Rhymes with Reason: Using Music to Connect Identity, Culture and Learning

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Culturally diverse students come to school with rich traditions, heritage, and cultural funds of knowledge that are often undervalued and under-utilized in academic settings. Tailoring educational programs to draw from and build on youth's experiences through culturally relevant and sustaining practices can enhance the effectiveness of programs designed to address existing disparities and promote students' academic success and thriving. This paper focuses on *Rhymes with Reason* (RwR), an educational product developed by the first author as an undergraduate student, that contributes to the collective efforts of scholars and practitioners to apply culturally relevant educational approaches to support diverse students and educators. Supported by two faculty mentors, the first author describes the theoretical foundations that informed RwR's development and the current product that is a web-based learning tool to support language-related academic achievement among middle- and high-school students. Additionally, the first author describes key developmental experiences that sparked RwR and how developing this culturally relevant program impacted his own identity development. Further, he discusses future directions for the expansion and evaluation of RwR. The mentors conclude with broader considerations for mentored scholarship and the development of culturally relevant education programs for diverse learners.

Educators, educational researchers, and policymakers in the United States are occupied with documenting and addressing the disproportionate representation of racially minoritized students (e.g., Black/African American and Latinx/Hispanic) in undesirable educational outcomes, including suspension, school dropout and push out, and low academic achievement (Carter, Skiba, Arredondo, & Pollock, 2017; Noguera, 2009). For some, these educational outcomes are due, in part, to dis-identifying with school because of the significant cultural compromise they perceive embedded in what it takes to do well at tasks that do not reflect their cultural assets

(Kirkland, 2013). Nonetheless, the same students come to school with rich traditions, heritage, and cultural funds of knowledge that are undervalued and under-utilized in academic settings (Lee, 2008; Moll, Amanti, Neff, & Gonzalez, 1992; Yosso, 2005).

Scholars and practitioners assert that tailoring educational programs to draw from and build on youth's experiences through culturally relevant and sustaining pedagogies can enhance the effectiveness of programs designed to address existing disparities and promote students' academic success and thriving (e.g., Ladson-Billings, 2014). Unfortunately, many educators are challenged to develop culturally relevant instructional strategies and may seek supports during their training and in-service professional development to demystify the process. An even greater challenge for educators may be to find culturally relevant strategies that are designed for structured learning environments (e.g., public school classrooms) where most culturally diverse students convene.

This paper focuses on one such strategy, *Rhymes with Reason* (RwR), a web-application conceptualized and designed by the first author, as an undergraduate student, and its ability to serve as an effective culturally relevant educational experience for culturally diverse students (www.rhymeswithreason.co). While studying human development research and theory (particularly regarding academic achievement across groups, stereotype threat, culturally sustaining pedagogy), the first author began to consider how to use his own transformed school engagement, integration of academic and racial identity, and knowledge of the literature to help support the development of students facing the same challenges he had as a student. In the following sections, the first author reflects on his background and educational experiences, discusses how hip-hop sparked his own academic motivation, and links discovering his love for lyric and metaphor to his interest in English Language Arts (ELA) courses. Then, we[1] review literature on culturally relevant and sustaining educational practices that informed his development of the program. After articulating his program's development (from conceptualization through current implementation strategy), he briefly discusses how developing this culturally relevant program impacted his own identity development. Finally, the paper concludes with future directions for the expansion and evaluation of RwR, and implications and considerations for research and development of culturally relevant education programs more broadly.

REFLEXIVE STATEMENT

I (first author) was born into a family that viewed opportunity creation for Black people and other minorities a generational mission. Both sides of my family are deeply rooted in Detroit, Michigan. Both of my grandmothers were 40+ year educators in the Detroit Public School system, and my grandfather was a Tuskegee Airman. My parents worked in health clinics in Detroit. Almost every single person in my family, on both sides, has dedicated a great portion of their life attempting to improve the lives of people of color.

I was born in San Diego, California, where my parents had relocated after they had moved up the career ladder. Growing up, I had the opportunity to attend some of the best schools in my home city. I played every sport and instrument, and was exposed to art and culture. I was unquestionably blessed with more opportunities compared to my parents and grandparents, but was also raised in a manner consistent with their generational mission. I grew up blessed, but was made familiar with what it looked like to face significant systemic challenges; we visited inner city Detroit every year

(my father helped run a charter school) and I was heavily involved in community service and activity with Black and Brown organizations in San Diego and beyond.

Despite what was expected of me given my background, as a young person who was incredibly intellectually curious and stimulated particularly by hip-hop music, sports and other disciplines more native to my cultural upbringing, I did not find the same passion for school. For the first 15 years of my life, I was frequently disciplined in school and often viewed by teachers as the academically struggling Black boy (underachieving student, yet with potential) that my family spent generations fighting for. This mystery bewildered my parents and anybody who knew me, creating a huge source of distress for most my life. By the age of 15, my love for hip-hop, particularly the lyrical and verbal aspects of hip-hop, sparked my interest in school. I would see material in my history classes, elements from my English classes (as we explored metaphor and other concepts), that were familiar to me, from the likes of Jay-Z and my other favorite rappers. In the same way that Lupe Fiasco made me want to wear glasses, and Kanye West and Pharrell made me want to wear bright polos, suddenly my favorite artists and their lyrics overlapped with academics, and made me want to pay more attention in school. With the help of this spark, and the help of continued support and patience from my parents, I blossomed from a notorious academic underachiever to a student who finished high school with above a 4.0. I began applying the same focus and attention to detail that I was applying to my extracurricular obsessions and everything changed. In 2013, I was accepted to Brown University, where I started learning about human development and education theories and began to develop an educational tool that filled the gap that I was missing as a youth.

