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Urban Science Education for the Hip-hop Generation
CULTURAL PERSPECTIVES IN SCIENCE EDUCATION: RESEARCH DIALOGS 01

Series editor
Kenneth Tobin, The Graduate Center, City University of New York, USA
Catherine Milne, Steinhardt School of Culture, Education, and Human Development, New York University

Scope
Research dialogs consists of books written for undergraduate and graduate students of science education, teachers, parents, policy makers, and the public at large. Research dialogs bridge theory, research, and the practice of science education. Books in the series focus on what we know about key topics in science education – including, teaching, connecting the learning of science to the culture of students, emotions and the learning of science, labs, field trips, involving parents, science and everyday life, scientific literacy, including the latest technologies to facilitate science learning, expanding the roles of students, after school programs, museums and science, doing dissections, etc.
Urban Science Education for the Hip-hop Generation

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For Monique Eniola Emdin
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>ix</td>
</tr>
<tr>
<td>Introduction</td>
<td>xi</td>
</tr>
<tr>
<td>Chapter 1 On Rap and Hip-hop</td>
<td>1</td>
</tr>
<tr>
<td>Chapter 2 Teach a New Way</td>
<td>7</td>
</tr>
<tr>
<td>Chapter 3 From 1520 Sedgwick to the World: Masked but Not Erased</td>
<td>21</td>
</tr>
<tr>
<td>Chapter 4 We are Hip-hop and School is Not</td>
<td>27</td>
</tr>
<tr>
<td>Chapter 5 Negotiating the Terrain of Cultural Misalignment</td>
<td>35</td>
</tr>
<tr>
<td>Chapter 6 Blame and Power in Urban Science Education</td>
<td>51</td>
</tr>
<tr>
<td>Chapter 7 From the Global to the Local: Hip-hop, Science Education, and the Ritual</td>
<td>71</td>
</tr>
<tr>
<td>Chapter 8 Moving Beyond the Silence…We’re Droppin’ Science</td>
<td>85</td>
</tr>
<tr>
<td>Chapter 9 Reframing Urban Science Education</td>
<td>99</td>
</tr>
<tr>
<td>Glossary</td>
<td>117</td>
</tr>
<tr>
<td>References</td>
<td>121</td>
</tr>
</tbody>
</table>
I must begin by saying that as a philosopher affected by existentialism, phenomenology, critical theory, and aesthetics, I’ve spent much time combating positivism when applied to values or the arts. I have labored over a foreword with the hope of being true to my commitments and beliefs—and reading this fine work through a lens that would not distort or would not be too slanted in my direction.

I thought I could write that I had just been introduced to a new verbal and gestural language shared by certain underprivileged youth but not understood by their teachers who mistakenly categorized all poor city youth as “urban youth” without distinguishing them from hip-hop youth. I see how that meant a lack of understanding of numbers of such young people in science classes.

Surely the reader is familiar with the many books about the misunderstandings and the stereotyping of urban youth as resistant to savage inequality. Troubled as we all are by prescribed curricula and their imposition on kids. I don’t really know alternatives in science education, I know Kuhn’s work and others—and I would turn to Dewey and Schon. Here, I turn to this work.

As a teacher educator largely in the Deweyan tradition, I have thought of education as an expansion and deepening of educative experiences, those which feed into and make understandable the ‘doings and undergoings’ that mark the processes of becoming. Becoming, or coming into consciousness, is the enactment of the ability to think about and reflect on oneself. For the educator, it is the opening up of the space to find out the purpose of teaching; which in the Deweyan tradition is rooted in considering and valuing students’ experiences. A concern for beginning and engaging with students’ experiences has always been of the first importance. This is why I welcome this thoughtful and eye-opening introduction to hip-hop and join Christopher Emdin in pushing for the realization that we are far too prone to stereotype and categorize urban youth today without some knowledge of the way many of them have learned the values and expressiveness intrinsic to hip-hop.

For teachers willing to attend to what to them may be a generally unfamiliar gestural and verbal language, an expansion of their experience awaits. Through this work, the process of becoming (in this case becoming an urban science educator) begins. Even as bilingualism and multilingualism may open new logics and perspectives without eroding a native language, so may hip-hop open new pathways to communication among urban girls and boys. Meanings are created when people are able to translate their gains and losses, their feelings, anger, hopes, and disappointments into words that they know those they are addressing will comprehend. The same is true when it comes to gestures, body movements, swaggering walks, and even dances, which so many members of the dominant culture either have forgotten or never knew.

Despite the ignorance or purposeful dismissal of hip-hop and its words, gestures, and body movements by the dominant culture, many of us have come to understand that emotions that are inexpressible in ordinary language can find expression in
FOREWORD

movement. We have only to recall tango, flamenco, and the many folk and circle
dances linked to mourning and celebration; and the proud or cocky or defiant walk
of many city young people will come clear. It may well be that certain teachers of
these youngsters have had painful experiences of their own in their early lives, but
have felt compelled to repress them in order to speak the supposedly standard
language of the system. But we might also recollect the painful youth of someone
like Frank McCourt, who emerged from the slums of Ireland to become in time a
remarkable teacher in New York. And lately, we have read the books of younger
activist teachers who have somehow tuned into the hard lives of their students and
turned out to receive good grades from the authorities. None of this, however, takes
away from the important viewing Christopher Emdin provides on the dialogues and
understandings achieved by the hip-hop generation, not to speak of the work they
do, somehow to infuse neglected, sometimes violent neighborhoods with the
vibrant and strangely knightly spirit of hip-hop.

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INTRODUCTION

Imagine if you could spend every second of the next three years in an institution that values who you are, embraces where you come from, and teaches what has been described as the most challenging subject matter in a way that is engaging, respectful of your culture, and aligned to the way that you see the world. The feelings that would be generated from that experience would be able to propel you into new possibilities for your future. You might be convinced that what has been previously presented as challenging, is really not anything out of your intellectual reach. Your confidence would grow, your faith in your academic abilities would develop, and over time, you would begin to see that you have the tools to be successful at whatever task is set in front of you.

Considering the length of the typical school day, the time that an average student spends in school, and the years of schooling from kindergarten to high school, I have calculated that the average student spends the equivalent of three full years (without interruption) inside a classroom. This is more than enough time to foster experiences in school that (strive to) bring out the greatness/potential inherent within each and every student. Given the time that educators have with students, they should be able to easily spark an interest in school and schooling, and develop in students an unquenchable passion for challenging subjects like science.

Unfortunately, the time that is spent in schools can also very easily be the root for disinterest in school, disdain for teachers, and an alienation from subject areas that are taught without a consideration for the cultural knowledge that students bring to the classroom. Whether classrooms are a bevy of positive experiences that foster interest in school, or negative experiences that push students away from school is dependent upon the structure of the classroom, and the nature of instruction - which are both affected by teachers’ exposure to, and comfort with, the culture of their students.

In urban classrooms, the culture of the school is generally different from the culture of its students. In addition, a majority of students are either African American or Latino/a while their teachers are mostly White. Culturally, urban youth are mostly immersed in a generally communal and distinctly hip-hop based way of knowing and being. By this, I mean that the shared realities that come with being from socioeconomically deprived areas brings urban youth together in ways that transcend race/ethnicity and embraces their collective connections to hip-hop. Concurrently, hip-hop is falsely interpreted as being counter to the objectives of school culture.

Culture is the summation of the beliefs and practices that a particular group of people holds (Bourdieu, 1993). More specifically, it is the sum of the schema and practices expressed through the shared meanings of symbols that allow people to communicate with each other (Geertz, 1973).

