedagogy: curriculum, instruction and assessment that are inextricably linked to student learning. The term "dynamic" is used to convey the fluid nature of the relationships among these concepts that allow the teacher to make adjustments in one area or the other in response to student learning strengths and needs. The term "pedagogy" is used to emphasize the interdependent and reciprocal nature of curriculum, instruction and assessment when activated through the mediating role of the teacher to engage learners in the construction of their own knowledge and transfer it to other contexts.

Essentially, Dynamic Pedagogy calls for teachers to embed learning processes in three key areas of their work in the classroom: curriculum, instruction and assessment by asking themselves four questions: (a) What is the learning target in terms of the domain specific knowledge, skills and the processes students must engage in toward the achievement of those domain-specific knowledge and skills?; (b.) What assessment probes are likely to elicit the students' use of processes to access their prior knowledge and skills in relation to the target learning outcomes? (c)) What assessment probes are likely to elicit the students' use of process to construct new knowledge. (d) What assessment probes are likely to elicit the students' use of processes to consolidate acquisition of new knowledge?; and (e) what assessment probes are likely to elicit students' use of processes to transfer new knowledge acquired to other contexts?

Based on the analysis of result from each set of assessment probes, the teacher makes adjustments in instruction and or curriculum as warranted. The sequence of assessment probes is at times linear, recursive, reciprocal, kaleidoscopic, depending on how students respond to them and the kinds of adaptations the teachers makes in curriculum and instruction in relation to the students' responses. The dynamic assessment-curriculum-instruction process continues until the desired learning expectations are achieved

Figure 1. Dynamic Pedagogy Model



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Figure 1 illustrates the interdependent relationships among curriculum, instruction and assessment with learning. The Interlocking circles indicate the interdependence of assessment, curriculum and instruction and the jagged lines are intended to depict the dynamic interaction among these three areas with learning as the focus.

### Conceptual Foundations for the Dynamic Pedagogy Model

The model was guided by theoretical and empirical research on how learners develop and learn and the mediating role of the teacher to promote learning in ways that inform their own teaching through three key interactive components of their work: assessment curriculum and instruction. What follows is a discussion of the conceptual underpinnings of the various strands of the model: learning, assessment, curriculum and instruction

### The Learning Strand of Dynamic Pedagogy

Learning strand is the heart of the *Dynamic Pedagogy* model. It describes the intellective processes students use to engage in opportunities that their teachers provide for them through curriculum, instruction and assessment over the course of a domain-specific lesson or unit. It also includes the developing processes that the learners themselves bring to a learning situation. The theoretical and empirical research literature in cognitive and learning sciences about how students learn offer some insights about these learning processes as discussed next.

### Learning progressions

The products of learning as manifested as developed abilities result from sustained opportunities to engage in processes of learning over time in a given domain of interest. The term "learning progressions" captures the developing or maturing nature of the processes individual use toward the eventual mastery of the knowledge and skills. The progressions are sequential in the sense that the learner has to uses processes to accomplish certain tasks before proceeding to others. However, the thinking in each phase is both sequential yet recursive and iterative or even kaleidoscopic in nature. For example, the thinking the learner engages in while activating prior knowledge from memory is different from the thinking he/she engages in when constructing new knowledge. Yet, the thinking processes reoccur when, in connecting a new concept to something familiar, the learner may have to go back into memory to verify it. Alternatively. learners may use general metacognitive processes repeatedly to monitor their use of domain- specific processes when constructing new knowledge, or applying it to a new context. Gordon (2014) would argue that the term "kaleidoscope" might be a more accurate description of the reciprocal and dynamically orchestrated patterns of affective, situative and cognitive processes an individual uses in the service of sense-making and problem solving when engaging in a learning experience.

## Cognitive and metacognitive processes in learning

Learning cannot occur without the use of some type of thinking or cognitive processes in any given task in or out of school. Various scholars have developed taxonomies of thinking skills over the years. For example, Bloom, Engelhart, Furst, Hill & Krathwohl (1968) developed a taxonomy of cognitive processes to describe a range from lowlevel processes (identifying, comparing, labeling to higher-level cognitive processes analyzing and evaluating and synthesizing) that have been used in many academic subjects and across grade levels. Beyer (1988) developed a classification of thinking processes consisting of three levels of complexity:

Level I problem solving, decision making and conceptualizing; Level II critical thinking skills and level III information processing skills. Like Bloom's taxonomy, these thinking processes have been infused in discipline- specific curricula in K-12 programs. Sternberg's (1997) creative, analytical and practical thinking processes is yet another example of a cluster of thinking processes underlying intellective tasks. In a series of instructional studies, Sternberg and his colleagues found that when students were taught in a manner that best fit how they think, they outperformed students who were placed in instructional conditions that did not match their pattern of abilities (Grigorenko, Jarvin, & Sternberg 2002; Sternberg,

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Grigorenko, Ferrari, & Clinkenbeard, 1999; Sternberg, Torff, and Grigorenko, 1998).

There is, of course, more to skilled thinking than the expert use of cognitive processes in learning in any given content area. Attention must also be given to the enhancement of students' awareness and use of executive thinking processes, sometimes describe as metacognition (Flavell, 1989; or metacomponents (Sternberg, 1986). A well-established finding from cognitive science research is that competent learners are metacognitively competent, i.e. they are aware of and are able to control their own learning using a variety of self-planning, monitoring and evaluation processes). Some researchers make a distinction between metacognitive knowledge and selfregulatory skills although it appears that both are important for learning in a variety of domains (Artzt and Armour-Thomas, 1992; Hartman, 2001; and Palinscar & Brown, 1984.

## The role of prior knowledge and skills in new learning

A widely shared view about learning from a cognitive and sociocultural perspective is that new learning is shaped by prior knowledge relevant to the new knowledge to be learned. (Brandford and Franks, 1971; Neisser, 1971; Anderson, 1995; Resnick & Klopfer (1989; Alexander, Kulikowich, &Jetton, 1995; Schneider, 1993) in accounting for the role of prior knowledge structures in new learning, Gagne and Dick, (1983) suggest that knowledge structures help retention of new materials by providing a scaffold or framework for storage but may also modify the new information by making it "fit" the expectations of already existing knowledge structures.

Although prior knowledge is necessary for new learning, researchers have found that misconceptions may impede future learning (Byrnes, 1996; DiSessa, 1996; Halpern & Hakel, 2002; and DeCorte, 2003. Misconceptions may be described as distorted knowledge that results when new information is filtered through knowledge structured that are themselves superficial, naïve, incomplete or downright incorrect.

Building on previous learning to construct new knowledge and skills

Once prior knowledge is activated relevant to the new learning, the learner uses that knowledge to construct new knowledge that includes both factual knowledge and conceptual understanding. Cognitive perspectives of development and learning suggest a number of factors that play a critical role in these outcomes of learning: social interaction between the learner and knowledgeable adult or capable peer (Vygotsky, 1978; Wood Bruner and Ross, 1976; the active role of the learner in using cognitive and metacognitive in making sense of the new information (Federiksen and Collins, 1989) the use of assimilation and accommodation process in factual knowledge and conceptual fitting understanding into existing knowledge structures (Piaget, 1952); the cultural context (Cole, Gay, Glick, and Sharp, 1971; and the structure of the knowledge to be mastered (Bruner, 1960; National Research Council, 2002).

## Consolidation and automaticity are key processes in learning

After learners have acquire factual knowledge and conceptual understanding, it is important that the new learning endures over a long time and are stored well in long-term memory. To ensure permanence of the new learning, learners need to consolidate the acquisition of factual knowledge and deep understanding of concepts, as well as to be able to perform complex tasks with automaticity. The research studies suggest that consolidation of learning through practice spaced over time increases retention of knowledge (Dempster, 1989; Krug, Davis and Glover, 1990; and makes easy retrieval from memory later (Anderson, 1983; Proctor and Dotta, 1995). Automaticity is also important for learning if the knowledge or skills to be learned require speed and limited mental effort. Like consolidation, automaticity can be achieved through practice (Bloom, 1986).

## Meaningful learning involves the transfer of learning to other contexts

The transfer of knowledge and understanding achieved in one context to other context is evidence that meaningful new learning has occurred. Although the research is not conclusive there appears to be some promising findings about the

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kinds of experiences conducive to transfer: opportunities to practice new concept or skill in different situations (Cox, 1997; Reimann & Schult, 1996); opportunities to practice retrieval of previously learned materials from long-term memory (Dempster and Perkins, 1993; Glover, 1989 ); opportunities to practice varieties of applications while learning (Bransford, 1979); initial learning must be embedded in a knowledgerich context ( Bransford, Brown and Cocking, 2000 ); opportunities for deep understanding of concepts and skills during initial learning of concepts and skills (Bransford and Stein, 1993).

### Learning is shaped by the social context

Theoretical and empirical studies in cognitive psychology and learning sciences hold that development, learning and cognition are inextricably wedded to the context in which they occur (Greeno (1998). Here, context is defined as the social and physical system in which the learner participates and the learning process is conceptualized as change in participation in socially organized activity (Lave, 1988; Lave and Wenger, 1991). Several studies have demonstrated how the acquisition, understanding, and application of domain-specific concepts and principles grew out of individuals' sociocultural experiences (Bereiter, 1995; Lave, Murtaugh, de la Roche, 1984; and Scribner, 1984).

### Learner characteristics and Personalized Learning

The research literature suggests that there is a variety of cognitive, emotional, and cultural patterns of an individual's response to specific environmental stimuli-situations, persons or event. Different terms have been used to describe these idiosyncratic responses: affective response tendency (Thomas and Chess, 1977; cognitive style (Messick, 1976); learning style (Dunn and Dunn, 1978); behavioral tendencies (Gordon, 1991). Level of energy deployment, degree of focus, persistence, intensity of effort are some of the behavioral manifestation of these personologic characteristics of the learner that speak to the learners' level of engagement in the learning experiences in which they participate that, in turn, can affect the quantity and quality of their learning. The greater the match between the characteristics of the learner and the teacher-learner relationship the greater the likelihood that the level of engagement and learning would be high.

Conversely, a mismatch between characteristics of the learner and characteristics of the teacher-learner relationship low engagement and less than optimal learning would be expected. However, Gordon (2014) reminds us that these characteristics of learners should not be understood as separate dimensions of human diversity but rather as a collective. In other words, learners bring these characteristics to the learning situation as dynamically orchestrated patterns or clusters that influence the level and quality of engagement and consequently their learning. He described this type of learning as personalized and includes the following features:

- The teaching and learning process is adapted to 1. or fit with the characteristics of the learner:
- 2. The processes by which the teachers and students relate in transforming what is being learned into the learner's data: and
- 3. The learner's identification with and ownership of products of the learning transaction.

### The Assessment Strand

The Assessment strand of Dynamic Pedagogy is informed by Campione's (1989 concept of "on-line probe" or Slavin's (2001) learning probes that function within a transactional relationship between the teacher and the learner to ascertain the processes students' use to (a) retrieve prior knowledge and skills from memory in readiness for new learning, (b) demonstrate their emerging understanding of new concepts and procedures as well as misconceptions; (c) demonstrate whether they have mastered the expected new knowledge and skills; (d) to demonstrate new learning with automaticity; (e) to demonstrate how well they have consolidated their new learning; (f) demonstrate how well they are able to transfer new learning to other contexts

Some on-line probes may take the form of questioning and may serve many purposes throughout the lesson. For example, questions may be used to elicit clarification on students' thinking, encourage elaboration of their ideas, to check their awareness and use of higher-order thinking, or to help them make a mental bridge to another idea. Other probes may require students to demonstrate their understanding in written form, verbally, pictorially, or kinesthetically. Assessment in this context is formative and dynamic in nature since its results are used as feedback to the learner improve his/her learning and to the teacher to make adjustments in their subsequent decisions about curriculum and instruction.

### The Curriculum Strand

In recent years, reform-minded educational policymakers and researchers, interested in the improvement of student learning have become increasingly focused on the curriculum and how that curriculum should is taught. For example. specialized professional associations in mathematics, science, English Language Arts and Literacy, World Languages, Social Studies, developed standards that articulate what students should know and be able to do in each discipline. Inquiry skills and conceptual understanding of core ideas in science, problem solving, communication, mathematical reasoning. and mathematical connections in mathematics, formulation of historical questions, interrogation of historical data, and employment of quantitative analysis in history are illustrative of the kinds of competencies envisioned for learners by designers of curriculum in these disciplines.

The curriculum strand of Dynamic Pedagogy consists of the content and related materials (e.g. text, media, and workbooks) of a discipline organized around a coherent body of interrelated principles and concepts. The development of the processes of learning that lead to conceptual understanding and skills in a discipline such as solving novel and common problems, is shaped, in part, by the level and quality of engagement of the curriculum by the teaching and learning persons. Moreover, the greater the consistency and prolonged use of processes of learning in a given domain, the higher the probability of increasing one's level of processing expertise. This conception of curriculum implies attention to characteristics or attributes of tasks listed below that are crucial to how well students engage in the processes of learning when working within a given domain.

• Do tasks allow students to make connections to their prior knowledge and skills and to build new knowledge?

- Are tasks open to multiple representations and multiple ways of knowing the content?
- Are tasks relevant to students' personal interests and do they arouse and sustain their motivation in them until successful completion?
- Are tasks sufficiently broad and deep to engage learners in metacognitive and cognitive thinking about a discipline's concepts and its underlying principles?
- Are tasks structured in increasing level of complexity to enable the learner to build on earlier successful experiences?

The curriculum strand is related to the assessment strand in that, choice of level and types of probes depend, in part, on the level and complexity of the task and its attendant cognitive and motivational demands on the learner. For example, the assessment of a concept using the format of a word problem, may have less motivational appeal for some children from culturally diverse background whose ways of demonstrating what they know and can do are at odds with the cultural norms of the teaching person. Alternatively, other children may have conceptual understanding of a concept but may not be motivated to demonstrate their competence because of limitations in their proficiency with the language of assessment. Using other types of assessments to appraise student learning of the same concept (e.g. asking students to show their understanding of equivalent fractions using openended tasks or using a different symbol system other than words to represent the problem) may yield results that are more meaningful from these curriculum-embedded assessments.

### **The Instruction Strand**

The instruction strand of *Dynamic Pedagogy* focuses on a multiplicity of strategies that are adaptive to the learning strengths and needs of the student. This is not an easy task for the teacher. Along with their differences in developing expertise; students bring a vast array of differences to the classroom: developed intellectual/intellective abilities, prior knowledge and skills, response tendencies (cognitive style, temperamental style, and cultural style). How well students' potential to learn is developed depends, in part, upon the judicious use of instructional strategies in adapting to these learner differences to meet the expected

learning outcomes. In some instances, strategies more closely associated with behavioral principles (e.g. direct instruction) may be necessary whereas in other instances strategies more in line with constructivist principles (scaffolding, metacognition) may be warranted. We have selected an eclectic blend of instructional strategies in an effort to be adaptive to the learning strengths and needs of the students. A discussion of these strategies follows:

### **Direct Instructional Strategies:**

Direct Instruction is an instructional approach in which information is transmitted directly to the student and class time is structured to enable students to acquire basic knowledge and skills. Some studies have found a positive relationship between elements of direct instruction and student achievement (Gage & Needels, 1989; Weinert & Helmke, 1995). Some studies of computer-assisted instruction that used elements of direct instruction found positive effects particularly for low-achieving students in elementary schools (Adams and Engelmann, 1996; Meyer, 1984). Although we know that high, academic achievement requires more than mastery of basis knowledge and skills, we think that achievement of automaticity of these competencies facilitate the acquisition. consolidation and transfer of more complex knowledge and skill. For this reason some of Slavin's (2001) direct instruction strategies are included in the instructional strand of the Dynamic Pedagogy model: (1) State learning objectives explicitly and orient students to the lesson; (2) independent practice; Provide Provide (4) distributed practice and review; and (5) Provide feedback.

#### **Social Scaffolding Strategies**

Vygotsky's (1978) concept of social scaffolding is similar in function to mediated learning in that it involves the guidance and support a more competent peer or able adult provides the child while working in his/her "zone of proximal development", i.e. the cognitive space wherein the child's learning and problem solving abilities are just beginning to develop. Working with the child in his/her zone of proximal development, the adult models the behaviors he/she expects the child to be able to do on his/her own, directs the child's attention to alternative procedures for the task and encourages the child to try out his /her embryonic skills on some portion of the task. As the child gains confidence, the competent peer or adult diminishes support and encourages the child to take on increasing responsibility for completing the task without help. It is this type of social scaffolding that Vygotsky (1978) claims as the mechanism for bringing about cognitive change.

The instructional strand is related to the *assessment* strand in that results of assessment may reveal learner strengths and weaknesses that could be addressed in two ways. First, the teacher may give feedback to the learner not only on areas of he or she experienced difficulty but also feedback on how to improve their learning. Secondly, based on assessment results, the teacher may use different instructional strategies when re-teaching the concept or alter the pace of instruction.

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(Appendices 1 and 2 display the indicators of the teaching and learning strands of *Dynamic Pedagogy*).

### Operationalization of the Dynamic Pedagogy model in the classroom

As indicated in the preceding section, the *Dynamic Pedagogy* model is one approach for linking the processes of learning with an integrated system of curriculum, instruction and assessment. In the section that follows, we propose a three-stage structure for the operationalization of Dynamic Pedagogy before, during and after classroom practice. The structure is consistent with Jackson's (1968) and Artzt and Armour-Thomas (2002)

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conceptual distinctions of preactive, interactive and post active stages of teaching.

### **Dynamic Pedagogy before Classroom Practice**

*Dynamic Pedagogy* before classroom practice involves consideration of a number of decisions teachers need to make for a proposed lesson in a given unit study in a domain of interest:

(1) the learning and content goals and objectives of the proposed lesson; (2) Diagnostic data on students' strengths and weaknesses in the knowledge, skills in a content area; (3) diagnostic data on students' strengths and weaknesses in learning and thinking processual demands of curriculum task; (4) cognitive, affective and cultural response tendencies of learners that predispose them to engage in the proposed process and content demands of proposed tasks; (5) The cognitive and metacognitive processes students are expected to use as they engage in the proposed curriculum tasks; (6) instructional strategies to engage students in the thinking and learning processes in the curriculum; (7) assessments to appraise how well students are using the thinking and learning processes embedded in the curriculum.

### **Dynamic Pedagogy during Classroom Practice**

During classroom practice, Dynamic Pedagogy involves the actions of the teacher informed by the decisions made prior to classroom practice. It also involves the actions of the students in response to the actions of the teacher. We borrow the terms initiation, development and closure phases of a lesson (Artzt and Armour-Thomas, 2002; Jones, Palinscar, Ogle and Carr (1987) to organize what teachers and students do within different transition points of a lesson. For example, for the Initiation *Phase* of the lesson, the teacher utilizes assessment and instructional strategies with curriculum tasks to help students make connections with their prior knowledge and ascertain any misconceptions or procedural errors likely to pose obstacles to students' achievement of the lesson's goals and objectives.

During this phase of the lesson, the student recalls previous knowledge in response to the teacher's questions about their prior learning or experiences. The classroom teacher responds non-judgmentally

to students answers by accepting multiple viewpoints. Should students' responses show misconceptions, the teacher uses scaffolding strategies to help students recognize their misconceptions on their own? For the Development *Phase*, the teacher uses assessment and instructional strategies with curricular tasks to help students build their intellective capacities as they engage in learning experiences conducive to the construction of the new knowledge. For example, in the area of science, the teacher asks students to predict the outcome of a situation prior to carrying out an investigation, demonstrate an inquiry activity for students before they perform the activity themselves, asks students questions to obtain an explanation of a process, encourages them to closely observe an object and describe what they are observing. Students may demonstrate a variety of active engagement behaviors during this phase of the lesson: responding to the teacher's questions verbally, through drawings or use of manipulatives; elaborating or clarifying when encouraged by the teacher; initiating their own questions, seeking clarification of the tasks assigned by the teacher or asking for help in doing the assigned task. They may even propose an idea for an investigation that was not planned by the teacher or ask off-topic questions. In terms of engagement in process behaviors, they may compare and contrast information, recognizing patterns, making connections between multiple pieces of information. Similar to the actions of the teacher in the initiation phase of the lesson, the teachers responds non-judgmentally, accepting conflicting ideas or explanations and encouraging students to engage metacognitively in recognizing own errors and making self -corrections.

Finally, for the *Closure Phase*, the teacher uses assessment and instructional strategies with curricular tasks to help students consolidate or reinforce newly acquired knowledge and to help them transfer the new learning to other contexts or situations. For example, the teacher may ask students to apply what they have learned to new situations, such as solving hypothetical problems, to support solutions to problems with evidence and evaluates their understanding.

During this phase of the lesson, student's works independently on assigned tasks and provides supporting evidence for their answers to the

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teacher's questions. As in previous phases, the teacher gives non-judgmental feedback to the students responses, encourages them to use metacognitive strategies to evaluate their own understanding of a concept or process, to recognize flaws in their thinking or judge their own level of success or failure in the assignment completed.

#### **Dynamic Pedagogy after Classroom Practice**

Dynamic Pedagogy after classroom describes teacher's self- assessment and reflections of their use of assessment, instructional strategies with curricula tasks to help students achieve the content and process objectives of the lesson. How responsive were students to the instructional and assessment strategies that I used to help them to (1) access their prior knowledge relevant to the content and process objectives of the lesson? (2) Use their prior knowledge to build new knowledge? (3) to consolidate their new learning? (4) transfer their learning to other contexts?. In addition, how well did I use the feedback from students' responses to differentiate subsequent learning experiences for them? (5) Were my efforts to differentiate instruction, assessment and curriculum matched to their diversities in learning? (6) Were my efforts to differentiate instruction, assessment and curriculum in each phase of the lesson based on diagnostic information on students' strengths and weaknesses in the content as well as the cognitive and metacognitive processes required to learn the content? These questions provide classroom teachers with prescriptive information for their subsequent lesson planning and implementation.

### Future direction for research and policy

The main point of this article is that assessments can provide information on the processes underlying learning especially when such assessments are integrated in with curriculum and instruction. This approach adds to the ever expanding knowledge base on the importance of assessments to document, analyze, appraise and understand the intellective processes of learning (The Gordon Commission, 2013); the integration of assessments with instructional and curriculum-related strategies to promote learning in the context of the classroom (Farenga, Joyce and Ness, 2002; Calfee, Wilson, Flannery,& Kapinus (2014); Mc Manus, (2008; A Framework for K-12 Science Education (2012). This type of assessment is difficulty to achieve and would require a research and development agenda as well as education policy in support of its potential to significantly improve both teaching and learning. The following recommendations are offered in both areas:

#### Computer-based assessments

The voluminous amount of data generated from this type of assessment would pose serious challenges for the classroom teacher to track student learning as well as their own efforts to adjust the curriculum, instruction based on results from assessments. In recent years, the convergence of digitalized technologies and cognitive science have led to promising technology-based assessments that could track students' online behavior related to their use of cognitive processes, or to diagnose their online behavior to reveal misconceptions or conceptual understandings (e.g. Chung, G., de Vries, L.F., Cheak, A.M., Stevens, R.H., Bewley, W.L., 2002; Baker, E.L., Chung, G. & Delacruz, G. C., 2002). Because assessments are integrally related to curriculum and instruction, the benefits of technology-enhanced would require a coordinated effort with many stakeholders among a community of stakeholders including educational policy makers, specialists in areas of curriculum, instruction, measurement and software design.

#### • Technical quality of process assessments

The same concerns about psychometric properties of standardized tests such as the validity and reliability would need to be addressed to ensure the technical quality of process data. This could become quite a daunting task given there are so many points in the learning progression for which process data may be derived. For example, what are the processes underlying students' prior knowledge and skills, construction and consolidation of new knowledge and its transfer to other contexts? The works of (Baker, Corbett, Roll, & Koedinger, 2008; Behrens, Mislevy, Dicerbo, and Levy, 2011; Chung and Kerr, 2012) offer some promising leads for accurately documenting the process demands of learning tasks.

### Professional development for teachers

One implication of the use of assessments to diagnose, appraise and understand processes underlying learning is that teachers would need to be supported in their efforts to use such measures to inform their own teaching in ways that enhance the learning of students in their care. Such supports would need to ensure "buy-in "strategies for teachers that these new ways of assessing would indeed inform the improvement of their teaching. Further, they would need reassurance that other key stakeholders in education such as school principals and parents would support their use of these assessments. Investment in the professional development of teachers with these sensitivities would be of paramount importance if process assessments are to become a routine part of teacher's work.

#### Conclusion

While it is highly likely that standardized tests will continue to serve as data-driven accountability measures of student learning, there is a growing recognition for a different purpose of assessment – to inform the improvement of leaning and teaching. More specifically, complementary assessment systems are needed to provide more direct and immediate information of the processes underlying learning by which intellective capacities can be nurtured though teaching. This paper offered a model of how assessment when integrated with instruction and curriculum can achieve that purpose with the help of new development in computer technologies and the professional development of teachers.

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### Table 1a. Teaching Component of the DP Framework

Teaching Strands and Dimensions	Indicators
Curriculum	
Modality of Representation	Uses manipulatives, diagrams, charts, symbols to make the content of tasks understandable
Motivational Strategies	Uses tasks that arouse, maintain student interest and involvement until completion; Teacher uses tasks that pertain to students' real world experiences
Sequencing	Orders tasks in ways to help students progress in their understanding of a particular content area
Rigor	Uses tasks that are at a level of difficulty appropriate to students' strengths and needs
Thinking Processes	
Memory	Helps students to recall information relevant to mastery of new knowledge
Analytical	Helps students to break down a concept or a skill into its basic elements to determine its essential features and their relationships relevant to mastery of new knowledge
Creative	Helps students to invent, imagine, or discover a situation that is new or novel relevant to mastery of new knowledge
Practical	Helps students to use manipulatives, diagrams, charts, symbols to make the content of tasks understandable Helps students to use real-world experiences or everyday life to generate a response
Metacognitive	Helps students to demonstrate awareness and use of their own executive thinking processes for the tasks at hand

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Assessment	
Declarative	Asks questions that probe for knowledge of facts, procedures/or strategies in a domain of interest
Procedural	Asks questions that probe for knowledge of how to perform certain procedures/strategies in a domain of interest
Conceptual	Asks questions that probe to determine the level of students' understanding of concepts Asks questions that require students to justify and or explain their understanding of concepts in a domain of interest
Metacognitive	Asks questions that require students to demonstrate their awareness and use of their own executive thinking processes for the task at hand
Instruction	
Scaffolding	Provides guidance and support, including clues, reminders, encouragement, examples relevant to mastery of new knowledge
Modeling	Demonstrates verbal descriptions of the thought or action to be imitated about a task
Explaining	Provides explanations about a task
Monitoring	Checks students' responses to ascertain understanding
Regulating	Makes adjustments to instruction as a result of information gathered through monitoring
Feedback	<ol> <li>Provides positive reinforcement to student response</li> <li>Acknowledges student's response</li> <li>Rephrases, elaborates student's response, corrects student's response</li> </ol>
Shared Practice	Provides tasks for students to practice newly acquired skills with assistance from teacher or capable peer
Independent Practice	Provides tasks for students to practice newly acquired skills without the assistance from teacher or capable peer

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Learning Progressions	Indicators
Accessing Prior Knowledge	Retrieves prior knowledge and skills relevant to mastery of new content Corrects misconception/s if revealed from retrieved prior knowledge and skills
Creating New Knowledge	Uses prior knowledge to make sense of new information and to construct new knowledge
Consolidating Knowledge	Practices understanding of new concepts/procedure with peers, independently, or under the guidance of the teacher
Transferring Knowledge	Applies understanding of new concept to different Situations or contexts independently

### Table 1b. Learning Component of the DP Framework

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# The Relentless Pursuit for Educational Equity: The Importance of Educational Leadership When Addressing Racial Inequities in Special Education

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#### Abstract

In this manuscript I connect the equity implications of racial disproportionality in special education with the power that educational leaders have to make systemic changes to practice. I invoke the principals of the Gordon Paradigm of Inquiry and Practice (GPIP) by using a systemic lens that is sensitive to how social markers of difference influence educational outcomes in local contexts. I delve into disproportionality research that shows how the social and contextual conditions of teaching and learning influence educational outcomes and I also outline how racial ideologies inadvertently contribute to the production of racialized inequities in special education. I then pivot these findings towards action-oriented solutions. framing the conversation within a narrative that does not seek to "fix" students and/or families, but rather encourages systematic interrogation of the social, cultural, and political factors that contribute to persistent racialized inequities in special education.

# **Racial Inequities in Special Education**

One of the most persistent patterns of stratification in schools across the United States is racial disproportionality in special education. It was first noted in education research when Lloyd Dunn (1968) suggested racial patterns in special education raise Civil Rights concerns. Disproportionality is defined by a group's overand/or under- representation in an educational category, program, or service in comparison to the groups proportion in the overall population (Donovan and Cross 2002). Students of color-in particular low income. Black, and American Indian students with disabilities—are the most affected by disproportionality. They are often overrepresented in high-incidence disability categories such as emotional and behavioral disorders (EBD), learning disabilities (LD),

intellectual disability (ID), and speech and language impairments (SLI) (Donovan & Cross 2002; U.S. Department of Education 2009) and are also subject to exclusionary discipline practices more often than other groups (Fierros &Conroy 2002; Losen 2014; Losen & Orfield, 2002; Skiba et.al. 2011; US Department of Education 2009). Students of color are also underrepresented in gifted and talented programs (Ford 1998; Ford, 2014; Ford & King, 2014; Harris & Ford 1999) while English Language learners (ELLs) tend to have geographically varying patterns of disproportionality (Artiles, Rueda, Salazar, & Higareda, 2005; Samson & Lesaux 2008; Sullivan 2011). Disproportionality is a serious educational issue because for students of color, it is often correlated with negative longeducational outcomes (e.g. Skiba. term Arredondo, & Williams 2014; Wells, Sandefur & Hogan 2003). The issue has persisted despite over forty years of federal legislation protecting students with disabilities in schools across the United States through the Individuals with Disabilities Education Act (IDEA), and over twenty years of specific policy attention-via IDEA-dedicated to addressing racial disparities in special education.

There are many factors which contribute to disproportionate outcomes such as misaligned educational practices, sociodemographic changes in the local context, and practitioner biases associated with race and other social markers of difference that negatively affect educational outcomes (Kramarczuk Voulgarides, Fergus, & King Thorius, 2017). Practice based explanations often focus on cultural disconnect and practitioner biases contribute beliefs and that to misunderstandings between educators and students (Annamma, Connor, & Ferri 2013; Skiba, Simmons, Ritter, Gibb, Rausch, Cuadrado, et al., 2008) which, when combined with academic and behavioral intervention implementation gaps, contribute to disproportionate outcomes (Harry &

Klingner, 2014). Sociodemographic studies interrogate how structural factors such as the racial composition of a school district or student body and socioeconomic variables contribute to disproportionate outcomes (Losen & Orfield 2002; Oswald, Coutinho, & Best 2002; Skiba, Chung, Trachok, Baker, Sheya, & Hughes, 2014). Collectively, the research indicates that there are complex and multifaceted reasons as to why disproportionate outcomes occur.

However, despite the plethora of research on the subject there are few studies that specifically explore how educational leadership relates to disproportionate outcomes (one notable exception is Fergus (2016)). In addition, there are few studies that critically unpack the intersections training between the special education administrators receive and the role they play when addressing educational inequities and pursuing socially just outcomes (Pazey & Cole (2013) for a discussion on the topic). This underscores how critical it is for special education leaders to know what contributes to disproportionate outcomes so they can combine that knowledge with their practice-based experiences in order to disrupt and dismantle persistent patterns of disproportionality.

Thus, in this manuscript I connect the equity implications of disproportionality with the power that educational leaders have to make systemic changes to practice. I invoke the principals of the Gordon Paradigm of Inquiry and Practice (GPIP) by a systemic lens that is sensitive to how social markers of difference influence educational outcomes in local contexts. I delve into disproportionality research that shows how the social and contextual conditions of teaching and learning influence educational outcomes and I also outline how racial ideologies inadvertently contribute to the production of racialized inequities in special education. I then pivot these findings towards action-oriented solutions, framing the conversation within a narrative that does not seek to "fix" students and/or families, but rather encourages systematic interrogation of the social, cultural, and political factors that contribute to persistent racialized inequities in special education.

# Educational Opportunity Gaps and Disproportionality

Students and families bring resources and assets to schools and school systems have the responsibility to be receptive and adaptive to both their strengths and needs. Misalignment occurs when the social, cultural, and economic capital of students and families are not incorporated into educational norms, routines, policies, procedures, and structures. The misalignment is exacerbated by educational opportunity gaps which manifest from community, school, and societal resource gaps that contribute to educational and socioeconomic inequalities (Carter & Welner. 2013). Collectively, these social forces have profound impacts on student outcomes. The following are examples of how misalignment between students, families and schools and opportunity gaps relate to racially disproportionate outcomes in special education.

# Biases

Practitioners provide opportunities to learn that are contingent upon how they relate to and understand the students and families they work with. Carter (2013) states the "inability of educators to comprehend the social realities, cultural resources, and understandings of Black. Latino, Native American, and other non-dominant groups is one of the main drivers of the opportunity gap in American education" (147). Studies on disproportionality have highlighted this dynamic showing that institutional racism and/or other forms of bias are present in the schooling process that transcend the best intentions of practitioners and the most well thought out interventions (Kramarczuk educational Voulgarides, Fergus, & King Thorius, 2017).