THEORETICAL BACKGROUND

(Dis)identifying with Schooling

Identity formation is widely recognized as a normative developmental process through which a young person explores, navigates, negotiates, creates and comes to understand their place in the social world (Erikson, 1968). Advancing the identity literature, Spencer (2006) asserted a person-centered identity development model, grounded in variations of ecological systems theory that also acknowledges the unique experiences that youth of color endure due to their interactions with systems of oppression. Varelas, Martin, and Kane (2012) noted that intersecting domains of a student's identity may differentially contribute to their learning, academic achievement, and development. The relative (in)congruence between one's ascribed and assumed identities can limit or facilitate a student's development and learning, contributing to racialized storylines that continue narratives of disproportional academic achievement (Nasir, 2012).

Particularly for students who are racially, ethnically, and economically marginalized, the gap between their social positions and the competencies and knowledge assumed in "mainstream" school-based curriculum, assessments, and behavioral norms may contribute to learning spaces rampant with microaggressions – everyday slights, insults, putdowns, invalidations, and offensive behaviors directed at individuals based solely on their group membership (Sue et al., 2007). Encountering these social pressures can trigger anxiety and stress in students via stereotype threat (Steele, 2010), which can shut down previously engaged learning processes, and sabotage

a student's academic achievement and positive sense of self-efficacy (Hammond, 2014). To address this disconnect and existing inequities, educators can support students' engagement by giving them opportunities to connect their culture and other forms of knowing to school achievement and learning (e.g., Ladson-Billings, 1994).

Bringing Diverse Cultures and Identities into Schools

Seminal works by Bourdieu (1990) and Freire (2005) emphasized the importance of culture and identity in a student's ascending journey within the social structure of the school. Amidst the "demographic divide" between a predominantly White, female, and middle-class teaching workforce and diverse students and families (often racially different), Ladson-Billings (1994) investigated how the pedagogical practices of eight successful teachers contributed to educational achievement in their African American students. Drawing on work by Bacon (1981), she reported that "among African-American high school students identified as gifted in their elementary grades, only about half were continuing to do well at the high school level (Ladson-Billings, 1994, p. 476)." She also noted that a systemic discouraging and exclusion of Black culture throughout years of schooling positions Black cultural identity development at odds with academic success. Her foundational research revealed that effective teachers scaffold their students' cultural knowledge and nurture cultural connections between students' lives (e.g., experiences, knowledge, interests, characteristics) and school to promote their academic achievement and positively impact learning.

To sustain students' engagement, Ladson-Billings (1994) outlined three relational perspectives embedded within a culturally relevant pedagogical approach for teachers to utilize (regardless of their cultural or racial background). The first, *conception of self and others*, includes having an honest understanding that teachers must learn from the cultural experiences of a student to effectively reach and authentically engage them. Second, *community of learners* highlights the importance of reciprocal knowledge exchange between student and teacher and maintaining a shared cultural and learning environment. Third, *conceptions of knowledge* recognizes that knowledge is often expressed in a way that is non-academic (e.g., takes different shapes, is not linear, and is not necessarily outcome-based) but should be identified and incorporated into classroom practices. These relational perspectives encompass both the teachers' approach and how students navigate educational spaces.

To explore students' perspectives, Carter (2005) conducted an ethnographic study of 68 low-income, Black and Latino youth to describe how they balanced cultural identity and reached varied levels of academic achievement. Within her sample, Carter identified three student groups: "mainstreamers" who conformed to mainstream (i.e., White) academic behaviors, "straddlers" who alternated between expectations of their culture of origin and mainstream culture, and "non-compliant believers" who chose to identify with their culture rather than subscribe to the mainstream culture, which they viewed as stereotypically more aligned with academic success. Findings from Carter's research demonstrate that some youth are unwilling to prioritize excelling in school, if it means they must abandon their cultural identity. Overall, this work shows how adolescents' complex interplay between identifying with one's culture and with school can affect their academic achievement, especially for some adolescents of color. The negative association could potentially be mediated if school presented itself as an environment where students' academic and cultural identities can be equally fostered.

Building on existing literature that helped align cultural knowledge and school-based tasks (e.g., Ladson-Billings, 1994), Paris (2012) articulated how culturally sustaining pedagogy "seeks to perpetuate and foster—to sustain—linguistic, literate, and cultural pluralism as part of the democratic project of schooling" (p. 93). Culturally relevant and sustaining pedagogies center around the idea that effective teachers minimize the amount of "cultural compromise" that Black and other minoritized students need to exhibit to succeed in school (see too Ladson-Billings, 1994). Further, these teachers and their approaches encourage and offer positive reinforcement for maintaining student's culture in academic settings.