The urban science classroom holds multiple cultures that inform perceptions of, and goals for, the classroom. These cultures can be grouped into four categories: the culture of science, the culture of urban teaching, the culture of urban students,
and the culture of the urban teacher. In science, there are distinct beliefs and symbols that members of a community use in their manifold investigations and communications with each other. For example, science formulas are made up of letters that signify words and symbols that only those who are embedded in science understand. Therefore, there is a distinct culture of science. Urban teaching also has its own culture, which is grounded in the historically rooted, and commonly accepted, belief that socioeconomically deprived urban youth and students of color require strong “classroom management,” hyper-structured classroom environments, and teaching that assimilates students into an established world of school. Urban students have their own culture, which is the summation of the beliefs and practices of the students’ out of school experiences as they become manifested in classrooms. Finally, urban teachers have their own culture, which is a summation of the beliefs and practices of the teacher and the ways that these phenomena combine to create who the teacher becomes in the classroom. This last type of culture (the teacher’s culture) is most significant because if it becomes amenable to change, it can allow the established culture of science and the manifest needs and identities of urban youth to come together. When these categories come together in synergistic ways, I argue that teaching can be more successful.

As more students enter into urban schools, and the teacher workforce increasingly does not reflect the culture of students, divisions between student and teacher increase accordingly. Statistics tell us that the enrollment of minority students in K-12 public schools in the United States has increased dramatically from 22 percent in 1972 to 43 percent in 2006 (NCES, 2008). By the year 2050, “the nation’s population of children is expected to be 62 percent minority” (U.S. Census Bureau News, 2008). Recent research tells us that while the minority enrollment in public schools is increasing, and students are more and more engaged in hip-hop (Stoval, 2006), science and mathematics achievement of Black and Latino/a students is decreasing (Brand, Glasson, & Green, 2006; CGS, 2008). Researchers also tell us that a large number of failing students are concentrated in urban schools that are disproportionately populated with Black and Latino/a students and teachers from ethnic and racial backgrounds other than those of students (Lankford, Loeb, & Wycoff, 2002; Sleeter, 2001).

The underlying premise of this work is not that the racial and ethnic differences between students and teachers in urban settings is the cause for low student achievement in science. The point is that effective teaching in urban science classrooms must consider both a deep understanding of subject matter and a profound understanding of the cultural backgrounds of students of color in urban settings (Fusco, 2001; Lee & Fradd, 1998). Therefore, I move forward in this work with the belief that a consideration of the cultural differences between students and teachers is absolutely necessary, and that the embracement of hip-hop can be used as a means to bridge these breaches.

While other educators/researchers have identified the importance of a focus on student culture, they have not recognized the significance of hip-hop culture. While they have focused on hip-hop as music and text, they generally have not considered that it undergirds the existence of urban youth in more complex ways (Hill, 2009).
In addition, they have not considered the ways that hip-hop specifically relates to science, which is the subject that urban students are most marginalized from.

The statistics and underlying themes stated above provide insight into the work that will come in this book. While I do critique the work of teachers and researchers, this is not a body of work that is intended to attack teachers or researchers. I believe that researchers are fundamentally good-hearted and want to address the achievement gaps that plague urban schools. I also believe that teachers are important for student learning, and in most cases, they teach because they want to meet the needs of their students. However, there is great variation in effectiveness across teachers (Kane, Rockoff & Staiger, 2006; Rivkin, Hanushek & Kain, 2005; Rockoff, 2004), and researchers are often ignorant of the nuances of student culture (Emdin & Lehner, 2007).

Science education programs across the country have identified that many teachers are not effective because of their lack of knowledge of student culture. In response, they have begun to address issues related to the culture of urban youth of color by offering/requiring classes in multicultural education, and holding seminars that address student culture and science. In one instance, the coordinator of a science education program I had a conversation with mentioned that he has begun to script lessons and provide a step-by-step protocol that he thinks will assist in the delivery of science content to urban youth.

Unfortunately, these attempts to address the needs of urban science teachers fail to recognize that a mere introduction to multicultural education will not necessarily provide the deeper insights into student culture that teachers need to succeed (McAllister & Irvine, 2000). These attempts will, and have failed due in part to an inadequate focus on significant yet under discussed issues like interactions between students and teachers and the absence of a focus on hip-hop culture.

This work purposefully avoids providing scripts or step-by-step processes like those that science education programs and many quick fix professional development programs found in urban schools provide. Its purpose is to introduce urban education, and science education in particular, to the larger issues related to the culture of urban youth and science instruction. Its chief function is to inform teachers on how to reach hip-hop youth by immersing the reader in the larger ways of thinking and challenging their existent practice, and providing them with insight into personal experiences related to hip-hop and science pedagogy that they would not have otherwise. I argue that providing teachers with this larger grounding, and then allowing them to create practical steps on their own challenges them to enact new means of connecting with hip-hop youth, and is in the spirit of the imagination and creativity inherent in hip-hop. The work is purposefully guided by the age old adage that says “Give a man a fish; you have fed him for today. Teach a man to fish; and you have fed him for a lifetime.” I implore the reader who is accustomed to the status quo in science teaching and learning to be open minded and soak in the work, and then use it to effectively teach and research hip-hop youth for a lifetime.
CHAPTER 1

ON RAP AND HIP-HOP

An overview of, and grounding in, the culture

Neither hip-hop nor science are new phenomena. They are each ways of looking at, and making sense of the world that can be traced to our earliest collective histories as human beings. As long as man has walked the earth, there have been questions about the world, theories about how we arrived on this planet, and studies of our immediate and distant surroundings. This deep questioning, and the search for more information about our surroundings are the building blocks of science. Therefore, it is fair to say that science has always been a part of the human experience.

At the same time, human beings have also had a collective history of not valuing difference. We ostracize those who we perceive as outside of established norms, and subjugate those who we see as weaker than us, or a threat to our sameness. Consequently, there have always been groups of people who have been treated uncivilly, shunned for their beliefs, and who in response, develop ways of looking at the world that are outside of the norm. While these ways of looking at the world are unfamiliar to most people, many others who have also been treated unfairly understand them. Take for example the popular science story of Galileo and his detention for the sake of his societally unacceptable scientific writings in 1633. Then consider rap group NWA and the harsh critique its members endured for the sake of their raps about their take on life in Los Angeles, California in 1988. In each case, Galileo and NWA questioned the way life was, used an artifact like writing or rapping to buck against established norms, were punished for doing so, and eventually caught the attention of others who identified with them because of their anti-establishment positions.

In the case of hip-hop and its chief artifact - rap, their birth in the United States during the 1970’s marks the advent of new forms of expression for people who have been oppressed since the beginning of time. Hip-hop culture is rooted in West African traditional music that has blended percussion from talking drums with songs of religious worship and celebration for centuries. Rap is found in African-American storytelling and singing about the tribulations of slavery prior to, and after the abolishment of slavery in 1865, and forms of both hip-hop and rap can be traced to the Caribbean art of toasting and dee-jaying on the island of Jamaica in the 1950’s.