# Limited Access to High Quality Interventions

Opportunity gaps are also sustained when families and students have differential access to crucial educational resources. For example, it has been found that students most affected by disproportionality have limited access to rigorous curriculum and academically advanced peers (Donovan & Cross, 2002; Harry & Klingner, 2014), which negatively affects long-term achievement patterns. Additionally, students are often referred to special education without sufficient exposure to high quality interventions that support student learning (Donovan & Cross, 2002; Harry & Klingner, 2014), leaving them without adequate opportunities to succeed. These patterns vary by race, socioeconomic status, and other social markers of difference and raise equity concerns.

#### Segregated School Systems

Opportunity gaps are sustained through segregated educational systems. Orfield and Eaton (1996) in their study on school segregation found that school districts have consistently and persistently re-segregated since the passage of Brown v. Board of Education; effectively dismantling and thwarting Odesegregation efforts and limiting educational opportunities for the most segregated and disadvantaged schools. Racial segregation is consequential to practice because it allows for local norms and biases around race and social differences to remain relatively there undisturbed. While is very little disproportionality research that directly engages with the effects of residential segregation on practice, some exceptions do exist. For example, using a racial dissimilarity index measuring a community's level of segregation, Eitle (2002) found that racial segregation contributes to the disproportionate representation of Black students in MR (now ID) programs.

Segregation also infiltrates within school processes by tracking students, which in its most extreme form, manifests as a special education placement. Tyson (2011), in her work on integration, states that racialized tracking "is essentially segregation" when the tracks have racial characteristics, highlighting a "deep irony in the fact that the institution that is supposed to level social differences and to render background characteristics unimportant, instead more often openly reinforces and exacerbates those differences" (28). Mehan, Hartwick, and Meihls (1986) found that student identities and abilities are created and rigidly defined in special

education meetings where practitioners view past institutional and anecdotal records as evidence of disability rather than evaluating students' current performance. This is particularly consequential for Black males who are consistently classified and tracked into lower quality programs at an earlier age than their school aged peers (Oakes, 1985; Coutinho, Oswald, Best, & Forness, 2002). Both across school and within school segregation reduces educational opportunities.

#### Sociodemographic Changes

When social contexts change, educational practitioners have to be responsive and adapt to the changes. Decades of research show that the sociodemographic composition of a school or district and/or changes in compositions are linked to racially disproportionate outcomes in the classification, placement, and suspensions of students with disabilities (e.g. Losen & Orfield, 2002; Oswald, Coutinho, & Best, 2002; Skiba, Chung, et al., 2014; Sullivan & Bal, 2013). This can be attributed to the fact that diversifying student bodies can lead to deficit based and culturally biased assumptions about students that influence how educational services are allocated across school systems (Cooper, 2009; Evans, 2007; Murrillo, 2002). For example, Evans (2007) in her study of a school district experiencing demographic change found that school personnel used seemingly nonracial discourse to draw distinctions between the *new* and *existing* students that "connoted racial messages connecting whiteness with something "good" or "right" whereas relating "blackness" or "other-ness" with something "not so good" or "wrong" (344). The misconceptions contribute to cultural mismatch dissonance, which and are related to disproportionate outcomes in special education (Harry & Klingner, 2014).

### Colorblind Ideology

The United States has been described as a colorblind society (Bonilla Silva, 1997; 2002; 2010). Colorblindness exposes the disconnect between a society that prioritizes race neutrality, a general unwillingness to openly speak about race

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and/or explicitly address racial issues, and a history of racialized outcomes. A colorblind framework shapes how educational assessments, interventions, and evaluations are administered to students perceived as needing special education services (Annamma, 2015; Annamma, Connor, & Ferri, 2013) and limits their effectiveness in appropriately identifying the causes of academic and behavioral issues. For example, Neal, McGray, Webb-Johnson & Bridgest (2003) found that white teachers perceive Black students mannerisms as more fearful and they related these perceptions to lower achievement as compared to other students. Skiba, Simmons, Ritter, Kohler, Henderson, & Wu (2006) found that white teachers were aware they did not feel prepared to understand or work with racial and ethnic minority student's behaviors and because of this, saw a need for special education services.

The assumption that adequate interventions and services have been given to students with disabilities, and in particular students of color, without academic or behavioral gains reinforces deficit-based beliefs about students. This logic faults students for limited learning and/or behavioral issues in schools. Linda Darling Hammond (2013) explains how this reasoning ignores the effects of opportunity gaps on practice. She states,

The assumption that equal educational opportunity now exists reinforces the belief that the causes of continued low levels of achievement on the part of students of color must be intrinsic to them, their families, or their communities. Educational outcomes of students of color are however, at least as much a function of their unequal access to key educational resources, both inside and outside of the school, as they are a function of race, class, or culture. (79)

When opportunity gaps are ignored and colorblind attitudes dominate educational practice, student failure becomes normalized, allowing for racial inequities to persist.

#### The Importance of Educational Leadership

Educational leaders—whether at the district or school level, special or general education—have a significant effect on the educational outcomes of the students they serve. School and district leaders not only manage how a district or school functions, but they also set priorities and the tone for how educational services are delivered. They can also play a crucial role in either interrupting or sustaining opportunity gaps that allow inequality and disproportionality to occur. This is especially true for special education leaders because they are responsible for administering IDEA, which is a piece of legislation that is conceptually committed to providing equal access and opportunity to all learners. To put it simply, leadership matters and leadership's impact extends across many aspects of the educational landscape.

Educational leaders also have very complex jobs because they must synthesize and act upon vast amounts of information about students, families, staff, finances, and more in the service of educating students. This is a difficult task because they are immersed in complex organizational structures and rarely have complete information about the decisions they must make. And, not only are school and district leaders embedded in normative organizational and contextual environments that sustain specific understandings of race and disproportionality, but they are also filtering decisions through their own personal belief systems. This is because people rely upon information they can process and understand through their own lens, expertise, and capacity. This is problematic because it implies that people's belief systems and values, which can encompass deficit-based views about students, are embedded in educational decision making processes.

People are faced with the problem of *bounded rationality* (Simon, 1972) when they have many competing tasks, uncertainty, and incomplete information about a situation. These complex factors lead to "optimizing" and "satisficing" (March & Simon, 1958; Simon, 1972) so that action can be taken to manage a job, make a decision, or align organizational resources towards an outcome. Optimizing is the act of simplifying a situation to a manageable solution that can be acted upon. Satisfying engages with the complexity of a situation, is less linear than optimizing, and involves the picking and choosing of which information to act upon, and is often the

process an educational leader is likely to go through. These decision-making processes are fraught with biases though, because as Bowker and Star (2000) state in their work on classification systems, state "people do not do the ideal job, but the doable job" (p.24) when they satisfice.

Unintended systemic failures occur when people satisfice and pick and choose which information to act upon and make decisions about. Payne (1984), in his study on urban school leaders, argues that although people, primarily school leaders, may be conducting their work "with the best interests of those at hand" (p. 41) and to the best of their ability the decisions and choices made in the course of a day may unintentionally discriminate, deny, or give opportunity to one group or person over another and over time lead to unequal outcomes. Inequality seems to "just happen" (Payne, 1984, p38) as school systems produce intended and unintended disparate outcomes based on chains of interactions that extend across different individuals, organizational units, and institutional boundaries through a process of *fragmentation of harm*. Fragmentation of harm is a conceptual tool that can be used to understand how seemingly benign decisions about complex inputs and outputs may have unintended equity implications. The idea also underscores the fact that in order to truly combat educational inequities like disproportionality, educational leaders must think systematically about the impacts of their decisions, challenge the status quo, and resist destructive norms and practices that unintentionally deny educational opportunity to some students over others.

#### The Zone of Mediation

In order for educational leaders to disrupt persistent inequities, comprehensive reform efforts must be initiated that engage with local "zone(s) of mediation" (Welner, 2001). Welner (2001) identifies the following four social forces as impacting reforms and ultimately, the zone of mediation: inertial, technical, normative, and political. Inertial forces are the taken for granted ways of being in an institution. These are the unquestioned habits, routines, and practices that exist in organizations and self perpetuate without

much effort. The technical aspects are material and temporal. They relate to the inputs that give structure to an organization and how these inputs are organized within schools. Normative forces influence how practitioners approach their work and include belief and value systems. Lastly, the political dimension is related to the power imbalances within a community that extend beyond the four walls of a school, or the boundaries of a particular district. They encompass the particularities of local, state, and federal demands, expectations, and needs of schools. The normative and political dimensions take on greater significance with equity work because they require that political, material, and ideological turfs become actively contested within local contexts (Welner, 2001).

It is imperative for educational leaders and practitioners to be clear that inequities like disproportionality are not the result of student failures and deficits, but are rather related to complex social factors that must be substantively dealt with. Educational leaders must embrace the tensions that arise from equity minded reform because the change process cannot be neutral and it is intense. For example, the change process requires leaders to identify how their own belief systems, their staff member's belief systems, and the policies and practices operating in their local context both constrain equity minded reform efforts and provide opportunities for meaningful change. If educational leaders are willing to do this, third order change (Renee, Welner & Oakes, 2010; Welner, 2001) is possible. Third order change implies that fundamental changes have been made to "educators and community members core normative beliefs about such matters as race, class, intelligence and educability" (Welner, 2001, 239) in the pursuit of educational equity. However, this work is complicated and difficult.

#### What Can Educational Leaders Do?

Educational leaders can take actionable steps towards identifying their zone of mediation and work towards achieving third order change by asking themselves, and their staff, the same question "*What can I do?*" (adapted from Pollock, Deckman, Mira, & Shalaby (2010) study on preservice teacher preparation) across three

dimensions. Pollock et al., (2010) found that pre service teachers encounter personal, structural, and strategic tensions when engaged in conversations about race and education, leading to reflections about their own efficacy in positively affecting change via their classrooms. At the personal level, the authors found that the study's participants questioned their own readiness to engage with issues of race and racism. At the structural level, the participants struggled to understand how they could combat racial inequities and social injustices via the classroom. At the strategic level, the participants searched for concrete socially conscious strategies and actions that they could implement in their classroom. The authors suggest that educators should keep these three tensions in mind throughout their educational practice as they work to be reflective educators.

Educational leaders can use the same framework developed by Pollock and colleagues (2010) in order to engage with and challenge the zone of mediation. Educational leaders should ask themselves "What can I do?" across the dimensions of reform—inertial, technical, normative, and political—in order to achieve systemic third order change. Table 1 provides a non-exhaustive list of potential strategies educational leaders can use under this framework. The contents of the table are loosely adapted from Klingner, Artiles, Kozleski, Harry, Zion, Tate, et al., (2005); Bryk, Sebring, Allensworth, Easton, & Luppescu, (2010); and Fergus (2016).

# **Table 1. Strategies for Change**

What can I do? Personal

*Inertial:* Assure district and school offices are warm and welcoming to *all* students, families, and community partners; Assure that families and students are seen and treated as an asset for assuring success and their voices are meaningfully integrated into school- and district- wide decisions.

*Technical:* Assure funding, space, and time are regularly allocated for district wide *collaborative* professional development related

to issues of race, disability, ethnicity, equity, inclusion, diversity, sexuality, country of origin etcetera.

*Normative:* Assure staff acknowledge professional development is a life long process and develop the capacity to have meaningful conversations with each other about how race, culture, diversity, equity inclusion, sexuality, country of origin etcetera relate to educational practice and outcomes.

**Political:** Assure frequent and accessible communication channels (e.g. multiple languages) are formalized so that parents and other community stakeholders can engage with or contribute to the schooling process and educational decisions; Assure issues of equity are raised in personal and public forums.

### What can I do? Structural

*Inertial:* Assure there is awareness amongst district and school based staff that there are ideological and taken for granted cultural norms in the schooling process that advantage some students over others; Assure staff know that curriculum should be critically interrogated for accurate representation of all groups of students and that it sufficiently acknowledge structures of power and privilege in society.

**Technical:** Assure within school tracking is monitored for racial, ethnic, linguistic, and gender patterns; Assure a school wide equity plan and mission statement is established and abided by; Assure efforts to address inequities and disproportionality are integrated into all strategic decisions and that resource allocations are targeted towards addressing known inequities in a school or district.

*Normative:* Assure staff are aware that culture is dynamic, complex, constantly evolving, and embedded in every aspect of the teaching and learning process; Assure student perspectives are meaningfully included in the teaching and learning process and that deficit based beliefs about students and families are not tolerated.

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**Political:** Assure local social service and community based organizations are involved with district and school operations and strategically aligned to address inequities in educational outcomes

# What can I do?

#### Strategic

*Inertial:* Assure there is community wide knowledge of racial inequities and disproportionality occurring in the district via regular school and district communication channels; Assure inequities are clearly described in district communications so that coalitions can be formed to address inequities.

*Technical:* Assure district and school wide policies are established that proactively and regularly examine disaggregated student achievement, behavior, and attendance data by race, ethnicity, gender, and gifted and talented etcetera.

*Normative:* Assure that all school based teams, special education offices, related service providers, educational professionals etcetera have a comprehensive understanding of disproportionality within their schools; Assure that staff members are aware that they are both part of the problem and part of the solution when addressing inequities in practice.

**Political:** Assure there is regularly communication with local and state educational officials about issues of equity in the local context; Assure there are coalitions that advocate at the school, district and state level for systemic changes geared towards achieving equitable outcomes.

# **Enacting Change**

Educational leaders must combine the accountability tools and policies they are responsible for enacting (like IDEA), thoughtfully adapt them to their local context, and use a systemic lens to address broad inequities. Educational leaders must also assess their local zones of mediation and embark upon work that purposefully seeks to disrupt educational inequities. Systemic and comprehensive efforts are needed to assure educational policies, procedures, and practitioner's beliefs are strategically aligned to achieve equitable outcomes for all students and eliminate disproportionate outcomes in special education (Klingner et al., 2005). When there is a lack of alignment strategic amongst educational resources, opportunity gaps manifest that harm students because either opportunities are not provided or systems of inequality go unchallenged or unquestioned (Pollock, et al., 2010). Therefore, it is imperative for educational practitioners, and leaders in particular, to act as cultural change agents (Cooper, 2009) who are dedicated to identifying their zones of mediation and relentlessly pursuing third order change.

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# A Sufficiency-Based Model of Education: Toward "An Education on Equal Terms"

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#### Abstract

Based on the equality of educational opportunity doctrine articulated in the Brown v. Board of Education decision-that high-quality education is a right that should be available to all on equal terms, and that the state has a responsibility to guarantee that right-this investigation proposes approach toward the achievement of an educational equity. Based on the sufficiency principle (Gordon and Nigro, 1988), that equality is only achieved when those in greater need receive additional support, a set of standards for achieving equality of educational opportunity is presented, an educational model is described in which these standards are applied, and a report of efficacy of implementation in a Title I New York City school is reported.

#### Introduction

Upon his visit to the United States, the French diplomat and historian Alexis de Tocqueville observed, "The equality of conditions is the fundamental fact from which all others seem to be derived..." (p. 3, 1900). The equality of social conditions is a standard against which American social progress is routinely measured. A concern for equality figures prominently within the realm of education in the U.S. Supreme Court's historic Brown v. Board of Education ruling, which asserted, "In these days, it is doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity of an education. Such an opportunity, where the state has undertaken to provide it is a right which must be available to all on equal terms." Building on the assertion of the equality doctrine, this investigation proposes an approach toward the achievement of a model of education that serves learners on equal terms.

Our national commitment to the ideal of equality of educational opportunity is based on the equality doctrine in U.S. Constitutional law, which asserts that all people in society deserve to be on an equal footing with others and that opportunities of any kind should not be limited by arbitrary factors (e.g., language, race, class, gender, social or political connections). The equality doctrine creates a fundamental problem for practice in education: Given that life conditions and social circumstances are arbitrary factors that should not interfere with a person's opportunity to learn, but given that prevailing systems of schooling do allow for arbitrary factors to influence educational outcomes, how can systems of schooling be altered so as not to limit opportunity to learn based on arbitrary factors? What is the nature of opportunities that are sufficient to enable the achievement of educational goals, regardless of arbitrary factors?

These questions have framed an action research study that was conducted in the context of this author's work as a consultant in Pre-K-12 New York City public schools. Through a Lewinian (1936) action-research process, organized around the spiraling steps of planning, action and factfinding based on outcomes of action, the Principal Investigator developed a systemic pedagogical model known as the Learning Cultures® www.LearningCultures.net, organized to support intellective development in learners by providing them with: (a) greater general freedom to move, speak, and interact with others as a means to learn; (b) more opportunity to take responsibility to make decisions about what to learn and what to do to learn; and (c) curriculum experiences that are practical and relevant to the social and cultural worlds beyond school.

The Learning Cultures model is based on the assertion that, by providing learners with sufficient opportunity to participate in grouprelated activities that are personally and collectively meaningful, key socio-cognitive processes essential to intellective competence can

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be successfully used and developed. This is a report of a conceptual model for sufficiency of educational opportunity. It recommends both a conception of educational outcomes based on the intellective competencies necessary for democratic citizenship and a conception of the socio-cognitive processes that are supportive of intellective development; it also describes the implementation and evaluation of Learning Cultures in a Title I Pre-K-8 school for a period of five years.

Sufficiency: A Working Definition for Equality of educational Opportunity

Gordon and Nigro (1988) propose an approach to educational equity based on the concept of sufficiency, which asserts that high standards and rigorous assessments should be employed in combination with equally high standards for the distribution of inputs (opportunities and resources that enable development). The sufficiency ideal (1988) can be understood in the context of three dominant policy responses to the equality of educational opportunity doctrine.

The equal-access response. The first response involves a concern with equality in the distribution and access of educational resources through changes in laws, regulations, and policies that affect the degree to which different social groups are permitted to gain access to quality education resources. After education on equal terms became a federal mandate, federal legislation followed suit, paving the way for social policy initiatives aimed to ensure that schools adhere to the equalopportunity doctrine (Gordon & Nigro, 1988). The publication of the government-funded Coleman report (Coleman et al., 1966) exposed glaring race-based educational inequities and galvanized reforms aimed at the provision of high-quality educational resources and efforts to help students reach minimal levels of academic competence. Desegregation, the Individuals with Disabilities Education Act (IDEA), and the Bilingual Education Act are examples of the equal-access response.

**The equal-treatment response.** The second policy response consisted in the development of a system of equitable resources with the goal of providing all students with what were known to be

best education treatments (Gordon & Nigro, 1988). The equal-treatment response is premised on the notion that equity is achieved when all children are provided with the best programs available, regardless of differential needs (Gordon & Nigro, 1988). For example, the curriculumreform movement, beginning in the mid 1960s, was an effort to apply scientific insights from psychology and other disciplines to the development of curriculum and instructional interventions. Man: A Course of Study, the humanities curriculum developed under the leadership of Jerome Bruner, and his related concept of a spiral curriculum, are examples of the equal treatment response (Bruner, 1977). Implementation of so-called 'evidence based' or 'best practices,' such as Success for All (Slavin & Madden, 2001), Reciprocal Teaching (Palingscar & Brown, 1984) or the practices advocated by the National Reading Panel (2000) could be considered examples of the equal treatment response. However, since arbitrary factors such as language or socioeconomic status are significant correlates to achievement. the aims of standardized, one-size-fits-all programs tend to overlook consideration of the complex ways in which diverse human children, each with their own idiosyncratic way of being, interact with the conditions of learning situations.

The sufficiency response. The third response focuses on the notion of sufficiency based upon a conception of justice concerned with need and a theory of justice based on fairness (Gordon & Nigro, 1988). Gordon and Nigro's (1988) sufficiency response was inspired by the ideas of John Rawls (1971), who published A Theory of Justice, in which he proposed the difference principle. This principle asserts that fairness is achieved only when the consequences of the inequalities that exist between the advantaged and disadvantaged are reduced through the unequal distribution of resources to those in greater need. The sufficiency response, unlike the equal-access or equal-treatment responses, assumes that access to and distribution of objectively equal resources, regardless of quality, may not adequately overcome consequences of deep-seated social inequities, and that only through the uneven allocation of resources favoring those with greater

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needs can educational opportunity be achieved (Gordon & Nigro, 1988; Rawls, 2005).

The sufficiency response requires two components-ends and means. Output standards specify the ends and establish learning objectives, such as the cut scores to pass a state history exam. Input standards specify the means, or how objectives will be achieved. Output standards identify the knowledge, skills, or understandings successful learners will possess once skills, understanding or knowledge is developed. Input standards provide criteria for experiences that enable learners to meet output standards. U.S. education policy has favored a focus on output standards in school-reform initiatives. In this investigation, we assert that a similar concern for input standards holds promise to more effectively reform schools in ways that provides all learners with access to educational opportunities that sufficiently support them in meeting output standards.

# Sufficiency to What Ends? Identifying Inputs and Outputs for an Equity-Based Education Model.

The sufficiency response presents a practical problem for practice concerning reference points used to determine sufficiency. For example, any two students who have failed to meet output standards for their grade (e.g., ELA and Math state assessment pass scores) manifest their own unique combination of functional or status characteristics that have influenced learning. On what basis could their education have been reformed in order to have better ensured their success? What standards could have been used to determine the quality of their educational opportunities? How could these standards be applied to improve the quality of future learning experiences? What mechanisms explain how any learner, taking into account the entirety of their unique patterns of individuality, might be supported to achieve high learning standards on a par with others?

The conceptual frame for this study, which provided insight into ways to address these questions, was drawn from the social philosophy of mind (Dewey, 1900, 1916, 1938; Gergen, 1995; Mead, 1934; Searle, 1997, 2010) and Shared Intentionality Theory (2001; 2005; 2009; 2010; 2014; 2016, personal communication). This conceptual frame allows us to understand human beings as distinctively social creatures whose adaptive socio-cognitive capacities evolved to enable them to cooperate with others to overcome survival challenges (Dunbar, 1992; Tomasello, 2014). These capacities first evolved to promote collaboration with partners and, later in evolutionary time, with large groups, putting humans at an advantage over other primates restricted to lower forms of social collaboration (Dunbar, 1998; Tomasello, 2014).

A second challenge concerned output standards. A plethora of learning standards have materialized over the last two decades that primarily serve to outline what learners should be able to know, understand, or do by certain points in their education. However, Gordon (2007) argues that, while outcome standards are central, the "explication of what we want learners to know about specific disciplines and to be able to do must be considered as instrumental to what we want learners to become." (p. 7). The starting place for the establishment of output standards, in this study, involved identification of competencies needed to carry out the responsibilities of citizenship within liberal democratic society. Robert Dahl (1989) qualified an ideal democracy to be one in which citizens can exercise full rights and participate in society by demonstrating certain competencies.

These competencies can form the basis of our effort to determine educational outcome goals:

- the ability to discern the merits of alternative points of view,
- the capacity to see multiple perspectives,
- the ability to hold opinions,
- the ability to make decisions instead of being told or "fed" information and propaganda,

• the ability to have a reasoned sense of partiality in decision making,

- the inclination to question,
- the ability to make suggestions,
- the ability to engage in logical reasoning,
- the capacity to have insight into situations,
- the capacity to make and hold judgments, and
- the capacity to have tolerance for other perspectives.

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These intellective competencies enable individuals to assume the responsibilities needed to take part in the privileges of democratic citizenship, including the free exchange of ideas, information, and opportunities, not only for learning and self-transformation, but also for social transformation (UNESCO, 2007). Gordon (2007) asserts such intellective competence in learners "... reflects the effective orchestration of affective, cognitive, and situative mental processes in the service of sense making and problem solving" (p. 6). Martinez (2007) argues that a deliberate orchestration of mental competencies instrumental to intellective competence is vital to the advancement of a democratic conception of social justice and to social equity in the service of values embraced by a free society. Sufficiency-based standards for educational equity emphasize the accommodation of needs of the learner relative to output standards and hold promise to redress "gaps in educational attainment between rich and poor, within and between countries...," which "... are simply appalling" (UNESCO, ii. 2016). This investigation began with the identification of key socio-cognitive processes that appear to be essential in supporting the development of human thinking (Tomasello, 2014), and using these to develop input standards in an education approach oriented toward sufficiency.

# The Mental Processes of Intellective Development

Through a ten-year process of action inquiry in the role of educational consultant to Pre-K-12 schools, the PI conducted action research by recursively applying theory to action, scrutinizing outcomes, refining practices, and repeating the process in eight schools where the education model, developed by the PI, known as Learning Cultures (www.LearningCultures.net) was implemented. Here we describe mental processes, derived through the literature, that catalyze intellective development in learners.

Opportunities to cultivate will, intention, and agency through experiences of freedom. Knowledge is generated through action; and doing is integral to the processes of learning and

becoming (Dewey, 1938). The human capacity for higher-order thinking adapted in humans to enable cooperative group living to support wellbeing and survival of human groups (Dunbar, 1998; Tomasello, 2009). For the human species, individual intentions are largely governed by the collective intentionality of the social groups to which one is a member. The choices and decisions that govern individual behavior are shaped by interactions with one's culture. Will, the ability to make choices and decisions, intention, an aim or self-referential objective of one's actions, and agency, the capacity to successfully execute intentions, are relevant to the cultivation of intellective competence because they govern activity and are expressed through activity. Who we become is largely determined by how we perceive ourselves and act within social situations.

For example, agency as a coherent trait in identity is determined by the degree to which one's memories across countless situations that make up episodic memory generally cast the person as a strong agent over circumstance (Siegel, 2015). An education concerned with equity should provide learners with opportunities to develop agency in academic contexts through a curriculum that provides opportunity to exercise freedom necessary to successfully act as an agent over new challenges. Tocqueville observed that "Nothing is more wonderful than the art of being free, but nothing is harder to learn how to use than freedom." Learning the use of freedom must be a concern for formal education.

How do we begin to address this challenge when centuries, even millennia of education traditions have dictated a "spectator theory of knowledge" (Dewey) and a corresponding passive role for students under classical transmission pedagogical traditions (Olson, 2003). Our brains initiate a course of action prior to conscious awareness of action-a phenomenon known as the Readiness Potential (Kornhuber & Deecke, 1965), the electrical activity in the brain preceding = voluntary action. This discovery revived a concern for free will within the fields of philosophy and psychology, and influenced the emergence of selfmanagement in theoretical and applied research (Kandel. 2007). The readiness potential establishes that preconscious cerebral activity

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governs the initiation of human action, but, through will, persons exercise processes of conscious decision making to intervene in action by channeling impulses and/or pre-conscious intentions (Kornhuber & Deecke, 1965). The readiness potential is a trigger, pulled from our subconscious mental states, which initiates actions that are either consciously approved or rejected through conscious activity. In other words, our subconscious disposition toward a particular object creates the very possibility of whether or not we have the option to decide to pursue the action.

The fact of free will forces a concern for what learners do with their will and how their actions influence learning. Searle (2010) asserts that intentions, or aims, can be understood by their conditions of fit to reality, or the extent to which they satisfy one's expectations. But intentions are like icebergs-only partially in view of conscious awareness. Searle (2010) distinguishes between conscious and unconscious intentions. We are predisposed to some of our actions through unconscious states that, which, while not immediately accessible to the appreciation of conscious awareness when they are triggered, are nonetheless intentional. Most of what we think lies beneath the surface of conscious awareness (Siegel, 2015). Activity can fall on a continuum between non-intentional to intentional, depending upon the degree to which the action satisfies expectations (Searle, 2010). Intentions also fall into categories of prior intentions and intentionsin-action (Searle, 2010). So an education model concerned with agency must take into accounteven operationalize-the various intentional states learners bring to pedagogical situations.

Despite the forward momentum of intentionality, pauses exist that must be explained if an accurate account of activity is to be truly understood. Searle points out that there are three gaps in intentional action: "...the gap between reasons and the decision (the formation of prior intention), the gap between the decision and the onset of the action (the intention-in-action), and, for complex actions, the gap between the onset of the action and the continuation to its completion" (2010, p. 41). We assert that learning activities that are both personally meaningful and also related to the collective intentions of the larger social group will most effectively enable learners to bridge the gaps in intention that might otherwise present challenges, fostering, over time, a sense of agency and independence as aspects of intellective competence.

Opportunities to learn through interactions with others. The extent to which the learner acts with agency or effort is dependent upon their relationship to others and the socio-cultural processes that support or mitigate new learning (Bruner, 1993, 1997; Cole, 1998; Tomasello, 2010). This assertion is echoed in the comments of Gordon (2006), who emphasizes the significance of the "I-thou dyad" in the process of learning, and who writes, "the social forces that drive the interactions in and between these dyads…ought to be the subject of our investigations" (p. 125).

The brain is plastic, meaning that it is constantly changing and growing in physical structure as a result of the formation of new memories made through experience (Kandel, Schwartz, Jessell, Siegelbaum, Hudspeth, 2013). A marvelous character of human development is the capacity to willfully change neural structures through autonomous control of mental states over ontogenetic time, as the developing person engages with others through activity, altering structures of the brain through states of the mind (Kandel, 2007). In other words, learners who may have lacked the benefit of experiences that support certain forms of development can, through interactions with others-peers as well as teachers-regulate their minds and orient themselves toward maturational processes that developmental support desired endpoints. Security, trust, confidence, self-competence, and all manner of dispositions that correlate with wellbeing can be learned through relational interactions with others (Siegel, 2015). We assert that these dispositions can be learned by students not only through relationships with teachers, but also through relationships with peers.

Through early interactions and opportunities to become mentally attached, the child and caregiver share what are known as "mindscapes," or mental representations. The mindscape of the child entering school bears influences formed primarily through interactions with primary caregivers. Co-

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created through interactions with others, the child's mindscapes equip her to interpret the social world and regulate behavior and emotion. Formal schooling is the first time many children are required to engage with others outside of the primary family group. Since access to others' mindscapes is the primary mechanism through which the mind develops (Tomasello, 2014), school could become a time of possibility. However, possibility is lost to children who are less able to attune and resonate with the emotional states of others (Siegel, 2015), or, as we assert, based on the work of Tomasello (2014), for children whose mental development is constrained by curriculum and instruction practices that restrict opportunities to share and exchange mental states with others. We assert that, due to these restrictions, school experiences can increase the possibility that equity gaps will widen.

Opportunities to integrate all of the components of the mind. Integration of the mind is the linkage of differentiated components of the mental system (Siegel, 2015). To give a successful presentation, for example, one must integrate different parts of the mind with behaviors in response to the exigencies of the social situation. To succeed in life, this microcosmic moment is multiplied exponentially, to the extent that the person is able to integrate the almost infinite number systems of the mind with the demands of social situations (Siegel, 2015). We assert that, in order to gain increasing competence, control and flexibility of these systems through the process of integration, socially situated learning experiences that are personally relevant to learners and socially relevant to the larger communal group are the only contexts that enable the development of integration of components of mind.

**Opportunities to develop executive functions.** Executive Functions (EFs) are the cognitive processes that allow for self-management (e.g., cognitive control, inhibitory response, selective attention, and working memory) (Kandel, et al., 2013). EFs enable humans to engage in higher-order thinking, or the combination of memories of previous learning experiences and their application in novel situations, to cooperate socially to achieve goals. All human groups develop social norms that enable group cohesion (Tomasello, 2016). The person taxes the EFs to self-regulate to the exigencies of situations within the confines of social norms.

**Opportunities to develop social competencies.** Social-emotional Competencies (SCs), such as emotional and affective self-regulation, empathy, and compassion, adapted in humans to enhance optimal performance required in coordinated social activity (2009). These adaptive capacities are needed when the wellbeing of the group depends on the individual's ability to successfully manage their connections with others in highstakes situations. EFs and SCs are best understood as proximate skills that are deployed in the service of collective intentionality in group activities (Tomasello, 2016). They develop over time and have the potential to be strengthened through use. EFs and SCs are swiftly and invisibly awakened into action by the wind of need. Therefore, goaloriented group activities that provide learners with opportunities to integrate EFs and SCs with other mental processes are a means by which these capacities can be developed and strengthened.

**Opportunities to learn through selective** attention. What does it mean to say we have learned something? What is learning? Neuroscientist Eric Kandel (2007) made the discovery that learning, in its most basic, biological form, is the creation of new neural connections in the brain that develop when something new has been learned. These connections take form as neural circuits and that enable new neurological processes to occur (Kandel, 2007). Certain forms of learning-for people, places or things-especially of the sort expected in the formal curriculum of school, depend on the development of a special type of memory known as explicit or declarative memory (Kandel et al., 2013). This type of learning depends on the learner being consciously aware and selectively attending to the object of learning (Kandel, 2007; Kandel et al. (2013). Implicit memory develops without conscious awareness in response to external stimuli that are sufficiently strong enough to support new connections between neurons; explicit or declarative memory, on the other hand, only develops when the learner wills it to develop by devoting attention to the object of learning (Kandel, 2007). School

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achievement depends on the learner's ability to selectively attend to the content of curriculum and to develop explicit memory. Without attention, there is no learning. So even if a 'champion' teacher delivers an excellently planned lesson, replete with explicit instruction, not a trace of learning will be left behind in the neurological structures of an inattentive student.

Opportunities to exercise self-management, self-organization, and self-regulation. A major challenge facing people of the twenty-first century is that of being overstimulated and overextended. Handheld devices enable 24/7 access to work and social networks, and access to an infinitely broad social network invites constant social engagement. Exponentially growing quantities of information create the potential to be drawn into the needles in haystacks of bits and bytes of information. Limitless choices of digital content are a constant temptation for screen addicts, texting is as regular as breathing, and multitasking is epidemic. Research has shown that people who are distracted in their thinking are more likely to be depressed, and whether distracted thoughts are focused on bad or good events, depression is experienced (Siegel, 2015). Having a mind that equally wanders is also correlated with the aging process (Epel, et al., 2012). The twenty-first-century person is literally at risk of losing their mind to an over-stimulating, over-plugged, amped-up world unless they possess self-discipline to control their own mind and maintain enough inner tranquility to enjoy wellbeing. The emerging science of the mind (Siegel, 2015) justifies the need to practice meditation as a form of mental hygiene in order to maintain a sense of wellbeing, and, we assert, an education oriented toward equity would provide such opportunities.