Investigating the efficacy of such sustaining approaches on a larger scale, Dee and Penner (2017) reported on a five-year study involving 1,405 students (predominantly Asian American, and Hispanic/Latinx) who took an ethnic study course during their 9th grade year. Implementation of an ethnic study curriculum in the San Francisco Unified School District showed significant increases in 9th grade GPA, student attendance, and credits earned. Engaging with the curriculum was also associated with an overall reduction in student dropout (Dee & Penner, 2017). The ethnic study course (and the culturally relevant content embedded within) drew upon funds of previous cultural knowledge, contributed to students' understanding of their place in the world (in the midst of their identity formation), and provided an inclusive curriculum for students from historically marginalized backgrounds. Notably, findings from the San Francisco study paralleled those in Tucson, Arizona (Cabrera, Milem, Jaquette, & Marx, 2014) and contribute to a growing body of research and school district-wide indicators pointing toward the value of investing in curriculum that reflects the cultural experience of students of color.

Although research indicates that culturally relevant and sustaining pedagogy is effective in reaching and improving performance for students from minoritized or marginalized backgrounds, a persistent challenge is to scale up these practices across public school districts, entities where most students from these backgrounds attend. National data indicate that students of color represent more than half of the student population in U.S. public schools (Frey, 2019). Despite concerns regarding disparities in academic outcomes, youth themselves, and practitioners seeking to support them, should draw from a range of resources to transform the dominant narrative about their academic trajectory. Educators and students need multiple and frequent opportunities to draw from and build on student's cultural funds of knowledge to enhance student engagement, achievement, and development.

> *As young people are positioned by teachers and others in line with prevalent racial storylines, they also engage in a sense-making process about who they are (racially and academically). They can draw on the available racial storylines or, conversely, the counter-narratives as they author themselves in school settings. This process of racial authoring has important implications for academic self-authoring and for the ways students participate and learn in schools* (Nasir, Snyder, Shah, & Ross, 2012, p. 292).

The current project contributes to efforts to align potentially disparate experiences in and out of school. Specifically, it represents the first author's experiences in school, how the disconnection with hip hop as his fund of knowledge inspired the development of *Rhymes with Reason* (RwR), and chronicles his development, that of the program, and its impact.

DEVELOPING RHYMES WITH REASON

Preliminary Program Development

Informed by literature on teacher-level culturally relevant pedagogy (Carter, 2005; Ladson-Billings, 1994) and district-wide implementation of culturally relevant education (Dee & Penner, 2017), I was inspired to develop a culturally relevant educational product that can have national utility in public schools across America. Since the goal was to reach as many students as possible, via a medium that was most relevant and familiar to this generation, I elected to create an online intervention. RwR's chief product is a web-app that incorporates Common Core and Standardized Test aligned portions of popular music (particularly hip-hop) to supplement English Language Arts (ELA) learning (TEDx Talks, 2016). In its original conception, it was designed to be a curricular resource that teachers could use to engage and connect with culturally and linguistically diverse students and increase students' ELA performance per nationally standard accountability metrics. The next sections describe the development, modifications, and preliminary evaluation of RwR, as well as the current implementation strategy.

When I arrived at Brown University, the idea for RwR was brewing but had not fully crystalized. A class on "The Psychology of Race, Class and Gender" taught by Professor Mona Abo-Zena helped to extract the idea from within me. We explored identity development and the fusion of education and culture in a way that I had never heard expressed. In the class, we did extensive research on culturally relevant pedagogies, and Professor Abo-Zena placed us in project-based groups where we had critical discussions with other classmates who were passionate about social issues. I also met Khalil Fuller, a fellow student, who had started a nonprofit that taught children math using NBA and WNBA player statistics (Dyer, 2015). I told Khalil about my academic experience with hip-hop and how I wanted to help other students (particularly Black and Latinx) learn vocabulary and elements of literacy using the magnetic cultural force that is hip-hop music. Khalil introduced me to mentors in the Social Innovation/Entrepreneurship Department at Brown, including social entrepreneur, Cliff Weitzman who created an app to help children with dyslexia read more efficiently.

With support from Cliff and faculty mentors at Brown, I learned about the process of creating product prototypes (also known as minimal viable products), which is a very low-scale, low budget version of what you ultimately want to create. My minimum viable product was inspired by three main elements: 1) initial research about the academic vocabulary words I could find within popular hip-hop songs; 2) a Weebly website; and 3) Youtube-linked Quizlet (i.e., online flashcards). I researched the top 100 words on the SAT and found 67 of them in popular, recognizable hip-hop songs via Google and other online lyric repositories. Then, I put the words on flashcards and attached the lyrics and Youtube links for users to listen on the back of the flashcards (Figure 1), and hosted the resources on a Weebly website. In my first year, I had a working version of my concept that was ready to be tested by students and built for less than $250.