Hip-hop’s roots in rhythm and storytelling despite the pain and anguish its ancestors have dealt with resound with urban youth, and allows rap to evolve into the main avenue of voice for urban marginalized youth across the globe. These roots have led hip-hop culture to become the once secret and now public, yet unheralded path through which urban youth share their experiences with those who have a similar plight.
In the Bronx, New York, in the 1970s, those who inhabited the lowest socioeconomic spaces struggled to find a way to provide voice to each other (Neal, 1999) and merged the art of speaking over beats with rhythm and rhyme (rap) with unique forms of dance (break-dancing) and distinctly urban visual art (graffiti) to express their view of the world. Since then, hip-hop has emerged to become not only a form of expression, but the culture of urban socioeconomically deprived youth and those who identify with them.

**Focusing on Rap**

As mentioned earlier, rap music is the chief artifact of hip-hop and is one of the purest expressions of urban African American and Latino/a youth culture. It creates scenarios where intensely personal words and ideas that an individual holds get introduced to others in ways that are unique enough to be personal, yet distinct enough to ring true to listeners across demographics and generations. Once again, this distinctness exists because rap music has its roots in aspects of Black culture and tradition like Negro spirituals and spoken word poetry, and hip-hop music is a coagulation of centuries of practices, rules and traditions (Ramsey, 2003).

Since, “Black music has always been a primary means of cultural expression for African Americans, particularly during especially difficult social periods and traditions” (Rose, 1994, p. 184), the feeling of living in a seemingly eternal difficult social life for minoritized youth calls for the rise of a medium that expresses the realities of their lives. Rap music is the text produced by those who are involved in hip-hop, and is a medium through which the culture of the marginalized is expressed. Rap’s antecedents in the traditions of the Black experience in the United States, leads to its ability to provide descriptions of contemporary urban life in oppressive social spheres beyond the U.S. This causes it to display a quality that transcends space and time while it reflects the experiences of those within a current and specific context. This attribute of rap is closely related to the chronotypic nature of certain literary texts that express an “intrinsic connectedness of temporal and spatial relationships that are artistically expressed in literature” (Bakhtin, 1981 p. 84). Rap music becomes the literature of marginalized people whose backgrounds are rooted in oral traditions. It connects their histories, echoes their pain, and concurrently articulates the stance of new people who have been, or are being, marginalized in different spaces around the globe. It is the verbal expression of the realities of social actors in contexts where they are either not allowed to fully participate or cannot be heard because their histories, traditions, and voices are different from those of a dominant group. Therefore, it is amenable to being, and often becomes a reflection of the experiences of urban youth when they have been silenced within schools.

The first time that many people outside of New York City heard of rap or hip-hop, it was through the song “Rappers Delight” by the Sugar Hill Gang. The song received widespread commercial exposure as simple lyrics that showed bravado and celebration were rapped over an already popular disco song instrumental. The
attention that the song received introduced many people to the infectious genre of hip-hop music.

Despite the historic significance of Rappers Delight to hip-hop culture, the power of hip-hop’s descriptive and vivid imagery was not displayed via song until three years later. In 1982, a record by Melle-Mel entitled “The Message” gave insight into how rap music became the voice of a new generation, and showed the potential of hip-hop to give insight to the experiences of urban youth. The song described life in the inner city and painted a vivid picture of the streets of New York. One of the main lyrics to this song, “It’s like a jungle sometimes it makes me wonder, how I keep from going under” (Melle-Mel, 1982) gave a glimpse into not just the physical realities of life in the inner city but also the emotional frustration that accompanies the life of participants in hip-hop. This song serves as an example of the dialectical relationship between rap and the inner city where the streets speak to the music and the music retells the message received from the streets. Artists rap about the struggles of living in urban settings and speak directly to people who are on the streets experiencing the same thing. This type of rap, in which the focus is on lived experience that consumers of the music can identify with through their own experiences, is a significant part of hip-hop where the streets and the music become single entities that cannot be separated from each other.

As hip-hop’s voice traveled from its humble beginnings in the Bronx to other boroughs of New York City, and the world, it continued to tell tales of the struggles of life in the inner city and celebrated its uniqueness from other forms of music. The fact that it had become something that was owned by those furthest from the mainstream or traditionally considered as outside of the norm became a key part of the music, much of which was originally produced on the front steps and in the cafeterias of New York City public schools. The fact that the creators of hip-hop were urban public school students who felt like they were not a part of the establishment in school or in the world is an under-focused upon component of the history of hip-hop. This fact leads to two distinct ideas that undergird the work in this book. Firstly, hip-hop is owned and spawned by marginalized voices. Secondly, because it is mostly created by urban youth, it provides insight into the inner-workings of their thoughts about the world, and consequently, is a tool for unlocking their academic potential.

Those who are most marginalized within the social fields they inhabit hold on dearly to hip-hop and rap, even as it goes through eras/phases where its main focus is celebration, subtle commercialism, overt materialism, increased socio-political commentary, and gross commercialism. As hip-hop goes through these phases, it always expresses some part of the lives of its participants at a particular point in time. The phases of hip-hop within the United States are marked by changes in the conditions of the inner cities throughout the country. Eras like the gangster rap (a response to police violence and socioeconomic depression) or self-conscious era (a response to increasing visibility of Black scholars and intellectuals) in hip-hop mirror what was occurring on the socio-political landscape of the country and their implications on the urban populace. The music was interpreting what urban youth
were feeling, and what urban youth are feeling, dictates the ways that they should be taught.

As outlined earlier, rap music has consistently translated the voices of the socio-economically disadvantaged within the inner city to others who share their plight. In modern hip-hop, where the music of the culture has been marketed and commercialized, voices from urban settings have been exposed to the world. Many believe this large-scale commercialization of hip-hop has resulted in the pollution of the true voices of urban youth and an over-saturation of negative parts of the culture that record companies choose to present to the world. However, rap music still, through students’ voices, provides insider perspectives on schools. Therefore, anyone interested in bettering the conditions of students who have been marginalized from achievement within formal institutions of learning must listen to and learn from hip-hop.

The Fallacy in “Hip Hop is Dead”

While many entities who financially profit from the commercialization of rap music lament its supposed demise because of declining record sales, hip-hop purists lament the high number of commercially successful rap artists who seem to only show a superficial involvement in the true essence of the culture. These contrasting views about the state of hip-hop lead to a questioning of the viability of hip-hop. They also open up a discussion about what really is hip-hop. In my quest to spark this discussion, I have posed many questions about hip-hop to students who describe themselves as hip-hop youth. My work with this population uncovers that they perceive hip-hop to be the combination of their realities and experiences, which is sometimes expressed as music, but also goes beyond it. In essence, urban youth see hip-hop as not just a musical genre, but as their culture.

While the notion of hip-hop as culture will be elaborated further on in this work, it is important at this stage to recognize that interacting with urban African American and Latino/a youth whose parents and grand-parents created hip-hop in the 1970’s, shows that the culture is still a deep part of urbanness (a state of being urban) about 40 years after its “birth.” In fact, as urban youth I work with consume and create rap music, they complain about the development of a false type of hip-hop (commercialized rap) that does not truly reflect their culture. They clearly demarcate the lines between rap music they listen to because it sounds good, and true hip-hop music that is true to their culture. I make this point to lay the foundation for an understanding amongst readers that when hip-hop is being discussed, existent messages about its demise relate more specifically to the overshadowing of certain parts of hip-hop by commercial rap. The true culture and spirit of hip-hop is still alive. In fact, even at points where commercial hip-hop appears to be at its height, artists who are in touch with the core of hip-hop culture critique its commercial forms and argue that true hip-hop is still alive and strong. Artists like the Roots (1996) have consistently responded to the commodification of hip-hop culture by explaining that despite the fact that “the true elements of hip-hop have
been forsaken, [and] now its all contractual and about money making,” hip-hop remains a space where “world populations, address their frustration.”