Self-management and self-regulation are the defining trait of the flexible, adaptive, coherent, energetic, and stable mind (Siegel, 2015). That high levels of self-regulation predict future successes in school, jobs, and relationships, even more than IQ, has been extensively documented (Mischel et al., 1972). Self-regulation and the ability to delay gratification, a factor associated with school success and life achievement (Mischel, et al., 1972), is directly related to life success. Opportunities to exercise self-regulation

through will, intention, and agency should become a primary concern of education.

**Opportunities to exercise self-determination** and to develop motivation. Human beings are naturally inclined to act in ways that promote autonomy, to experience a sense of selfcompetence in the things they do, and to feel a sense of relatedness to others (Deci & Ryan, 1985). These impulses are internal sources of motivation, triggered in the context of intentional activity. Education practices that reward behaviors extrinsically create situations in which the reward becomes the focus of motivation (Deci & Ryan, 1985). Extrinsic rewards have been shown to undermine intrinsic motivation by causing overjustification, or motivation for the reward itself rather than the reinforced behavior (Deci & Ryan, 1985; Tomasello, 2009). Self-determination theory (SDT) of motivation provides an explanation for the reasons humans are motivated to act without external influences (Deci & Ryan, 1985). It also includes a sub theory that takes into account how extrinsic motivation influences behavior on a continuum from those that are performed strictly because of the external reward or demand to those that the person identifies with and are fully assimilated into the person's sense of self but nonetheless still external to the person (Deci & Ryan, 1985). In order to recruit the person's natural inclination to be motivated through experiences of self-competence, autonomy, and relatedness, the content of curricula need to be situated within activity systems that provide these experiences.

Opportunities to stretch our minds around the future through the process of prolepsis. Since humans have the capacity to represent things to themselves cognitively, they can consider representations of things that have not vet happened or do not yet exist (Tomasello, 2014). This process is known as prolepsis. Prolepsis—an activity in anticipation of a thing-maps a trajectory for the process of becoming. If the expectation is that school should prepare learners to become citizens capable of exercising intellect, gaining insight, making suggestions, reasoning logically, seeing multiple perspectives, and having tolerance for others' perspectives, school experiences need to incorporate experiences in which these mental states are practiced.

**Opportunities to exchange mental states with** others cooperatively. Philosopher and linguist Paul Grice discovered that human communication is fundamentally cooperative in nature (1991). Grice's Cooperative Principle (1991) asserts that every participant makes their conversational contribution according to rules or maxims. Gricean maxims posit that human communication adheres to the simple principles of quality (be truthful), relevance (stick to the point), brevity (be brief and to the point), and orderliness (be clear) (Grice, 1991). Any example of communication can be understood in relation to the way in which its content adheres to or defies these maxims (Grice, 1991). Humans utilize their intrinsic cooperative competencies to interpret speech in relation to communicative norms (Searle, 2010; Tomasello, 2008). Applied to pedagogical interactions in school, achievement can be supported to the extent that learners understand the cooperative principle and how it operates to inform their development in the domains of text comprehension or composition processes.

Dewey (1910) wrote, "Genuine communication involves contagion; its name should not be taken in vain by terming communication that which produces no community of thought and purpose between the child and the race of which he is the heir" (p. 224). Conventional classical transmission methods of instruction structured by content delivery, practice and drill, specify authoritydictated activities that curtail the fuller exercise of will, intention, and agency in response to situative conditions, and instead emphasize compliance and conformity to teacher directives. The purpose of conventional curriculum activities typically centers on things to be learned for the sake of their learning. We propose a broader purpose for organized curriculum, around meaningful cooperative activities in which these things might be more successfully learned.

**Opportunities to share intentions with others.** The shared-intentionality hypothesis is the understanding that humans possess innate abilities to communicate cooperatively and to read others intentions (Tomasello, 2014). One type of thinking that is unique to humans is co-consciousness—the awareness of a phenomenon while, at the same time, being cognizant of another person's awareness of the same thing (Tomasello, 2014). Most of our thoughts and memories are shaped through interactions with others. The social nature of human beings distinguishes their capacities for thinking, which are to represent things mentally, to reason logically and inferentially about cognitive representations, and to mentally represent what they believe to be the perceptions of others (Tomasello, 2014). Opportunities to share mental states with others is the vehicle through which thinking develops.

**Opportunities to adjudicate differences with** others. What are the processes through which individuals gain access to the minds of others? How does new thinking emerge through these (1990) interactions? Gergen's relational conception of social understanding provides the theoretical framework for understanding how cooperative thinking is achieved. According to Gergen (1990), relational ties are the locus of understanding, and all personal outcomes depend on human interchange. In other words, the individual's wellbeing can only be considered within the context of the relationships in which the person is engaged.

The assumption that any form of understanding depends on the insights gained through relationships with other people forces the need to 'operationalize' the person-person relationship. Gergen's relational theory offers two constructs that are useful to that end: the relational nucleus and relational adjudication. The nature of a relationship depends upon the mutual coordination of action between its participants. As coordination of action progresses, a relational nucleus between participants in a group is formed. A relational nucleus is "...a self-sustaining system of coordinated actions in which two or more persons are engaged." (Gergen, 1990, p. 585). The relational nucleus is a social accomplishment developed and sustained through time. The relational nucleus offers a metaphor for the properties of the relationship between the teacher and the learner, or a learners and their peers.

As situations arise, conflict is bound to arise as well, which requires resolution in order for continued cooperative understanding to develop

(Gergen, 1990). Gergen (1990) refers to this process as adjudication. Just as a judge adjudicates conflict in the courtroom, so too do participants adjudicate conflicts or differences in understanding within their relationships. When they see things differently, each deploys their own way of seeing the world by accessing evaluative discourses from the range of relational nuclei derivative of the constellation of their social interactions (Gergen, 1995). Each person assesses the collective evaluative discourses of the sum of their previous experience as reference points to understand and navigate new and/or challenging situations. The outcome of conflicts of new situations, then, represents the processes of uniquely human, synergistic thinking, which has been passed down through minutes, hours, years, and generations of interchange.

**Opportunities to join the 'sacred collective.'** All of the processes outlined so far in this report as dimensions of intellective competence can only be orchestrated in the context of the experiences of the learner in relation to the social group. Commenting on the relationship between the self and society, Dewey (1916) wrote that democracy is a form of associated living, a "con-joint communicated experience" in which "...beings who are born not only unaware of, but quite indifferent to, the aims and habits of the social group have to be rendered cognizant of them and actively interested. Education, and education alone, spans the gap" (p. 3). Dewey (1916) went on to say, "The individual in his isolation is nothing; only in and through an absorption of the aims and meaning of organized institutions does he attain true personality" (p. 94).

Social interaction enables the person to become enculturated and, through interactions with others, to develop to their fullest mental capacities. For Dewey, the standard for democratic living could be measured against two points: (1) the extent to which shared interests are numerous and varied, and (2) the extent to which the interplay of forms of association are full and free. Dewey's vision of an education for democratic society portrays an individual who not only is shaped by society, but who also has a role in shaping it through widening realms of association.

The typically restrictive realms of association with others, imposed by school traditions such as ability-leveled reading groups or tracked classes, limit developmental possibilities in much the same ways as racial or gender segregation limits opportunity on a societal level. The product of human thinking is a metaphorical beaded chain of relational nuclei, consisting of relationally adjudicated pearls of collectively normed outcomes of human thinking and deliberation. To the extent that interactions that interactions are made "full and free" by democratic values infused in schooling practices, such as free association, the learner's potential to develop is enhanced.

**Opportunities to participate in the collective** norms of the 'sacred communal group.' As modern humans evolved from foraging dyads to communities that live in large social groups of approximately 150 individuals, they acquired new communicative and cooperative abilities that supported more complex forms of life (Dunbar, 1992; Tomasello, 2016). Because survival depended upon how well group members within these cultures got along together, cooperative behavior was a form of cultural agency (Tomasello, 2016). In adaptive terms, collective group harmony was more important than individual success. Tomasello (2016) writes, "The self-regulation of 'we>me' in modern humans therefore took the form of moral self-governance: the individual internalizing the objective value of the group." (p. 146).

A complete view of formal education should take into account the way in which the learner takes responsibility to adhere to the norms of social groups as means to gain access to the mental states of participants within groups and to develop the intellective competencies used by them. All forms of knowledge presented in formal education curricula are the outcomes of cooperative group communication. Teaching content of any kind is really a matter of teaching norms or conventional ways of understanding the world that are collectively understood and accepted. For example, the sound made by the letter 'G,' or the product of '7 X 3' are commonly taken as facts, but they are actually the products of social achievements that have become established and accepted as truths. In order to learn anything, the learner needs to care enough about being a participant of the group in which knowledge exists

to commit to knowing it in a way that results in new memory.

So, what are the processes that support the internalization of group norms? Internalized norms are born out of countless reciprocal, giveand-take interactions with peers and elders (Tomasello, 2009). Olson (2007) has proposed a process that explains how a person internalizes social norms, which follows: Initially, the seeds of norms are planted when a caregiver attempts to hold a child responsible for an action; and then the norm is internalized through the child's efforts at self-control, or their ability to regulate to what they've learned, represents the growing body of a norm. Olson explains that the transfer of responsibility for normative behavior from adult to child depends on the child's ability to hold a rule in mind and make causal connections between the rule and their personal action.

Children arrive at school with this cognitive ability, but of course, they will have internalized only the norms of those social worlds in which they are participants and where norms have been meaningfully exercised. In order to learn new norms in school, these also need to be meaningfully exercised in situations where learners are active participants in social contexts in which they view themselves as members of groups and where they can take responsibility to regulate their behavior to group norms. Once students develop a sense of belonging through normalized behavior, they begin to identify with the group. Through either formal or informal ground rules for activities, groups form bonds that eventually result in a sense of what Michael Tomasello calls we-ness (Tomasello, 2009). Psychiatrist Dan Siegel points out a more mefocused sense of this phenomenon, which he terms MWe (2015). The need for human beings to feel a sense of belonging to the social group is a critical facet of identity that should not be overlooked in education, but more importantly it should be harnessed.

As learners take part in activities of the social group, they are enabled to integrate different systems of their brains in order to respond adaptively and flexibly in social situations (Siegel, 2015). The image of early humans traveling

together in groups of 150 cooperating to survive helps envision a sense of the contexts in which higher-order thinking abilities evolved to enable cooperative group work. Humans used these capacities to survive, and in the process, developed the abilities that stemmed from them. Interdependent, goal-oriented, purposeful work in groups is the context in which human beings show their greatest potential to grow and develop. These group contexts are the richest sites of possibility for learning, and they should be the fulcrum of formal education.

#### **Sufficiency in Practice**

We have asserted that each person's learning trajectory is fundamentally shaped by their sociocognitive functions that support shared and collective intentionality. We have also asserted that the content of instruction (e.g., literacy and mathematics knowledge) is a form of cultural knowledge, the acquisition of which depends upon intentional participation on the part of the learner with others in social groups in which these forms of knowledge are valued and used purposefully. The question to be addressed for practice, then, is: How can a system of education be created to provide all learners sufficient opportunity to use and develop socio-cognitive processes that support intellective development and the achievement of output standards? Opportunities to address this question came as a request to the PI to devise a school-wide system of education organized to ensure every student's access to such opportunities.

In fall 2007 the PI began a five-year implementation of the Learning Cultures education model at P.S. 126 Jacob Riis/Manhattan Academy of Technology School (Jacob Riis), a Pre-K-8 Title I school in Lower Manhattan serving over seven hundred students. The principal believed teachers and students were constrained by the existing writing program in the school, which consisted of a set of prescribed units of study that is based on a classical transmission model of instruction (personal communication, September, 2007). In the first year of implementation, every student's access to opportunities to learn were systematized in the writing program, which provided freedom for

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students to interact with one another and to make choices about which topics to write about and what text forms to employ. These activities included the following: Writing Work Time: a daily forty-minute period during which students enjoyed maximal freedom to select writing topics and write in genres of their choice, as well as to move freely about the room to collaborate with peers; Writing Conferences: a ten-minute meeting between the teacher and an individual student that focused on discussions of writing goals and evidence about how the student's writing efforts aligned with their goals; The Writing Share: a period of twenty minutes at the conclusion of each writing period during which time two students read their writing to the entire class of peers in order to get feedback about ways to improve it.

These methods were based on the PI's instructional model, known as Genre Practice® (2008), which enables learners to assume responsibility to develop projects that originate from their own sense of purpose. The student's peers and teachers judge projects by evaluating how well the student achieves the intended purpose. To develop their projects, students refer to published exemplars and adapt useful conventions. They also receive feedback on their work through a discursive sharing procedure in which writing is displayed on a document camera and read by the author to the class. Peers offer feedback directly to the author, who has the option of selecting responses from whomever they wish to choose. Students then make revisions based on peer and teacher input and inspiration from exemplars.

Within the context of Genre Practice, students have opportunities to exercise their tacit cooperative capacities as writers and readers through activities organized explicitly around the cooperative principle. Genre Practice is the context in which the socio-cognitive processes described above can flourish. Once contexts for cooperation and group membership are established, learners are disposed to draw from the socio-cognitive processes that support intellective development, described above. In addition to working in classrooms, the PI also worked with the leadership team to devise sufficiency-based systems of accountability to ensure that every student had access to the activities demonstrated. The writing program was implemented in all of the elementary classrooms in the school in the first year of the study and in the middle school in the second year.

The PI develop a reading program based on the tenets of Genre Practice, which was implemented in the school beginning midway through the second year. The reading program consisted of the following formats: Reading Work Time: a daily forty-minute period during which time students enjoy maximal freedom to select texts to read and to move freely about the room to collaborate with peers; Cooperative Unison Reading®: a method of reading developed to support intentionality in reading, in which groups of five or fewer are formed based on students' self-selected text choices. Unleveled Cooperative Unison Reading groups replaced guided reading groups, which were based on students' reading level, and became the core of reading instructional program in all grades in the school. Cooperative Unison Reading requires that students follow these rules: Read aloud in sync; stop the group with questions or comments; and be promotive (be nice and supportive of everyone in the group) (McCallister, 2011).

Groups meet four times over the course of one week, two of which take place with a teacher and two of which take place independently of the teacher. On the fifth day of the week, new group leaders post texts for the following week, and students sign up for texts of choice; Reading Conferences: A ten-minute meeting between the teacher and an individual student focusing on discussions of reading goals and evidence of how the student's efforts align with their learning goals; The Reading Share: a period of ten minutes at the conclusion of each reading period during which two students have the opportunity to share an account of how they overcame a challenge in the context of reading.

### **School Culture and Student Behavior**

Students' opportunities to access the mental states of others is the theory of change within the Learning Cultures model, rather than the more conventional theory of changed based on content

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delivery underlying the classical transmission approach to education. Therefore, it was necessary to devise a means to address the highly problematic behaviors of students whose misbehavior prevented their own access to other minds in order to succeed in providing them sufficient opportunity to learn. To respond to this need, the PI developed a culture and behavior program called Keepers of the Culture® (McCallister, 2017), which specifies procedures to be used to help learners internalize new social norms. The Keepers of the Culture program begins with an introduction in every classroom to the "Citywide Discipline Code," which outlines students' rights and responsibilities (See: http://schools.nyc.gov/RulesPolicies/DisciplineC ode/default.htm).

Students contribute their opinions about what should happen when fellow students fail to meet their responsibilities, and a school-wide ladder of self-regulation is adopted for use in every classroom. Students receive reminders from peers as a first step on the ladder. After a reminder from teachers, students typically are required to move seats. Since all students are free to sit where they choose in every classroom during work time, moving one's seat is a strong deterrent to misbehavior. Moving seats is usually followed by the next rung on the ladder—a behavior reflection. If problematic behaviors persist, the next rung usually results in a conference with a teacher. And the final rung is usually a call home. Finally, students lose their privilege to stay in what is known as "the circle of freedom" when they fail to self-regulate to classroom norms, and receive a principal's referral. If misbehavior persists after the last rung on the ladder, teachers initiate the "On-Call" system, whereby teacher or deans respond to classroom teacher's requests for immediate classroom support. Upon arrival to the classroom, the On Call either relieves the teacher in her role in the activity format or attends to the problematic behavior, or the On Call addresses the behavior itself.

Students who persistently fail to self-regulate to school-wide norms receive an 'intervention.' During the intervention, the student with problematic behavior meets with a group of staff, peers, and sometimes parents. The student who is the subject of the intervention identifies behaviors that are problematic and then identifies which responsibilities the behaviors interfere with. Students are asked if they want to change. After the student commits to change, an action plan is made and revisited the next time an intervention is scheduled. Students with highly problematic behaviors typically need several interventions to norm their behavior.

# Sufficiency Materialized: Education as a Civil Right

How can sufficient access to the socio-cognitive processes and pedagogical practices just described be provided to all students when conventional schooling practices limit such access? The Learning Cultures model specifies practices that support key socio-cognitive processes, but they can only be achieved if the program is successfully implemented. To address challenges of highfidelity implementation on a school-wide scale, a comprehensive system of input standards was developed by the PI, which specify practices that supported the key socio-cognitive processes just described. This system consists of a set of onepage rubrics, each of which outlines the primary aim of the format it describes, the roles and responsibilities that students and teachers assume within the activity format, and the environmental and material conditions that are necessary for the format to function.

The transformational power of the rubrics lay not only in their descriptive content, but also in their instrumental power. The rubrics were used as a catalyst for new forms of behavior through the deontic power they held as status function declaration. A status function declaration is a form of an utterance that makes something real by stating it is real (Searle, 2010). The Declaration of Independence and traffic signs are both examples of the class of speech act known as status function declarations. Searle (2010) explains that status function declarations get their power through the sense of obligation one has to the "sacred moral commune," as Tomasello (2016) refers to it. Through a moral sense of commitment to the group, individuals adhere to their declarations (Searle, 2010; Tomasello, 2016). Status function declarations are "constitutive," in that they "create

new forms of behavior" (Searle, 1969, p. 33). In addition to being used in this investigation, the rubrics were subsequently used instrumentally in implementation efforts in other schools.

Creating Worlds as We Wish Them to Be: Constituting the Educational Human and Civil Rights

This investigation rests upon the assumption that target educational processes are basic human rights, justifying a constitutional approach to implementation and enforcement. To swiftly instantiate change in the service of every student who did not have time to wait for slow-paced innovation, a school-wide quality control and monitoring system was devised, which enabled the leadership team to ensure sufficiency by using rubrics as an observation and evaluation tools. The rubric-based evaluation system evolved into a school-development system as students and teachers began to use rubrics to self-regulate and create new forms of behavior. Teachers were evaluated by use of the rubrics, and the teachers also used the rubrics for staff-development purposes. The route to sufficiency proved to also be an efficacious approach to responding to the vast diversity amongst students. New practices provided freedoms and supports for students to exercise their own intentions, and as students began to take responsibility for the social obligations outlined in the rubrics, they also began to use key socio-cognitive processes to cooperate with others, thereby strengthening abilities related to intellective competence.

# What Happens When Learning Opportunities are Sufficient? Evaluation of Student Progress

A delayed time-series analysis of student-level progress in English Language Arts (ELA) and Math was conducted in order to compare progress of students in the Jacob Riis School to over fivethousand students in ten other demographically similar New York City public schools over a fiveyear period (2007-2012) (Pignol & McCallister, 2014). This design allowed comparison of students in the experimental school to students in control schools by taking a series of values at successive times. beginning before the intervention and continuing through its course. In this case, the values taken were state math and reading scores for students in grades three to eight. Ten peer schools served as controls. Elementary schools were selected from Jacob Riis' peer group, allowing for demographically similar comparisons. Demographically similar middle schools were selected from among all middle schools in the district. The question, "Are we observing significant gains over time which can be attributed to the Learning Cultures intervention as compared to the control schools?" framed our observational study comparing the p-values for each school from one year to the next.

A statistical analysis of the gains from 2006 through 2012 in scores for Jacob Riis students in comparison to those for control schools was carried out. Tables 1 to 8 report Math and English scores for elementary and middle experimental and comparison school classes from 2006 to 2012. All Tables are available at

(https://drive.google.com/file/d/0B3c02lIV6g3Pa 0RLTFBlQzBxbEE/view). In the analysis, we tested for significance of the gains each year over five years in both math and ELA for both elementary and middle school. In these analyses, the cohort (N=400) for one year was compared to the cohort (N=5000) for the subsequent year, and the gain was tested for significance.

In our analysis, the null hypothesis—that the average gains in math and ELA for Jacob Riis students was equivalent to the average gains of students in control schools—was rejected in favor of the alternative hypothesis that the intervention undertaken at the Jacob Riis School resulted in statistically-significant gains (p<0.01) in Math and ELA achievement. The data show that the Math and ELA scores for Jacob Riis students improved significantly the first year of implementation (2007-08 in the elementary, and in 2008-09 in the middle school). These data show that the Jacob Riis classes saw significant gains that were sustained over the period. All these Tables are available at

https://drive.google.com/file/d/0B3c02lIV6g3Pa0 RLTFBlQzBxbEE/view

Comparisons with control schools with similar demographics show that Jacob Riis students' achievement equaled or bettered those of the comparison control schools. Specifically, for

elementary-school mathematics, only one of the four comparison schools reported significant gains and no significant losses, which was the pattern reported for Jacob Riis students. For elementaryschool English, no schools reported significant gains comparable to Jacob Riis students. For middle-school mathematics, only one of the six comparison schools showed a pattern of systematic gain over the four testing cycles equivalent to that for the experimental middleschool students. For middle-school English, two of the four comparable schools showed comparable gains. Thus, not only was there a highly significant (p<0.02) increase in both mathematics and English language arts the year Learning Cultures was implemented, the Jacob Riis students also showed achievement gains in mathematics and ELA that were equal to or greater than those of students in the control schools. In ELA, the gains were sometimes as large as fifteen points on a scale of eight hundred, which was 6.5 points larger than the next highest performing comparison school (the program was implemented at the elementary level during AY 2007-08 and at the middle school level during AY 008-09).

Although mathematics was not a focus of the intervention in the traditional sense of instruction focused on so-called "cognitive" mathematics skills in relation to targeted mathematics achievement outcomes, students in all grades during the first year of implementation saw mathematics scores rise significantly. In both the elementary and middle schools, the gains increased from 2007-2009 at a rate that was statistically significant. In other words, the cumulative effects of the program appear to have enabled students to maintain a high trajectory of growth relative to students in other schools. This phenomenon can be explained by the hypothesis of this study-that key socio-cognitive processes support intellective competencies that are a function of subject content mastery. These abilities are transferable across contexts.

Gain scores for English Language Learners in the experimental and comparison schools are shown in Tables 9 through 12. All Table available at https://drive.google.com/file/d/0B3c02IIV6g3Pa0 RLTFBlQzBxbEE/view. These data show that gains for English language learners were

particularly robust. In the elementary school, even though the gains for ELLs were not statistically significant, ELLs as a group grew over six points more than the average student in comparison schools. While ELL ELA achievement gains were significant in other schools (Schools 1, 2, and 3), the average ELL's ELA point gains were higher in Jacob Riis students than in students in the comparison schools. While it might be expected that such a large effect size should yield gains that are statistically significant, the low number of ELLs prohibit such an analysis.

All these Tables are available at the provided link (https://drive.google.com/file/d/0B3c02lIV6g3Pa 0RLTFBlQzBxbEE/view)

In the middle school, even though the school's overall student ELA gains were not significant from 2006-2007 when the program was partially implemented, ELLs made significant gains of a high magnitude at twenty-three points (ELLs in School 3 made gains of 29.4, but these gains were not significant the following year). Notable gains in ELLs' ELA scores were observed again the following year with average gains for ELLs of eighteen points.

Comparable elementary schools also showed significant gains, but in only one school were gains sustained over the testing period, and the effect sizes were smaller in comparison to students at Jacob Riis. Similarly, Jacob Riis middle-school students made significant gains during the first year of implementation, and these gains were sustained through 2010. Only one comparison school showed a similar pattern of gains, while three showed significant declines in the semi-final year and one demonstrated no significant gains whatsoever. The systematic gains in middleschool math are remarkable, suggesting that the gains were not only preserved but were actually accumulative over the years. These data the Learning demonstrate that Culture intervention was a significant factor in achievement for students in all testing grades in both math and ELA.

A Copernican Revolution for Education: Toward a Learner-Centered Universe

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Olson points out (2003) that since as early as the middle ages, schools have been organized around systems of authority that delegate responsibility for learning primarily to teachers, who dispense knowledge, monitor, and evaluate learner progress. The epistemology coined "spectator knowledge" by Dewey, upon which classical transmission methods are based, and which represent the learner as passive, contrasts with the social and experiential view advanced in this investigation, in which we advocate something of a Copernican revolution for education, moving the center of authority for learning from teachers to students. In this proposed universe, students have responsibility for learning, are aware of their goals and competencies, and act cooperatively with other, with intention in order to pursue goals.

Generally, U.S. education policy has emphasized output standards and accountability systems but has neglected input standards that spell out the kinds of learning opportunities necessary to enable learners to succeed in achieving output standards. The view of education advanced in this investigation is that knowledge is acquired culturally, through socio-cognitive processes, which by their nature, necessitate the exercise of basic individual freedoms (of movement, thought, speech, and social interaction). In pursuit of knowledge, as learners exercise the freedoms necessary in order to learn, they simultaneously internalize the norms of liberty that characterize democratic life. Schools are political institutions in which, to varying degrees, society cultivates the rights of its young citizens. Through these processes, individual intellective competencies emerge.

Based on a definition of justice based on simple fairness, equality of educational opportunity requires the provision of resources sufficient to enable every child to reach learning standards (Gordon, 1999; Rawls, 1977). Within such a framework, sufficiency is the linchpin of educational equity. An emphasis on high outcome standards and punitive consequences for schools and students who cannot meet them, without a parallel emphasis on the quality and sufficiency of high input standards, penalizes low performing schools without insuring they have access to and are utilizing the means needed for children to learn and for schools to improve.

In this report, we have identified and described salient mental processes that enable the development of intellective competence in learners that, once manifested and used, become defining aspects of the intellect. We have suggested that these competencies develop only when they are supported in the context of purposeful social activity. To substantiate this claim, we provided an account of the implementation of a model of education designed to meet the sufficiency mandate through a program organized around purposeful activity and demonstrated its efficacy in patterns of student achievement. Through these achievements, this investigation has demonstrated that a program of education that incorporates certain freedoms creates the possibility that school can be a context in which a program of education transfers responsibility to schools to be instrumental in advancing the liberties of society. It also provides a recommendation for the development of input standards based on the socio-cognitive processes that support intellective development in the service of participation in democratic life.

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# Exploring Successful Teachers' Conceptions of Student Achievement through a Relational Theory of Teaching: Applications for Practice

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#### Abstract

This paper presents a relational theory of teaching and describes its application in a study of twelve first-grade teachers and their accounts of interactions with struggling readers. Based on this relational theory, successful teaching can be defined by the extent to which the teacher engages the learner in a relationship that enables achievement of learning goals. This view accepts that a range of methods exists that characterize effective instruction, but also asserts that teacherlearner relationships underlie these practices, which are as consequential to academic development as are instructional methods.

Each teacher was identified as either highly or minimally successful based on their students' mean levels of achievement between fall and spring scores on the district-mandated Early Childhood Literacy Assessment. Narrative accounts from each group were analyzed. Among participants, all of whom employed a districtmandated balanced literacy curriculum, there were important differences between highly and minimally successful teachers' studentachievement outcomes. These quantitative corresponded qualitative differences with differences in the ways teachers narrated their agency within the context of relationships with students. This paper illuminates these differences through the presentation of a highly successful teacher's narrative of one of her students and offers implications for pre- and in-service teacher education and student assessment.

#### Introduction

This paper presents a relational theory of teaching and describes how this theory informed the design of a study of twelve first-grade teachers' accounts of their interactions with struggling readers. Based on the relational theory, successful teaching can be defined by the extent to which the teacher engages the learner in a relationship that enables the achievement of desired learning goals. This view of teaching accepts that there are a range of methods and practices that characterize effective instruction, but also asserts that teacher-learner relationships underlie these practices, which are as consequential to academic development as are instructional methods.

To address the question of how successful teachers teach reading, this study analyzed and compared the narrative accounts of highly and minimally successful teachers through sociocultural analytic frameworks that explained how teachers affected the intentionality of students. Teachers were asked to recount situations that illustrated the ways in which they helped children overcome literacy difficulties. Among participants, all of whom employed a districtmandated balanced-literacy curriculum, there were significant differences in student achievement outcomes. These quantitative differences corresponded with qualitative differences in the manner in which teachers narrated their agency within the context of relationships with students.

This investigation employed a relational analysis of narrative methodology, developed by the Primary Investigator (PI), to explain accounts of literacy development in highly successful teachers. Empowered by this method, this study attempts to press beyond the typical focus on "what works" in reading interventions, which usually focuses on sub-skills. This study attempts to begin to understand and describe the teacherlearner relationships that seem to account for differences in levels of teacher success.

#### **Literature Review**

A Relational Conception of Social Understanding Anthropologist Ruth Benedict (1934) explained that cultures establish their "canons of choice" through patterns of social interchange. In these processes, certain traits get established while others are eliminated. In classrooms, the

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mechanisms of privileging occur at the individual level in interactions between children and their teachers as words or actions that deviate from each participant's expectations are reconciled against their own evaluative discourse (Gergen, 1990). In their interactions with students, teachers deploy their own notions of normativity as they make sense of and respond to the behaviors of students. For example, "Raise your hand if you have something to say," reinforces a certain value of the teacher's authority in the classroom to control discourse and authority. Patterns of teachers' responses to students over time help to support the establishment of desired behaviors in students (or the lack of them, and replacement with unwanted behaviors). For example, when I was a kindergarten teacher, my values of independence, effort, fairness, honesty, risk taking, and generosity constrained the energy of my students and their learning. As students violated or conformed to my expectations, using Bruner's ideas about the power of normativity in narrative, I responded in ways that established certain traits in students. Whether conscious or not, my judgments about students were based on my own sense of the "normal" in the narratives I told myself about them.

Through interactions with significant others, such as students, parents, and peers, the child's reality is patterned (e.g., Bruner, 1983; Siegel, 2001). The premise of this research is that the interactional relationships between teachers and their students account for significant patterns of achievement and suggests that a better understanding of these relationships will reveal promising insights for teacher education.

Kenneth Gergen's (1990) relational conception of social understanding provides the theoretical framework for this study. According to Gergen, relational ties are the locus of understanding, and all personal outcomes depend on human interchange. In other words, the individual's wellbeing (or, in the case of this investigation, literacy achievement) cannot be taken out of the context of the relationships in which the person is engaged. I realized that the assumption that any form of understanding depends on the insights gained through relationships with other people forces the need to "operationalize" the teacherlearner relationship. Gergen's relational theory offers two constructs that are useful to that end: the relational nucleus and relational adjudication (1990).

Gergen's (1990) relational conception asserts that the nature of relationship depends up on the mutual coordination of action between participants. As coordination of action progresses, a relational nucleus is formed. A relational nucleus is "...a self-sustaining system of coordinated actions in which two or more persons are engaged" (Gergen, 1990, p. 585). The relational nucleus is a social accomplishment built and sustained through time. It offers a metaphor for the properties of the relationship between the teacher and the learner. The process of building a relationship depends on the capacity of relational participants to resolve conflict in order to maintain understanding. Gergen (1990) refers to this process as adjudication. As a judge adjudicates conflicts in the courtroom, so too do participants a relationship adjudicate conflicts in in understanding. The relational nucleus (Gergen, 1990) is an outcome of patterns of adjudication and the mutual coordination of actions between participant. The relational nucleus are the joint understandings achieved through the process of relational adjudication (Gergen, 1990).

This study views literacy achievement as the product of a relationship between teacher and child. If literacy achievement is a socially shared and historically situated phenomenon, as opposed to one that is isolated in the head of the individual child, descriptions of successful methods for promoting student achievement should take into account the relational mechanisms that promote competence relative to learning goals. From the standpoint that relationships hold great potential to influence academic development, teacher-learner relationships should be as thoughtfully considered as are instructional methods. This study offers a way to explain literacy achievement as a product of teacher-child relationships, standing in sharp contrast to more-technical views of instructional reform that focus on training teachers to use particular methods improve to student achievement.

# The Analysis of Teacher-learner Relationships and their Outcomes

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One way achievement can be understood is by explaining how, through their relationships with teachers, children are enabled to meet normative expectations for academic development. Teachers themselves provide interesting insights into this phenomenon. As cultural insiders, they offer organically valid perspectives of how competence emerges in children. This study proposes a method to describe, from the teacher's perspective, the relational processes that seem to account for student achievement. Grounded in relational theory, this study examines the points in the teacher-student relationship where action is adjudicated and interprets patterns in teachers' responses. Thus, this study is designed to highlight the relational mechanisms highly successful teachers identify as being responsible for the construction of competence in children whose competence they initially questioned.

#### Method

In this study, narratives were used as a context in which to examine relational mechanisms. Twelve first-grade teachers were invited to participate. The basis for selection of participants was shaped by my desire to pool and examine the insights of teachers who were successful in teaching struggling first-grade readers. In the context of this research, successful teaching is understood to be teaching that brings about a desired result (Fenstermacher & Richardson, 2005). Fenstermacher and Richardson (2005)characterize successful teaching as but one dimension of quality teaching, with the other dimension being good teaching as determined according to ethical values. Determinations of "goodness" of teaching, while not an explicit aim of the study, can be inferred through the interpretation of highly successful teachers' practices. Successful teachers were those whose students demonstrated significant achievement relative to other teachers studied on mean growth in scores on the district-mandated Early Literacy Childhood Assessment (ECLAS) administered in a fall pre-test and a spring posttest described below. To identify an initial pool of teachers who would be likely to demonstrate successful teaching practices, I asked the district to nominate six effective teachers according to their own criteria. These criteria, reported to me

by the district administrator, included classroom observations of the teachers, student-achievement records, and impressions of the teachers' effectiveness based on participation in professional development programs. I chose the other six participants randomly from the district's roster of first-grade teachers with the assumption that this group would provide a sample of teachers of more average skill, insight, and experience.