Collecting Feedback and Program Modifications

After developing the first iteration of RwR, the next step was to test how users would receive it so I could improve the product accordingly. Thanks to Brown's partnership with a nearby public high school, I piloted RwR with high-school students. I conducted an exploratory A/B[2]

Word: Parched
Song: YOU SONG
Artist: LIL WAYNE feat. Chance The Rapper
Listen From: 0:00
Exact Time: 1:05

*(clean option)

to be dry, hot, or thirsty

Lyric: "I'll hire Geoffrey to get a beverage if you should ever get parched."

Context/Explanation of use in song:
Chance references receiving a beverage in response to being thirsty (parched).

FIGURE 1 Rhymes with Reason vocabulary flashcard, created in summer 2014.

test in 2014, where a small cohort of students who used RwR performed better than those that did not on a multiple-choice test that I curated for the pilot cohort. In this exploratory investigation, I focused on one classroom. Half of the students used RwR and the other half used Quizlet flashcards, which were typically used as an in-class study tool. All students learned the same words and were then given the same multiple-choice test. In this small-scale comparison, designed to provide prompt feedback on the product, the students who used RwR scored slightly higher compared to the students who used the standard tool. This small-scale pilot study was not necessarily methodologically robust, but it was an early indicator that the program had some potential for impact, especially because the students glowingly raved about how engaging the program was.

In the same year, I was awarded a Social Innovation Fellowship at Brown, which provided me some start-up funds, as well as invaluable mentorship. With funding, I incorporated the early user feedback and invested in building out the learning content database (more vocabulary). I hired friends over the summer to help me add words to the database, while I sought out additional input from schools and afterschool programs. I also sought feedback from education professionals who I eventually invited to serve on my advisory board. One notable conversation I had been with a leader in the College Board's Midwestern Regional Office. We discussed trends in standardized testing, and his insights inspired the methodological expansion to make the RwR interface mirror the vocabulary section students encounter on standardized tests, with the goal that understanding vocabulary words in this format would help scaffold students' performance on standardized tests (Figure 2).

During this time, I simultaneously piloted the prototype at a few schools and afterschool programs, and received consistently positive feedback from students, teachers, and administrators. Students largely noted how the program facilitates their connection to and engagement
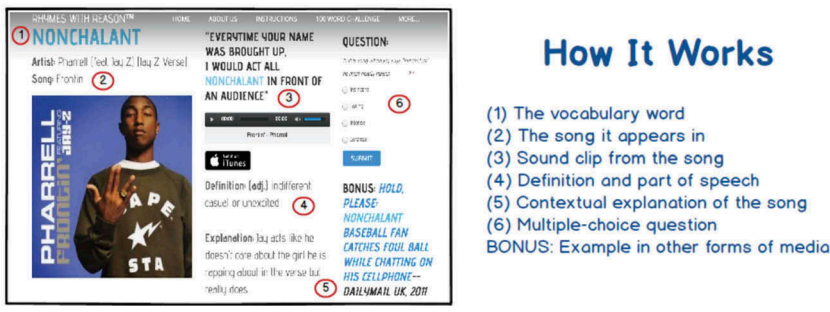
FIGURE 2 Prototype product in 2015–2016 (after student testing and consultation with a College Board representative).

with requisite learning material. For example, a student at Hackensack Public High School in New Jersey said, "[when] you're listening to music and your remembering it, and you're like 'oh, Meek Mill said this, Drake said that'—and we look at our idols and we remember those lyrics and that is a better way of understanding than us looking at a textbook" (TicToc by Bloomberg, 2018). In the same cohort, students described how RwR was the first academic program that brought the exact same artists who "helped them through" tribulations like depression and loss into their curricular experiences.

One incredibly important thing I learned through piloting and assessing RwR's inclusion in schools is the product must also be embraced by teachers. A teacher in Detroit who used RwR with his 9th grade class published an article in the Education Post (2017). He reported that his students' test scores increased substantially over 10 weeks. Another 9th grade teacher from Los Angeles told me, "I have been teaching for 11 years and I've never found any vocabulary program that aims to engage students more than Rhymes with Reason." A graduate Teaching and Learning Fellow at Harvard's Graduate School of Education described the program as:

> an impressive, youth-centered platform that respects the desires and preferences of students by utilizing the artistry of hip-hop songs and lyrics to expand student understanding and critical engagement with vocabulary usage and often-marginalized, neglected histories. It has the incredible result of supporting both a social justice component to close the achievement gap amongst students from underserved backgrounds while giving dignity to an artform that arises from Black culture, as well as aligning with markers for traditional academic success. I think this platform is an important and valuable tool for use in any classroom that strives for inclusion and demonstrable academic achievement in the humanities. And, it injects joy and creativity into learning. Rhymes with Reason rocks!

Administrators are important stakeholders and were another source of input. The program received consistently positive feedback from administrators (e.g., principals, ELA department heads). They generally focused on how their faculty can utilize the potential benefits of RwR. For example, the Principal of the Boys Academic Leadership Academy in South Central Los Angeles stated:

We know kids are motivated by music, and it's probably one of the biggest influences in their lives … and for years I've been saying we have to capitalize on what hip-hop is using to keep them, not just interested, but captivated by the music. So why haven't educators learned or studied what they are doing in music, or what is happening in that process that keeps them captivated? (BAL Academy, 2018).