For teachers and researchers who intend to work with students who identify themselves as part of hip-hop culture, it is necessary to constantly keep in mind that what is perceived as the death of hip-hop is actually an increased visibility of commercialized or false hip-hop that causes a masking of the core of the culture. Williams (1991) describes a process where certain people take an individual’s reality (which is what hip-hop is) and places it into a process that “puts reality up for sale and makes meaning fungible: dishonest, empty, irresponsible” (p. 30). This has been the case with hip-hop culture, where its most unattractive aspects are presented as the face of the culture. For example, at any given time, there are forms of hip-hop music being created that portray everything from violence and misogyny to love, self-awareness and political activism. However, commercial forms of hip-hop music that are produced for the masses who are not embedded in hip-hop culture often ignore the more positive forms of hip-hop and focus on easily sensationalized negative forms. I argue that the proliferation of these negative forms of hip-hop leads to the perpetuation of the grossly inaccurate myths that begin with the belief that urban youth embody all of the negative stereotypes that are associated with the commercial hip-hop music that is heard on the radio.

While I do not support or condone the gratuitously violent or hateful lyrics that are in some rap lyrics, it is important to recognize that these lyrics only provide a thin slice of hip-hop and an even thinner slice of hip-hop culture. Even the type of hip-hop music that is most often critiqued for negative lyrics (gangster rap) is merely a strand of rap music that is either inspired by the experiences of urban youth or a retelling of the artists experiences. A narrow view of hip-hop culture that does not recognize that participants in the culture who are rappers are describing truths in their experiences and those of their peers is flawed (Watkins, 2005). Furthermore, the lack of an understanding that rap, like literature, explores everything from reality and fantasy to fiction and non-fiction leads to an unjustifiably harsh critique of the culture and limits its potential as a teaching tool to “what not to do.”

Students who are a part of hip-hop feel the effects of the negative ways they and their culture are portrayed and perceived. I argue that these feelings affect their abilities to connect to the classroom and alienate them from a field of study like science, which is taught in ways that run counter to hip-hop. Students in my research have discussed the ways that teachers perceive them and have made statements like “They (teachers) don’t know about us and …they don’t care about what we say, they don’t listen to us… (and they) they don’t listen to rap.” Rap artists share similar sentiments as the students and speak to and about science educators and researchers in statements like “he wants to be an astronaut and fly to space, but his teachers told him that he just ain’t got what it takes” (Jay Electronica, 2008). These words by urban youth and hip-hop artists demonstrate an insight into schooling that scholars and educators are unaware of. It reveals that “the hip-hop underground is the most socially and politically active generation since the long death and silence of the Black community which fell asleep in the 1980s” (Banfield,
2004 p. 203), and as such, it tells educators that the insight that urban hip-hop youth provide need to be heard, and utilized to improve the state of urban education.

Currently, the connections discussed above have not been made. In fact, the lines of division between hip-hop and education are often created by academics, politicians, and teachers, and are reinforced by the curricula within urban schools. Within schools, student interest and the absence of connections between hip-hop and education are rarely explored beyond complaints about hip-hop youth’s disinterest in school. This stance does not consider that student complaints, rap songs and lyrics that appear to denounce school and education are merely reflections of the frustration students experience in schools. Rather than look at hip-hop music as anti-school, I suggest we view them as rapper Common (1997) does and see them as “smoke signals” that establish a relationship between urban communities and the rapper, and that gives the rapper the authority to speak for urban youth and share their passions. Therefore, if we are hearing negative lyrics about school, law enforcement or any other phenomena in urban settings, it is often because there are issues within the street, neighborhood or school that are being signalled. The rap artist’s message is a reflection of the hip-hop participants’ experiences. Lyrics about schools (whether negative or positive) exist because urban youth have an interest in being successful within schools. Hip-hop’s critiques about the injustices in the world exist because somewhere in the world, someone is using rap to let off a smoke signal to alert the world that an issue has to be addressed.

Alive and Global: The Current State of Hip-hop

As a result of the wide distribution of hip-hop across the globe, and the ways that it speaks to populations that are marginalized from the socio-economic norms in places that traditionally would not be exposed to U.S. hip-hop music or culture, the emergence of indigenous and grassroots hip-hop among many traditionally marginalized populations (from New Zealand to New Guinea) has emerged. Hip-hop has grown to include many different national cultures, making it important to recognize that it has become a unified culture that informs multiple generations across various physical and symbolic boundaries. The fact that hip-hop is the unified language that many diverse populations share means that it must play a part in how these populations are educated. Only when a path to this understanding is cleared can we juxtapose analyses of urban schools, hip-hop, and science education to discover ways that these supposedly separate entities can coexist to develop a more effective vision of urban science education.

In order for a hip-hop based urban science education to exist, it is necessary to discover what is at the core of the culture of urban schools, hip-hop, and science education. It is only when this happens that the science education community can effectively begin to work towards situating hip-hop, school, and science within each other. It is only at this point that the maintenance of the status quo in regards to the growing numbers of students in urban areas who are disinterested in science can finally be addressed.
TEACH A NEW WAY

Wake up everybody no more sleepin’ in bed
No more backward thinkin’ time for thinkin’ ahead
The world has changed so very much from what it used to be
There is so much hatred war and poverty
Wake up all the teachers time to teach a new way
Maybe then they’ll listen to what you have to say
Cause they’re the ones who’s coming up and the world is in their hands
When you teach the children teach em the very best you can.

The world won’t get no better if we just let it be
The world won’t get no better we gotta change it yeah, just you and me.

Harold Melvin and the Blue Notes 1975

As I begin to address teaching in urban schools, some will see the arguments that I make as controversial. For others, they will either be an affirmation of what is already known, a clarification of issues they may have seen or experienced, or a chance to gain insight on issues they may have been unable or unwilling to explore. My intent is for the work to serve as an uncovering of truths that have been obscured and a means through which the reader is ushered into a new way of looking at the teaching and learning of students of color, particularly in science, within urban classrooms. My goals are simple. They are to invite audiences from varying ideological and theoretical backgrounds and perspectives to become students of hip-hop. In addition, I want the reader to work with me to understand the influence of hip-hop on the life experiences of students in the urban classroom. Finally, I want the reader to see hip-hop as a part of science teaching and learning and vice versa.

I embark on the task to meet the above-stated goals by nesting this work primarily in my own research and experiences within urban public schools. I believe that by sharing the tools I have crafted and discovered through my journey in urban science education, I will open up my world to the reader and provide the type of insight into urban science teaching and learning that can only be provided by the type of research I have conducted and the anecdotes that came from my experiences in urban science classrooms. I share my experiences as student, teacher, administrator and researcher, and pick apart my experiences in order to deconstruct the way urban classrooms were when I was a student, uncover the way that they are, and guide a path towards how they should be.
This work is the manifestation of thoughts about, and insight into, my experiences with urban schooling. It is also a guide for the use of tools I have both crafted and discovered on my journey in urban education. As the chapters progress, envision them as the carving out of holes in concrete walls that stand in the way to a path towards transforming the experiences of urban youth in classrooms. Each thought, and the suggestions they provoke, are a challenge to the existent power structures in urban education that inhibit teachers and researchers from understanding that conventional approaches to instruction in urban classrooms are not working and are long overdue for an overhaul. Each story, each sentence, each line, and each word is intended to be another tool for tearing down the walls that block us from our path. I focus specifically on the urban science classroom because it is the space where I have felt most marginalized from attainment in my youth and find the most challenge as a researcher. In this work, science and science education serve as both foci for the study, and tools for radical change in existing practices in urban schools. What I argue for in this work is the need for a means to teaching students in ways that meet their interests and ignite their passions. The work is a manifestation of a thought I have had since I was a student in a 7th grade classroom in Brooklyn, New York. Teachers have to teach a new way.