Assessment results were another criterion used to determine levels of teaching success. Mean levels of improvement on the ECLAS were calculated for students in each classroom. The ECLAS generates a holistic score on a six-point scale for literacy awareness based on activities in phonemic awareness, word and letter identification, and writing and oral-reading behaviors. It is used in the district to track early literacy development. Teachers reported fall and spring results, and a mean level of literacy development was calculated for each child by classroom. This procedure provided a quantitative indicator of effectiveness by which to make comparisons to the qualitative insights generated from the interview data. The nominated teachers' ECLAS results differed significantly from the randomly selected ones, with the exception of one outlier in each group (one teacher in the nominated group tied with a randomly selected teacher for the lowest average gains per student on the ECLAS, and one teacher in the randomly selected group showed the third highest average ECLAS gains of all twelve participants). Average mean-achievement levels for students of highly successful teachers were almost double that of randomly-selected teachers when averages of outliers were removed at 2.24 points for nominated teachers as compared to 1.2 for randomly selected teachers. Mean levels of improvement ranged from a low of 0.9 points for the least-successful teacher to a high of 3.0 points for the most-successful teacher (see Figure 1).

All teachers agreed to participate in a ninetyminute interview at his or her school. Prior to the interview, I asked the teacher to identify several children who struggled in the process of learning to read and to gather records of those students' progress in literacy (e.g., reading and writing folders, copies of informal assessments). During interviews, I asked each teacher to narrate

accounts of their interactions with students by recounting specific situations with students that illustrated the nature of the child's difficulty and how they respond. Interviews were audiotaped and transcribed.

Nominated Teachers	Average ECLAS Gain= 2.24 points
Randomly Selected Teachers	Average ECLAS Gain= 1.2 points
Figure 1. Comparative gains for nominated versus randomly-selected teachers.	

Nominated	Average ECLAS Gain (6 point scale)
Mr. B	3.0
Ms. D	2.5
Ms. E	0.9 (outlier-score removed)
Ms. H	1.9
Ms. L	2.0
Ms. M	1.8
Randomly Selected	Average ECLAS Gain (6 point scale)
A	1.5
F	0.9
G	2.4 (outlier-score removed)
I	1.2
1	1.2
К	NA (teacher misplaced scores)

Figure 2. Individual ECLAS gain comparisons.

I developed a system of coding that I based on Gergen's (1990) relational theory and designed to surface salient aspects of the teacher-learner relationship. Data were coded 'V' where narratives revealed points of conflict between teachers' explicit or implicit biases towards students' behaviors that appeared to violate the teachers' sense of normative. Data were coded 'R' where narratives revealed how teachers responded to students who were different in some way in relation to the teacher's sense of normative. Data were coded 'C' where teachers revealed judgments about these "different" students when the students behaved in ways that conformed to the teacher's sense of normative.

A research team comprised of pre- and in-service teachers and graduate students met during series of research seminars to read and code interview transcripts. The coding strategy allowed data to be reduced into the 'R'-'V'-'C' categories just described. I created inventories of the narrative segments based on response categories. Violation Inventories listed all of the behaviors and characteristics that the teacher viewed as problematic to literacy achievement, Response Inventories listed the ways in which teachers responded to students, and Inventories of Conforming Gestures collapsed teachers' insights about normativity in literacy development. In their condensed and collapsed form, the inventories contained language that could be analyzed for the belief-driven, goal-directed behaviors of teachers in order to make inferences about teacher intentionality.

Inventories of teacher judgments offer something like a typological map of practice. The inventories help envision something of a multi-dimensional portraval of practice around the kinds of challenges that teachers perceive they face in their efforts to respond to students who differ from the norm. "Violations" were the peaks where literacy challenges had to be overcome, and "responses" helped fill in a landscape that represented the teacher's ethos of action. This ethos could then be interpreted alongside theoretical explanations about the cultural processes involved in the learner's development. In the remainder of this paper, two interpretive perspectives will be applied to the data-thinking through others and the person-environment relationship.

# Explanations of Learning: Thinking Through Others and the Person-Environment Relationship

I will now illustrate how the relational perspective can be used to explain successful teaching using an account of Ms. D, who describes her work with a student called Jeanette (the subjects of this study were given pseudonyms). Based on average ECLAS scores, Ms. D was the second most-highly effective teacher of those interviewed. Her students showed an average gain of 2.9 points on the assessment during the year the interview took place. Jeanette, a Hispanic child, was tested in the fall. At that time, Ms. D could not obtain an ECLAS score due to Jeanette's limited literacy. However, by the spring assessment cycle Jeanette scored a six, the highest possible.

*Ms.* D: I actually, at the first parent conference, I told her parents that she was a potential at risk hold over. I was very worried because she was

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very shy, very quiet, not very social (V). She was sort of not sure what to do (V). She was pretty much low in everything (V).

*Researcher: What were some ways you responded* [to her shyness]?

*Ms. D: Like I said, buddy-ing her up (R). Really just acknowledging her for any little thing she did (R). You know, like, "Look at you Jeanette, I really like how you chose that book" (R), or "Oh, you really love that read aloud. Why don't you take it home tonight?" (R) Like encouraging her (R). Some kids, just like right away, they're like, "I want to take that home." Just more forward about asking. But I would say, "Oh you like this story, why don't you borrow it tonight?" (R), or, "What are you interested in? Why don't we look in the library together?" (R) Or I'd say, "Remember when you couldn't read this? Now you can read this!" (R) Or "Remember what it was like, how hard it was? Now look at you!" (R)* 

...*Her mom said she just loves school (C). Her mom told me that*—*this is an interesting thing*—*she's a little overweight (V).* 

I told her mom that I wouldn't worry about that, but that's their business (R). She said that Jeanette actually said to the mom that in this school it doesn't matter what you're wearing and stuff (C). Like I guess in her old school they would talk about what they were wearing and whatever (V). And her mother told me, like, getting her ready, she doesn't care if it's the perfect pants or whatever (C). And it's true. The kids are so accepting and we don't really, don't say, "Oh you should be wearing this" or whatever (C). I don't know. Socially, I think she feels safe here (C), and beginning to make friends (C), and loving to come to school (C). Last year I don't think she loved to come to school (V).

[In the beginning of the year] she just was like, she wasn't really like—like in math she really didn't know what to do (V). She needed a lot of one-onone time (V). She needed a lot of assistance (V). She needed a lot of direction about what to do (V)....

And then, what's funny, in writing workshop... She had learned a few words from meeting with [the Reading Recovery teacher] in that small group and it was a book called The Little Pig. And so she learned how to write pig and little (C). She just

wrote. She just kind of took some papers and folded it together like a book (C). And she just wrote over and over "pig," "little," "I" (C). Like words she knew. She didn't have that sense of story that she could just draw the picture and don't worry about the words at that point (V). But what was nice is that she was trying out something (C). She knew it was time to write, and she was thinking about what she knew, and she was putting it down on paper (C). And I was like, "Oh, you're writing about a pig?" I was like, "Tell me about this pig" (R). To kind of help her story tell a little bit. And I was like, "You didn't mention that in here, and so you'd better mention that" (R). And then writing became favorite time (C), and she couldn't wait to get her paper (C), and she'd draw a picture about her family. Then, she got into telling stories about her family and about her brother and her mom (C). Then she slowly started writing words (C). And now she has these endless stories (C).

*Researcher: Did you ever worry about disabilities?* 

Ms. D: I didn't worry about that with her. I got the impression she's just never been taught (V) so she just didn't know what to do (V). Now that she's had some good teaching and opportunities to read and write every day, you know (R), and she likes it (C), she's made a lot of progress (C). And she's really come a long way (C). And she's still quiet (V). Kind of shy with friends (V). But she has one good friend, and that's all you need (C).

This excerpt from Ms. D's account of Jeanette is coded using the Relational Narrative Method according to the protocol described above. The Violation, Response and Conforming Gesture inventories of Ms. D's work with Jeanette resulted in a portrait of the values and practical logic Ms. D deployed as she cultivated a teacher-learner relationship with Jeanette (Bourdieu, 1977). This portrait was examined using two analytic frameworks in order to explain the underlying processes that might account for Jeanette's achievement—thinking through others and the person-environment relationship.

The acquisition of new understanding involves "thinking through others," a process by which a person uses, "the intentionality and self-

consciousness of another culture or person-his or her or its articulated conception of things-as a means of heightening awareness of one's less conscious self" (Shweder, 1990, p. 33). From a cultural perspective, "thinking through others" is the mechanism by which human understanding develops. Opportunities to "think through others" are central to literacy development. Socialpragmatic theories of language acquisition (e.g., Bruner, 1983; Tomasello, 1992) explain the mechanisms of "thinking through others" by suggesting two variables that are central to the process. First, the time children spend in "joint attentional engagement" with teachers, and second, the extent to which teachers "follow into" their students' attentional focus on literacy-related objects (Tomasello, 1999). Joint attentional engagement occurs when the adult and child are "jointly attending to some third thing, and to one another's attention to that third thing, for a reasonably extended length of time" (Tomasello, 1999, p. 97), creating an opportunity for intersubjectivity to develop. The process of "following into" the child's attentional focus means that the adult is using the opportunity "to talk about an object that was already the focus of the child's interest and attention" (Tomasello, 1999, p. 110).

This excerpt illustrates the principle of follow-in or joint-attentional engagement. Ms. D followed into Jeanette's engagement in writing the "Little Pig" piece. She recognized that Jeanette was "trying out something: and seized this opportunity to follow into the focus of Jeanette's attention on her writing. Ms. D engaged Jeanette in a conversation about the story and used that conversation to prompt her to incorporate more detail into her writing. Ms. D follows into Jeanette's attentional engagement in other ways. By noticing and attending to Jeanette's interestssuch as allowing Jeanette to take home the read aloud book that she was fond of-then suggesting the pursuit of further engagement with the object of interest, Ms. D is navigating a course of development. Also, Ms. D literally engages Jeanette to jointly focus on her own achievement: "...remember when you couldn't read this? Now vou can read this!"

That joint attentional engagement and the phenomenon of "following in" to the child's attentional focus are very strongly correlated to early language comprehension and production in pre-school children has been established (Tomasello, 1999). Findings from this study suggest that these variables remain important through the stages of early literacy development as well. Response inventories of the most highly effective teachers were replete with situations in joint-attentional engagement which was established and used as a means for teachers to follow into the child's attentional focus

#### The Person-Environment Analytic Framework

Another way to make sense of aspects of Ms. D's teaching that might have accounted for her success with Jeanette is through the person-environment relationship (Shweder, 1990, adapted from Scarr & McCartney, 1983). This construct helps explain the way in which Ms. D facilitated Jeanette's relationship to the classroom environment in order to engage and channel Jeanette's intentions about learning. The person-environment relationship can be positive when the purpose of the context supports or amplifies the intentionality of the learner, or negative when the purpose of the world diminishes, opposes, or interferes with the intentionality of the learner. We put children in "time out" to oppose their intentions. We praise their achievements to support their intentions. "Choice time" encourages children to act on their intentions, and direct instruction imposes a reactive person-environment relationship because the teacher selects the intentional world for the child.

There are different degrees to which people set the conditions of their involvement. An interaction is active when the person creates or selects his or her own intentional world, reactive when other people create or select an intentional world for the person, or passive when a person finds him or herself living in an intentional world created or selected by others for others or for themselves. An important aspect of the art of teaching is the ability to understand how to manipulate the personenvironment relationship in order to bring about

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intentions in the child that help him or her achieve certain goals.

Person-Environment Re	elationship	Conditions of Involvement		
ACTIVE		REACTIVE	PASSIVE	
POSITIVE	Positive-Active	Positive-Reactive	Positive-Passive	
NEGATIVE	Negative-Active	Negative-Reactive	Negative-Passive	

Figure 4. Person-environment relationship.

When Ms. D explains how she deliberately buddied Jeanette with another child, Ms. D is narrating her role in selecting an intentional world laden with her canonical expectations for Jeanette to find a comfortable niche in the classroom community. She is responding to her concern that Jeanette's timidity interfered with her academic development. Based on Ms. D's description of Jeanette's early involvement in the classroom, it would seem Jeanette's early intentions were to retreat and draw inward. Upon being assigned to the role of "buddy," Jeanette's relationship to the environment becomes negative in that it interferes with Jeanette's intentions to remain socially withdrawn. The situation is also reactive because Ms. D, rather than Jeanette herself, chose the conditions of involvement.

Though Jeanette did not initially choose this role-she was not initially "intentional" about being a buddy—we can infer through the middle portion of this narrative that Jeanette is finding her place in the community and feeling comfortable as she is also beginning to succeed academically. She loves school, is not self-conscious about her appearance as she had been at her former school, and, as Ms. D points out, feels "safe" within the classroom community. Ms. D's final comments suggest her awareness of a relationship between Jeanette's emerging intentionality as an integrated and involved member of the community and her progress academically. Like Ms. D, other highly effective teachers in this study made continual adjustments to the learner-environment relationship in order to promote literacy awareness.

The person-environment relationship is a way of understanding shortcomings of instructional

methods and why they fail to bring about desired outcomes with particular children. For example, the suggestion that whole language practices are not successful with minority students (Delpit, 1995, 1996) could be productively positioned within this framework. One could speculate that learner-environment relationships that are mostly positive and active, such as they tend to be within whole language practices, do not sufficiently redirect the learner's intentions toward important learning objectives. Conversely, instructional methodologies that tend to be consistently negative and reactive run the risk of deadening desired intentions. The insights provided through the relational method of the analysis of teaching open the way to understand teachers' interpretive judgments in order to explore teaching methodologies that match student needs. **Implications for Practice** 

In this paper, I have offered a relational theory to explore facets of successful teaching, suggesting that inventories of teachers' judgments and responses to their students could be understood as "typologies of practice." I have offered examples of the way in which these inventories were analyzed using the example of follow in and the person-environment relationship. This presentation was an invitation to a method of exploration as opposed to a prescription for achievement, showing a way to think of teachers' narratives of their work with students as portraits to be composed and examined. I will now explain how the relational approach can be applied to inservice professional development and pre-service teacher education curricula by describing accounts of their use in these contexts.

### **Professional Development**

In-service literacy specialist candidates were asked to use the relational protocol to interview a teacher and to probe for insights about how they worked with students who experienced difficulty with literacy. Candidates recorded and coded the interviews, creating inventories of violations, responses, and conforming gestures. They then analyzed and interpreted findings and finally offered hypothetical recommendations for professional development. This series of activities provided a rich venue from which to understand

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the complexity of practice as it intertwines with teachers' beliefs, senses of identity, and pedagogical practices. These inventories of teachers' accounts served as portraits that could be viewed against theories of literacy development that the literacy specialist candidates were learning about in their masters program. Through this activity, they could begin to imagine the kinds of conversations, as well as other strategies for mediating teacher professional development, that they might engage in as literacy coaches and staff developers in order to successfully challenge misguided assumptions about children and learning or to support further refinement beliefs and practices that support children's growth. The relational protocol described here offers a method to mediate teachers' professional development in pre- and in-service contexts.

### **Connections Between Theory and Practice**

The relational protocol offers a way to identify teachers' misguided judgments and misinformation as a first step in addressing them. An in-service teacher who had been introduced to the relational protocol described her work with a child who spoke a non-standard dialect of English. At one point, she indicated a child's pronunciation of a word was a reading error, indicating her sense that the child had violated an expectation of literacy development and implicating that his dialect was the problem. Throughout the interview, the teacher made other comments that chauvinistic assumptions revealed about children's language use that essentially constructed problems that simply did not exist. The V-C-R inventories provided a way to identify concrete patterns of probable malpractice in her teaching, helping to clarify an agenda for professional development.

### Self-Awareness

When we are aware of the power of our judgments to affect children, we are more careful about how we make our judgments. In-service teachers who have used the relational protocol have commented on is lasting influence. I paraphrase one in-service teacher who was trained in the method who left the last meeting with a fleeting comment: "I'll never

be able to talk about a child again without stopping myself to think about the way I make judgments. I mean, to say a child violated my expectationsthat's a lot of responsibility." Knowing that our judgments circulate into actions that sanction some behaviors and penalize others forces a sense of responsibility. The protocol offers a way to sharpen an awareness of the ways we problematize student behavior and helps to bring into clearer focus our own sense of power to resolve the student's problems. I would venture to say that, like the less-successful teachers in this study, teachers who identify violations that they have no power or ability to influence are bound to be less successful in bringing about student achievement. Teachers whose violation inventories contain many references to family practices and indicate them as barriers to achievement create narrative plots they lack power to resolve. Highly successful teachers might reference home situations as factors that challenge normative patterns of achievement, but they will construct problems ultimately that thev themselves have the skill, power, and knowledge to resolve independent of the child's other circumstances.

## **Inventories of Practice**

The relational protocol offers a way to take stock of pedagogical practice. Response inventories offer an authentic portrait of the pedagogical resources that teachers use and portray them as they relate to the particulars of each student's circumstances. Viewing pedagogical response as a complex portrait forces the awareness that pedagogical method does not exist independent of subject, history, or context. The highly successful teachers in this study employed the range of scientifically based methods, such as reading instructions routinely. However, they did so in careful measure and with attention to other pressing factors. For example, the second-most successful teacher in this study told an account of a child who arrived in school in April. He had serious behavioral problems, and within a week he had climbed out the second-story window of the school two days in a row. An emergency intervention resulted in a full-time paraeduactor to shadow the child during school. The teacher was

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unable to obtain a score on the ECLAS due to his limited literacy awareness.

A teacher who might have constructed the child's behavior in a different way may not have had such success. The child did not have phonemic awareness, phonics knowledge, alphabet knowledge, or any reading fluency. However, these were not behaviors that the teacher identified violations problematic of normative as expectations (contrary to conventional wisdom). The violations the teacher attributed to the child included the fact that he had never been taught how to behave in school, reasoning that the children were probably permitted unruly behavior at his former school. She also speculated that he had had never been read to as a child.

Among items in her response inventory were the following: Her instructions to the paraeducator were to ignore what the rest of the class was doing and to read to the child on a constant basis. She also explained how she addressed his behavior violations by explicitly describing back to him his behaviors and explicitly telling him that such behaviors were not permitted in this school. Within two months of these first interventions, he scored a level two on the ECLAS. Items in the teacher's conforming gestures inventory indicated that he began to enjoy books. He still misbehaved at times, she explained, but was improving. Successful teachers viewed non-normative behavior as products of social practices as opposed to isolated skills that could be developed in isolation. They viewed skills, such as phonemic awareness and phonics knowledge, as products of children's development in terms of identity and their perceived role in a classroom culture. As a means to address the former, they consistently privileged their concern with the latter.

### **Student Assessment**

The relational protocol has important implications for student assessment. Inventories created as children recount their learning experiences can serve as typologies of understanding and insight. A child's ability to identify aspects of behavior or performance that "violate" normative expectations can be understood as insights about personal performance in relation to learning goals. Response inventories can reveal the patterns in emerging intentions about learning, showing important insights about how the strategies used correct or improve performance. Children's acknowledgements of behaviors that conform to learning expectations are signs of developing awareness of personal competence. Learning to listen for patterns in violations, responses, and conforming gestures in children's accounts of their performance offer insight into the ways they relate their own achievement.

### Conclusion

This research provides a method to explain teaching and learning as products of intentional social interchange rather than a set of methods to be executed. Recognizing that in most instructional contexts there are methods that need to be followed, the relational method provides a tool to explore the values and logic that govern what teachers ultimately make of methods. In the era of "scientifically-based" reading instruction, where methods are generated from monothetic research approaches, and where the learner is understood as a single specimen of a larger, homogenous group, it is critically important to acknowledge that no matter how standardized the method, the humanity surrounding it influences both teacher and student. Each learner possesses intentions and a disposition, as well as strengths and needs as understood in conventional terms of literacy development. Regardless of method, the manner in which a teacher engages the intentions of the child has enormous consequences on development. The successful teacher portrayed in this study tailored her role as teacher in a relationship with children who had unique strengths and needs. The capacity to successfully relate to children in a way that promoted literacy awareness seemed every bit as significant as the methods used to teach it. Even though all teachers employed the same literacy curriculum, the most successful teachers invited their struggling students to chart their own course toward literacy awareness.

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#### Marginalization of the 'Any' Learner

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### Abstract

Marginalization of learners occurs in public schools, even today. Our rationalizations of who marginalized students are have allowed us to ignore the need for better opportunities for these students. As, many educators will never be exposed to the reasons why disaggregating averages is critical in evaluating how well we are reaching all learners in our classrooms, our instructional leaders have a responsibility to show A Student-Centered Adaptable them how. Learning Environment (SCALE) was evaluated for its ability to offer equitable learning processes to all students and to explore the minimum number of learners who get marginalized in traditional, non-flexible classrooms. Educational leaders will be critical in focusing our attention towards the need to dismantle classroom averages such that we can reclaim educational equity for those we have tended to leave out.

Marginalization of certain learners occurs far too often in public schools, even today. Averaging scores across performance levels masks disparities and the negative effects of marginalization (Gamoran, 1992). Many educators will never be exposed to the reasons why disaggregating averages is critical in evaluating how well we are reaching all learners in our classrooms. Learning environments we espouse as solid, rigorous and engaging for our students, needs to be able to evidence that we are doing this for all learners in mixed-ability settings, not just the majority of learners. The average therefore, has unwittingly served as a means of confound to stakeholders within the public education system; leaving them believing they are providing good resources, but unsure of why it is not working as good as it should be.

Our perceptions and rationalizations of who marginalized students are have allowed us to ignore the need for more and better opportunities for these students. Historically, we have allowed "biological determinism, social deficiency and cultures of poverty" to dictate for whom we will accept less than opportunities for in learning (Gordon, 2000). One solution in reclaiming educational efficiency and learner equity is to shift our mindset to one that provides education for the 'any' leaner, rather than the majority of learners. School leaders that innovate, implement and support programs that are good for the 'anybody' in a classroom, will not only recapture educational equity, but more importantly, human equity. Leaders interested in whether a school cultures use of the average has marginalized certain learners for others, should look to their most mixed-ability classrooms and disaggregate those averages.

A case study of a full-time implementation of the Student-Centered Adaptable Learning Environment (SCALE) in a secondary level science classroom, provides school leaders with important insights as it attempts to understand the minimum number of 'any' learners who would be at risk of marginalization in traditional classrooms.

## THEORETICAL FRAMEWORK

### **SCALE Implementation Delineated**

The Student-Centered Adaptable Learning Environment (SCALE) was developed in theory, adapted for practical application and developed through several pilot events. The next phase of development was fulfilled through an opportunity to implement SCALE full time within a suburban, secondary high school of Connecticut by assuming the role of classroom teacher during the implementation. Four heterogeneous classrooms

were thereby exposed to SCALE while studying chemistry to better understand the lasting effects of the learning environment as it transitions from a novelty implementation towards routine.

## SCALE Defined

SCALE is an organizational time template that did not replace curricular content. Within each template component, flexible affective and cognitive prompts could be selected to engage both fast and slow learners while learning new science topics. Offerings in control, creativity and technology options of choice were presumed to allow learners to better maneuver into a position of success within static time periods. Information to be taught was delineated into 2-day cycles of social and autonomous learning days, during which students transitioned from a teacher-led structure towards progressive autonomy. (For more information on the theoretical framework girding a SCALE classroom, consult Grace, 2017).

Social days included a mini-lecture, followed by an extended hands-on activity (HOA) period, which was a visual and kinesthetic demonstration of the ideas presented during lecture. As, the number of activities attended by students was flexible to allow students to make better use of static time, a whole-class Get Together (GT) discussion post HOA, regarding the meaning of each activity, insured learning gaps were apparent to students before leaving the social learning day. Autonomous learning days followed social learning days, from which students were expected to diminish their deficits, isolated through their rankings of understanding in both lecture and HOAs, as well as through information garnered in the final GT discussion.

Autonomous events included a student-creation of 1 of 3 differentiated technology conceptualizations (TCs) to bring conceptual abstract information and past knowledge into a concrete format through animation. A homework performance journal (HPJs), aligned to each activity, was also assigned. Students were asked to direct their homework question choices to their areas of weakness identified the preceding social day to best attempt to fill personal learning gaps while completing 75% of the offered assignment.

Upon the completion of four SCALE cycles, an assessment was given. Observations presented in this paper include those during the first four assessment cycles out of six in total given.

## METHODOLOGY

# SCALE Adaptations Prior to Year-Long Implementation

#### Homework Moved to In-Class Component

During research events, a SCALE environment had reduced negative effects of static time intervals on learners better in one school than in another. The homework culture in the better performing school was considered a critical factor in the highlighted results. Consequently, the SCALE homework component was moved into school hours to defend its integrity against competing family/homework cultures.

Originally, homework performance journal questions anticipated learner transition toward autonomy by prompting them to use new knowledge in a new environment and/or new applications, if students could attain mastery. A home environment had appealed to student choice through location and supply variations that could be selected to best align with their learning preferences. Bringing the homework component into class time removed those choice appeals, but substituted another. to continue learner transitioning toward mastery in an autonomous way.

New versions of the homework performance component offered choice through design of the amount and the particular problems selected to practice a concept. Students were required to complete a minimum of 75% of problems offered to be eligible for an assessment, but were expected to select those problems which best targeted their learning gaps identified through social day components of lecture and activities.

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### **Procedures and Forms Added for Consistency**

### Student Journals Incorporated

Students were required to use a journal during each component of the SCALE system in the hope that the process of journaling could serve a vector to develop the habit of metacognitive tracking (Table 1). To help students become better at choosing efficient solutions for their learning deficits. multiple opportunities to assess themselves metacognitively were presumed necessary (Panadero, Tapia, & Huertas, 2012). Howard's (2001) research further encouraged the implementation of journaling to the process with his finding that metacognitive tracking formed a better model of future success than past achievement outcomes.

At assessment time, journals were collected to provide student feedback on how they could improve their documentation skills. After students received feedback, journal checks were graded for completeness to insure that students were conforming behaviorally to the expectations of each segment.

#### Table 1

Journal Template Sample of Social and Autonomous Learning Day inputs				
Ch1-Social Lea	rning Day - ppt1a V	Why Science		
Lecture Ranks	Understanding: 8	Interest 4	Wellheing: 5	

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HOA Activity	Understanding: 8 Understanding	Understanding Post-GT	HW Performed
1 (compare/	8	10	1,2
Contrast)			
2 (patterns)	10	10	none
3 (simple/	10	10	none
Complex)			
4 (Substitutions)	3	4	6, 7, 8,9,10

Note: Sample student has documented their largest learning hole in the activity 4 concept. The student has allotted more of their homework problems towards addressing that learning gap, while meeting the 75% minimum homework requirement.

On social days, students were asked to rank their understanding, interest and wellbeing levels after hearing a mini lecture on four intercomplex ideas. Students then transitioned into hands-on activity (HOA) stations, meant to isolate each of the topics from lecture into a singular idea. Students were asked to answer questions at each station attended and rank themselves in understanding once again, as they moved through the stations. To maneuver themselves into a position of improved understanding during the individual stations, students utilized up to eleven opportunities to either reduce the cognitive load of lecture topics or increase affective attachment to remain engaged (Table 2).

#### Table 2

Student Utilization of Horizontal Opportunities Embedded within SCALE HOAs
Horizontal Opportunities Percentage Utilization (%)

Control of the order of HOAs performed 39 Control of number of HOAs performed 43				
Control of the order of HOAs performed39Control of number of HOAs performed43Control of number of HOAs performed43Control of time spent at each HOA74Choice of engagement level within each HOA50Choice of group68Choice of group members68Choice of group role (doer or watcher)51Control to change role (watcher to doer or vice-versa)37Control to change engagement level51Control to ungroup or re-group themselves33				
43				
74				
50				
68				
68				
51				
37				
51				
33				
Control of the order of HOAs performed39Control of number of HOAs performed43Control of number of HOAs performed43Control of time spent at each HOA74Choice of engagement level within each HOA50Choice of group68Choice of group members68Choice of group role (doer or watcher)51Control to change role (watcher to doer or vice-versa)37Control to change engagement level51Control to ungroup or re-group themselves33Control of socialization during HOAs66				

Note: All horizontal opportunities are necessary for some students, though some used more than others. Percentages are based upon student queries of their HOA behaviors.

This procedural allowed for the documentation of the magnitude by which multi-modal learning enhances learner understanding, despite student variation in compensatory behaviors leading up to their learning success. Of those options provided to students, all were utilized, albeit some more importantly than others, such as dynamic time, ability to use grouping strategies and socialization maneuvers.

### Homework Eligibility Forms Incorporated

Student journaling was a procedural implemented to promote student buy-in of the SCALE process to their overall learning outcome success. Nonetheless, though student journaling was necessary to the holistic process for students, in terms of classroom procedurals, the process could be considered cumbersome. Homework eligibility forms were developed as an alternative method of managing student behavior between assessments, when journals were not being collected (Table 3).

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Table 3			
Homework Elig	ibility Samp	ole: Ppt 5a	Atoms and Elements
Lecture Ranks:	U:* 7 I: 1	7 WB: 8	



Note: \*A theoretical student's self- rankings of understanding (U), interest (I) and wellbeing (WB) in lecture (L), on a scale of 0-10, are then disaggregated into higher and lower areas of understanding as they attend HOAs where they drew from additional modalities and learning preferences. \*\*Activities 1,2, and 3 have been perceived higher in understanding than activity 4. \*\*\*The student fills their largest personal learning gaps first as they complete the required 75% minimum homework (22 problems out of 30 problems assigned).

### **Retakes Incorporated**

In the spirit of transitioning learners toward mastery, retakes were offered on summative Burke's (1995) organizational assessments. change theory, making note that transitions are iterative versus linear in nature, supported the implementation of retakes (successive chances at mastery) to SCALE; cognitive learning being viewed as a form of organizational change. When initial eligibility was met, students were required to meet 100% homework offerings in sections they wished to re-attempt mastery in. For those unable to improve, a second retake procedure was also offered. For these students, an exam viewing and tutoring session was required to remain eligible to retake a second time via a new, but comparable exam.

## Flexible Pathways to Success: What SCALE Offered

Multiple options to position and re-position one's self throughout the course of an assessment cycle were available to learners; some more immediate than others (Figure 1). Options were both cognitive and affective in nature to appeal to the 'any' learner.



Figure 1\*\*

SCALE: Self-Correction Opportunity Timeline

Note: \*Retaking was optional in the self-correction process. \*\*Technology Conceptualizations (TCs) took place concurrent to HPJs, but were not tied to retake eligibility. Some students did not complete them, resultantly.

Student options to maneuver took place in the following ways:

1. HOAs: students selected from 11 affective enhancements /cognitive reducers to improve understanding levels from lecture through activities.

2. HPJs: students selected which homework problems to perform based upon cognitive weaknesses identified on social learning days, to reach a minimum of 75% homework. Students also decided how much more homework they should do to increase their chances for success.

3. TCs: students selected from baseline, goal, or exceptional levels of technology animations to display their level of understanding in a way that was challenging, but doable. Students also made the choice not to complete a technology output at all for that topic.

4. Retakes: students selected whether a retake would be taken after each assessment, and how many sections they wished to retake. To be eligible for a retake, students needed to complete 100% of the homework for any sections they wished to retake.

### RESULTS

### **Logistical Adaptations**

SCALE Pacing Reduced

SCALE lessons require ninety minutes to complete, whether in one day, or over consecutive calendar days. Thus, during research events, lessons had taken place over one- or two-day intervals, depending upon the class interval used in a school. Pacing during research events was not sustainable in full time practice.

In current practice, the SCALE template was incorporated into a sixty minute daily time interval. While initially, the students enjoyed the same pacing used during research events, as material increased in difficulty, students began to balk at rate. Pacing complaints began about eight lessons into curricular content.

In response, mini review sessions were interspersed between lessons to slow the pace.

## Teacher Perceptions of Students' Time Management: Internal Strife

As novelty wore away, overall student engagement declined, expectedly. Behaviorally this might appear to an educator however, that some students began to misuse their time in class. Though prior research events had demonstrated that dynamic time use is a necessary component of SCALE success, the emotion of wanting to keep a classroom controlled as you once may have, competed with the ideals of the program that had to remain in place.

Prior research events had demonstrated that fast learners in mixed-ability classrooms would draw engagement mainly through affective opportunities, while slow learners would pull cognitive reduction mostly from load opportunities to stay engaged (Grace, 2017). Hence, as both affective and cognitive options will have been needed to be consistently present to keep engagement opportunities available at all times for all learning speeds, time must have remained dynamically flexible for the program to have had success. Therefore, a teacher that has pre-emptively locked down a classroom will have interfered with the reason the program offered success. Interestingly, increasing control due to behaviors associated with affective engagement penalizes slow learners, as opposed to the fast learners who tend to display the affective behaviors (socialization, decoration, etc...) we may be most uncomfortable with.

Educators will need to anticipate the looser feel of the classroom, but remain steadfast in their commitment not to lock-down the classroom, destroying the flexibility of the learning environment to work for fast and slow learners simultaneously in the process.

# Routine Perceived Positively and Negatively by Students

The regularity of a SCALE template was beneficial by giving students a tangible learning Students were able to try out various lab. behaviors to meet their affect and cognition starting points, giving them the ability to determine which combinations resulted in the best learning outcomes. Continual metacognitive practice choosing behavior to need scenarios and experiencing the outcome in a timely manner, quickly honed learner self-efficacy of this skill. Bandura's (1986) self-efficacy theory, a guiding principle of SCALE theory, and positing that learners can only move towards success if they first can see themselves as plausibly attaining it, supported the need for routine, however.