In December 2015, during my junior year at Brown, RwR was featured in a National Public Radio (NPR) story about innovative work coming from college students (Palka, 2015). I strategically used this opportunity, the most exposure that my product ever had, to obtain more feedback from teachers and administrators on key factors including: how much they would be willing to pay for the program? What was the amount their schools have paid for programs like RwR? And what were key materials that teachers would need to effectively utilize RwR? My story on NPR and the subsequent survey contributed to achieving several extremely important milestones in RwR's growth trajectory. It gave me a preliminary national user base, and it led me to believe there was a legitimate national market for the product along with a willingness to pay for it (even though it was not fully developed).

The feedback also informed the next strategic plans. Even in its developing form, I wanted to try to sell it to schools and afterschool programs—and it worked. In the summer of 2016, with insights gained through user feedback, I sold RwR to three afterschool programs and one school. This was when I realized that this project could turn into a career path for me. To achieve this goal, I needed to improve the user interface to increase students' learning and enjoyment. Importantly, I needed to give the product a gradebook/learning management system to address the concerns of teachers and administrators (the true stakeholders in purchasing the product) who needed to track student performance on the intervention. With money that I had generated from the product's sales, side jobs during summers, a GoFundMe campaign and many other fundraising strategies, I hired a friend to build the next iteration of RwR that incorporated feedback we had received. In Summer 2017, we created the current system that schools, teachers, and students presently use.

RwR's evolution has happened in tandem with its piloting in classrooms, schools and districts over the last five years. It has shown promising results throughout its growth and development process in areas that we targeted in forming the intervention, and in some areas that we may have not originally conceived of when I started this venture during my freshman year in college. Drawing from multiple sources of input has contributed to the product's development and led to its current implementation strategy.

CURRENT STRATEGY

RwR is currently being used by schools and informal learning programs (e.g., afterschool study centers, libraries) across the United States. It incorporates the vocabulary rich and academic-standards aligned portions of popular music to improve language-related achievement for secondary school students, blending the experience of music streaming (e.g., Spotify, Apple Music) and language-related education. It currently exists as a web-based, literacy resource – an interactive repository of thousands of academic vocabulary words, history key terms, fundamental English phrases for English Language Learners/English as Second Language

(ELL/ESL) and additional information that can all be found within the lyrics of the most popular songs and artists around the world.

Each vocabulary term on the platform is presented on a "word card" containing the word's definition, the lyric that features the word, a 20-second audio snippet where a student can hear the word used in a familiar song, a contextual explanation of the lyric and sample sentences with other examples of the word being used in different contexts (Figure 3). Almost all words are selected from Common Core "tiered" lists (or SAT/ACT) and the words are divided into modules that are based on their level of difficulty. This helps to organize the content within the platform for both students and teachers, so that content can be paced differentially and responsively to the student's learning level. Further, it is delivered in a manner that pushes students to higher levels than their teachers and schools may expect them to perform at. After students read and listen to the "word cards" they are met with several retention exercises,

FIGURE 3 Current Rhymes with Reason flashcard.

including standardized test questions, multiple-choice inference questions (e.g., "When [the artist] said "cataclysmic" in this lyric, [the artist] most nearly means?), visual/photo select exercises where students must select an image that best reflects the words meaning, a feature where students can record their own raps or poems that use the vocabulary word or term, and matching exercises. Each module (i.e., bundle of tiered words, plus retention exercises and quizzes) is bookended by both pre- and post-assessments that provide students with scored feedback.

Teachers interface with the product in many ways (Figures 4 and 5). The standard method of usage for teachers is a simple "assignment creation feature" where they select appropriate modules and exercises to "assign" to their students and they can track student progress and performance with an internal Learning Management System. These features are designed so that teachers can utilize the programs and have minimal additional work. If teachers want to facilitate integrating additional exposure to the words, they may also pull content from a bank of words that are "hashtagged" and sorted by theme. This feature allows teachers room for customization and the ability to create their own word lists that can effectively supplement the lessons they are teaching. There are also a few printable guide materials that walk teachers
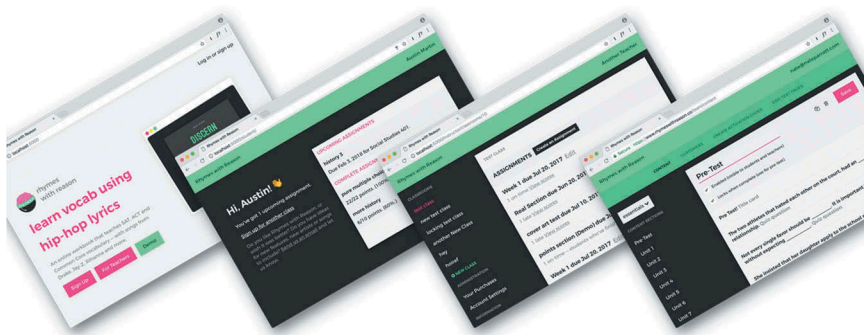