The first time I realized that someone else in the world thought there was a need to teach a new way, I was about thirteen years old. The day this revelation came, I was engaged in one of my favorite activities when my parents weren’t home. I would cracked open a huge cardboard box that held my father’s record collection, grab a stack of records, and lose myself in the artwork on the album covers. I would leaf through the 12 inch by 12 inch square covers of the albums for hours until I found a cover that caught my interest. When that happened, I would flip the album cover upside down, carefully watch the black vinyl slip through the cover and into my fingers, and guide it to an old record player in the back of the room so I could listen to what the artists had to offer.

Most often, the vivid colors of a funk album would catch my attention. I would play the record, let the bass driven melodies ooze through the speaker, and recite raps that I had crafted over the beats and melodies of songs created before my time. Sometimes, I would imitate hip-hop deejays and spin the records backwards when a break beat came in so I could hear a special part of the record over again. On occasion, I would fall in love with a song and play it for hours until I knew that my father was on his way home from work. I would then return the records to their rightful place, wonder in their ability to bring me to a place beyond the four walls of a Brooklyn apartment, and spend the rest of the day with a song or two dancing in my head.

On one particular day, as I sifted through a stack of records that all happened to have vivid colors and intricate artwork, one album cover struck me. Its color was a dull shade of green and it showed a landscape of mountains with one standing in front of the rest. The mountain that was out front was shaped like a Black man with an Afro. From the forehead of this mountain, a yellow flower grew and provided the only color to the otherwise dull cover. I was intrigued by the cover, pulled the album from its jacket, walked it to the record player, and dropped the
needle on the title track. A piano riff played, the lyrics began, and after a challenge for the world to wake up, the words that opened up this chapter joined a barrage of blows that struck me.

The first blow was a line in the song about “hatred, war, and poverty.” It immediately opened my eyes to the fact that issues that were relevant in my life in the 1990’s were just as prevalent in 1975. As I reeled from that line, there was a lyric that called for teachers to “teach a new way” that struck just as hard, and etched itself into my subconscious. These words were what I wanted to say to my teachers as I wrestled with being stereotyped and feeling invisible as a student in high school, college, and even graduate school.

The words “maybe then they’ll listen to what you have to say” followed the request for teachers to teach a new way and provide a justification for, or reasoning behind the need to teach a new way. While this call to teach a new way is the underlying theme for this work, the reason behind why it is important to do so is the springboard from which the work is set in motion. I argue that the acknowledgment that a change in teaching practices may cause students to listen to a teacher when they normally would not, is an indication of the awareness that for many students, their disinterest or lack of success in school is a conscious decision. It is not that certain students cannot listen or cannot succeed. Rather, it is that they choose not to.

While this choice to not listen to the teacher may evolve into the enactment of unconscious practices that do not support school success, at its core, the decision is rooted in whether the student holds any value for the teacher or if the teacher’s practices reflect a “new way” of teaching. I argue that the decision to not listen is a conscious effort to subvert the teacher’s power and is a direct response to approaches to instruction that do not reflect what the student needs to connect to the classroom. This is particularly the case in science; where the ways that the subject has been taught, and even what is taught, has not changed much since the call to teach a new way was made years before I was born, and when the songs was released in the mid 1970s. The reality is that the emphasis in most science instruction is on helping students acquire what has come to be accepted as a fundamental base of scientific knowledge (Gallagher, 2000). Unfortunately, this limited focus on what is taught is accompanied by a strong focus on drilling in this fundamental information. Consequently, efforts to teach a new way have never been truly implemented on a broad enough scale to be acknowledged beyond individual cases, or enough for their true value to be determined.

THE RESULTS OF NOT TEACHING A NEW WAY

Much research has indicated that the nature of teaching in urban schools focuses more on classroom management and keeping students in line than on connecting them to an academic discipline (Darling-Hammond, 1997, Emdin, 2009). In classes where rigidity in the instruction takes preeminence over connecting students to an academic discipline, the classroom is viewed by urban youth as constraining. This is the case because within these classrooms, freedom to think beyond the instruction that is provided, or even to question what is being presented, is not allowed. For
the secondary school students that I have taught, I find that those who have spent a majority of their lives within urban public schools find no need to move beyond the constraints of a closed, simple, and confining school system. For them, it is easier to play a prescribed role in the way that schooling is than it is to exert the energy to change it. Their experiences within schools, and their consequent perceptions of school, stand in sharp contrast to the fact that they are immersed in a culture outside of school that is rooted in breaking from constraints. Outside of school, they are welcomed into a community where they are lauded for thinking critically, and acclaimed for forging new paths of inquiry. This dynamic – of being constrained in one world and being free to move beyond constraints in another supports an aggressive move towards positioning oneself as beyond the trivialities of school. School is perceived as too simple and too prescribed. There is no new way.

In my work, I find that for members of the hip-hop community, the choice to become disinterested in what is going on in the classroom, or to not listen to the teacher, is a function of how trivial they think the classroom is, and the fact that they believe they are superior to even an academically challenging class. In conversations with these students, they neither refer to a fear of, or an inability to engage in academic work, nor do they mention a fear of acting White. Rather, they speak about their strengths, the weaknesses of their school, and the inabilities of their teachers to be effective. Conversations with students who are part of hip-hop reveal that they understand that their lack of success in school “doesn’t mean that I (they) couldn’t be a doctor or a dentist” (Dead Prez, 2000). As one of my students mentioned, when he was queried about why he did not complete a lab report, “I don’t do your work because I don’t want to do your work. If it was my work, I would do it.”

The typical teacher response to this type of statement involves a defensive stance that blames the student for not completing the assignment or even for being rude. However, it is important to recognize that urban students of color are often the victim of a process of schooling that positions them in ways that makes them feel like they are not welcome in school. This forces them to have certain reactions to schooling that can be perceived as inappropriate, and that spark knee-jerk reactions to teachers, who in turn enact knee-jerk responses to students because they are unaware of the larger dynamics at play in the classroom.

The chief concept that needs to be grasped by educators, and that will be made throughout this text, is that what is being taught in science classrooms will be perceived by urban students as not significant if the subject delivery methods remain the same. For educators and researchers who choose to work in urban settings with students who are immersed in hip-hop, it must be clear that disinterest, lack of participation, or poor performance is not the result of an intellectual deficiency, or an inability to grasp the content. It is rooted in an inability of educators to teach a new way.

For educators, there must be a shift in the way that we traditionally look at students of color in urban classrooms. There must also be an effort to understand why and how these students’ reactions to school and schooling are so visceral, rather than using these reactions as examples of how disinterested they are in
school. The teacher must understand that the hip-hop belief system that students ascribe to includes a positioning of oneself as superior to situations at hand in order to both mask one’s vulnerability and affirm one’s power in situations where one is challenged. This belief system includes a superiority to all that is not explicitly defined as a part of hip-hop culture. Understanding these facts sheds light on the relationship of participants in hip-hop to the science classroom, and highlight the fact that school and science are perceived by youth as trivial in comparison to the complex understandings required to survive in the world and be a part of the highly complex and nuanced culture that is hip-hop.