As learners saw their own rating of lecture understanding, go down for example, as a result of further exploration in HOAs, students attempted to solve the problem by assigning themselves a solution (homework set). As assessments were broken into four lectures, students could determine if the solution attempted had 'worked'. This process was documented, allowing students reference their baseline to experience. continuously as they performed new cycles, and could be used to guide future decisions. Having had a past experience, the next attempt to fix a learning hole will come with an expectation of performance; they will have gained self-efficacy, whether positively or negatively, which will be directed into academic achievement outcomes (Bandura, 1993; Camona, Buunk, Dijkstra &

Pierro, 2008; Ferla, Valcke & Cai, 2009). Without a predictable template, students would not have had a reliable medium by which to grow selfefficacy in their ability to solve their learning problems and to solve them in multiple ways; to realize that they had control of their outcomes in the learning process.

Nevertheless, regularity was also seen as monotonous by some students. Learners with strong opinions regarding their learning style fell into this category. Some, whom had long found success through lectures, had not found need to follow-up with hands-on activities in the program. Similarly, others whom had rarely found success outside of hands-on learning experiences in classrooms, had not found value outside of those segments.

### **Innate Student-Grouping**

A person's learning style has been described as both a composite of their set of intelligences (Gardner, 1983), brain dominances (Benzinger, 1995) and patterned ways of responding to stimuli, with given nature / nurture conditions (Kolb, 1984). However described, there is strong consensus among learning experts that learning is a unique, active experience for each person, resulting in the creation of new functionally fitted mental structures in the brain (Petty, 2012). These called learning styles, dominances so or preferences of learners, formed the basis of groups developed organically that during the implementation.

Students grouped themselves intuitively. During HOAs, when students were first able to begin drawing from options to place themselves for success, students readily separated into three groupings. Continual observations of HOA exiting patterns by students reproduced nearly identical groups each time. Several studies concurred that students will need to vary their paths despite a similar destination (Duschel, Schwengruber & Shouse, 2007; Grace, 2017; Shin, Stevens & Krajcik, 2010; Sutherland, Shin, McCall, 2010). A correlation between student

need and how they behaviorally accommodated for that need formed an explanation as to why students had separated into reproducible pathways during HOAs.

Student self-characterizations of learning speed and learning style were reported on an initial SCALE survey. Students chose from learning speeds of slow, medium or fast and from learning styles of auditory, visual and kinesthetic labels. Reported learning speeds were considered to flex in response to learning styles that made information retrieval either more or less time intensive, relationally. By example, kinesthetic learning requires enactive participation to hold in one's own hand, whereas visual and auditory learning require only vicarious attempts, minimally. Hence, that waiting may need to take place to touch learning manipulatives necessitates that this learning style would slow down learning speeds of all magnitudes.

Similarly, baseline learning speeds would be quickened by an auditory or visual learning style complement. Figure 2 displays how self-reported student learning speeds were theoretically pulled up (toward the right) by a quicker learning style and pulled down (toward the left) by a slower learning style; the composite of which would serve as student self-identified baseline need. Also available from figure 2 are students' efforts to accommodate those baseline needs through the amount of time they spent holistically in all HOAs, as represented with a yellow overlay. A student spending little time in HOAs will have been represented through an overlay positioned in the fast columns. Similarly, a student spending a large amount of time in HOAs will present as an overlay in slow columns, while a student having spent medium time will overlay in the middle columns. The combination of overlay (behaviors) to needs elucidated the meaning behind the groupings having formed organically within the SCALE classroom.

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#### Figure 2

Sample: Students' Self-Identified Baseline Need and Routine Correcting Behavior in HOAs

Note: \*Yellow overlays display how long a student remained engaged in HOAs to understand the material, when offered eleven coping mechanisms by which they could either reduce cognitive load or increase affective attachment while learning (see Table 2 for coping strategies). An overlay directly on top of a number shows that student used their behavior to meet their need naturally (Green); an overlay to the right of need reveals student behavior falls short of need by leaving HOAs too soon (Orange); an overlay to the left of need revealed overcompensating behavior for need (Blue).

Quintana, Shin, Norris & Soloway (2006) had also observed learners to actively regulate their environment when control had been perceived. Other research extended these results to demonstrate that people were quite adept at predicting their own success from attempts when in control (Carter, 1993; Grace, 2017; Kinzie & Joseph, 2008; Kopcha & Sullivan, 2007; van Gog During this year long et al., 2005). implementation, it was found that students regulated for their needs through eleven coping strategies. Patterned behaviors emerged, producing the following delineations of behavior to need alignment:

1. Students that have a learning speed/learning style composite in the same range as their behavior pattern to compensate for the need; 51% of students fell into this category, to be called GREEN learners (see Table 4 for color behavior delineations),

2. Students that have a composite falling outside the range of their exiting behavior, but their need or ability to socialize keeps them engaged longer than necessary cognitively; 27% of students fell into this category, to be called BLUE learners, 3. Students that have a composite falling outside the range of their exiting behavior, but for whom extra socialization is not needed or cannot be tolerated to compensate cognitively; 22% of students fell into this category, to be called ORANGE learners.

# The Flexible Pathways of Blue, Green and Orange Groups

Students became green, blue and orange learners through their engagement in HOAs in attempt to uncover the learning gaps they would later try to remedy on the followup day in a SCALE cycle. Table 4 shows how heavily each of the color distinctions relied upon the coping strategies available to them. Though each color reported using all of the options available to them, each group emphasized certain ones more strongly.

Table 4
Student Utilization of HOA Opportunities by Green (G), Blue (B)
and Orange (O) Pathways

	and orange (o) rannugs						
Ī	% Horizontal Opportunities Selected by Groups:						
		*G	В	0			
	Control of the order of HOAs performed	15	10	5			
	Control of number of HOAs performed	15	12	5			
	Control of time spent at each HOA	30**	* 12	13**			
	Choice of engagement level within HOAs	22	6	9			
	Choice to group	26	14	11			
	Choice of group members	23	17*	* 11			
	Choice of group role (doer or watcher)	18	9	12			
	Control to change role (watcher to doer)	15	7	6			
	Control to change engagement level	21	10	7			

Note: All horizontal opportunities are necessary for some students, some using a broader range more than others. Percentages are based upon student queries of their HOA behaviors. \*Greens use of options most thorough and most homogenous. \*\*Top Priority Option Green, Blue and Orange groups.

HPJ and TC solution attempts on autonomous learning days further delineated meaning in color designation. In attempting solutions to lingering learning deficits, colors attempted different percentages of effort in each of these areas.

After 4 cycles of learning gap to solution alignment, assessment occurred. Following assessment, retakes offered the fourth and final opportunity to fine tune achievement. Color separations developed through groups'

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propensities to retake assessments to improve achievement.

The frequency of colors to participate or benefit from each venue follows (Table 5):

### Table 5

### Behavior Delineations of Student Groups and Population

Group	% HOA	L to HOA U	% HPJ	% TC	Retake	HOA Exit
	Options Used	Change	Completed	Completed	Propensity*	Pattern
Green	51	0.3	84	68	1.54	2 <sup>nd</sup>
Blue	26	0.1	87	58	1.56	3rd
Orange	22	0.4	91	60	1.70	1 <sup>st</sup>
Populat	ion 33	0.3	86	64	1.57	NA**

Note: Retake propensity rankings were derived through inputs of 3, 2, or 1 for each student. A student that performed 3 or more exam retakes was ranked a 3, a student retaking 2 exams was ranked 2 and students whom retook 1 or less exams were ranked 1. \*\*NA: not applicable.

### Learning Equity across Groups

Teachers are not always aware that their learning environment may be better for some than for others, or that they unwittingly can produce achievement polarizations as a result of a learning environment more suited to certain learners (Gad Yair, 1997). Moreover, our common practice of looking to the average as a done little to alert educators of the inequitable conditions that may lurk within their classroom.

As classroom averages can hide inequity by washing out the declines of some via the inclines of others (Gamoran,1992; Grace, 2017), SCALE was evaluated on its ability to offer learning equity to groupings that had emerged naturally; on its ability to promote the 'any' learner toward achievement. Table 6 displays the achievement growth of green, blue and orange grouping over the observational period (4 assessment cycles).

## Table 6 Achievement Growth Equity amongst Student Groupings

Group	Original Assessment % F	Original Assessment % Retake Assessment %		
Green	71.6	78.8	7.2	
Blue	72.3	79.1	6.9	
Orange	71.6	79.4	8.1	

Note: No significant differences were found between scores of any groups. Assessment was defined as the average of all four assessments taken, either without the benefit of retaking or with the benefit of retaking.

## Marginalization of the 'Any' Learner: A Minimum

Had students not been able to continuously selfcorrect their learning holes through all four options provided through a SCALE environment, it was presumed that some students would have performed differently than they had during this implementation. To measure how many students at a minimum would have been affected, the final opportunity for students to adjust their achievement was removed. Table 7 presents achievement averages with and without the fourth repositioning option of retaking included.

Once averages were assigned a category (around the mean, above the mean or below the mean) for pre-retake and post-retake scenarios, the categories were compared. If a student without final accommodation opportunity scored in one area, but with the final accommodation opportunity scored in another, the student was said to have changed categories. Whether a learner would have been perceived lower than they really are or vice-versa was thereby available. Table 7

Pre- and Post-Retake Average Assessment Percentages by Population and by Student Groups

Group	Pre-Retake	Post-Retake	Growth % A	Affected Category
Assessment	Assessmen	nt	by Category	y**
	Average	Average		Change
Population	71.53*	78.88*	+7.34	100%
Unaffected				69%
Affected				31%
Green Group	71.53	79.31	+7.75	51%
Unaffected	71.66	77.97	+6.38	65%
Affected	70.94	81.72	+10.47	35%
Affected+	70.72	84.50	+13.81	26% (75%)
Affected-	72.97	73.41	+0.44	9% (25%)
Blue Group	71.59	77.94	+6.34	27%
Unaffected	69.56	76.78	+6.75	71%
Affected	75.38	80.75	+7.34	29%
Affected+	73.13	80.47	+7.34	8% (28%)
Affected-	76.28	77.38	+1.10	21% (72%)
Orange Group	71.44	79.09	+7.66	22%
Unaffected	72.28	78.13	+5.84	75%
Affected	68.88	81.94	+13.06	25%
Affected+	68.88	81.94	+13.06	25% (100%)
Affected-			NA	0%

Note: Assessments raw scores were out of 32 points. Raw score means were rounded to normalized student grades of 23 and 25, respectively. \*Pre-Retake Mean = 22.89 (71.53); Post-Retake Mean = 25.24 (78.88). \*\* Students were classified into categories based upon the following delineations from raw means: those falling around the mean, those above the mean and those below the mean, to represent medium ability (MA), high ability (HA) and low ability (LA) achievement outcomes, respectively; The direction of growth in terms of ability perception determined whether a student would be incorrectly classified in a class where opportunities were not there for them to maneuver for success. A student in a particular range during pre-retake position that moved into a different range post-retake position was determined to have had a negative effect or a positive effect, regardless whether their scores were better at post time.

### DISCUSSION

## SCALE Process Develops Learners' Beliefs 'to Solve'; Process is Continuous

Students participating in a SCALE environment first benefitted through a multimodal approach to content, not normally present in a traditional classrooms in a routinized way. Average understanding increased 7.3 to 7.6, on a 0-10 scale, as students transitioned from lecture through handson activities. Several other studies had been able to show improved understanding when cognitive load was reduced, similar to the transition that occurred as the intercomplex ideas of a SCALE lecture were drawn apart into activity singles (Ayers 1993, Atkinson et al., 1968; Renkl et al., 2009,1998; Rourke & Sweller, 2009, Sweller et al., 1998; Wirth et al., 2009), or when information was presented through multiple modes, also occurring in the lecturing to HOA transition (Low & Sweller, 2005; Sweller et al., 1998; Tindall-Ford et al., 1997; Wolfe, 2001). Both of these positions, that multimodal learning impacts the brain more than singular learning, further support the improved understanding seen during this full time implementation of SCALE.

The additional 0.3 of understanding, while modest, may have been more instrumental symbolically than in magnitude. The process itself, of learning how to find out what was missing in their thinking and then finding their own solution to that, may have improved students' self-efficacy that they matter in the learning process; that it is something I do versus something done to me. Improved self-efficacy as to their perceived active role in the learning process evidenced itself through the homework and retake components of SCALE.

As students uncovered their learning holes on social learning days, homework selection was the most immediate solution they could have attempted. Students over-performed in the homework

component to 'fix' a discovered weakness. On average, students completed 86% of HPJ problems, rather than 75% required, demonstrating a budding belief in the process to 'solve' for themselves by doing 'more'. Further, students evidenced that their beliefs continued to grow, as seen in their change in willingness to retake early in the implementation versus later on.

Retakes were completed by students initially at a rate of 42%, but doubled by the end of the data collection period. As retakes were less immediate fixes for students, the lower initial rate of use supports the initial presumption that students are not as attracted to a specific achievement hurdle as an educator may be. That retake usage doubled five months into the implementation, shows that students continued to develop their beliefs regarding their self-efficacy to control outcomes. Lally, van Jaarsveld, Potts & Wardle's (2009) study reporting the time it takes people to make lasting change is anywhere from 18 to 254 days (approximately two to eight months) supports observations within this case study.

### **Driving Green, Blue and Orange Achievement**

Several concurrent affective and cognitive options were available to draw from, by which learners could remain engaged in the learning process, as prior research events had revealed that fast learners and slow learners draw differently from options available while learning. The immediacy of options became interesting in the selection process of learners (see Figure 2 for options in terms of immediacy).

### HOA Component

The range of HOA options were used most equitably by green students and less by blue and orange students. Certain options were more heavily relied upon than others in groups and not necessarily the same ones (Table 4, Table 5). Blue learners were more often than not, the last to exit from activities segments and those for whom the ability to group with their peers was of highest importance. Orange learners conversely, were those students exiting HOAs first and those for whom time manipulation was of top priority. Green learners tended to rely on the gamut of HOA maneuvers, but like the orange group, also felt time manipulation was most important. This group exited HOAs in the middle of orange and blue learners.

Within the HOAs, learners attempted to improve their understanding further than what they had already attained in lecture. Green learners generally reported a gain of 0.3 understanding points, equivalent to the holistic classroom average. Blue learners reported a lower benefit (0.1), while oranges gained the most (0.4) (Table 4).

These results indicate that learners have varying degrees of social threshold in relation to their cognitive threshold. Though learners often find value in learning from their peers, the ways in which they use the peer interaction varies by student cluster, based upon how much of a social threshold they have. The flexibility of the time component served each student group, as represented by a generalized bump in understanding post-HOAs, by allowing them to respond to their social threshold differences.

Orange learners did not value socialization with their peers like blue learners did. However, though they did not enjoy the chit chat of peer interactions, they did enjoy being able to use their peers as models; being able to learn vicariously from peers through their generally visual learning styles. In this regard, orange learners also valued their peers, but for different reasons than blue learners. That orange learners were best, and blues worst, at gaining additional understanding from HOAs, may simply have been a result of their ability to get to and through each activity station, not having been slowed down by extracurricular conversations craved by blue learners. That the blue group also reported not having had to attend all activities as an option of importance to them but rarely important to orange learners, further supports the claim that blues value activities for socialization not cognition, and vice-versa for orange students.

Green learners were best at trying out the range of options. Green learners therefore, valued both the

socialization and the cognition of the HOA component, allowing them to gain understanding somewhere between that of the orange and blue groups.

Green learners composed about half of the students in classes, while the other half is approximately split between blue and orange leaners. These results demonstrate that approximately three quarters of students will desire social options of engagement during the learning process. Moreover, though the other subset will not desire social options, they may be those that most benefit by them in adjacent ways, as orange learners did through vicarious learning with their peers.

### HPJ Component

Students generally completed the required minimum homework to attain eligibility for a retake option on assessments. That only 42% of students partook of retakes initially appeared contradictory therefore, as so many more than necessary had performed the retaking requirement, than would be needed. This perhaps speaks more to the homework culture within the school, than to an intention to retake later on.

That all student groups performed above the requirement (Table 4) speaks not only to the school culture, but also of learners' beliefs in the power of cognitive practice to solve learning holes. Still, additional distinctions in homework percentages between student groupings developed: green (84%), blue (87%) and orange (91%). These results demonstrate that orange learners are those that had the highest cognitive thresholds in classes. Not only they seemingly are the fastest learners observationally within HOAs, but they are also those that will do the most extra cognitive work to get to a position of perceived achievement success. Surprisingly, blue learners, who had drawn most heavily upon affective options in HOAs, recognized lingering learning holes, either throughout activities or perhaps after the GT whole class discussion period. Consequently, blues were willing to draw from cognitive corrective measures more so, when alone.

Green learners performed the least additional homework problems. Overall, however, green learners seemed the most consistently flexible to try out new solutions and work the system as a personal learning lab. Blue and orange learners appeared to either understand themselves more, or were more rigid in their ideas of solutions that were possible for them.

### Retake Component

Retakes were given after school hours, requiring additional effort to be shown by students in order to partake of them. Retakes required students complete 100% of the homework prior to retake in any section that they wish to retake, of the four. Further, to be eligible for retakes, initially students would have had to have completed the minimum homework percentage in all of the areas. Overall, students averaged 1.57 exam retakes, with the orange group learners willing to take the most retakes (1.70), the blue group slightly less willing (1.56), leaving the green group least likely to retake (1.54). These results demonstrate further that oranges were those most likely to engage through cognitive components. Blue students also followed the same pattern that developed in the HPJ component, by performing much less retakes than orange, but slightly more than green learners.

### **Disaggregating the SCALE Classroom Average**

While characterization of our students by ability can be important to educators as they usher students towards a theoretical achievement hurdle they may keep in their mind for personal, political or professional reasons, students in this case study did not draw from ability to create their success. Rather, learners revealed behaviorally, that grouping took place through a dichotomy between social and cognitive thresholds they internally competed with. In other words, learners formed groups based upon the means of getting to an end, rather than the end itself. Perhaps a reflection of the age of the learners compared to that of the educator, a grade may be too far removed, even for secondary schoolers, to serve as a tangible, pragmatic carrot in getting them to achievement success.

Given that students grouped by their perceived means of making a path toward success, the success of SCALE would thereby depend on its ability to offer equitable growth opportunity to each pathway. Any learning environment which promotes growth significantly better for one path than for another would be in need of disaggregating their averages, as the increases of some could be washing-out the reductions of others within the average and thereby marginalizing them for their means, as opposed to their ability.

Table 6 demonstrates the growth opportunity SCALE offered to each presenting pathway of success used by learners during the first full year implementation. While student groupings may have accommodated themselves differently in the SCALE environment to get there, equal opportunity was demonstrated to be present, denoted by the consistent growth in achievement between groupings.

While the process of disaggregating the average did not reveal subsets of underserved learners within this learning environment, it just as well could have, if one group had perceived significantly better support than another. Disaggregation supports our claims as leaders and as educators that resources we implement into our schools, are getting to every learner and that processes we believe are good for kids, really are and that they are good for all kids.

# Marginalization of the 'Any' Learner: The Minimum

Upon removing the final method students had of bettering their achievement position and assigning the pre- and post-retake averages into categories (at, above or below the individual means), a comparison of the average characterizations was made. As the post-retake overall mean was higher than the preretake mean, score improvement was expectedly and generally apparent. However, score improvement did not necessitate jumping categories. Students that jumped categories would have had to move in magnitude in double proportion to the norm for that to occur. Still, for a third of the class (31%), this occurred (Table 7). Further, because these students look different than what they really are, right up until the last correction, these students are those that a teacher may inaccurately perceive in ability.

Upon disaggregation of these results, it was found that all groups were susceptible to inaccurate classification even with only one maneuver removed to self-correct their true achievement destination. Still, green learners were most likely to be inaccurately perceived, followed by the blue group and then the orange group.

While all student groupings held members who would have been perceived incorrectly, color pathway predicated the type of instructional mistreatment groups would more commonly be susceptible to in non-flexible classrooms. Whereas green and orange students would have been misperceived lower in ability than they actually were, the blue group was more likely to have been perceived higher in ability than they actually were.

At minimum therefore, a third of our students have not been able to function adequately in common mixed-ability classrooms, but for two different reasons; some by being held back and others by being dragged along. Both situations are prime scenarios for disengagement to occur while learning.

Future observations will attempt to understand the maximum number of students that would be at risk of teacher misperception, when students are given no options to maneuver for achievement success.

# Leadership's Role in Shepherding the Process of an Implementation

Organizations, like learning environments, are dynamic in nature. Just as the people within an environment create the ways of doing things, those systems and culture created by them, control the people within it (Bernard, 2012; Burke, 1995). Thus, leaders take risks when they attempt any implementations today, not having full control of its resultant success. Furthermore, that only 30% - 50% of educational leaders will make it beyond the three to five years (Fuller & Young, 2009) it takes on average to mobilize a singular vision (Murray & Richardson, 2003), it is not surprising that change is

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difficult to sustain. Still, leaders have a responsibility to help those within their schools understand the hidden beliefs of their culture that may hold groups of students back or marginalize them.

Transactional versus transformational leadership remain the dominant theory regarding how change takes place. Though there is much literature to espouse that transactional and transformational leadership are separate entities, more rigorous assessment has demonstrated that their similarities make it difficult to separate out the effects of one from another (Bass, 1997; Judge & Piccolo, 2004). This research releases us from romanticized notions that important change can only take place under idealized conditions via idealized leaders. Further, it frees our leaders to make big change without idealized conditions or followers. Perhaps, it is also time to shift our mindset of what leadership needs to be to support big change as well. I suggest a term 'aggregated teambuilding', from another longstanding organization, commonly known as America's pastime, be applied to leadership; aggregate leadership.

To provide example, baseball went through a time when teams with less resources could no longer compete with wealthier teams, when putting together a roster. Money was finite, but the desire to win endured. They had to start thinking differently and they did; they looked to math, to find a make a new solution path. While poorer teams could not afford the best player, they could create a composite of the best player with multiple, less expensive players, who each contributed a piece of what they were looking for, to get them the same results, mathematically. As we now know, it worked, and has changed the way we think about winning baseball. This mentality is applicable to leadership today.

Our common leaders are free to open up the solution paths to common workers under this perspective. No one is interested in finding the superstar under this leadership style, because no one has time to develop a 'maybe' solution in their short tenure. Knowing that people will need to take different paths to the same destination (finding a solution to a problem), leaders can use this to their time advantage when searching for solutions under their tenure. Supporting followers to control smaller partial solutions (implementations), to role-model how their implementation works toward a larger problem X (at a lower level), frees up leaders to build multiple solutions at a time.

The solution we need may just be a composite of solutions, or an aggregate, and not a single implementation.

### EDUCATIONAL SIGNIFICANCE

SCALE allows educators to offer ways for learners in heterogeneous environments to pull from options that they choose are most beneficial to their success while learning. These results show that students not only can choose to their benefit, but can be trained to document how that happens for them. Documentation of the process is part of how the students 'buy-in' to the idea that they are in control of their learning.

Four flexible elements of the SCALE environment allowed students to pull concurrently from both affective and cognitive elements to remain engaged while learning. Innate groupings (green, blue and orange) formed through the very different ways clusters behaviorally accommodated for their baseline needs. No significant differences were found between groupings when the average was disaggregated, demonstrating groups had perceived equitable learning processes during the observational period.

Despite each group's achievement success, orange learners pulled the most from cognitive options to support their learning success. Blues drew most from affective options, but also drew from cognitive options in greater proportion than greens. Greens fell in the middle for most options drawn upon.

The ways in which groups draw from options available will make them appear behaviorally different. Orange learners will look like the fastest learners, as they do not require or perhaps desire the social aspect of class that blue learners do. Blue

learners will appear as the slowest of the classroom learners, as they look to their peers for support while learning, yet sometimes get off track onto extracurricular topics. Green will fall into the middle, observationally. These patterns are readily and consistently evident to a teacher as students exit activity-based situations.

Some of the behaviors students display may appear to an educator, like students are mismanaging their time in class. Still, educators need not fear this, as even the chatty blues will recognize their ability to go off topic, but they will also compensate through cognitive options behind the scenes to find success. As teachers may be uncomfortable with the look and feel of the SCALE classroom or behaviors it promotes, the support of educational leaders will be critical to the success of the program.

The SCALE implementation offered a window of opportunity to see how many students without access to pull from flexible maneuvers to achieve, would be susceptible to inaccurate teacher perceptions of ability. As post-retake averages present the maximum achievement a student could get when all options were expended, pulling the final maneuver away, allowed for the determination of who would look different without it. The percentage of students that changed in ability appearance was demonstrated to be 31% of a heterogeneous classroom. Of these students, most (75%) will have been perceived too low, with the remainder (25%) perceived too high, possibly prompting educators to pace too fast or too slow based upon inaccuracies. That innate green and orange groups are more susceptible to being held back and blues are more susceptible to being dragged along, SCALE thereby offers an opportunity to leaders to divert problems before they start with professional development.

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### School Leadership: Commitment to Social Justice

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### Abstract

In this paper we argue that more than ever in an era of uncertain and contentious divisions in our diverse society, it is necessary for caring citizens to examine and commit to the fundamental principles of social justice. We make the case that after decades of well intentioned reform efforts, a vast majority of marginalized groups still experience social injustices. We point out that the research evidence overwhelmingly reveals that educational inequality has widened; school segregation has increased, discrimination has grown and the problems of poor, linguistic and gender minority children have become more acute in America's schools.

In light of the complex equity challenges facing our country, we underscore that it becomes urgent that the values and policies of educational agencies reflect social justice ideology to stop the further proliferation of negative social trends. Those who work directly with students must send a strong signal to all stakeholders to commit to an equitable quality of life and experiences for everyone, especially those who are the most disadvantaged in our schools and communities.

## "Inequality in education is the most pressing issue of diversity in the U.S." (Sonia Sotomayor, 2011)

"While diversity is a hallmark and strength of our nation, the path toward common ground, mutual respect, and equity has been rocky for nearly every religious, racial, and ethnic group that has become a part of the American fabric along the way." – James Baldwin

Many non-biased and objective references define social justice as the "the distribution of advantages and disadvantages within a society" (Dictionary.com, 2014). Similarly, the Oxford Dictionary defines social justice as, "Justice in terms of the distribution of wealth, opportunities, and privileges within a society." Beyond these basic definitions of social justice, there is a wide range of meanings that expand across the interpretive spectrum that are frequently bent and fixated to align with worldviews, academic disciplines and philosophies. For example, Michael Novak, (2009) who writes for the politically conservative Heritage Foundation states that, "social justice is really the capacity to organize with others to accomplish ends that benefit the whole community. Furthermore, if people are to live free of state control, they must possess this new virtue of cooperation and association". However, Adams and Bell (2016) view social justice as "helping people develop a more thoughtful understanding of diversity and group interaction, better prepare people to critically evaluate inequitable social patterns and institutions, and find ways to work in coalition with diverse others to create more socially just and inclusive relationships, practices, and social structures" (p. 5). A universal consensus on the meaning of social justice appears to be illusive. Hegemonic values and deeply entrenched social traditions significantly factor in conflicting interpretations. Perhaps the best approach to navigating the divergent definitions is offered by Bogtoch (2002), "there can be no fixed or predictable meanings of social justice; they must be "continuously reinvented and critiqued again and again" (p. 10).

The lack of a consensus on the meaning of social justice should not distract from the compelling need to take affirmative action to address the problems. More than ever in an era of disparate and contentious divisions in American culture, it is incumbent on the citizenry to coalesce around the fundamental principles of social justice. According to Hytten and Bettez (2011), "Democratic citizens value an open flow of ideas regardless of their popularity; have faith in their capacity to work collectively to create a better world; use critical reflection to analyze social problems and policies; are always concerned

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with the welfare of others and work to promote the common good; fight for the rights and dignity of minorities; and create institutions and value systems that support a democratic way of life." (p.7)

### **Social Justice Education**

Social justice education focuses on all facets of the school community. Schools should be safe places where there is equity and justice for students to learn and grow. The social justice oriented educational institutions strive to close the achievement gap, improve multicultural understanding, reduce segregation and provide equal opportunities for every child to learn. Educators are given the authority to create an environment that fosters student development and create a positive socialcultural milieu for all students. Hackman (2005) states that, "the goal of social justice education is full of equal participation of all groups in a society that is mutually shaped to meet their needs, while the process for attaining the goal of social justice should be democratic and participatory, inclusive and affirming of human agency and human capacities for working collaboratively to create change." (p. 103).

## **Educational Leaders**

Educational leaders must be on the frontline in spearheading efforts to affect positive change and promote social justice principles both within and outside their schools. A school leader must unambiguously demonstrate a commitment to and set a credible tone for social justice education. An individual who accepts responsibility for leading a community should have extensive school knowledge about social justice, especially the ubiquitous problems in marginalized communities.

It is imperative for the school leader to review and process the prodigious body of evidence on the causes and effects of the achievement, economic and social gaps, school segregation, discriminatory practices, and the overall acute disparities of the poor, linguistic and gender minority children in America's schools. The school leader is responsible for sending a strong signal to all stakeholders to unceasingly commit to social justice values and behavior. A social conscious school leader indicates

that their educational institution is serious about social equity and expects all of its members to personally commit to the beliefs of social justice. According to Dewey (1897), "education is a regulation of the process of coming to share in the social consciousness; and that the adjustment of individual activity on the basis of this social consciousness is the only sure method of social reconstruction." (p 79.)

Educational leaders have a fiduciary responsibility to ensure that all members of the school community have equitable opportunities to achieve their highest personal goals. Lytle, (2012) explains that the "successful leaders define their values and vision to raise expectations, set direction, and build trust; the conditions for teaching and learning; restructure parts of the organization and redesign leadership roles and responsibilities; enrich the curriculum; enhance teacher quality; enhance the quality of teaching and learning; build collaboration internally; and build strong relationships outside the school community." (p.21)

Schools led by a social justice driven leader have the capacity to mobilize teachers, motivate students, energize communities and substantively improve schools. Davis (2016) describes how a principal's bus duty encounter transformed his thinking and behavior. The principal began to have conversations with an African American boy when he got off the bus each day and discovered that the boy was intelligent beyond his years in the subject of meteorology. This led the principal to realize that intelligence is manifested in multiple ways and in academic disciplines outside the core subjects of school and in human connections. If the principal had not taken the time to get to know the student on a personal level this very intelligent student would not have been given a referral to the gifted program. "Set high expectations for all students", "Lead the charge", "Recognize talent in every community", and "Seek support of all families" (p.19). This case clearly demonstrates the power of a school leader's commitment to social justice and actively promote equality of educational opportunity.

### **The Research Nexus**

### Data

The impetus behind the growing research on the coupling of school leadership and social justice emanates from the indisputable evidence including the compelling data about the crushing problems in many American schools. The data that aspiring and experienced educational leaders can examine will broaden their understanding of the magnitude of the need to advance social justice ideology in their schools. For example, data from the U.S. Department of Education's Civil Rights Data Collection (2016) exposes the disparate statistics for black students related to graduation, retention, and funding for schools predominantly black schools. Black students are more likely to be held back, despite mounting research showing that holding back children doesn't benefit them socially or academically and makes them more likely to drop out later. Retention rates for black students in ninth grade is 34 percent. Minority students represent 57 schools where the senior class has 60 percent or fewer students who entered as freshmen - but only 30 percent of the population in all schools.

Another Department of Education (2011) study found that 45 percent of high-poverty schools received less state and local funding than was typical for other schools in their district. On average, schools serving more minority populations have less-experienced and lower-paid teachers who are less likely to be certified. A report from the Center for American Progress (2012) found that a 10 percentage point increase in students of color at a school is associated with a decrease in per-pupil spending of \$75. The findings from the data analysis indicate that all of the participants perceive changes in their awareness, attitudes, beliefs, and school practices regarding issues of social justice and equity, changes that center on developing a deeper understanding of the need to assess the dominant values and goals of schools to protect those live on the margins.

There are many and varied conceptual frameworks and paradigms on social justice and school leadership. School leaders must be open to all types of research to establish and sustain a social justice environment. There must be a willingness to go beyond the traditional research approaches to help mitigate the pressing and often egregious social inequity issues in many schools. The Journal of Research on Leadership Education devoted a special issue on leadership and social justice to demonstrate the increased attention to social justice in school leadership. Hernandez and Bell (2010) in an article on resistance to social justice in leadership preparation programs state that "The overall research on leaders who strive for social justice has gained unprecedented momentum in the last five years; for example, scholars in the field of leadership research have well documented the role that school leaders for social justice play in creating equitable schools for children, particularly for students living in poverty, students of color, English-language learners, and students with disabilities. (p.49).

McDaniels and Magno (2015) examined many leadership programs and found that due to a packed curriculum on leadership constructs, organization theories and field experiences that there was little room in programs for social justice content. "Enrollees in leadership programs would benefit from the incorporation of strong social justice themes that prepare them to manage schools and effectively lead staff and students to meet the dynamic socially-based challenges that occur both within and outside of the school – especially critical in today's educational environment. A social justice perspective enlarges and enriches the role of the leader by providing a two-pronged ethical dimension to school leadership, allowing for deeper understanding of: 1) the environments from which children and families come, and 2) meaningful selfawareness, necessary for building relationships and making collaborative decisions. As such, we promote social justice pedagogy, which places ethics and analysis of "self" at the center of intellectual growth." (p 61.) They developed a model that infuses key elements of social studies in

#### **Frameworks and models**

graduate school leadership programs that is aligned multiple leadership standards.