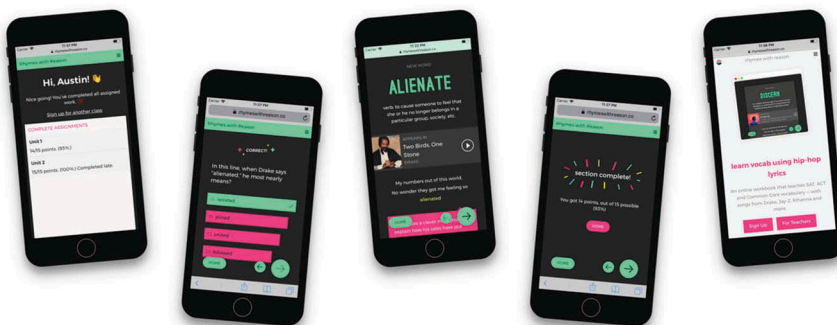FIGURE 4 Examples of current computer interface.

FIGURE 5 Examples of current mobile interface.

through pacing strategies and different modes of implementing RwR, some that are entirely "hands off" and do not require the teacher to walk through any of the content aloud with students, and other materials that suggest ways that a teacher can integrate the materials into class conversation and engage in class exercises with students.

Recently, RwR's leadership team worked with consultants who were alumni of Harvard Graduate School of Education in addition to participants in Harvard's HipHopEx Lab, which led to the creation of new implementation strategies and methodological app features designed to make the program more effective for learning. For example, we are expanding the current model to utilize elements of instructional design and content-based learning to provide opportunities for deeper and richer vocabulary learning. In addition, RwR will be available for individual subscription, outside of schools, where students can be the pilots of their learning experience and can select and create various "learning playlists" that allow them to learn per genre, artist, and levels of their choice.

RwR has been implemented in more than 70 schools and educational institutions in the U.S. including Los Angeles, Detroit, Miami, and Dallas. It has been adopted district-wide in Hampton City Schools in Virginia, where it is being used in all the middle schools in the district. Additionally, we are embarking on a research study with San Diego State University, to examine academic motivation and school connectedness among other indicators of academic success among students involved in San Diego Juvenile Court schools who are using RwR. We are also launching a collaboration with Chance the Rapper's nonprofit organization "SocialWorks" to donate 1000 individual subscriptions to students in Chicago.

To facilitate the iterative process of responding to feedback and identifying user needs, my team and I are constantly meeting and communicating with an interdisciplinary network of mentors, advisors, and clients across the sectors of education, technology, music, and business. Additionally, being selected as a 2019 Echoing Green Fellow to help solve pressing social injustices has provided funding and lends support to innovate effective solutions with social impact. Reflecting on the potential impact of RwR from my personal perspective, the best way to summarize its development is:

> *I was someone who didn't necessarily need Rhymes with Reason, I just needed disparate elements of it that I fused together and that worked for me. I had a support system from my family, Brown, and mentors that I have accumulated over time who helped me through life. If I didn't have a support system, I probably would have needed Rhymes with Reason. Most kids that look like me don't have the support system that I had. Rhymes with Reason exists as an amalgamation of my blessings and experiences that I am determined to break open for the benefit of the millions of youth that need it now more than ever.*

Future Directions for Rhymes with Reason and Addressing "Pain points"

RwR exists at the center of three major shifts happening in the United States: 1) "minority" groups are shifting toward a numerical majority, 2) hip-hop is shifting toward popular and mainstream audiences, and consequently, 3) alternative forms of education are increasingly in demand. According to the 2018 U.S. Census, the American population of people under 18 will be majority-minority by 2020, as the White population of 18 years and under will dip below 50% (Frey, 2019). Nielsen music reported hip-hop became the most popular genre of music in the United States in

2017 (by far the most popular with people under 18), and is becoming the most globally popular genre of music in the world. Music has mass appeal, connects with wider audiences and can affirm cultural identities. Because of these changing demographics and preferences, alternative and "culturally relevant" forms of education (e.g., Kahn Academy, identity-based charter schools) are increasingly being utilized. RwR reflects these three shifts and provides a potential solution by offering an alternative and culturally relevant form of education that can potentially reach mass amounts of students in schools, and can be implemented outside of school (in student's homes and informal learning spaces). Thus, online educational programs like RwR are uniquely poised to be a cultural force that help make academic achievement and school engagement more accessible to students of all backgrounds.

RwR is planning for broader and deeper expansion to help build on its capacity and address persistent "pain points[3]" or limitations. In our expansion planning, we keyed in on the major educational "pain points" or areas of difficulty, often marking when and why students might disengage with challenging learning tasks. The pain points that educational interventions, like RwR, are being engineered to resolve include personalization of learning, English language acquisition, test preparation, special need accommodations, and social and emotional learning. The first pain point to address is crafting interventions and solutions that can holistically meet individual students where they are developmentally and culturally. Hence, we are consistently expanding our word bank content to offer students and teachers a more robust, personalized learning/teaching experience. With the main premise of RwR to "meet the student where they are," increasing the word content provides more opportunity for customization and individualization of assignments so that each student can effectively raise their Lexile levels and perform on par with other reading/ELA/history- related standardized test metrics. To further enhance individualization in student learning based on Lexile/reading level, we have added a feature where students can select their personal favorite music genre within the realm of hip-hop, R&B and pop. Through this approach, we acknowledge group variation within racial groups and cultures. Given this, a product that is truly culturally sustaining should attempt to represent a range of music genres to provide entry points for students. Our next step is to add responsive machine learning infrastructure (i.e., technology that learns and adapts based on user's interest and learning level) that can autonomously assign content based upon each students' musical taste and reading/Lexile level, simultaneously. Additionally, with the changing demographics in the U.S., we are looking to improve the English as a Second or Other Language/English Language Learner offerings. American music is a global force and not only a shared knowledge fund in the U.S., but on a global scale. Eventually, we hope to include all languages, beginning with Spanish to English. We are looking to utilize popular music's potential as an entry point to developing English language fluency while maintaining proficiency in other languages.