The perception that school is trivial goes hand in hand with the above-stated hip-hop belief that one is superior to any situation at hand. This superiority complex is evident in the often-haughty dispositions of hip-hop artists in interviews and music videos. It is also seen in the expression of these characteristics by urban youth both within, and outside of, the science classroom. This piece of hip-hop culture (expressing superiority in the face of adversity), is a major component of the ontology of marginalized people of color in the United States. I argue that its roots can be traced to slavery and the moral, stylistic and intellectual superiority expressed by Black slaves in instances where they gathered together to critique their masters cruelty, dress, and mannerisms (Hartman, 1997). I also argue that these historical under-pinnings are the seedbed from which the expressions of a superiority complex in participants in hip-hop take root.

In my work in urban schools, and in my study of the academic work produced on urban education, I find that the issues surrounding this superiority are either understudied or not recognized for what they are. The lack of consideration of the ways of sense making of the hip-hop generation has caused the teaching and learning of urban youth of color to be, and continue to remain inevitably fractured. This is particularly the case in science classrooms because urban youth who are a part of hip-hop are framed as, and then taught as if they are, disinterested in school science. In actuality, their expression of dissatisfaction with the ineffective instruction of the discipline is a marker of interest. The need to actively communicate, present information in colorful and creative ways, or challenge established norms in order to create more complex understandings, that are key components of the hip-hop culture are currently not welcome in urban science classrooms. This is the case in spite of the fact that these above stated “hip-hop attributes” are those that are also beneficial to the advancement of science. For example, the emergence of Einstein’s conceptions over pre-established and scientifically accepted Newtonian science is a classic examples of the dominance of thought and creativity over remaining comfortable with conclusions drawn purely from established norms. In the same vein, hip-hop based pedagogy is an advancement over established approaches to teaching science.

In the instruction of science, particularly in urban settings where a majority of students express the extreme thoughtfulness and creativity that comes with being a part of hip-hop, the nature of instruction revolves around the cramming of facts, the omission of the contexts surrounding advances in science, and limited opportunities to utilize one’s creativity to make sense of science. Within urban science classrooms,
the inability of teachers to understand and accurately reflect the fact that science welcomes the characteristics that participants in hip-hop exhibit outside of the classroom, leads to the continual growth of urban students’ negative feelings towards teachers and the positivistic nature of science instruction.

While the pervasiveness of positivism in science has been considered to have waned with the advent of science and technology studies that questions the boundary between science and politics (Jasanoff, 1990), what Fuller (2003) describes as the epistemic status that science enjoys, as well as the problems science has caused and solved in modern society, are generally not considered in urban school science. This, I argue, is a significant factor in hip-hop youths’ disenchantment with science, and a cause for both the historical marginalization of hip-hop youth from school, and hip-hop’s view of self as beyond school because it does not relate to the brand of science or mathematics that has historically been a part of the urban experience.

Therefore, in a consideration of hip-hop youths’ disenchantment with school science, I also consider the historical marginalization of people of color from science. As we progress, I will work towards a reconnecting of the role of this history to what we find in contemporary urban science education. I also work towards fully interrogating contemporary studies of hip-hop as they relate to the urban science classroom. Then, I offer a set of suggestions for the effective instruction of hip-hop youth experiences to move beyond negative preconceptions of hip-hop and urban youth and consider that the hip-hop generation is an evolved version of the urban poor that Bowles and Gintis (1976) describe as the inhabitors of urban settings in the United States. The overt and purposeful discounting of school that is expressed by hip-hop youth is an outgrowth of silenced responses of the historically oppressed to being excluded from full participation in society. Understanding this fact and its impact on contemporary teaching and learning allows us to see that what we label today as an anti-school hip-hop persona is an expression of a sentiment that pre-dates hip-hop’s musical origin in the late 1970s.

One of the most significant connections of hip-hop to its ancestry is in the roots of hip-hop’s superiority complex to that of the slave in the mid to late 1880s. I highlight this connection because, as Hayek (1952) mentions, “it is important to observe that in all this, the various types of individual beliefs or attitudes are not themselves the object of our explanation, but merely the elements from which we build up the structure of possible relationships between individuals” (p. 68). In other words, through the exploration of the relationships between the slave and the hip-hop student, our understandings of those within the hip-hop generation are more elaborately developed.

ON SUPERIORITY

For students in urban science classrooms, who are for the most part, largely influenced by, or immersed in hip-hop, they inherit much of the interplay between
the overseer and the slave in their experiences within spaces like the urban classroom where they are not given the opportunity to express their hip-hopness. In my work within urban science classrooms, I find that the connections between slavery and the classroom are expressed daily in instances where the student and the teacher’s relationship mirrors that of power wielders and the powerless. Since the prototypical urban science classroom is governed by the teacher in a rule by force ideology which focuses on classroom management as the main objective, “doing science work” is presented to students as a necessarily labor intensive set of processes that must be removed from a passion for, or desire to, connect to science. The expected reaction to this relationship between the power wielder and the powerless may be expected to be that the powerless deal with their positioning by internalizing a belief that they are inferior to the power wielders. However, with Black slaves, as with hip-hop youth, the reaction to being positioned as the powerless is a strong sense of self that results in the feeling that they are above the menial tasks presented to them by the master, or in the case of the urban science classroom, the teacher.

If we focus here on the Black slave, the belief in one’s superiority is understandable when one looks at the larger circumstances that surrounded slavery. In essence, the need for a self-affirmation in the face of daily debasement can be seen as a necessary coping mechanism. Webber (1978) discusses the slave’s belief in “their own stylistic superiority” as expressed in the aversion shown by the quarter community (slave community) for White church services that they found disengaging and lacking in any pleasure. The expression of this superiority was a sentiment that was often expressed in song with lines like, “White folks go to chu’ch, An’ he never crack a smile; An’ nigger go to chu’ch, an you hear’ im’ laugh a mile” (Scarborough, 1925, p.168). This lyric displays the nature of the White church sermon, which consisted of the preacher at the pulpit delivering a sermon, or teaching about the word, where the level of engagement is low and full participation is muted. It also describes the Black church, where engagement is high and smiles, laughter, and active engagement are a part of the preaching or teaching.

I argue that the White church service referred to in the slave song is representative of a style of instruction that functions to alienate people whose daily experiences and means of making meaning are multi-modal, and arguably more complex than the simplistic ways of knowing that are required for just sitting and listening. A slave era White church approach to instruction that simply requires sitting and listening cannot connect the hip-hop student to a discipline like science - that requires not just listening, but doing. This is even more the case when the students’ hip-hopness dictates that to live is to question.

The result of extracting the students’ natural affinity for questioning, and eliminating opportunities for embarking on quests for one’s own answers, inevitably breeds a disinterest in science. The result is scenarios where students talk about the teacher and the subject being taught disparagingly while affirming their own intelligence or superiority to what is being taught through by their words and actions. This is seen in conversations that students have in the classroom, their
behavior in the classroom, and even hip-hop lyrics like “... while I sleep through class, My teacher can’t stand that I always pass, [but I am] Sharp wit da flow like darts wit da flow” (Roscoe, 2003).

For the rapper quoted above, the instruction in class becomes so disengaging that he falls asleep. Concurrently, it describes the student’s affirmation of his own intelligence as he describes his sharpness with his rap flow. This lyric is representative of the hip-hop students’ belief in their superiority to school, and is the contemporary iteration of the slaves’ response to the confining structures that exist in the spaces they are forced to inhabit.