Hernandez and McKenzie (2010) cite the McKenzie framework (2008) on leadership and social justice consists of 4 categories: 1) selection of students, 2) knowledge and content; critical consciousness and teaching and learning; 3) proactive systems of support inclusive structures, and and 4) induction/praxis to prepare social justice oriented school leaders. The framework requires that students be predisposed toward social justice as an admissions criterion. It is necessary to have an affinity with social justice ideology as they acquire knowledge and training to lead such efforts in schools. Themes, including social equity, critical pedagogy, culturally responsive pedagogy, white privilege, diversity, multiculturalism, and other would be an integral part of the core curriculum in programs that are

Seay (2013) research challenges the traditional paradigm of social justice that the author asserts can be racialized, gendered and classed with personal perceptions that should not be a part of social justice research ideology. The author asserts that the research design must reflect that groups of students are not the problem, but instead, gendered and classed racism is the problem, and teachers, administrators, and policy makers who fail to act on the injustice perpetuate the problem. The author demonstrates this claim in a study of 3rd and 5th grade students. Even though most of the students in her study could read, their reading test scores were below grade level and students were often labeled as "unmotivated, disruptive, and disrespectful." Seay, then examined qualitative data to determine why these students were ascribed their reading label and found that "black males represent the majority of students in remedial reading and special education and 50% of black males in inner cities drop out of high school, many because they were reading below grade level, felt alienated, helpless, or discouraged in schools." (p. 19) Seay recognized the validity and value of personal perceptions and experiences that scientific research excludes. By including her personal experience into the social justice concern of the students of her study, Seay developed research

ideology which emphasized objectivity, neutrality and rationality, and every day experiences to question how forms of oppression operated in schools and societies, and "killed the dreams and hopes of black males' success in school and life." (157-158). The author encourages social justice researchers to build solidarities with social justice workers at schools and within the community to create spaces of hope in the midst of contested theories, methodologies and research practices.

Feldman and Winchester (2015) present the social practice theory as a viable way for school leaders to implement social equity policies to create multicultural learning environments. The premise is that educational institutions can learn from the shortcomings of its social equity practices to substantively change it, rather than just policy compliance. The authors showcases how schools in Oregon improved its schools by adopting a multicultural education policy. Initially, there was limited progress in part because most educational leaders had limited experience in creating multicultural schools. However, the more they understood and committed to social justice, they saw noticeable improvement. Over time local schools were able to make changes to both their policies and practices resulting in increased evidence of socially equitable schools.

School leaders can learn from the critical and dialogical model (CDM). Covertino (2016)describes the model as a pedagogical framework to facilitate shared meaning-making through the "process of discovering what I think and want to say and through the feedback I receive in the responses of my interlocutors" (p.128). The model explains the "demographic divide" is a crucial obstacle to achieving social justice and points to education programs and accreditation agencies that have not incorporated an adequate approach to the predominantly white, middle-class, monolingual teaching that needs to grapple with the growing racial, socioeconomic, linguistic, cultural and gender gap. According to the author CDM can be used to shape instructional strategies such as how individuals' positionality and social location in a stratified society shape their views and perspectives

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on social and educational inequalities, how knowledge is socially constructed and how listening to and incorporating diverse voices and alternate perspectives creates new understanding.

Santamaría (2014), focused on ways in which educational leaders of color in K-12 schools, tap into positive attributes of their identities to address issues connected to social justice and educational equity. African American and Latino educational leaders backgrounds help them overcome educational barriers and commit to social justice. Leaders of color are culturally sensitive that can build solidarity within and across diverse communities. The data reveal that leaders of color present a value-added, critical, multicultural dimension to support social justice leadership. School leaders of color can use their positive identity and ethnicity culture, linguistic, and gender diversity to promote social justice and equity.

Ongoing research and data that highlight social justices practices that are working, the practices that are not, and areas where further research in needed. Both aspiring and experienced leaders must be willing and even enthusiastic to join the cadre of educators and societal stakeholders who want to guarantee that the promises of equity enshrined in the constitution and held by citizens of good will apply to everyone.

### **Social Justice Concepts**

There is a voluminous and wide ranging body of literature on social justice from many fields of study ranging from the humanities to the physical sciences. All disciplines should include content to further the understanding and impact of social justice themes, including social equity, segregation, and the growing discussion of white privilege.

### Equity

Equity is a central concept in social justice ideology that is often approached from a democratically grounded perspective. UNESCO defines social equity as the means to achieving equality. It intends to provide the best opportunities for all students to achieve their full potential and act to address instances of disadvantages which restrict educational achievement. Educational equity seeks to compensate those who are disadvantaged by ensuring fairness and inclusion for all students in the educational system. Darden (2013) points out that "Equity is more than nondiscrimination. It is a proactive stance that insists all students and employees receive the support and resources needed to succeed and that equal treatment is a nonnegotiable and true priority. With equity, there is one goal to reach student improvement. For instance, research has shown that there is a direct correlation of the ability group that children are tracked in and social injustice and the denial of equal access and opportunities. "(p.68)

### Segregation

Segregation is perhaps the most visible and long standing evidence of social injustice and inequities. The findings from agencies, court cases, legislative fiats, clearly show the negative impact that segregation has in schools, especially on members of minority groups. The Civil Rights Project (2016) has issued many reports on enrollment changes and their impact on segregation of schools across the country in the last 20 years. Massive and growing research evidence that (1) segregation creates opportunities and helps perpetuate unequal stratification in the society and (2) diverse schools have significant advantages, not only for learning and attainment but for the creation of better preparation for all groups to live and work successfully in a complex society which will have no racial majority. According to the latest Civil Rights Project study on school segregation, public school enrollment has increased in size and transformed in racial composition since 1970. Intensely segregated nonwhite schools with zero to 10% white enrollment have more than tripled from 1991 to 2007. Racial segregation and concentration has become most extreme for Latinos and blacks and there is a striking rise in double segregation by race and poverty. for who are concentrated in schools that rarely attain the successful outcomes typical of middle class schools with largely white and Asian student populations with race.

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School leaders should be aware of the impact of tracking in their schools and its impact on all Black and Hispanic students are students. disproportionately placed in the lower tracks. The lower tracks are not challenging, use a diluted curriculum and have low student expectations. There is often no claim educators make for instructional equity to provide an opportunity for students to develop their full capabilities. Without opportunities, students are placed on a trajectory for underachievement and often failure. There is a correlation between tracking, the ever widening achievement gap and the growing list of failing schools. In a study conducted by Burris and Welner (2005), graduation rates increased dramatically when tracking was removed and students were given the same opportunities as those students in the higher tracks, the graduation rates increased dramatically from 1996 when only 32% of blacks and Hispanics to 82% in 2003. Even white students graduation rates increased 88% in 1996 to 97% in 2003. All students benefit from untracked schools and help close the achievement gaps.

## White Privilege

The theme of white privilege has received growing attention in recent years. This is not surprising because racial differences and race identity are woven throughout American culture and deeply embedded in the historical landscape. Blanchett (2006), as "any phenomena whether individual, structural, political, economic, or social, that serve to privilege Whites while oppressing people of color and promoting white supremacy" (p.26). According to Baldwin (2016) many white Americans may not realize that "being White confers special status or experiences, potentially to the detriment of others" (p. 2). White students have historically obtained superior access to schools, resources, and opportunities. Life in racially separated and discriminatory environments is a systemic problem that perpetuates the achievement gap and academic risk gap. The importance of education should be continually underscored and those in leadership roles must advocate for those who cannot do it themselves.

Abdi offers evidence to explain and support the role white privilege plays within classroom and how educational experiences are often very different for Black and White students due to "the ways in which schools institutionalize race" (p.61). Abdi identifies the classroom as a racialized space in which the existence of "Whiteness [as] the default setting of the classroom culture" or White privilege allows white students to "have the choice to ignore the ways in which race influences and structures the opportunities that people are given" p. (61). As a result, "race only matters to those who are not white" (p.60). This "racialized culture of the classroom" Abdi identifies produces a "concept of duality" in which Black students are "seen and see themselves as the 'Other,' an experience that...White peers cannot identify with but may recognize" and even extends beyond students to the teachers (p.61).

J. Flynn's (2012) "explores what can happen when middle school students take up issues of racism and White privilege in classroom discussions" (p.95). The aim of this study was to answer questions on how individuals in a diverse middle school classroom react to discussions of race, culture, and white privilege and what new problems and possibilities can emerge in this dialogic space? (pp. 95-96). Flynn concludes that multicultural work in the classroom is challenging, but it is important work because it empowers students to become "antiracist leaders," "to work for social justice," and "to 'function effectively in a pluralistic democratic society" (p.109). Flynn's study appears unbiased in its detailed discussion of the theoretical framework of "critical multicultural pedagogy to engage all students in discussions of racism and White privilege" (p.96).

## Conclusion

The United States tried to chart a hegemonic social culture, but over time, ideas have evolved. However, aspirational notions of equality and justice remain at the core of American society despite the historical legacies and current challenges. Educational leaders across the ideological landscape must continue to reaffirm their moral principles on what is right and just. It is imperative that they always staunchly

promote what is good for their students, including taking on the role of protectors and guarantors of equality of educational opportunities. Educational leaders should commit to a vision to create an environment that rescues the learning community from moral inertia and social inequities. Schools should be transformed into a haven that exemplifies social justice. It is not an easy task to dismantle the policies and practices that are in conflict with social justice, but with persistency and commitment, educational leaders can make serious progress in influencing all members of the school community. Everyone benefits from a social justice environment.

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Social Justice in Higher Education: Interdisciplinary Approaches Across the Curriculum

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### Abstract

The strategies highlighted in this paper have proven to be effective over time and across academic disciplines in inspiring students in higher education to engage in critical analysis and produce extraordinary projects on the concept of social justice. The assumptions, assignments and strategies showcase the scope and quality of social justice endeavors across the curriculum. It is hoped that this paper might provoke vigorous discussions and contribute to productive activism to effectively address the local, national and global realities in this second decade of the 21st century.

### Introduction

The purpose of this paper is twofold: 1) examine social justice concepts and; 2) highlight curriculum and instructional approaches that have proven to be effective in motivating students in graduate education programs to embrace social justice and produce exceptional culminating projects. It is hoped that this paper might provoke robust discussions in classes and prepare aspiring educators to lead efforts on social justice in schools and communities.

### **Rationale for Social Justice in Higher Education**

The Association of American Colleges and Universities (2007) view social justice as part of a liberal education that helps students develop a sense of social responsibility. This position is echoed in many colleges and universities in their vision, mission and strategic planning goals. An example of the importance of social justice is identified in the mission statement on the Southern Connecticut State University website and prominently displayed in the vestibule in the main building. "Southern Connecticut State University provides exemplary graduate and undergraduate education in the liberal arts and professional disciplines. As an intentionally diverse and comprehensive university, Southern is committed to academic excellence, access, social justice, and service for the public good." Another example of the importance attached to social justice is seen in San Francisco State University's Commission strategic plan (2005) that states their "commitment to its core values of equity and social justice.

Increasingly higher education institutions realize that they must move beyond the rhetorical proclamations and take action to ensure that the laudable social justice goals are met. Colleges and universities understand that they must broaden their traditions in research, teaching and inquiry to embrace the social justice. This undertaking requires that faculty connect academic knowledge to social justice in a profound way throughout the entire curriculum. With a heightened knowledge of social justice, universities can ensure fuller participation in transforming campuses into academic and social bastions that understand, embrace and advance social responsibilities and justice for all. Dell'Angelo (2014) states the value of social justice is "recognizing and acting upon the power that we have for making positive change" (p.1).

### **Analysis of Social Justice Interpretations**

The literature is replete with interpretations on the meaning of social justice. Some scholars believe that the search for a consensus on a definition is not necessary and even question the utility of requiring an operating definition that at times is confusing. Hytten, K., & Bettez, S. (2011). "Despite all the talk about social justice of late, it is often unclear in any practical terms what we mean when we invoke a vision of social justice or how this influences such issues as program development, curricula, practicum opportunities, educational philosophy, social vision, and activist work. In the abstract, it is an idea that is hard to be against. After all, we learn to pledge

allegiance to a country that supposedly stands for "liberty and justice for all." Yet the more we see people invoking the idea of social justice, the less clear it becomes what people mean, and if it is meaningful at all." (p.7) Haynes and McDaniels (2017) in a study that they conducted in their graduate leadership classes found that every student was able to identify major principles associated with social justice.

Despite the lack of agreement on a definition of social justice, we argue that it is important that faculty and students analyze the concept and principles as the first step in developing the capacity to teach and incorporate social justice into the curriculum. In exercises in our courses which are made up of educators from all academic content certification programs, we require students to engage in multiple social justice concept development activities. The results reveal that there is a general consensus of fundamentals ideas that form the core of their understanding of social justice that transcends academic disciplines and grade levels.

### **Social Justice Concepts**

Equality is the most cited notion. It is not surprising that equality emerges frequently in students responses because the notion of equality is a foundational principle that is enshrined in the American ethos and amplified in our political, social and academic discourses. Educators often enter the profession with a desire to help children have a fair chance in achieving the American dream. Many believe that the inequalities, such as the unequal distribution of wealth, the withholding of rights to some members of society, the marginalization of those who do not fit the mainstream idea of Americans, and racial discrimination justify a reasonable stance in favor of the need for social justice. In a study conducted by Upadhyay (2010) to determine science teachers perceptions on social justice, the author concluded that, "Social justice cannot simply be about the redistribution of goods and services but also needs to take into account cultural and social identities of individuals so that cultural identities of oppressed groups are

recognized and accepted" (p. 59). Affolter, Tara L. & Deborah A. Hoffman (2011) suggest that there is an underlying belief that in order to combat persistent inequities in schools (and beyond) leadership and teaching must be antiracist at its core. Clark (2006), on the other hand, while finding that equality is at the center of a just society he draws a line between tolerance and intolerance. "There is no reason to suppose that social justice entails all differences, all inequalities must be attended to. A just society is one which marks out the limits of tolerating difference and equality (p. 281)."

Many Americans acknowledge and sympathize with population groups who are negatively impacted by the powerful forces of racial discrimination and wide spread poverty. Especially vulnerable children in public schools and feel that there is very little that they can do about such gigantic problems embedded in systems and agencies. Reish (2002) states that the "...opposition to oppression and domination, the eradication of racism and poverty, and the emancipation of 'people from the restrictive social arrangements that make both instrumental and substantively rational action difficult" (p. 349). While the challenges in addressing the deeply entrenched social injustices are enormous, Hackman (2005) believes that schools must reaffirm their commitment to social justice goals of, "Full participation of all groups in a society that is mutually shaped to meet their needs, while the process for attaining the goal of social justice...should be democratic and participatory, inclusive and affirming of human agency and human capacities for working collaboratively to create change (103).

## Analysis, Reflections and Discussions

Intensive and strongly facilitated discussions should ensue on interpretations, positions and remedies on social justice. The goal is for each prospective educator to ascribe personal meaning to the concept of social justice and how such an understanding can lead to personal reflection and activism in schools. Cobb & Sharma (2015) in their research study on teaching social justice stated that "The first phase of the study requires students to engage in thinking

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about the concept social justice. By understanding the political nature of social institutions, such as schools and universities is a primary goal for social justice, which allows students and educators to decipher what is just and unjust according to their context and challenge it respectively. (p. 42).

McDaniels and Haynes (2016) used the following scenario to engage in a concept formation activity in their courses that includes several issues designed to stimulate discussion on social justice. Jorge is a 10 year old Guatemalan student whose mother is a domestic worker in an affluent town. Jorge has enrolled in the high performing all white Horace Mann Elementary School because he lives in the domestic quarters of the home where his below the poverty line single mother works as live in maid. Jorge and his mother speak very English, only Spanish. His mother with the help of a neighbor was able to communicate with the Board of Education in the town to get Jorge enrolled into school, but she was not able to do much more than tell Jorge he is going to a new school and send him off on the bus. Horace Mann does not have a bilingual program and no faculty member speaks Spanish. They do offer special education classes and even one-to-one aides, but none of the staff are fluent in Spanish. This raises two problems: How will Jorge continue to learn on grade level if he cannot speak English? How will a social justice perspective address this situation?

Cobb and Sharma (2015) present the case of a Muslim student needing to miss some school every Friday for religious reasons, and if that is fair. Cobb approaches it more from a parent's perspective while Sharma tackles from a teacher's perspective, adding some differences into the conversation. But that is not all they need: they need vibrant discourse, which is why they involved the students, too, asking if this is fair and how they would feel if they had a religious classmate get out of school every week for prayer (p. 50-51). Where do we draw the line? Is there a line to draw? The authors mention that in addition to discussion nuances, but all the silences (p. 49). Both are key in observing a social justicefueled discourse, in or out of the classroom. We need to take note of what people are saying, how they are

saying it, but also what they are hearing, responding, reacting to (or not reacting to).

### **Social Justice Pedagogy**

Social justice pedagogy is a useful perspective and instructional approach for analyzing social justice, in which conceptualization is a part of as demonstrated above. Critical social pedagogy generates in students the desire and ability to participate in critical thinking, questioning, and relating classroom learning with life. McDaniels, C. and Magno, C. (2015) promote social justice pedagogy in school leadership preparation because it places ethics and analysis of "self" at the center of intellectual growth who can set the tone and lead a climate for social justice. Further social justice pedagogy presupposes that all children are worthy of human dignity and schools should provide opportunities to develop their capacity.

Generally, social justice pedagogy is based on the notion that understanding different experiences and histories about groups in society can empower and compel educators to engage in actions to address the circumstances and situations that created and perpetuate social injustices. Miller, G., & De Oliveira, L. C. (2013) found in their study on science that when a school becomes more sensitive to experiences and knowledge of minority students, student participation in school science activities also increased. Haynes and McDaniels (2016) often include a version of the following motivating speech to inspire critical social pedagogy.

"As aspiring and practicing teachers and leaders, it is essential that we always reflect on why we have chosen our profession and for some of us, have remained in it for a long time. In fact we are continuously renewed and refreshed about what we do! It is important for us to understand our own value orientations and how it affects our beliefs about our teaching, content and behavior. The more we understand ourselves and the education and norms of our students, the more we will promote social justice."

Chapman and Hobbel (2011), present 6 elements that constitute social justice pedagogy.

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1. Emotional and cognitive components of learning

2. Acknowledge and support the personal and illuminate the systemic

3. Pay attention to social relationships and dynamics

4. Reflection and experience

5. Value awareness, personal growth and change as outgrowth of the learning process.

6. Acknowledge and seek to transform identity based social position and power, privilege and disadvantage, shape participant interactions in the classroom and everyday contexts (p. 201).

### **Social Justice Education**

Social justice education (SJE) is another and widely used approach to social justice that is based on the understanding of the growth and development of society and how it relates to and effects its students. SJE is considered "a part of the curriculum of multicultural education in which teachers and students should be co-constructors of learning in the classroom that are inclusive, supportive, and constructively critical," (p. 539). Nieto & Bodes (2007) asserts that social justice education should:

• Challenge, confront, and disrupt misconceptions, untruths, and stereotypes that lead to structural inequality and discrimination based on race, social class, gender, and other social and human differences.

• Provide all students with the resources necessary to learn to their full potential

- Draw on the talents and strengths that students bring to their education"
- Create a learning environment that promotes critical thinking and supports agency for social change. (p11)

Morgan Gardner and Deborah Toope (2011) approach social justice education from a strength based position. As the term suggests, the focus is on the strength that each student has. When teachers are equipped with such knowledge, they can use those strengths to motivate and design instruction to target instructions. By knowing each students' strengths teachers are able to use resources to motivate and design instruction to address the strengths and target the areas that require most improvement. Haynes and McDaniels (2016) generously apply this approach in designing assignments to allow each student to address social justice issues from the disciplines and experiences that they can relate to the most.

The written assignments are preceded by variations of the following narrative and also supported with data and anecdotal examples. "Students, you are in this program because you have made a career decision to work with young people to help them achieve their goals. Each one of you wants to do the right thing and give everyone of your students the optimal opportunity to excel and be the best that they can be. So this assignment is designed 'for you' to build on your strengths, interests and goodwill to help your students to be well rounded and socially conscious members of society. For example those of you who are in the art program, think about how you can use your passion for art to address all of your students to make them feel special and develop a sense of self efficacy while learning art."

Professional educational organizations that prepare for educators for certification also promote social justice education (SJE) in their goals. For example, The National Council of Teachers of English (NCTE) draft resolutions suggests that teachers who train future educators must "strive to create learning experiences that are relevant to my students and that challenge them to teach for social justice" (p. 66). According to the NCTE website, the organization has resolved to:

• support efforts by educators to teach about social injustice and discrimination in all its forms with regard to differences in race, ethnicity, culture, gender, gender expression, age, appearance, ability, national origin, language, spiritual belief, sexual orientation, socioeconomic circumstance, and environment;

• acknowledge the vital role that teacher education programs play in preparing teachers to enact and value a pedagogy that is socially just;

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• advocate for equitable schooling practices that reinforce student dignity and success; and oppose policies that reinforce inequitable learning opportunities or outcomes for students.

After raising the level of awareness and understanding of the meaning of social justice, our students are asked to develop a brief narrative or expression of social justice in their content or certification area. This allows students to personalize and incorporate their unique style in a creative and substantive way to teach social justice. Writing in and across disciplines provides opportunities to explore and elaborate on social justice themes. Social justice literature allows for both teachers and students to grow and develop stronger understandings, tolerances, and acceptance for each other and those around them. Thandela K. Chapman et al (2011) suggest that "a social justice approach to writing fosters an awareness of societal challenges that affect students' families. communities, and the larger society". Social justice writing "affirms students' multiple identities, creates solidarity among peers, builds students' ability to respond to and embrace supportive criticism of their work, and targets authentic audiences for their finished products" (p.539).

A vignette is a literary style that targets a theme, issue or topic in a brief narrative through conceptual analysis, develop skills and promote activism. Jeffries, C. (2016) "Vignettes are defined as incomplete short stories that are written to reflect, in a less complex way, real-life situations in order to encourage discussions and potential solutions to problems where multiple solutions are possible" (p 2). Students are able to personalize their interpretation of social justice in a purposeful and meaningful way in the content area that they are preparing to teach in or in a broader context of school leadership. Visual images, songs, essays and even dramatic representations have all been successfully used in the authors' classes to highlight social justice.

These devices have resulted in robust and in depth discussions that extend far beyond the curriculum content areas and target the many transactional and transformative problem-solving actions in classrooms and communities. Jefferies, C. and Maeder (2005) "The beauty of the vignette activity is that, by its very nature, learners must transfer their learning to other situations and in doing so integrate their knowledge and skills well enough to make predictions about new situations." Jefferies C, Maeder (p. 24).

### **Project based Learning**

There has been a resurgence in project based learning as an effective learning strategy, including the opportunity to work in groups to solve problems. Project based learning is not a recent instructional approach, but has existed in many disciplines throughout history, including science. The New Generation of Science Standards (NGSS) requires students to observe, collect and analyze data, and problem-solve. The scientific method is essentially the same principle as project-based learning. The nature of the study of science is inquisitive and reliant on critical thinking. This same curiosity is the foundation of project-based learning (p.4)

Interdisciplinary collaboration on a social justice project allows for interpersonal engagement and relationship building while working on a meaningful endeavor that makes a difference for those involved. Moursund (1998) states that by focusing on the individual learner, project based learning strives for "considerable individualization of curriculum, instruction and assessment- in other words, the project is learner centered (p. 4).

The project method provides students with the opportunity to apply the concept of social justice acquired through multiple experiences to create a 'real world' hands-on purposeful project to improve lives and schools. There is a plethora of categories and models on the project method in which we draw from in teaching social justice in our graduate courses in education. The overarching linear model targets the concept of social justice acquired through multiple modalities and provided a thematic and conceptual framework for students to create a project based on the principles they learned from our interactive lectures, conceptual analysis, data

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reviews, discussions, anecdotal experiences, creative activities, and other teaching and learning strategies used in conjunction with the project assignment. For instance, the holistic model specifically assigned each team member items on social justice and gave them the flexibility to develop their section as they wanted within the parameters of the overall goal. Other than a list of required items and general guidelines, students were able to develop the project in the direction that all team members agreed on.

We emphasize in our instructions that the project is not a mere academic exercise to meet an assessment criterion, but instead should be viewed as an 'authentic' exercise that students can one day use in their classrooms and schools when they complete their programs and are certified. We present samples of the finished products later in this paper to showcase how effective the project method is in advancing social justice understanding and promoting action in multiple disciplines across the curriculum.

## Justification for Interdisciplinary and Integrated Approaches in Social Justice Curriculum

Curriculum has many different meanings, ranging from a syllabus to a multi-faceted system of measurable components. Wiles and Bondi (2007) assert that the curriculum represents a set of desired goals or values that are activated through a development process and culminate in successful learning experience for students. There are many curriculum approaches that can and should be used to teach social justice. As long as it is integrated into the higher education curriculum, the social justice goals can be achieved. Two approaches that have proven to be effective in our courses are the interdisciplinary and integrated approaches.

## Interdisciplinary

Coffey (2009), interpretation of interdisciplinary curriculum as, "Teaching educators to apply methods and language from more than one academic discipline to examine a theme, issue, question, problem, topic, or experience" (p. 1) Social justice ideology can be examined using thematic, issue

oriented, problem solving and experiential ways. Nikitina (2006) suggests three inquiry-based strategies approaching interdisciplinary to curriculum: contextualizing, conceptualizing and centering. Contextualizing problem places emphasizes placing the content in the context of whatever is being studied to provide for a more personalized experience. Conceptualizing identifies the main ideas in different academic areas to make connections in these multiple content areas. Problem-centering combines the skills needed to understand the content area with challenging realworld scenarios. The solution to the problem can only be found by incorporating the knowledge from multiple content areas. The purpose of this approach is enacting social justice. Al Husni & El Rosadi (2016), "It is always healthy to expose learners to different learning approaches in attempt to solve long life learning problems as ability to tackle real life physics problems."( p 42)

Modo and Kinchin (2011) write about the interdisciplinary nature of neuroscience and the benefits for studying the nervous system through the lenses of multiple disciplines. They recognize that psychology, molecular biology, and psychiatry all have particular methods and techniques that are appropriate to study their neuroscience, but do not directly relate to each other and provide a fragmented view of the nervous system. "It is imperative that the new generations of scientists are educated in the interdisciplinary nature of neuroscience, rather than merely within a single discipline" (pg. 1). Moreover, the interdisciplinary curriculum approach fosters a deeper learning of concepts in neurology and a 'spiral' curriculum compared to superficial learning could be used because one can continuously make connections of the same problem.

Often the terms interdisciplinary and integrated are used interchangeably because they both examine content from multiple perspectives. Watkins & Kritsonis (2011) suggest three models of curriculum integration: (1) interdisciplinary, (2) problem-based, and (3) theme-based and "gain a deeper understanding of the material" (p. 2). Harrell (2010) describes that an integrated curriculum,

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"Emphasizes a student centered approach that focuses on making connections, critical thinking, cooperative learning, and allowing students to engage in relevant, meaningful activities. She further cites the Bagley (1989) model of the integration process: "1. Fusion brings together two separate disciplines. 2. Incorporation adds one curriculum element to another. 3. Correlation makes connections between two different subjects. 4. Harmonization takes different elements of the curriculum that can work together and unifies them" (p. 3).

An integrated approach to social justice should reach across multiple fields of knowledge to around which to coalesce around. When students see the application of social justice from many academic prisms, they are more likely to understand the complexities and the needs of each person to combat policies and practices that impede its attainment. We incorporated all of the strategies mentioned in our courses and observed the benefits of the multi-teared approach in students final projects.

## Modalities for Integrating Social Justice Across the Curriculum

In order to effect meaningful curriculum integration across disciplines, we suggest a multi-modal approach to the teaching of social justice across the disciplines as described above. This is consistent with what is known about best practices in teaching and learning, especially in andragogy. The modalities we suggest that may be used include: (1) Concept Analysis, (2) Social Justice Pedagogy (3) Literary Expressions (4) Creative Works (5) Projectbased Learning (6) Reflection on Learning Experiences.

Given that this paper is focused on social justice across the disciplines, we do not focus our discussion on specific disciplinary content but on the fluid conceptualization of social justice and its flexible application. We provide examples to demonstrate how social justice can be integrated and infused in higher educational programs and courses. This as we suggest, can take the form of an analysis of the concept of social justice based on the assumption that when social justice is understood and justified, students are more likely to appreciate the need for incorporating social justice into their teaching and assume responsibility for its attainment. Additional considerations include the selection of content, curriculum articulation, and critical social justice pedagogy are core elements. In discussing each element, we provide cognitive organizers in the form of assumptions and include assignments that would allow students to explore and deepen their understanding of social justice. Deciding what aspects of social justice to teach, what materials to use, and how to go about it in each discipline is a deliberative and intense process.

### **Education Programs**

The need for the inclusion of social justice is especially acute in those professions entrusted with teaching and servicing the youth in American society. Teachers and school leaders are at the forefront of social justice because they are charged with instilling knowledge, skills and values to our youth to create a more just society. With over 50 million students attending k-12 public schools in the United States in 2014, (NCES.ed.gov), who will be exposed and influenced by the values and beliefs of their teachers. Students will be affected by the worldview of their teachers and how they feel about and themselves and others. When educators subscribe to social justice principles, their students will be more inclined to learn to interpret society from a broad minded, anti-racist, and social awareness level. Bull (2008) points out, "Without such a perspective, children might come to regard their nation's or community's commitments to be either absolute or entirely culturally relative (p. 101)." The four examples below make a strong case for including social justice in the curriculum.

### **Social Foundations of Education**

Social justice has been and continues to be an important component in the social foundations of education curriculum. Most states require at least one required course in social foundation for state certification under the broad heading of social foundations of education. Platt (2002) notes that

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most students will only take one course on multiculturalism to meet the state requirement and that the course often includes one textbook and a fast journey through the minefields. So unless a concerted effort is exerted to add a purposeful social justice perspective, students entering the profession will not be appropriately prepared to address the complex and divergent issues associated with social justice in their educational setting. To meet this deficit, Tinkler, Hannah, Tinkler, Miller (2015) lists four social justice goals in social foundations: "a) to increase awareness of systemic oppression based upon color, culture, ethnicity, language, religion, gender, sexual orientation, disability, and socio-economic status, b) to foster dispositioned commitment to meeting the needs of all learners and to increase knowledge of how to do so, c) to increase knowledge of how to interrupt oppression and; d) to develop problem posing strategies" (p.19).

### **Educational Leadership**

Educational leadership programs are at the forefront of integrating social justice in their curriculum. The function of educational leadership programs is to prepare individuals to lead, control and manage schools. Northouse (2013) defines leadership as a process wherein an individual influences a group of individuals to achieve a common goal. Effective leadership goes beyond influencing, but actually have followers who are willing to foster and enact a common vision and effect meaningful change. Dell'Angelo (2014) states that leaders should be cognizant of "recognizing and acting upon the power that we have for making positive change" (p.1).

Successful school leadership requires an awareness of the backgrounds of their students and families and the importance of social justice. Marie, Normore, and Brooks (2009), assert that school leaders must increase their awareness of various explicit and implicit forms of oppression, work to subvert this dominant paradigm, and act as committed advocates for educational change. In addition to others and their environment, the must be aware of themselves and their values. McDaniels, C. and Magno, C.(2015), state that "School leaders must be aware of their own beliefs and morality, understand the social contexts and be able to lead conversations social by demonstrating knowledge and commitment and actively engage in achieving the meritorious goals of social justice" (p.66)

## **Special Education**

Social justice is at the core of special education. Alfredo J. Artiles, et al.( 2006 ) underscore that the "exclusion of some children from any form of education on the identifiable physical condition and the segregation of others in separate schools and classrooms violate their fundamental human rights" (p. 263). The individual student has the right to receive an education and the community should not be deprived of participation from some of its members due to a disability. In this approach, students with disabilities, those accommodating the students, and anyone else involved, are expected to coalesce with members of the community (and other communities) and work together to overcome political struggles (p. 264). Many schools do not practice inclusiveness and the very act of exclusion violates the basic principle of a just society.

### Media and Information Technology

Even though technology has become more affordable and internet accessibility increases, the digital divide and digital literacy are issues that are a part of the social justice discourse. Lower income schools and their students are less likely to be successful in this digital information processing age when they have limited resources including outdated technology, inadequate access to digital resources instructional programs. Soltan and (2016)emphasized that the "The digital divide has especially far-reaching consequences when it comes to education. The rich and educated are still more likely than others to have good access to digital resources per the Pew Internet & American Life Project. For children in low-income school districts, inadequate access to technology can hinder them from learning the tech skills that are crucial to success in today's economy." (p.1) The author references data that demonstrate the wide divide. For example, "Only 49% of African Americans and 51%

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of Hispanics have high-speed internet at home, as compared with 66% of Caucasians. Teachers of low income students tended to report more obstacles to using educational technology effectively than their peers in more affluent schools. Fifty-six percent of teachers in low income schools say that their students' inadequate access to technology is a "major challenge" for using technology as a teaching aid" (pp. 1-3). Todd (2008) suggests that, "school libraries need to systematically collect evidence that shows how their practices impact student achievement" (Todd, 2008).

#### **Art Education**

Smith (2009) Currently forty-seven states have arts education mandates, forty-eight have arts education standards and forty have arts requirements for high school graduation according to the 2007-08 AEP state policy data base" (p. 2) states that a comprehensive study of 3,020 many American perceptions and attitudes on the arts believe that the arts play a vital role in the personal well-being and in healthier communities. The leading non-profit organization for the advancement of the arts, American for the Arts (2016) include social justice in their platform. They proudly display their definition of cultural equity on their website. "Cultural equity embodies the values, policies, and practices that ensure that all people-including but not limited to those who have been historically underrepresented based on race/ethnicity, age, disability, sexual orientation, gender, gender socioeconomic identity. status. geography. citizenship status, or religion-are represented in the development of arts policy; the support of artists; the nurturing of accessible, thriving venues for expression; fair distribution and the of programmatic, financial, informational and resources."