Alleviating "pain points" within and related to schooling may also occur by addressing opportunities outside of the school/curricular space and time. College Entrance Exam test preparation is another area for growth. Current test prep options are often not affordable, culturally inclusive, or engaging enough for many students to thrive. Thus, we are thinking about how we can pair our extracurricular, test prep offering with machine learning technology, to again meet students "where they are" in a creative, inclusive manner.

CONCLUSIONS

In this innovative piece of applied scholarship, we highlight one example of how an emerging scholar connected learning of human development research and theory to developing an educational intervention (Abo-Zena, Loyd, & Cunningham, 2020) followed by the use of an interdisciplinary approach to develop and disseminate an educational program. Applied developmental science seeks to advance the integration of developmental research with actions to meet pressing developmental or social needs (Lerner, Jacobs, & Wertlieb, 2005). Rooted in the first author's own disconnect between schooling and the critical social justice messages embedded within the rhymes of hip hop, he synthesized human development and related coursework to develop an innovative educational tool. By drawing on cultural assets and instances of flow along with "pain points" in his own narrative, the first author engaged actively in self-authoring his own life narrative in a manner that created new possibilities for himself and for the program he was developing for youth with similar experiences (Nakkula & Toshalis, 2006; Nasir et al., 2012).

More broadly, critical engagement with human development coursework can facilitate students' reflecting on the issues they may have been exposed to or experienced personally (e.g., dis-identifying with school, educational performance, stereotype threat). Given that a review of interdisciplinary literature has found that social support and increased identity options are important to academic success among ethnic and racial minority youth (Syed, Azmitia, & Cooper, 2011), such applied developmental coursework may facilitate students' trajectories and contribute beyond specific individuals and groups. Thus, human development students can apply what they are learning to deepen their own understanding, contribute to the scholarship, and innovate ecologically valid interventions that speak to their personal and social experiences, while helping address social and systemic issues.

We believe the development of this educational product will contribute to the target students and the efficacy of educators, to the network of mentors and supporters who seek to develop culturally sustaining resources that work in conjunction with other supports of youth including families, teachers, youth workers, schools and other educational institutions, and has contributed to the first author's own development. Through its intentional support of students at all levels, this applied research illustrates how engaged and mentored scholarship can contribute to linking identity, culture, and learning for diverse students and provide practical knowledge to the fields of human development and education. In this manner, applied developmental scholarship can contribute to the development of the self and promote equity within society.

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Notes

1. This paper was conceptualized and written by the first author, a junior scholar, with support from two research mentors. The mentors were intentional in centering the voice of the first author in the work that he conducted.
2. A design typically used in market research to determine which product performs better (Gallo, 2017).
3. A term generally used in business to describe a problem clients may be experiencing.

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REFERENCES

Abo-Zena, M. M., Loyd, A. B., & Cunningham, M. (2020). Introduction to mentored scholarship: Mirrors, windows, and doors to understanding and supporting research in human development. *Research in Human Development*. https://doi.org/10.1080/15427609.2020.1727821

Bacon, M. (1981, May). *High potential children from Ravenswood Elementary School District* (follow-up study). Redwood City, CA: Sequoia Union High School District.

BAL Academy. (2018, September 8). *Rhymes with reason @ boys academic leadership academy of Los Angeles*. [video file]. Retrieved from https://www.youtube.com/watch?v=rkWfjG4s_N0

Bourdieu, P., & Passeron, J. C. (1990). *Reproduction in education, society and culture* (Vol. 4). Thousand Oaks, CA: Sage

Cabrera, N. L., Milem, J. F., Jaquette, O., & Marx, R. W. (2014). Missing the (student achievement) forest for all the (political) trees: Empiricism and the Mexican American studies controversy in Tucson. *American Educational Research Journal*, *51*(6), 1084–1118. doi:10.3102/0002831214553705

Carter, P. L. (2005). *Keepin 'it real: School success beyond Black and White*. New York, NY: Oxford University Press.