For slaves, the results of dealing with limiting structures in their everyday experiences was the rise of a constant effort to outwit Whites and affirm their superiority over the overseer or master. They met these goals by engaging in practices that were subversive to the master’s goals and by making the master the “target of slave jokes and plots” (Webber, 1978). For the hip-hop youth, the master’s position as the target of jokes is transferred to the teacher. In my work within urban science classrooms, I have witnessed students purposefully choose not to engage with the subject matter being taught in order to upset or anger the teacher. Under the mask of this show of defiance is a search to find one’s superiority to the teacher. The long-term effects of the students’ search for the most appropriate response to the constraining structures of the classroom results in the identification of the behaviors that are most frustrating to the teacher or the school, and the purposeful enactment of these behaviors until they are seen as characteristics. These characteristics are then tied to the nature of being hip-hop and not seen as responses to the slavery like nature of instruction within the urban school.

Another misunderstood connection of hip-hop to its slave ancestry is the role of music as one of the chief avenues through which frustration with negative experiences is expressed. Courtlander (1992) describes the fact that slaves would utilize song and rhyme with distinct meter and rhythm (similar to that found in hip-hop) as a means to express their frustration with toiling the fields or a means of generating solidarity when they gathered together. The role of music in the lives of Black slaves mirrors the role that hip-hop music plays with urban youth. The use of the slave song as an avenue for voice can be seen as an example of how rap (one of the chief attributes of hip-hop) has become an avenue for voice for oppressed Black and Latino/a youth. Hip-hop stands as a cultural understanding that has roots in slavery. Once this link is thoroughly investigated, it provides a lens through which educators can look at urban youth that is different from those that are traditionally used. This new vantage point, allows the educator to look at urban youth in ways that go beyond their classroom behaviors, and forces a focus on hip-hop through its historically rich tradition; steeped in the experiences of those who have been and are oppressed. When this new focus on hip-hop and youth in the classroom occurs, what is labeled as poor behavior in school is seen as a search for opportunities to affirm intelligence, and hip-hop becomes the means through which feelings of superiority over the mundane and confining structures of the urban classroom are expressed.
With an understanding of the deep roots of hip-hop having been established, the next step is to provide deeper insight into its relationship to the urban science classroom and move toward teaching a new way. In order to do so, an explicit focus on the theoretical framework that guides the chapters in this book is necessary. Here, I lay out the themes from cultural sociology that speak to the topics that will emerge throughout this work. I present them as pieces of a theoretical framework that provide a deep understanding of hip-hop, science, and education and the ways that they indelibly affect each other and impact the instruction of youth in urban science classrooms.

On Cultural Sociology and the Use of Structure

Cultural sociology is a field of study that functions to “bring the unconscious cultural structures that regulate society into the light of the mind” (Alexander, 2005 p. 3). In other words, it functions to question unquestioned social structures that impact the ways that we act and brings the results of this questioning to the forefront of our discussions. This approach can be seen as a means to explain the whys and hows of our daily interactions and the social phenomena that shape them. Cultural sociology provides a framework for seeing how hip-hop has evolved into a democratic space for those who have been denied the opportunity to be active participants in a democratic society at large, and within schools.

I have already mentioned, and will consistently refer to structure. In many cases, I will refer to the relationship between structure and agency and the fact that the agency or power to act for an individual or group is related to the structures in place within a social setting. For example, for hip-hop students in the classroom, both their agency and the way that this agency is enacted is dependent upon both animate and inanimate structures like the teacher and the materials in the class. Therefore, structures stand as objects or phenomena within social life that provide a frame for another aspect of social existence (Sewell, 1992). The frame that structures provide can then be viewed as parameters that a person or group must function under or within in order to exist. For example, the fact that science is taught in an urban science classroom by limiting hands on demonstrations (in comparison with classes in non-urban schools who are more socioeconomically advantaged), or not supporting inquiry creates a scenario where the agency of students in the classroom to engage in hands on activities that would provide more than superficial insight or interest into science is limited. When a student is not free to explore scientific concepts using hands on or inquiry based tools, the structure created by the teacher, or the nature of the urban classroom, is invariably linked to the limited agency of students in the classroom to be fully connected to science.
CHAPTER 2

Structure and Agency

Sewell (1992) makes it clear that structures shape practices, but it is also people’s practices that constitute (and reproduce) structures. This reciprocal relationship between structure and agency stands as a way to make sense of the constant affirmation and reaffirmation of structures that impact human practices and the evolution of practices into patterns of behavior that become seen as characteristics. This is the case because once a structure is in place that leads to the enactment of a set of practices; the practices become a way through which the structure is reaffirmed. This interplay between structure and agency is ultimately rooted in culture. For example, the oppressive structures within urban settings that prevented poor urban Black and Latino/a youth from having the monetary and symbolic resources to be involved in the party scene in the late 1970s created certain constraints on the extent to which they could be a part of the larger social scene. These constraining structures pushed them to be able to enact agency in very limited ways that were outside of the larger party scene. This resulted in their creation of an alternate social scene. They began throwing parties in the parks in their neighborhoods, and before long, hip-hop was born. In the creation of hip-hop, the larger structures that were put in place affected urban youth agency. Ultimately, this agency became enacted in a way that led to the advent of hip-hop. Hip-hop stood as a way to enact agency within the parameters set by the established culture and over time, evolved into a distinct culture. With all this being said, it is important to also recognize that “societies are based on practices that derive from many distinct cultures, which exist at different levels, operate in different modalities, and are themselves based on varying types and quantities of resources” (Sewell, 1992, p. 16).

On Culture

The use of the word cultures by Sewell in the above quote makes it a key piece of the theoretical framework developed for making meaning of hip-hop and identifying characteristics that one could classify as hip-hopness. This focus on culture lays the groundwork for a deeper understanding of what it means to be part of the hip-hop generation within a school with a culture that is other than hip-hop. A discussion of culture also assists in the sense making of urban school science and the fact that it has its own distinct culture. The view of culture I hold begins with the fundamental understanding that culture is composed of schema and practices. This view of culture is an extraction of a definition from Sewell’s discussion on the relationship between structure and agency as he discusses the role of practices and the multi-modality of structure. However, it is more deeply rooted in a Bourdieusian framework and can be seen as a contemporary explication of the fact that the knowledge imposed on students in schools is founded on the culture of the dominant class, which determines what is taught in schools (Bourdieu & Passeron, 1977). Class and culture are therefore related and the societal value placed on certain schema and practices determines whether they are of a certain societally valued or devalued class.
Extending the example of hip-hop and its formation as a result of structures that inhibited the connection of urban youth to the social scene, I argue that the creation of hip-hop culture from the structures that sought to set the parameters for the enactment of agency for urban youth of color, relegated hip-hop to a low class culture or lower class structure than the culture that it grew in response to. In weaving the theoretical pieces from the previous two paragraphs into this one, I argue that the structures that are in place within a social field are directly related to, or implemented by, the larger culture in place. There are cultures that grow because they are considered the popular or higher class culture and then there are those that grow because they are responses to those mentioned above. Certain cultures serve the interest of the dominant class and the reciprocal relationship between structure and agency functions to reaffirm these structures and reproduce power dynamics. 