Art allows for the development and expression of creativity that can be applied to learning in all disciplines and in problem solving on socially just issues in schools and communities.

#### **Student Assignments**

The following assignments are organized and aligned with the modalities presented earlier: (1) Concept Analysis, (2) Social Justice Pedagogy (3) Literary Expressions (4) Creative Works (5) Projectbased Learning (6) Reflection on Learning Experiences.

#### **Concept Analysis**

# Assumption 1

When the concept of social justice is thoroughly analyzed and understood, aspiring educators can appreciate the need for social justice and are more likely to become committed advocates for the advancement of a more just community of learners in schools and in society at large. The contentfocused assignment requires students to identify the terms and concepts associated with social justice. Raising the level of consciousness of social justice for aspiring and practicing educators should commence with an examination of the terminology, concepts, theories and principles currently held by students. An analysis of the meaning of social justice is the first step in developing the capacity to integrate social justice into the curriculum.

# Assignment 1

Create a concept map on social justice and briefly summarize the key components.

Sample: The justification for social justice into the curriculum raises students' awareness of the world around them and helps to improve students' social problems, interpretation of their understanding of cause and effect relationships, and the long-and short-range consequences of their own actions and values. Adding social justice programs into our school curriculum teaches students to think critically and question the decisions that are made by those in power that directly and indirectly impact their lives and the lives of those around them. It allows students the opportunity to "walk in the shoes" of groups that have been oppressed or disenfranchised and to learn from past mistakes. It encourages them to view society as interdependent to see the world beyond themselves.

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## **Social Justice Pedagogy**

# **Assumption 2**

When social justice is taught from critical and normative perspectives, aspiring educators will have a deeper and multi-dimensional understanding of the role of social justice in achieving the academic, social, political, historical and economic goals.

When students consult standards, laws, and policies that explain the importance of social justice, they are more inclined to develop a personal vision and embark on a personal mission to promote and embrace strategies to teach and learn about social justice.

#### Assignment 2

a) Write a reflective journal entry in your educational background that involved a social justice situation and how it affected students.

b) Develop vision and mission statements to support social justice based on content or professional standards. National Professional Standards for Educational Leaders, 2015

• Standard 1 – Mission, Vision, and Core Values: Effective educational leaders develop, advocate, and enact a shared mission, vision, and core values of high-quality education and academic success and well-being of each student.

• Standard 2 – Ethics and Professional Norms: Effective educational leaders act ethically and according to professional norms to promote each student's academic success and well-being.

• Standard 3 - Equity and Cultural Responsiveness: Effective educational leaders strive for equity of educational opportunity and culturally responsive practices to promote each student's academic success and well-being.

• Standard 4 - Curriculum, Instruction, and Assessment: Effective educational leaders develop and support intellectually rigorous and coherent systems of curriculum, instruction, and assessment to promote each student's academic success and well-being. • Standard 5 – Community of Care and Support for Students: Effective educational leaders cultivate an inclusive, caring, and supportive school community that promotes the academic success and well-being of each student.

• Standard 8 – Meaningful Engagement of Families and Community: Effective educational leaders engage families and the community in meaningful, reciprocal, and mutually beneficial ways to promote each student's academic success and well-being.

Sample: Vision Statement: We recognize and value the strengths of our students' diverse backgrounds and perspectives. We are committed to equality, equity, and justice. We envision a professional learning culture in which all members of the school community consistently put the needs of students first and foremost.

Mission Statement: We seek to create a safe, nurturing environment that achieves equity for all students and ensures that each student is a successful learner, is fully respected, and learns to respect others. Our mission is to help prepare young people to assume a meaningful and productive role in school and society.

# **Expressions for Social Justice**

#### **Assumption 3**

When students are given an opportunity to express knowledge using resourceful tools that allow for creativity, students freely interpret their thoughts and experiences on social justice. When students research and read about experiences of those who write about their experiences with social justice they will glean insight and develop empathy to increase their understanding and motivation to advocate for social justice.

### **Assignment 3**

Write a literary expression that illustrates the need for social justice.

Sample: (excerpt) Katherine's Vignette

Katherine has just started her first teaching job in an inner city high school. She had no experience

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teaching or exposure to urban education because she attended high performance schools in an affluent suburban community. She was not worried because she was committed and enthusiastic about teaching and felt that she could teach all students regardless of the circumstances. Her class is composed of students of different ethnicities, race and speaking multiple languages. Before long Katherine observes that students do not have access to instructional technology programs, up to date textbooks, or even notebooks. She approached the principal and asked for more resources and even spent her own money. However, the gap between what she experienced in her suburban schools and the students she was now teaching was huge and she did not think that she could handle such blatant inequities. Katherine convened a meeting with co teachers to address the problem and was shocked to find that some teachers did see these issues but did not care to address them because they were just too complicated to solve. So she began to take her own action to try to make people more aware of this social justice issues. What do you think Katherine did next?

# **Creative Works**

#### **Assumption 4**

Within every student lies a creativity capacity. Students should be allowed to express their thoughts about social justice in a personalized manner. Creativity takes many forms and are expressed in many ways.

#### **Assignment 4**

Creatively interpret social justice in any manner that conveys a personal understanding.

Sample: Look Away

8:59 first day of school the bells about to ring

A new class will arrive she thinks, "this should be interesting."

One by one they enter class but wait there's something wrong. The teacher frowns, she looks around. These students don't belong. "And who are you?" she asks the brown skinned boy in back.

*He smiles at her, sits up straight, "hello my name is Jack!"* 

"Oh no" she says, "this will not do, this mistake must be undone" "But why" Jack cries with innocent eyes,

"Isnt school for everyone" She frowns at him and thinks a bit, "well yes of course that's true, But don't you think you'd like a school with people just like you?" His smile fades, he looks around, "I'd really like to stay, But do you that think my brown skin will scare the kids away? "Not sure how to answer, the teacher must delay, "Let's move on" she turns around, "I don't know what to say."

"And who are you?" She asks a pretty girl with hair of gold.

"How about you tell us what you want to be when you grow old?"

*Her eyes light up as she exclaims, a scientist I'll be!* 

*I want to change the world through scientific discovery.* 

*The teacher chuckles as she says, "Oh no that will not do,* 

You're just a pretty little girl, science is not for you"

*Her smile fades, she looks away, "But I'll do great you'll see.* 

If all the boys can do it, then tell me why not me?"

Not sure how to answer, the teacher looks away,

"Let's move on" she turns around, "I don't know what to say"

She looks nearby in hope of one familiar face.

At last she finds the kid who finally knows his place.

The white boy looks familiar but from where she cant recall,

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Then finally it hits her, he's from that room just down the hall.

She says, "you cannot stay, oh no this will not do.

*I'm afraid that we are learning things too difficult for you."* 

He frowns, head down, his comment tugs at the teacher's heart,

"I should of known that I can't stay, because I am not smart."

She does not have an answer, she has no words to say.

The question she must answer is, can she still look away? By Brooke Amigo

#### **Project-based Learning**

### Assumption 4

Aspiring educators will benefit from collaborating with each other to share, understand and address social justice issues in schools and society in a meaningful and authentic manner that makes a difference.

#### Assignment 4

Collaborate with peers to create a product to address social justice in a school.

# **Project Proposal Description**

You have been asked by the principal to be a part of the team to develop an innovative plan to advocate for social justice as a part of the school improvement plan. The plan must include specific items to qualify for possible grant funding by the state. All members of the team must collaborate to complete all parts of the plan and present to the board within 8 weeks. If your plan is approved by the Board of Education each team member will receive \$2,000 for their participation.

#### **Social Justice Project Proposal**

• Title of social justice project

# Abstract

• Goal

- Vision statement
- Mission Statement
- Objectives
- Standards
- Philosophy reference
- Problem statement
- Data
- Specific plan
- Resources
- Professional Development Presentation
- Flyer/Brochure
- References and work cited

### **Project Team Assessment Testimonials**

JP's Assessment on Collaboration on the Social Justice Project

"Collaboratively, our team was a success. As we worked on our separate parts, we communicated regularly through email and Google Docs. Google was used as a platform on which to upload completed work for review from our team members. This continuous communication made our meetings productive, as we were already familiar with the work completed throughout the week. The meetings were spent discussing ways to improve our individual sections and editing our proposal document. As a first semester graduate student, I appreciated the opportunity to discuss all components with my team members and ask questions on topics I am learning for the first time. I was also pleasantly surprised by the ability of our team to cohesively work together despite coming from different educational concentrations and having divergent experiences with social justice. I learned that collaborative design could be a success

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when objectives are identified that transcend the individual classroom.

#### **Mary's Motivation**

Understanding our desires to excel and motivate each other instead of looking for our differences from education majors and experiences in life, it definitely made the team a more cohesive group and more enriched with knowledge to share. The eagerness of every member toward this project was phenomenal; we really believed in our mission of social justice in education.

Many questions were surfacing as the project went from development to collaboration stage, but our apprehension was elevated to new levels because of the excellent communication that we all have during the developmental stages, coming to conclusions in an expedite manner to move over to the collaboration in a flawless way.

### **Kristen's Overview**

We combined all our ideas to create something unique to the project, taking in consideration, how much do we all care for social justice. During the collaboration stage, we worked individually in our assignment of the project, never questioning each other decisions of the final submissions, yet we all contrive all types of ideas to the project having laborious times to put the presentation together. I noticed how much we have learned from each other. Procrastination was not present in our team; everyone met their assignments on time. The zenith of the project came together during the presentation. Mary did an amazing job introducing the vision and mission statements. Katie elaborated her part of the presentation with the statistical data and other information, Angelina and I spoke about the lesson plans, and alignments of such lessons with State Common Core Standards in conjunction with the vision & mission statements.

### Santiago's Team

Overall it was an excellent experience to work with my group. I was the only male, yet it was cordial in everything we did together. As future educators, this shows our ability to make sure that working as a team we can help the next generation to face the challenges ahead. The course and its assignments made it possible for us to achieve in this project an excellent experience of team building."

# Sample Project: The Culmination Learning Experience:

Title:

Developing Formative Measures to Promote Social Justice and Teacher Diversity in Education

#### Team Members:

Malcolm, Tim, Brooke, Katia & Andre

The following team represents graduate students from across the curriculum: Library Science, English, Elementary Education, History and Science who developed the following project from a in a graduate course required for teacher certification. Students were so committed to their social justice product that they exceeded all expectations and planned to seek support to implement the proposal.

\*The entire 48 page paper is available for faculty with permission from all team members.

### Mission:

We are classmates in EDF 520 who want to introduce formative measures in order to promote the cultural competence of current and future educators. Additionally, we strive to attract new and diverse highly qualified talent to the field of education. Believing these two goals impact social justice in education, our measures seek to assist education professionals in activating direct steps toward actualizing equity in education.

#### Philosophy:

Acknowledging that we need to consistently speak for the underrepresented in our field while developing systemic responses to the gross injustices that affect marginalized groups within education. We believe in skills, theories and tools that construct, bolster and support: social justice, diversity, open-mindedness, acceptance, responsibility, integrity, ecosystem and equilibrium.

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We believe this project has the potential to positively impact the students who are most affected by the achievement gap and to foster a more socially just America.

We engineered this project in order to create a common language and an adaptable set of metrics that will positively influence and ultimately shift the field of education. Widely shared and discussed achievement data points deepen the need for a concrete and actionable guide in how to create; a more diverse working force, culturally responsive teaching and learning climate and to support the creation of a more physically and psychologically safe environment across all backgrounds of group membership.

#### Goal:

Increase equitable representation of all people within education so that all are valued and free to contribute in ways that promote and sustain education that challenges the status quo. Advocate and promote social justice within education.

### Objectives:

- Raise awareness of cultural and social justice issues within the teaching field
- Provide action oriented mechanisms for agents wanting to promote a more equitable system of education
- Provide a basis for common language around social justice in education
- Provide metrics that can leverage change within multiple areas of the educational field
- Provide a safe and professional way for education professionals to address the cultural and diversity disparities within the education field
- Expose education professionals to resources and data that can help them understand and explain some of the hurdles within the field of education based on systemic marginalization

Conclusion

Educators will face social justice issues in their daily lives throughout their career. The ability to identify and address the complexities of social justice in an informed manner that reduces social injustices across the curriculum is critical. Those who teach in higher education have a professional and social responsibility to incorporate social justice in their respective disciplines. Goodman (2011) reminds us of the meaning of social justice and its potential impact on our society. "Social justice involves addressing issues of equity, power relations, and institutionalized oppression. It seeks to establish a more equitable distribution of power and resources, so all people can live with dignity, selfdetermination, and physical and psychological safety. It creates opportunities for people to reach their full potential within a mutually responsible, interdependent society." (p. 4)

The standards of excellence for educational leaders include the dispositions and practices that educational leaders demonstrate on issues of social justice for and among all members of their school community. One of Professor Edmund Gordon's passions has been his social justice advocacy in society generally and specifically in educational policies and practices. He has always sought to encourage school educational policy makers, school district leaders and school staffs to find ways to child was disenfranchised ensure that no educationally because of his or her social background. This is not an issue addressed only in classrooms during instruction time. It is an issue that is pervasively critical in all aspects of school life and it is the responsibility of educational leaders to lead on the issue of social justice.

The imperative for higher education institutions and education programs in particular to address social justice issue head on cannot be overstated. The curricula, pedagogies and field experiences must clearly and forcefully meet NCATE social justice standards and go beyond those standards to incorporate elements of critical theory and critical pedagogy in which the unique characteristics, needs and aspirations of all social groups and individuals are addressed and met.

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### School Climate and Social Emotional Learning Measurement Systems:

#### **Trends, Contributions, Challenges and Opportunities**

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# Abstract

There is growing interest in social, emotional, civic and/or prosocial measures and measurement systems to assess the non-academic aspects of student learning and school life. There is a range of prosocial measures currently in use: from individual student measures of prosocial learning to more systemically informed school climate measurement tools. This paper focuses on trends in school improvement and transformative leadership informed by school climate and to a lesser extent, on individual social-emotional measures. In this context, we highlight many of these measurement tools developed and being developed by the Center: School climate surveys, Readiness, Process, and Community surveys, as well as a Quality of Sustainable and Independent Learner scale. The development process of these measures and measurement systems focus on supporting transformational leadership that sets in motion a fundamentally collaborative, data driven, and helpful prosocial school-family-community improvement process in which students, parents, school personnel, and community members learn and work together. This process is aligned with and supports findings from implementation science as well as the Gordon Commission on the Future of Assessment in Education. Trends in developing prosocially-informed school climate and measurements, challenges, and opportunities are discussed. Implications for pre and in-service school leadership development are considered.

# School Climate and Social Emotional Learning Measurement Systems: Trends, Contributions, Challenges and Opportunities

What is measured is what is treasured. Measurement shapes our lives: knowingly, thoughtfully, helpfully or not. And, educational measurement practices are in the midst of significant change. The No Child Left Behind Act (NCLB), the 2002 update of the Elementary and Secondary Education Act, ushered in a new wave of empirically based measurement practices that have-helpfully and not -shaped American public K-12 education over the last 15 years. NCLB was helpful in requiring educators to consider "what really works?" It was also helpful in pushing school leaders to utilize schoolwide, instructional and/or relational improvement practices that had demonstrated some efficacy. However, it was profoundly unhelpful in three ways.

First, it was too narrowly focused on student academic learning (reading, math, and science). As the Every Student Succeeds Act (ESSA) of 2015 begins to redress, academic learning reflects only part of a complete education that supports success in life as well as in school. Second, NCLB guided schools' improvement efforts were based on randomized controlled experimental findings alone. The growing body of implementation science shows that as important as randomized controlled studies are, they have significant limitations if the purpose of educational research is to helpfully shape improvement efforts (Bryk, Gomez, Grunow, & LeMahieu, 2015). Finally, NCLB only focused on annual assessments of student progress. The intent

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here was to ensure that the progress of all children would be accounted for. However, one of many drawbacks to this approach is that judging school leaders on annual student performance undermines their ability and inclination to adopt a continuous model of learning and development, which is the foundation for effective school reform (Baker & Gordon, 2014; Bryk et al., 2015; Comer, 2005). Similar findings are noted as the new field of utilizing technology has been introduced into curricula; Darling–Hammond (2016) showed that effective technology–enhanced teacher training only contributed to standardized test scores after three years. School improvement is a multi–year and a multi–faceted process.

In part, because of a tremendous backlash to NCLB as well as the rising body of research in this area (Brown, Corrigan, & Higgins-D'Alessandro, 2012; Durlak, Domitrovich, Weissberg & Gullotta, 2015; Haynes, 2015; Jennings, & Greenberg, 2009; Morgan, Salomon, Plotkin, & Cohen, 2014; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013) and implementation science findings (Bryk et al., 2015; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Fullan, 2011) there has been growing interest over the last two decades in school climate, social emotional learning (SEL) and character education. As a result, this has contributed to both mounting interest in creating measures for prosocial educational efforts, as well as the utilization of prosocial education data to complement academic and behavioral data to support school improvement. This type of data has been used to fuel a variety of school climate improvement efforts, such as effective bully/victim/bystander prevention efforts, decreasing high school dropout rates, and "plugging the high school to prison pipeline" (Cohen, McCabe, Michelli, & Pickeral, 2009; Morgan et al., 2014; Thapa et al., 2013). The passage of the 2015 Every Student Succeeds Act (ESSA) will only increase interest in these "non-academic," or social, emotional, and civic measures to complement academic assessments.

Broadly speaking, there is a range of prosocial (e.g., character education, social emotional learning (SEL), school climate, "whole child") measures.

These measures seek to explicitly recognize social, emotional and civic as well as academic functioning to larger, systemically informed aspects of school life.. In this paper, we focus on and give examples of school improvement process informed measures. To a much lesser extent, we also recognize the emerging interest of individual prosocial informed measurement systems to assess individual student development.

The rising interest in prosocial measurement tools has – necessarily – raised the essential question of how this data can and should be used. As we describe in more detail below, school climate informed measurement systems have the potential to not only recognize and support the social, emotional and civic dimensions of student learning but also of school improvement. We strongly agree with and support the recommendations of the Gordon Commission on the Future of Assessment in Education that assessment needs to move from accountability assessments to more annual. continuous assessments used in the course of a learners' and the school's ongoing process of learning to learn (Baker & Gordon, 2014).

The Center has been at the forefront of developing an evidence-based school improvement and transformational leadership process, and measures to gauge student and school learning and improvement. We use the Center's work as an example of developments in this field. The Center's measurement development efforts have been focused on promoting building and district-level transformational leadership that sets in motion a democratically informed, strategic, data-driven process of mobilizing students, parents, school personnel and even community members. The major aim of these efforts is for the school community to learn and work together to create safe, supportive, equitable, and engaging climates for learning that support school and life success. This work will be contextualized within the larger field of prosocial measurement development. We comment on the helpful and/or unhelpful ways that these measurement systems are being used to support children's learning and healthy development on the one hand, and effective school implementation and

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improvement efforts on the other hand. Finally, we make policy and practice recommendations that support prosocial and academic measurement systems to promote all K–12 students' ability to learn and succeed in school and life.

# The Center's measurement contributions: A brief history

The Center was founded in 1996 at Teachers College, Columbia University. In its early years, the Center focused on prosocial instruction: Translating research into practice guidelines that would support parents and educators (pre and in-service) invested promoting children's developing social, in emotional and civic as well as academically informed competences. When the Center left Teachers College in late 1999 to become a free standing not for profit organization it's goal was to promote the prosocial aspects of teaching and learning. In 2000, the Center worked to develop individual SEL-informed measurements. It was argued that this goal was ultimately unattainable for four reasons: (a) there was a profound lack of consensus about how to specify and define the essential social, emotional and civic competencies; (b) competencies that all agreed were important (e.g., flexible problem solving capacities) are complex, multi-dimensional phenomena and are affected by a wide range of 'state' and 'trait' related factors; (c) there is tremendous normal variation in children's developing abilities; (d) self-reports and performance measures tend to focus on the student alone, without measuring larger, ecologically informed sets of social relations and other environmental conditions that color and shape student learning and development.

As a result, the Center decided to develop a school climate survey that recognized the social, emotional and civic aspects of student learning and school life for three reasons. First, there were only three reliable and valid school climate surveys that recognized student, parent and school personnel violence, and none of them recognized the social emotional aspects of learning and/or school life. They were aligned with NCLB's focus on academic learning alone. Second, in contrast to individual measurers,

school climate surveys had the advantage of recognizing the "voice" of the whole school community: students, parents/guardians and school personnel. As such, it provided an ecologically informed 'snap shot' of the school community. Finally, school climate survey administration was potentially a meaningful strategy that could be used to foster engagement: an essential foundation for effective school improvement efforts.

# The School Improvement Process and Individual Student Development

Too often, communities, policymakers, and even educators conflate school improvement with individual student development. Although both are desirable, necessary and empirically connected (Benbenishty, Astor, Roziner, & Wrabel, 2016), they have important and variable relationships with one another that suggest we may learn more from conceptualizing them separately. Results of a crosslagged panel autoregressive model study of the California Healthy Kids Survey data showed that over three years school climate was highly connected to violence and academic performance at middle and high school levels; additionally, it also revealed that improving school-wide academic performance was a central factor in reducing violence and enhancing school climate over time (Benbenishty et al., 2016).

More often, research has demonstrated the reverse, that more positive school climate is predictive of improved health, academic performance, and prosocial attitudes and behavior over time (e.g., Abbott, O'Donnell, Hawkins, Hill, Kosterman, & Catalano, 1998; Durlak, Weissberg, Dymnicki, & Schellinger, 2011; Gottfredson, Taylor, Gottfredson, Payne, Gottfredson, 2005; Higgins-D'Alessandro, Guo, Choe, & Elgendy, 2008; Patton, Bond, Carlin, Thomas, Butler, Glover, & Bowes, 2006; Way, Reddy, & Rhodes, 2007). Considering the complexity of the relationship of school climate to student behaviors and attitudes, it is necessary to take a step back and point out that various definitions of school climate exist. It is also true that no definition of an effective school improvement

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process, or its components, has been agreed upon by many or most practitioners and researchers.

The U.S. Department of Education has not suggested a definition of an effective school or school climate improvement process. The U.S. DOE's new Quick Guide on Making School Climate Improvement (2016) does not define what this process is. We suggest that this is important, as too many believe that positive behavioral interventions (e.g., PBIS) are one and the same as school climate improvement. Although there are many similarities between these two frameworks, there are also important differences (Cohen, 2014). Behaviorally informed models of improvement, for example, tend to be based on a 'top down" or educator driven "carrots and sticks" model that is based on extrinsic motivation.

An alternative school climate improvement model has been suggested by the National School Climate Council (2009; 2012; 2015). Their model describes a fundamentally collaborative process that is "bottom up" as well as "top down," thus focused on igniting the intrinsic motivation of students, parents, and school personnel to learn and work together in a continuous process of learning and improvement (Christenson, Reschly, & Wylie, 2012; Epstein, 2011).

There is a major difference between various prosocial "camp" labels (e.g., SEL, character education, school climate, civics education), on the one hand, and an effective school climate and prosocial improvement process, on the other hand. Character education, SEL and school climate emerge from different educational, risk prevention and/or health promotion traditions. Historically they have focused on different domains (e.g., skill development vs. supporting children developing a moral compass). Moreover, these labels negate two important facts. Over time there is greater and greater similarity in instructional as well as schoolwide goals and improvement practices that color and shape all prosocial 'camps' (Payton, Weissberg, Durlak, Dymnicki, Taylor, Schellinger, & Pachan, 2008). And, as the National School Climate Council (2015) has outlined, virtually all of the major SEL, character education, and school climate leaders and centers endorse an improvement process that includes similar goals: mobilizing students, parents, school personnel (and to a greater or lesser extent, community members/leaders) working together to learning and define improvement goals (schoolwide, instructional and/or relational), delineate evidence-based improvement strategies, and then to measure the processes and outcomes in ways that support continuous learning. Prosocial improvement efforts-by definition-are focused on the social, emotional, ethical and civic as well as academic aspects of student learning and school life.

#### **Measurement Goals, Tools and Practices**

We suggest that it is helpful to consider (a) a school improvement process that includes given stages (that schools may or may not focus on in a linear manner); (b) benchmarks for each stage; and, (c) measures of key indicators. We now briefly describe how the Center's assessment tools have been informed by the goals of organizational transformation and individual prosocial development: School climate surveys that recognize the "voice" of students, parents and school personnel; A Community Scale and process that recognizes the "voice" of community members and leaders and supports students' leading, learning from, and teaching about this process;

School improvement readiness and process measures; and, an individual SEL informed measure and process. We summarize the status of such measures in the field as well as particular measurements that the Center is developing as examples of prosocial measures and measurement systems. As will be noted below, reliability and validity studies on the Center's Readiness, Community Scales; and, a Quality of Student Learnings measures are preliminary. We have just begun to study and develop our Process measures. All of the Center's measures have been designed to support school leaders setting in motion conversations and a continuous process of learning and/or school improvement.

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# Understanding: The Foundation for Measurement

Ideally, measurement is one step in a continuous process of learning and school improvement. Although there is no national consensus about how to define (a) a positive climate for learning, (b) an effective and sustainable school climate improvement process, nor (c) school climate (Cohen, 2015; Cohen & Thapa, 2017), the field has developed two major, overlapping sets of ideas and definitions about (i) school climate and (ii) a positive and sustainable school climate. One has been developed by the National School Climate Council (www.schoolclimate.org/about/council.php): a nonpartisan national group of policy and practice leaders that has developed a series of consensus statements about school climate, a positive and sustainable school climate, an effective school climate improvement process, and school climate standards (National School Climate Council, 2007; 2009; 2012; 2015).

The Council developed School Climate Standards (2009) that provide five major benchmarks that support effective school climate improvement efforts as well as sixteen indicators and twenty-nine sub- indicators that can be used as additional benchmarks. These standards are aligned with the Council's understanding of effective an improvement process and have been and are being adopted by a growing number of U.S. school districts (e.g., Westbrook, Connecticut) and State Departments of Education (e.g., Minnesota and Pennsylvania) as well as foreign educational ministries (e.g., France).

The National School Climate Council (2007) suggests that "school climate" refers to "the quality and character of school life." School climate is based on patterns of students', parents', and school personnel's experience of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (National School Climate Council, 2007, page 5). A positive and sustainable school climate includes: Norms, values and expectations that support people feeling socially, emotionally and

physically safe. People are engaged and respected. Students, families, and educators' work together to develop, live, and contribute to a shared school vision. Educators' model and nurture attitudes that emphasize the benefits and satisfaction gained from learning. Each person contributes to the operations of the school and the care of the physical environment." (National School Climate Council, 2007, page 5).

The U.S. Department of Education (2016) suggests an overlapping but somewhat different definition. It suggests that school climate "reflects how members of the school community experience the school, including interpersonal relationships, teacher and other staff practices, and organizational arrangements. School climate includes factors that serve as conditions for learning and that support physical and emotional safety, connection and support, and engagement. And, a positive school climate "reflects attention to fostering social and physical safety, providing support that enables students and staff to realize high behavioral and academic standards as well as encouraging and maintaining respectful, trusting, and caring relationships throughout the school community"(https://safesupportivelearning.ed.gov/ sites/default/files/NCSSLE\_SCIRP\_QuickGuide50 8%20gdc.pdf).

Although these definitions overlap they lead to somewhat different strategies and focus for operationally measuring school climate. The Council's model is based on the notion that there are four major factors (safety; relationships; teaching and learning; and the environment), whereas the U.S. Department of Education's model is based on three factors (safety; engagement; and the environment). Importantly, the National School Climate Council has suggested that an effective school climate improvement process is "an intentional, strategic, data driven, transparent, and democratically informed process of students, parents, school personnel and even community members supporting the continuous process of learning improvement" (National School Climate Council, 2015, page 2). Strategically, school leaders need to be very clear about the schoolwide,

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instructional and/or relational improvement goals that they are focused on and measure processes as well as outcomes that support and indicate continuous learning. The Council's and the Center's understanding of an effective school climate improvement process is aligned with the growing body of implementation science findings that underscore the importance of encouraging the intrinsic motivation of students, parents, school personnel and even community members to work together to delineate and operationalize school improvement goals (schoolwide, instructional and/or relational) that support positive change as well as addressing problems and tracking the process and outcomes in a continuous process of learning and development (Blase, van Dyke, & Fixsen, 2013; Bryk et al., 2015; Bryk et al., 2010; Fixsen et al., 2005; Fullan, 2011). Thus, we turn, to a description of the kinds of group and individual measures we see as necessary for supporting and assessing school improvement, transformational leadership, and student learning and development processes and outcomes. The Center's assessment tools are highlighted as examples.

# **Prosocial Measures:**

# School Climate Surveys: Recognizing student, parent, and school personnel voices

Over the last 15 years, there has been an explosion of interest in self report surveys that recognize how students, parent/guardians, and school personnel perceive and rate any number of social, emotional, and civic as well as academic dimensions of student learning and school life. Rather than focusing on the individual, school climate and culture surveys use the school as the unit of analysis, usually by examining mean scores of the various stakeholders. In 2000 there were less than a handful of valid and reliable school climate surveys. Today the U.S. Department of Education funded Safe Supportive Learning resource lists dozens of such surveys (https://safesupportivelearning.ed.gov/topic-

research/school-climate-measurement/school-

climate-survey-compendium). Moreover, the U. S Department of Education, itself, has just issued a new, free comprehensive school climate survey (safesupportivelearning.ed.gov/edscls). Haggerty, Elgin, and Woolley (2010) and Voight and Hanson (2007) provide a recent review of school climate measures. As the Every Student Succeeds Act (ESSA) comes into effect in the coming years, it is very likely that school climate survey usage will increase.

New measures share many characteristics and seek generalizability as well as reliability and validity. They differ in their theoretical roots and definitional comprehensiveness. Bradshaw, Waasdorp, Debnam, and Johnson (2014) developed a high school climate measure, for example, modeled after the US Department of Education's three factors, safety, engagement, and the environment. Results confirmed the three-factor model with high internal consistency of the factors and 13 subdomains as well as invariance with regard to student sex, grade level, and ethnicity. Bear, Gaskins, Blank, and Chen (2011) validated a school climate measure for students demonstrating five factors (teacher-student relations, student-student relations, fairness of rules, liking school, and school safety) with second order unidimensionality for overall school climate, and invariance across grade levels (elementary to high ethnicity, school), and gender. Moderate correlations were found with academic achievement and suspensions and expulsions. Bear, Yang, Pell and Gaskins (2014) also developed a brief teacher survey to assess teachers' perceptions of school climate, with some parallels to their student scale. This measure also demonstrated a bi-factor model, however, with seven factors and with invariance for teaching different grade levels (elementary through high school) and instructional and non-instructional staff. At the school-level most domains correlated with student school academic achievement and suspension/expulsion rates in expected directions.

Bear and colleagues' measures parallel to a great extent Higgins-D'Alessandro and Sadh's (1997) School Culture Scale (SCS) which has completely parallel student and teacher forms; it has a fourfactor structure, and more recently, with new items on inclusion, demonstrates five factors in a bi-factor model with school climate as the overarching factor (Guo, 2012). While the SCS is based on Anderson's

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idea of culture as the most malleable aspect of climate (Anderson, 1982) and is much shorter than most climate scales, SEM analyses showed the student measure fully mediated the relationship between a schoolwide character– focused intervention and student self– reported grades and prosocial attitudes and behaviors among elementary, middle, and high school students (Higgins-D'Alessandro, Guo, Sakwarawich, & Guffey, 2011).

Similarly, Brand and his colleagues (Brand, Felner, Shim, Seitsinger, Dumas, 2003; Brand, Felner, Seitsinger, Burns, Bolton, 2008) developed both student and teacher school climate measures. Their student measure has 10 dimensions and the teacher measure, six dimensions, with moderate to high internal consistency, and concurrent validity with academic achievement and negative behaviors. Like the Higgins-D'Alessandro and Sadh (1997) SCS, the Brand and colleagues' measure (2003, 2008) teacher and student reports on the same dimensions of climate that are quite highly correlated. Both showed some teacher versus student differences, with the SCS demonstrating more positive teacher views than student views of climate (e.g., Guo & Higgins-D'Alessandro, 2011). These studies demonstrate that understanding each stakeholder's views is important especially when using feedback from school climate measures for school improvement efforts. Konold and Cornell (2015) recently found a two factor (structure and support) for the Authoritative School Climate Survey that positively related to higher student engagement and lower aggression at the school and student levels.

Thus, school climate measures represent different underlying theories and therefore, vary in the number and content of their factors. However, it is also clear that all school climate measures have been designed to assess indicators showing climate improvement and/or the consequences of school improvement processes. The Comprehensive School Climate Inventory (CSCI) developed by the Center is aligned with the National School Council's definition of school climate, and as its name indicates is the most comprehensive measure including 11 (for students, parents) to13 (for educators) factors depending upon the stakeholder group. (Educators complete two sets of questions about professional development and school leadership that students and parents do not.) Moreover, from the outset, student, teacher/school personnel, and parent parallel forms were developed. Additionally, the CSCI has undergone a series of revisions, each time based on large samples. We describe the CSCI 4.0 herein, explaining its history and development.