Carter, P. L., Skiba, R., Arredondo, M. I., & Pollock, M. (2017). You can't fix what you don't look at: Acknowledging race in addressing racial discipline disparities. *Urban Education*, *52*(2), 207–235. doi:10.1177/0042085916660350

Dee, T. S., & Penner, E. K. (2017). The causal effects of cultural relevance: Evidence from an ethnic studies curriculum. *American Educational Research Journal*, *54*(1), 127–166. doi:10.3102/0002831216677002

Dyer, K. (2015, December 22). *Bringing basketball and math together in a fun way*. Retrieved from https://www.usatoday.com/story/life/2015/12/22/bringing-basketball-and-math-together-in-a-fun-way/77780374/

Education Post. (2017, October 20). *This Detroit teacher uses hip-hop literacy to engage his students and the community*. Retrieved from https://educationpost.org/video-this-detroit-teacher-uses-hip-hop-literacy-to-engage-his-students-and-the-community/

Erikson, E. (1968). *Identity, youth, and crisis*. New York, NY: Norton.

Freire, P. (2005). Pedagogy of the oppressed (Rev. ed.). New York: Continuum. (Original work published 1970).

Frey, W. H. (2019). *Less than half of US children under 15 are white, census shows*. Retrieved from https://www.brookings.edu/research/less-than-half-of-us-children-under-15-are-white-census-shows/

Gallo, A. (2017). A refresher on A/B testing. *Harvard Business Review*. Retrieved from https://hbr.org/2017/06/a-refresher-on-ab-testing

Hammond, Z. (2014). *Culturally responsive teaching and the brain: Promoting authentic engagement and rigor among culturally and linguistically diverse students*. Thousand Oaks, CA: Corwin Press.

Kirkland, D. E. (2013). *A search past silence: The literacy of young Black men*. New York, NY: Teachers College Press.

Ladson-Billings, G. (1994). *The dreamkeepers: Successful teachers of African American children*. San Francisco, CA: Jossey-Bass Inc.

Ladson-Billings, G. (2014). Culturally relevant pedagogy 2.0: Aka the remix. *Harvard Educational Review*, *84*(1), 74–84. doi:10.17763/haer.84.1.p2rj131485484751

Lee, C. D. (2008). The centrality of culture to the scientific study of learning and development: How an ecological framework in education research facilitates civic responsibility. *Educational Researcher*, *37*(5), 267. doi:10.3102/0013189X08322683

Lerner, R. M., Jacobs, F., & Wertlieb, D. (Eds). (2005). *Applied developmental science: An advanced textbook*. Thousand Oaks, CA: Sage.

Moll, L. C., Amanti, C., Neff, D., & Gonzalez, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory into Practice*, *31*(2), 132–141. doi:10.1080/00405849209543534

Nakkula, M. J., & Toshalis, E. (2006). *Understanding youth: Adolescent development for educators*. Cambridge, MA: Harvard Education Press.

Nasir, N. S. (2012). *Racialized identities: Race and achievement among African American youth*. Stanford, CA: Stanford University Press.

Nasir, N. S., Snyder, C. R., Shah, N., & Ross, K. M. (2012). Racial storylines and implications for learning. *Human Development*, (55), 285–301. doi:10.1159/000345318

Noguera, P. A. (2009). *The trouble with black boys: ... And other reflections on race, equity, and the future of public education*. Marblehead, MA: John Wiley & Sons.

Palka, J., (Host). (2015, December, 23). *Hip-hop vocab: The lexicon is in the lyrics*. [video file]. Retrieved from https://www.npr.org/sections/ed/2015/12/23/458817227/hip-hop-vocab-the-lexicon-is-in-the-lyrics

Paris, D. (2012). Culturally sustaining pedagogy: A needed change in stance, terminology, and practice. *Educational Researcher*, *41*(3), 93–97. doi:10.3102/0013189X12441244n

Spencer, M. B. (2006). Phenomenology and ecological systems theory: Development of diverse groups. In W. Damon & R. M. Lerner (Eds.), *Handbook of Child Psychology* (pp. 829–893). Hoboken, NJ: Wiley.

Steele, C. M. (2010). *Whistling Vivaldi: How stereotypes affect us and what we can do*. New York, NY: W.W. Norton & Co.

Sue, D. W., Capodilupo, C. M., Torino, G. C., Bucceri, J. M., Holder, A., Nadal, K. L., & Esquilin, M. (2007). Racial microaggressions in everyday life: Implications for clinical practice. *American Psychologist*, *62*(4), 271. doi:10.1037/0003-066X.62.4.271

Syed, M., Azmitia, M., & Cooper, C. R. (2011). Identity and academic success among underrepresented ethnic minorities: An interdisciplinary review and integration. *Journal of Social Issues*, *67*(3), 442–468. doi:10.1111/j.1540-4560.2011.01709.x

TEDx Talks. (2016, April 26). *Rhymes with reason | Austin Martin | TEDxBrownU*. [video file]. Retrieved from https://www.youtube.com/watch?v=zLatRexsXj4&t=24s

TicToc by Bloomberg. (2018, November 28). *Teaching vocabulary through hip-hop*. [video file] Retrieved from https://www.youtube.com/watch?v=gT1vZeIgDwo

Varelas, M., Martin, D. B., & Kane, J. M. (2012). Content learning and identity construction: A framework to strengthen African American students' mathematics and science learning in urban elementary schools. *Human Development*, *55*, 319–339. doi:10.1159/000345324

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity and Education*, *8*(1), 69–91. doi:10.1080/1361332052000341006