In the case of school science, particularly in urban schools, the teacher functions as the power wielder and the representative of not only the power structure of the school, but that of “Western” science. Therefore, students who are a part of a culture that developed in response to the larger dominant culture are positioned in ways that cause their culture to be perpetually devalued by school unless there is a fracture in the continuum between structure and agency. In other words, if a culture is birthed out of a response to an existent one, it quite possibly is based on tenets that are critiques of the established culture. Therefore, it will be positioned as less than the dominant culture as long as the power of that larger culture is maintained. In many ways, hip-hop stands as a response to an established culture. However, over time, it has evolved to interrupt the continuum between structure and agency that sustains the existent culture and has become its own distinct established culture.

The relationship between structure and agency, and the role of culture in this relationship is also seen in science education. In this field of study, there is a focus on the nature of science, inquiry, and other more constructivist approaches to instruction that breed certain schema and practices that give the discipline a certain culture. However, in the relationship between science education and urban science education (which itself has its own distinct culture), the structures in place within urban science education extract much of the practices that are identified by science education as necessary for teaching science. In place of constructivist approaches to instruction there is a hyper focus on issues like classroom management. In a sense, approaches to instruction that are valuable for all students are removed from urban science education. Hence, Bourdieu’s (1984) discussion of the inclination of dominant culture/class to remove practical use or material necessity from education gets played out within urban science classrooms. This issue is problematic for students who are a part of a culture like hip-hop, which is based on hands on teaching and learning and the enactment of practical responses to issues that affect one’s community.

**Focusing on Social Fields and Capital**

In an extension of Bourdieu’s work, I utilize his (1983) notion of the social field and his examination of capital to analyze our topic of discussion further. I view hip-hop, schools, and science as separate social fields in which certain types of
CHAPTER 2

culture are simultaneously produced, reproduced, and transformed, and certain capital is held and or exchanged. There are certain understandings in hip-hop, schools, and science that are distinct to each, and under which participants in each of the fields are consistently operating. For example, the ways that students communicate in a hip-hop field where they are writing a rap together varies significantly from the ways that teachers expect the students to communicate with each other in a classroom. While students may collaborate to create a rap song, and suggest ways to improve each rap verse, the classroom teacher may expect each student to be individually responsible for providing answers to questions she asks. Each social world, whether affiliated with hip-hop, schools, or science, is made up of what Bourdieu refers to as an “accumulated history” based for a large part on the experiences of participants in the culture (Bourdieu, 1983). This view validates the perspective that hip-hop as a culture that is historically rooted in slavery and gets enacted within certain social fields, and school and science as separate entities each with its own distinct history gets enacted in other fields like classrooms or the school. Bourdieu describes these fields as systems within which participants interact and exchange different forms of capital (Bourdieu, 1990). By capital here, I refer primarily to social capital and the fact that “social capital is defined by its function. It is not a single entity, but a variety of different entities... and they facilitate certain actions of actors” (Coleman, 1998, p. 103).

Viewing the environments where culture is produced as fields is helpful for assisting the reader in looking at the dynamics at play among people of a particular culture in different spaces. For example, when participants in hip-hop are rapping to each other on a street corner, they are in a social field expressing their cultural and social capital. Within social fields that are outside of the classroom, they will inevitably express a part of this culture, and may either be supported or hindered from doing so depending on the structure within the field they are in. When students rap within a social network of their peers in the field of the rap cypher, there is a situation where there is a type of capital that is unique to the field that is supported by the structures within it. Conversely, in a classroom, where the teacher is teaching a lesson to students who share a similar cultural background with the teacher, they are interacting with each other in a field where they have the opportunity to exchange similar types of capital. The teacher and the objects in the classroom are structures, and these structures facilitate the types of actions or behaviors that students enact.

The Structures of the School

By looking at hip-hop and urban schools as separate fields, each with different structures that sometimes have the same actors or participants, it becomes easy to see the ways in which actors from both of these fields interact when they come in contact with each other in the classroom. By looking at the classroom as a social field where two types of people with different forms of capital come together, one is able to look at the dynamics at play when hip-hop culture becomes expressed in the classroom and understand the ways that this clash of cultures affects teaching and learning. In a school, the actors in the larger social field are teachers, school
TEACH A NEW WAY

administrators and students. In the larger field of hip-hop, the actors in the field are graffiti artists, rap artists, dancers, deejays and those who appreciate their genre. When participants in hip-hop come into schools, and particularly when they enter into the science classroom, the nature of the new field, or the structures of the field (the classroom) are often different from those in the fields they inhabit outside of the classroom. This in turn, affects the students’ agency.

There is a separation between the culture in hip-hop fields and those of school fields that requires participants in hip-hop to maneuver through the structures of schools in order to find ways to enact their agency in ways that allow them to be successful in classrooms. To communicate in the classroom, a participant in hip-hop has to understand the ways to appropriately communicate in this field and ensure that there is no indication of her hip-hop identity in this communication. This separation of cultures is primarily a function of the low value assigned to hip-hop culture in schools and the subsequent implementation of structures within schools that are intended to limit the agency of participants in hip-hop. Oftentimes, the structures that limit the student’s agency are teachers that adhere to a too-strict curriculum limited to too-few topics that are often not presented in new ways that incite student interest. These structures also include school regulations that consequently limit access to materials that would allow students to engage in science. The limiting structure of the hyper-strict curriculum draws invisible lines which confine each group of actors in the classroom (students, teachers, administrators) into pockets that cause them to either not consider the social capital of others as valuable or to explicitly work to de-legitimize the culture of others in the schooling process. An example of how these divides become enacted is often evident in the urban schools where I conduct research.

In these fields, teachers follow a pre-established curriculum and do not deviate from the existent state mandated plan. Furthermore, they focus on referencing learning standards and performance indicators rather than examples of science and teaching referent points from students’ lifeworlds. Teacher practice is too often completely aligned to an established plan that does not reflect the diversity of the students being forced to adhere to these standards, and does not function to generate student interest. In one classroom, an experienced chemist who had been involved in numerous research projects around the world prior to becoming a science teacher found that there was such a limit on his capital that he could not teach chemistry in a way that reflected his experiences of doing extensive research in the discipline. The strict limits on what to teach and how to teach negated the experience he had gained as a chemist and the potential for engaging students in new ways. In other words, the possible ways to utilize his expertise to involve students in the subject were severely limited by the structures of the science curriculum. In one particular instance, a teacher responded to a student’s request to spend some extra time on a science topic she was interested in by saying “We have no time to improvise here, I don’t make this up. This (what I teach) is from the state and we have limited time for nomenclature.”

Within this structure, the teacher who is a chemist is devalued in order to become a teacher. Therefore, the student who is immersed in hip-hop is forced into
the even more lowly position of the victim of an established approach to education implemented by a possibly effective educator that is rendered powerless because of an approach to instruction he is forced to adopt.

As I sit and write this, more than four decades after the lyric that asked teachers to teach a new way made its way to the general public, and less than two decades after I first stumbled upon the record that introduced me to this question, it appears as though not much has changed. The issue for connecting students to the subject matter is more pressing than it has ever been. Therefore, I continue in this work holding tightly to my strong allegiances to students and teachers in urban science classrooms. I write not only from my stance as an academic but also from my stance as a participant in hip-hop. I draw upon my experiences as teacher and researcher and write from my stance as a man of color, having completed a vast majority of my education in urban public institutions. Through this position I hold an intimate, reflexive, phenomenological, and experiential view of what learning and teaching science in urban settings entails. I am a product of the social and temporal structures that shape the contexts wherein I am embedded and set the parameters for how I enact my agency. They guide my path into this work. I am a scientist, I am an educator and I am hip-hop.