# Comprehensive School Climate Inventory (CSCI)

The CSCI is an especially good school climate measure to describe more deeply as it is the only school climate measure

(www.schoolclimate.org/climate/csci.php) that has been endorsed by the four current, independent reviews of school climate surveys. (Clifford, Menon, Gangi, Condon, & Hornung, 2012; Gangi, 2009; Haggerty, Elgin, & Woolley, 2010, Voight & Hanson, 2012). The Center has just released the 4th edition of the CSCI. The psychometric properties of version 4.0 (middle/high school level) are based on the work by the research team at the Center (Thapa & Choe, 2016) with 32 middle and high schools including 11,589 students, 1794 parents, and 1108 school personnel. The CSCI 4.0 added items that became an additional factor, 'social media'. Factor analyses showed that the other factors demonstrated in versions 2.0 and 3.0 remained consistent (Stamler, Scheer, & Cohen, 2009; Guo, Choe, & Higgins-D'Alessandro, 2011). Confirmatory factor analyses of CSCI 4.0 confirmed the 11- factor student and parent structures and the 13-factor teacher/school personnel structure of the CSCI 3.0.

Cronbach's alphas, as indicators of internal consistency, were computed for each factor based on middle and high school student data, parent data, and teacher/school personnel data. For student data, Cronbach's alphas ranged from 0.66 (Sense of Physical Security) to 0.89 (Social & Civic Learning). For parent data, Cronbach's alphas ranged from 0.79 (Social Media) to 0.91 (Social & Civic Learning). And, for school personnel data, it ranged from 0.68 (Sense of Physical Security) to

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0.93 (Leadership). (See Appendix, Table 1 for more details) . The 11-factor model in a SEM analysis was demonstrated as an acceptable model fitting the middle/high school student data, given RMSEA = 0.049, CFI = 0.841 and GFI = 0.999; the parent data (11- factor model) given, RMSEA = 0.052, CFI = 0.865 and GFI = 0.999; and the school personal/teacher data (13- factor model), given RMSEA = 0.049, CFI = 0.808 and GFI = 0.999. Further details on the factor analyses (EFA, CFA) as well as on internal consistency characteristics are reported in a forthcoming paper (Thapa & Choe, in preparation).

Evaluation of the Comprehensive Health Education Foundation), Madhabi Chatterji, Ph.D. (Associate Professor of Measurement, Evaluation and Education. Teachers College, Columbia University); and, Chrys Dougherty, Ph.D. (Director of Research, National Center for Educational Accountability). Subsequently, versions 3.0 and 4.0 represent further adaptations that enhance CSCI validity. For more about how the CSCI was developed, see: https://beta.schoolclimate.org/wpcontent/uploads/climate/documents/How CSCI wa s\_developed.pdf. Convergent validity testing has not yet been conducted.

Subscale	Reliability Coefficients (Cronbach's alpha)			Number of	
				Items	
	Middle	&	Parents	School	
	High			Personnel	
	Schools			(SP)	
Safety-Rules and Norms	0.816		0.865	0.798	5
Sense of Physical Safety	0.664		0.744	0.680	4
Sense of Social Emotional	0.738		0.833	0.789	6
Security					
Support for Learning	0.875		0.912	0.872	8 (9 for SP)
Social & Civic Learning	0.894		0.913	0.880	10
Respect for Diversity	0.782		0.846	0.795	6
Social Support- Adults	0.845		0.904	0.810	7 (6 for SP)
Social Support-Students	0.749		0.829	0.726	5
School Connectedness &	0.801		0.870	0.811	7
Engagement					
Physical Surroundings	0.837		0.827	0.777	6
Leadership	N/A		N/A	0.930	10 (only for SP)
Professional Relationships	N/A		N/A	0.821	8 (only for SP)
Social Media	0.680		0.792	0.725	6 (5 for SP)
Total					70 for students
					and parents, 87
					for SP

Evaluating test content is one of several steps that were undertaken to insure appropriate content. Comprehensive literature reviews of school climate (e.g., Cohen, et. al, 2009; and Thapa, et al., 2013) including all the literature relating to the four major areas of school climate: safety, teaching and learning, relationships, and institutional environment, was reviewed by experts in the field. Secondly, an initial version of the CSCI 2.0 was vetted by experts–Kathy Burgoyne, Ph.D. (Senior Director of Capacity Building, Research, and There are several appropriate uses for the CSCI that assesses a school's overall school climate and the four areas identified by the Council: (i) safety; (ii) teaching and learning; (iii) relationships, and (iv) institutional environment (Cohen, et. al. 2009; Thapa et al., 2013). There are two major ways that school climate findings are being used today: (1) to provide building and district leaders with a 'snap shot' of their schools social, emotional and civic health as well as sense of safety and learning; and (2) as the data– driven step in the continuous process

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of school improvement. The Center has developed a series of case studies illustrating how school leaders can use school climate findings in conjunction with academic and behavioral data to helpfully shape short and long term action planning (e.g., Cohen, Shapiro, & Fisher, 2006; Cohen, Pickeral, & McCloskey, 2008; Cohen, Fege, & Pickeral, 2009).

At this early stage of researchers sharing their results with school leaders for the purposes of improvement, the various ways that school leaders are using such data are not clear. Certainly, many Principals and Superintendents are invested in using these findings to inform and shape action planning. Some very clearly use school climate assessment as a data–driven step in the continual process of learning and school improvement. There are other school leaders who use school climate survey findings to garner a 'snap shot' of the school's/district's health and functioning at one point in time (Cohen & Thapa, 2017).

The federal Every Student Succeeds Act (ESSA) presents opportunities and danger. ESSA potentially supports school leaders helpfully integrating this information with academic and behavioral findings to garner a more comprehensive understanding of school life. But, to the extent that given State Departments of Education adopt school climate measurements as their 'non academic' measures of accountability, it raises the danger that school leaders will administer these surveys to simply comply with state law and not use this measurement process or the results to engage students, parents, and teachers/school personnel stakeholders in collaboratively developing school improvement goals and plans.

Educators and the public today recognize that understanding and developing support related to issues of disabilities, diversity, and inclusion are a critical responsibility of schools as well as of families and communities (Kirby, 2017; McWhirter, Brandes, Williams-Diehm, & Hackett, 2016). Acknowledging the importance of understanding inclusion has led to these domains being included or added to school climate measures as well as the development of new scales focused on inclusion. The development of new school climate survey scale–The Social Inclusion scale

As noted above, there is not a national consensus as to how to define and operationally measure school climate. Researchers can help to build national understanding. For instance, the Center's research will–naturally–reveal over time which factors are most important to focus on for given types of schools with particular school-wide, instructional and/or relational school improvement goals (National School Climate Council, 2015).

The Social Inclusion (SI) scale is an example of a new targeted measure of one aspect of school climate that Special Olympics International and the Center have collaboratively developed over the last three years. Social inclusion is based on the following simple and profound understanding: Students of all abilities have the power to positively impact their school communities by promoting social inclusion or the integration of all students in and out of the classroom. The SI scale is designed to be particularly helpful for school leaders and communities that are focused on supporting social inclusion of students who present with a wide range of intellectual abilities and disabilities. The SI focuses on the inclusion of disabled students and does not look at ethnic/racial or gender related aspects of inclusion.

The SI scale was developed using the Center's usual series of steps over the last three years, including literature review, expert validation, focus groups, and then, the development of the first version of the scale Social Inclusion scale (SI Scale 1.0) with subsequent testing for reliability and validity. Based on results of these initial steps, a second version of the SI was created and submitted to expert review and focus groups for feedback. Then, a series of correlational, factor analyses (EFA and CFA) and related reliability testing were completed to establish the SI as a scale. Further work on the SI scale will be done using data from future administrations by Special Olympics International.

Assessing Readiness and the Process of school climate improvement

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The study of effective school improvement efforts or implementation science has shed important light on how we can and need to learn from past experiences (Blase et al., 2013; Bryk et al., 2015; Bryk et al., 2010; Fixsen et al., 2005; Fullan, 2011). Schools–like people–will never be perfect. And, school improvement efforts will also never be perfect. Hence, school leaders and school improvement researchers need to –as best we can– learn from past experience and study what supports an effective school improvement process.

Although there is tremendous and growing interest in implementation science, there are few examples of readiness and/or process measures that we are aware of in the SEL, character education, civics, and/or school climate literatures. School climate readiness assessments build on the seminal past work of Shirley M. Hord (Hord, 1990; Hord, Rutherford, Huling– Austin, & Hall, 1987) as well as the more recent and important work of Fixsen, Blasé, and their colleagues (Blase, van Dyke, & Fixsen, 2013; Fixsen et al., 2005). There is significant and growing support for school leaders using needs assessments to support sustainable school improvement efforts (Corbett & Redding, 2017).

In 2008, roughly thirty–five educational researchers as well as practice and policy leaders helped to synthesize school improvement research findings from character education, social emotional learning (SEL), community schools, risk prevention, and health/mental health promotion school improvement efforts to delineate tasks or challenges that support an effective school climate improvement "road map" or series of benchmarks: The School Climate Implementation Road Map: Promoting Democratically Informed School Communities and the Continuous Process of School Climate Improvement (Cohen & Pickeral, 2009). The Center suggests that this series of tasks and challenges shape an effective process of planning, evaluation, understanding evaluation findings to develop an action plan, implementation and beginning anew in the continuous process of learning and school improvement: The school improvement process "road map." Over time research will shed light on

the relative importance of given tasks as well as what tasks may be missing from this current road map.

Soon after, in 2011, the Center began to develop the School Climate Leadership Team Readiness Assessments (Readiness Assessments). They realized that too many schools with whom they were working were beginning the school improvement process by administering the school climate survey without considering the range of foundational planning and preparation related tasks. For example, an essential foundation for an effective school climate improvement process is that students, parents and educational colleagues are partners or "co-learners and co-leaders" in the school improvement process. School leaders can and need to take concrete steps to support as many in the school community as possible to be partners before the school climate surveys are administered. Another critical example relates to trust. Although all schools are "ready" to embark on the next iteration of school improvement, when there is a lack of trust between educators, any and all improvement efforts tend to fail (Comer, 2005; Bryk & Schneider, 2002) The Center's Readiness Assessment was theoretically based on the six essential tasks that are important for school leaders and their leadership teams to consider during the initial planning and preparation process (Cohen & Pickeral, 2009; Cohen, Pickeral, & Levine, 2010):

1. Building support and fostering a shared vision for the school.

2. Forming a democratically informed representative leadership team.

3. Moving towards a culture of trust and collaborative problem solving.

4. Ensuring the team has adequate resources to support the process.

5. Celebrating successes and building on past as well as current efforts.

6. Developing Professional Learning Communities (PLCs).

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Each of these tasks includes between three to five indicators.

As noted above, the Center's understanding is that virtually any school is "ready" to embark on a school climate improvement process. But, all schools-like all people- evidence an array of strengths, needs, and weaknesses. Understanding 'readiness' supports thoughtful and strategic decision making on the part of school leaders who are almost always involved with a multitude of targeted improvement efforts (e.g., promote curricular integration, reduce bullying, foster prosocial norms, etc.). There is one exception. There are some schools in which educators are learning and working together in a culture of distrust, blaming, and shaming. When this is the case, any and all school reform efforts will fail. As a result, when school leaders understand this, it is essential that they focus on team building and work to create an 'educator culture' that is colored by greater trust and collaborative working relations. James Comer was the first to write about the challenge of basic trust and its essential importance for creating what he has called a "no fault framework." This overlaps with the idea of "authentic learning communities" or "communities of practice" (www.ewenger.com/theory/). It is also important implicit component of an the "Communities That Care" prevention model that has been supported by the U.S. Department of Education (ncadi.samhsa.gov/features/ctc/resources.aspx).

Tony Bryk and his colleagues studied these issues– experimentally and ethnographically–and arrived at the same important conclusions (Bryk& Schneider, 2002): When educators are working together in a culture of distrust and blaming any school improvement efforts will be challenged by this group dynamic.

The Center is still in the early stages of learning about the uses and limitations of such self– assessment tools, and of the development of its tool, the Readiness Assessment, but is convinced of the necessity of such diagnostic tools. Ideally, readiness assessment should include a thorough evaluation of a school's climate, history of change and improvement efforts, and available resources in light of the planned improvement process and its desired and/or likely outcomes (Lindahl & Beach, 2013).

The Center has documented the beginning efforts of developing a Readiness Assessment (Thapa & Duffee, 2016a). Items were written to reflect the six essential tasks of the Council (presented above) combined with a review of literature of past school improvement readiness assessments to design early iterations of a measure. Subsequently, experts in the field reviewed several iterations of the scale and made recommendations. The scale is still in the developmental phase and the Center plans to conduct a full validation study once more and better data are gathered. The reliability coefficients of the current subscales utilizing available data are presented in Table 2.

Table 2. School Climate Readiness Assessment:Reliability Coefficients

Subscale/Factor	Cronbach's alpha	N # of Items
Vision & Support	0.872	5
Leadership	0.834	3
Trust &	0.887	4
Collaboration		
Resources	0.887	3
Building on	0.871	3
Success		
Professional	0.914	3
Learning		
Communities		
Total		21

Case studies and anecdotal reports strongly suggest that Principals and building as well as district level leaders and teams have found the Center's readiness assessment tool very helpful to support school improvement planning. The Center's staff have been somewhat surprised that a number of leadership teams who have used their tool at the beginning of the school year decided to re–administer it at the end of the school year. They reported it was truly informative: certain indicators had changed significantly and others not at all. Results of these tentative pre– post differences led some leadership

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teams to decide focusing on team building, as results indicated distrust and blaming among school personnel. The Center plans to follow these schools, as well as expand the use of revised tool to more schools to begin to assess its psychometric properties and establish its appropriate usefulness.

Theoretically, the appropriate use of any school improvement readiness assessment is to measure the extent of a school's strengths, needs and possible weaknesses. These findings, in turn, will help determine the focus of the initial phase of the improvement process, informing the extent and depth of efforts in the first phase of planning and preparation. Readiness assessment tools should not be used as a substitute for school climate assessment nor as a sole indicator of a school's strengths and weaknesses as they most often tap only a school leadership team's perceptions. School improvement efforts are best undertaken with the advice and mentorship of individuals, organizations, or other schools with experience implementing such a process.

In addition to promoting more effective schools with transformative leadership capacities, readiness and process tools have great potential to further intervention science research. To date, most intervention science research is still correlational: although causal modeling and cross-lagged or multiple time point longitudinal studies are increasing (e.g., Benbenishty et al., 2016; Jones, Brown, & Aber, 2011). However, most school intervention research still focuses more on inputs and outcomes, that is, on the effects of intervention components on student, teacher, and other stakeholder outcomes. It remains for the future to also include theories and measures of intervention readiness and readiness process indicators to fully understand how school improvement efforts work to effect change and promote organizational and individual growth. In turn, this will deepen our understanding about what different kinds of schools need to support an effective school improvement effort initially and over time. This will necessarily be a continuous process of learning and refining as different schools have different goals (e.g., some instructionally focused, student focused, and some schoolwide.

# Moving from Readiness to Improvement Processes and their Assessments

All school improvement efforts are-necessarily-a continuous process of learning and improvement. To the extent that this notion makes sense, it is potentially invaluable to measure the process as well as outcomes of our improvement efforts. The National Implementation Research Network (Blase et al., 2013; Fixsen et al., 2005; Russell, Ward, Harms, St. Martin, Cusumano, Fixsen, & Levy, 2016) is an international leader in implementation science. They are importantly focused on what supports helpful K-12 innovations: implementation stages, drivers, cycles, and teams that are needed to support it. Although their work is focused on supporting innovations in general, it is relevant to school improvement efforts. Their Active Implementation Hub (http://implementation.fpg.unc.edu) includes а range of rich information and guidelines.

The Center is not aware of any other, school climate/SEL informed process measures that have been developed. The Center is currently developing five School Leadership Team Process Assessments or 'end of stage' surveys that are based on its definition of the essential tasks that are important for school leaders to consider during each of the five comprehensive school climate improvement stages include planning, evaluation, action planning, implementation, and beginning а new) (http://www.schoolclimate.org/climate/assessments .php; Cohen & Pickeral, 2009).

After 'baselines' are established with readiness and/or school climate surveys, each of the five Process surveys is based on the tasks that define each stage (Cohen & Pickeral, 2009). Although the Center has not embarked on empirical studies of these surveys at the time of this writing, its plans are to begin such work in 2017–18. The five phases define benchmark activities that should be accomplished by the end of each phase. The phases include neither timelines nor rates of change. They

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rather, indicate the completion and analysis of essential activities in order to move to the next phase.

## **Community Scales**

Ideally, whole school improvement efforts aim to reform not only the school but also aim to strengthen the school-family-community nexus that includes students, parents, school personnel and community members/leaders learning and working together to create even safer, more supportive, engaging and healthy schools that support student development and life success. The Center's literature review revealed that one large gap in most school improvement efforts is that they have not ensured that the 'voices' of community members and leaders are included or studied (Gregory & Cornell, 2009; Osher, Bear, Sprague, & Doyle, 2010; Swearer, Espelage, Vallancourt, & Hymel, 2010). However, a growing body of school improvement and implementation science research suggests that engaging all members of the school community, including community members and leaders, provides an essential foundation to successful school improvement efforts (Fullan, 2011; Henderson, Mapp, Johnson, & Davies, 2007; Patrikakou, Weissberg, Redding, & Walberg, 2005).

The Center's Community Scale and youth led School Community Partnership Process (www.schoolclimate.org/climate/community-

scale.php) were developed to support three overlapping goals: (a) To understand what community members/leaders think about current school-family-community partnerships; (b) to further youth engagement and inter-generational school improvement efforts; and, (c) to engage community members in partnership with youth leaders to work to create even safer, more supportive, engaging and healthy climates for learning. Research and practice leaders have learned that igniting the intrinsic motivation of students to be 'co-learners and co-leaders' in improvement efforts is so, so helpfully powerful for them as well as in supporting intergenerational leadership improvement efforts (Christenson et al., 2012). Thus, the Center developed a Community Scale to be used in a youth-led School Community Partnership Process. These are described below as examples of working with the community in ways that enhance community groups' understanding of school life, by opening opportunities for dialogue school and community, between the and implementing a low intensity community involvement intervention—the vouth-led Partnership Process-laying Community the groundwork for school-community partnerships.

The Center's Community Scale partially builds on the comprehensive Public Education Networks (PEN) Civic Index for Quality Public Education (http://www.publiceducation.issuelab.org/resource/ national\_civic\_index\_for\_quality\_public\_education toolkit). This Civic Index involved a school community hiring a polling firm to help identify the areas in which communities excel and the areas where communities need assistance in supporting public education. The Civic Index was based on the understanding that we know what is needed inside a school to make it successful. And, the Civic Index provides a framework for what is needed outside a school, in the community, to ensure success. Utilization of the Index costs between \$20,000 and \$35,000 for the polling process as it entailed surveys hundreds and hundreds of community members from fifteen sectors of the larger school community.

Development of the current version of the Community Scale followed the Center's steps of conducting a literature review of existing community assessments that seek to recognize the 'voice' of community members and/or leaders. The literature review was sparse: We did not discover almost any comparable attempts to recognize the "voice" of community members in our literature reviews and consultations with national schoolfamily-community partnership leaders. At that point, a multi-dimensional concept was defined and operationalized with a set of items. Then experts in the field reviewed several early iterations, offering feedback. Given that it is designed for community members, it was important to make it concise Community Scale v. 2.0 (Ice, Thapa, & Cohen, 2015; Thapa & Duffee, 2016b) consisting of 12 items was then developed. The data were collected

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from 501 community members associated with three middle schools in the Midwest and one middle school in Connecticut. The findings from exploratory and confirmatory factor analyses suggested a two–factor model, with good factor consistency (Cronbach's alpha for factor 1 is 0.92 and that for factor 2 is 0.74). See Table 3 and 4 for more details. SEM modeling showed a moderate fit (RMSEA = 0.093, CFI = 0.932, and GFI = 0.974; therefore, further refinement of the assessment is recommended, followed by a validation study. development and capacity to learn. There are a series of concrete improvement strategies that support this foundational process (Epstein, 2011; Hutchins, Greenfeld, Epstein, Sanders, & Galindo, 2012).

The youth-led School Community Partnership Process engages students in giving out the Community Scale 2.0 to fifteen sectors of the larger school community, from faith based, local media, to law enforcement, senior citizens, civic leaders, and many more. The Community Scale (version 2.0) engages youth (sometimes elementary school

Table 3. Community Scale: Reliability Coefficients

Subscale/Factor		Reliability Coefficients (Cronbach's alpha)	Number of Items
School Collaborations	Community	0.921	9
Community Support		0.738	3
Total			12

Table 4. Social Inclusion Scale: Reliability Coefficients

Subscale	Reliability Coefficients (Cronbach's alpha)		Number of Items
	Students	Teachers	
Resiliency	0.57	0.73	4
Social Skills	0.69	0.80	7
Self-Advocacy	0.74	0.87	6
Social Responsibility	0.66	0.85	4
Self-Regulation	0.70	0.82	5
Self-Reflection	0.61	0.75	4
Problem Solving	0.72	0.86	5
Management & Organization	0.72	0.87	6
Total			41

In tandem, the Center began the development of a youth–led School Community Partnership Process that builds on the important work of Joyce Epstein and the National Network of Partnership Schools at John Hopkins University. This research and practice–based network has underscored that schools really do need the support of the larger school community to foster students' healthy students who are paired with high school students but more often middle and/or high school students) to ask two sets of questions to community members: What do you think about the current school– community partnership? And, would they be interested in learning about the schools' improvement goals and to help? Community members/leaders often complete the short survey in

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the presence of the students. However, they can also complete the survey on their own.

The Center developed this Scale and Process-in part-as a response to one of the most common school climate findings, that students report feeling significantly less safe in schools than educators and parents realize. These differences almost always are rooted in prevalent and problematic social norms that covertly supported bully-victim-bystander behavior, or substance use (American Educational Research Association, 2013; Cohen, 2007). Research shows that community involvement can positively influence bullying behavior in and outside (National Academies school of Sciences, Engineering, and Medicine, 2016). The Center had the idea that community members/leaders could potentially complement school based bully prevention efforts. For example, if faith based, civic, local media and other community leaders as well as community members in general talked about what it means to be a "witness" when we see someone being hurt and/or hurting, that this would powerfully support the schools efforts to promote Upstander-or socially responsible behavior (National Academies of Sciences, Engineering, and Medicine, 2016). And, this has happened in meaningful and important ways.

Perhaps most importantly, the administration of the Community Scale sets in motion conversations between students, community members/leaders and educators about current school-family-community partnerships. Initially, these conversations are about what community members/leaders think about current school-family-community partnerships and whether they are interested in learning about the schools improvement goals and aiding them. When the students and educators have garnered findings and present them to the community, further conversations tend to occur about possible next steps. The Center did not originally expect that these would lead community members/leaders to suggest many creative and practically important schoolfamily-community partnership projects! It is worth noting some of the projects that community members/leaders and/or students with community member developed: A school job fair; events to develop research skills in high school students with the help of university doctoral students; healthcare support in schools from local doctors, dentists, and nurses; local psychologists/therapists involvement to support student behavior and social challenges; and, school-wide presentations on school climate improvement co-led by students with the help of Connecticut State Department of Education and Connecticut Commission on Children along with Yale's Center for Emotional Intelligence and the Connecticut Association of Schools. The Center's ongoing work on the Scale and Process in several Illinois and Minnesota based schools as well as in Chile will further define these concepts and specifically identifying processes. more generalizable key characteristics.

#### Student SEL-informed measurement systems

There is a dramatic and growing interest in measures of student prosocial learning that evaluate a range of dimensions, from aspects of school context (e.g., classroom climate and caregiver interactions) to prosocial competencies and other assessment measures of student prosocial learning (Denham, Ji, & Hamre, 2010; Hagen, 2014; Haggerty, Elgin, & Woolley, 2010; McKown, 2015). Some of these student measures are primarily research tools (e.g., Mayer, Salovey & Caruso, 2002). However, a growing number are designed to also be used by educators in order to integrate prosocial metrics into report cards (Elias, Ferrito & Moceri, 2016).

In many ways, the field of individual student, prosocial measurement systems today is akin to what it was in 2000 when the Center worked to develop a SEL informed battery of student tests: There is a profound lack of consensus as to how to define social. emotional best and civic competencies. Social and emotional competency and constructs (e.g., flexible problem solving) represent a wide variety of knowledge, skills and dispositions (Duckworth, Quinn, & Tsukayama, 2012; Jones, Zaslow, Darling-Churchill, & Halle, 2016; Reeves & Venator, 2014). Today, most agree that although individual prosocial measures may be helpfully used as formative assessments, they are far

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from ready to be used as measures of accountability (Duckworth & Yeager, 2015).

Qualities of Sustainable and Independent Learning Scales (QSIL): Supporting student-teacher reflections and collaborative planning to support student learning

The Center in partnership with the Winston Preparatory Schools (www.winstonprep.edu/) are beginning to develop short SEL informed surveys that are completed by the student and then, by his or her teacher, to support reflection, learning and student-teacher action planning. The goal of this tool is to support sustainable and independent learning. An analysis of the data gathered from the school shows moderate psychometric properties of the scale.

The Center is in the preliminary phases of learning about how educators and students are using and learning from these survey findings as a springboard reflection. for conversation. learning and specifically - development of student drivenlearning plans. Preliminary and anecdotal findings are very positive. The Center plans to continue to systemically study the process of students' and educators' understanding and use of these findings as well as actual outcomes (e.g., specific student "learning plans") and the impact of implementing such plans. This measurement tool and process is aligned with the goal of improving schools and transforming school leadership through data driven decision making. The Center's framework is aligned with what Gordon and Armour-Thomas (2006) has recommended: Students and teachers using data to shape personalized learning and teaching plans.

Results of 4 years of QSIL data are currently being analyzed using an item response theory (IRT) framework. An IRT framework has become popular to use in educational scale development because it not only allows factors or domains of the larger concept to be identified but it also provides information about each individual's abilities relative to others on each factor as well as examining differential relationships of factors to other student outcomes (Lambert, M.C., January, S. A., Cress, C.J., Epstein, M. H., & Cullinan, D., 2017). The IRT analysis Given that the purpose of the QSIL is to help develop individual student learning plans, this additional information should be very useful. Moreover, results from IRT analyses can help identify poor items and areas in which new items could be added.

The use of evidence from school–based and student prosocial measures: Opportunities and challenges

The use of school–based prosocial measures and measurement systems should potentially open up helpful and even, transformational opportunities to further meaningful learning and school improvement efforts. But, there will continue to be significant challenges.

The use of school-based and student prosocial measures for school improvement and student prosocial development- by definition - means that school leaders will recognize the social, emotional and civic as well as academic aspects of student learning and school life. This has the potential to support John Adams', Thomas Jefferson's, John Dewey's and ensuing generations of progressive educators' understanding and need to educate the "whole child" as the foundation for a vital democracy (Cohen, 2006; Havnes, 2015; Levine & Higgins-D'Alessandro, 2010). A growing body of empirical research has underscored that when students are actively engaged in learning-socially, emotionally, civically and academically- teachers supporting their healthy schools and are development and lifelong capacity to learn (Brown et al., 2012; Comer, 2005; Durlak et al., 2015; Morgan et al., 2014).

As the new federal Every Student Succeeds Act supports more and more educational leaders using "nonacademic" measures, we argue that the most important challenge will be how educators' understand and constructively use instructional and school climate informed prosocial data in conjunction with academic and behavioral measurement findings. This raises a range of related questions: Who would be involved with understanding and making meaning of the data?

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Only administrators? Or, students', parents and other school personnel under the leadership of the Principal? How would decisions be made? Perhaps most importantly how would the data be used: As a "hammer" or a "flashlight"? Too often school, district, and state leaders experienced NCLB's annual assessments as punitive (a "hammer").

As the Gordon Commission on the Future of Assessment in Education (Baker & Gordon, 2014) and a growing number of implementation science leaders (Blase et al., 2013; Bryk et al., 2015; Bryk et al., 2010; Comer, 2005; Fixsen et al., 2005; Fullan, 2011; Taylor, McNicholas, Nicolay, Darzi, Bell, & Reed, 2014) have underscored, educational measures and related school improvement models need to use sound empirical findings to direct the continuous process of engaging the whole school community to delineate schoolwide, instructional and/or relational goals and improvement strategies.

By advocating that schools and stakeholders use their own school data to inform school improvement, we are also suggesting that pre and in–service learning would be necessary in order to support classroom, building, district and state leaders. These stakeholders should learn about the range of prosocial and academic improvement models, tools, and professional learning communities/network improvement communities that embrace the notion that "learning from failure is the heart of improvement" (Bryk, et al., 2015).

We are concerned that many educators and school leaders may struggle to use prosocial measurement and measurement systems findings as a part of a continuous process of learning and school improvement for two reasons. First, federal and state accountability systems over the last 15 years have been annual. Annual accountability systems haveand unhelpfully-supported and inadvertently "pushed" building, district, and state leaders to primarily focus on "this year alone." The Center and other improvement efforts advocate annual assessments, but in the context of a multi-year and multi-dimensional evaluation plan. Unfortunately, often each annual assessment becomes the focus of well-intended efforts to recognize any and all students who "were being left behind" rather than enabling school leaders to assess cumulative effects of their school improvement strategies. A three to five year time frame is essential to evaluate any model of continuous learning and school improvement (Bryk et al., 2015; Comer, 2005).

Over the last two decades, measurement has increasingly been the foundation for federal and state educational policy. Although the new federal Every Student Succeeds Act (ESSA) does narratively recognize and support the notion of continual improvement, this is not mandated in any way. Thus, annual assessments will continue–in the short run –to be the norm. This is a serious challenge. Researchers, consultants, and school leaders need to work together to educate state departments of education and local districts to adopt continuous models of school improvement and student learning and development, and with that, an understanding of the power of multi–year evaluations of progress and change.

ESSA also importantly mandates that states begin to utilize a "non academic" measure of accountability. This is a very positive step. However, it alone does not support school, district, and state leaders working to intentionally integrate multi-year instructional and schoolwide improvement goals and strategies. NCLB's narrow focus on annual reading, math and science achievement undermined classroom, school, and district leaders' ability to focus on systemic as well as instructional goals. However, there is a growing body of risk prevention, health promotion, and educational empirical support for the notion that educators should take intentional steps to create safe, supportive and engaging climates for learning as well as to promote the skills, knowledge, and dispositions that support school and life success (Centers for Disease Control & Prevention, 2013; National Center for Injury Prevention and Control, 2009; National School Climate Council, 2015; Thapa, et. al, 2013).

Fortunately, there is growing interest in school climate and SEL policies and standards (Rivera-Cash & Cohen, submitted for publication). SEL informed policy, for example, is focused on learning

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standards and detailed information about "scope and sequence" -- informed social emotional competency benchmarks. Today, state level school climate policies fall into one of three categories. Many are grounded in school climate standards that have been developed by the National School Climate Council (2009) that focus on the process of mobilizing students, parents, school personnel, and community members to create safe, supportive, engaging climates for learning that promote school and life success. Some are grounded in a PBIS informed understanding of improvement (Cohen, 2014). And, a smaller number are informed by the US Department of Education's three-pronged focus on safety, engagement, and environment. Thus, we recommend that state and district policy intentionally support ongoing measurement of students' prosocial learning and schoolwide improvement efforts whatever the chosen method.

The growing body of health care as well as educational improvement and implementation science is heartening and, in our view, provides a strong research basis upon which to build educational policy (Blase et al., 2013; Bryk et al., 2015; Bryk et al., 2010; Fixsen et al., 2005; Fullan, 2011; Taylor et al., 2014).

#### **Summary and Discussion**

Assessing and measuring is an ongoing facet of human life: consciously and helpfully or in unrecognized, confused and/or unhelpful ways. NCLB ushered in a new wave of intentional K–12 educational measurement that has shaped public education over the last 15 years in both helpful and unhelpful ways.

Over the last decade, there has been a dramatic increase in both prosocial, social emotional learning (SEL), and school climate informed measurement systems. More and more states are adopting SEL instructionally focused "scope and sequence" informed policy as well as school climate measurement and improvement informed policy. The passage of the 2015 Every Student Succeeds Act (ESSA) will only increase interest in prosocial measurement systems. For the sake of the nation's children and a vital democracy we support federal and state educational leaders who are now focusing on the "non academic" aspects of student learning and school life. We have suggested that there is a range of prosocial measures that assess individual student learning on the one hand and more systemically–informed or school climate and school improvement measurements that recognize student, parent/guardian, school personnel and even community member 'voice' on the other hand. These developments in prosocial measurement development have significant implications for the pre and in–service education of school leaders and teachers, as well as potentially influence parent and community ideas of school life and student success.

Researchers and consultants need to expand their initiatives to introduce and education future and current school leaders about the purpose and growing range of prosocial measurement tools and systems. We hope that this paper has begun to support and further this goal. Aligned with the Gordon Commission on the Future of Assessment in Education (Baker & Gordon, 2014) vision, school climate/ prosocial improvement efforts are based on principals that set in motion conversations and collaborative improvement efforts. The Every Student Succeed Act should potentially support these kinds of school improvement efforts.

The prosocial measurement trends in this paper raise a major policy concern and challenge. NCLB explicitly and solely focused on annual assessments and accountability systems. This undermined school leaders' ability and inclination to embrace a longer term, continuous model of learning and school improvement. Paradoxically, American business, medicine and the military have accepted that people and organizational systems always make mistakes and, thus, need to adopt a continuous, data-driven system of learning and improvement. The new educational act -- ESSA -- does recognize and begins to support educational leaders taking longer term perspectives, engaging them with the idea that continuous models of school improvement are necessary. A major shortcoming is that this is not institutionalized in any way. Every state will need to consider how to actually implement a longer-term

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perspective and planning supported by the theory that continuous improvement is realistic and-trulyembracing the idea that "failure is the foundation for school improvement" (Bryk, Gomez, Grunow, & LeMahieu, 2015).

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