Increasing Access to Math Learning for ALL: NEC's Flagway Math Literacy Initiative

Bill Preble

New England College

Carlton J. Fitzgerald

New England College

Abstract

This participatory action research (PAR) study describes the Flagway program at New England College (NEC). The purpose of the study is to share the historical origins of the Flagway program, discuss how Flagway is being implemented with college students at NEC, and describe initial effects of the program on middle school students who score in the bottom quartile on tests of mathematics achievement. The study focuses on one, small New Hampshire college's role as one of many "little springs" that are sprouting up as part of a larger national movement to expand access to math education and literacy, which has historically been denied to students of color and poor students across the U.S.. In this article, the authors describe the development, implementation, and initial impacts of the program using a participatory action research design. The study also demonstrates how this predominantly white college is collaborating with several non-profit, social justice-based organizations to provide college students with opportunities to develop critical and anti-racist thinking, cultural competence, and skills as Math Literacy Workers. Through the use of qualitative data collection methods (i.e., storytelling, interviews, photographs, and observations) data are shared to provide evidence that the program is helping college, elementary, and middle school students build their competence and confidence as math learners and antiracist leaders.

Keywords: Flagway Program, systemic racism, Eugenics movement, math literacy, generational wealth

INCREASING ACCESS TO MATH LEARNING FOR ALL: NEC'S FLAGWAY MATH LITERACY INITIATIVE

This participatory action research (PAR) study focuses on New England College's (NEC) effort to develop culturally responsive programs (Ladson-Billings, 1994) and pedagogical practices to meet the needs of our college-aged students. The teachers in this study invite our students to "own a piece of the problem" of working to ensure educational equity and access to effective mathematics instruction for ALL students. The results from this study describe how a student-led, community-based, math outreach program called Flagway (1996) is providing learning and leadership opportunities for NEC's increasingly diverse student population. The PAR study demonstrates the ways in which our predominantly white college is looking inward and reaching out to help local schools address the needs of diverse students, especially those groups of students who have historically struggled to learn math. As NEC helps others to become more culturally responsive and proficient, we are learning and growing as a college community.

The Flagway program at NEC focuses on the question, "Is quality education, and math literacy for ALL students, a 'civil right'?" The founder of the Flagway program, and the inspirational leader whose work is at the center of NEC's program, is Robert "Bob" Parris Moses. Bob is a civil rights leader, who traveled south from New York City in the 1960's to work with Martin Luther King Jr. and the Southern Christian Leadership Conference (SCLC). He became the field secretary of the Student Non-Violent Coordinating Committee (SNCC) and organized voter registration drives, sit-ins, and Freedom Schools which led to significant voter registration and demands by black Mississippians to gain their right to vote (Zinn Education Project, 2020).

Since his early work as a voting rights activist, Bob has taken the lessons he learned in Mississippi about amplifying youth voices, youth leadership, and activism for social justice into schools and communities across the U.S. With an emphasis on providing access to math

literacy for students who have historically been denied access to quality mathematics education, Bob created the Algebra Project (Algebra Project, Inc., 2020) in the 1980s. The Algebra Project develops curricular materials and trains teachers and teacher-trainers to provide ongoing professional development and community involvement activities to schools. Bob received the MacArthur Genius Award for his efforts to link his civil rights activism to the critical need to ensure that all students have access to math literacy.

Bob formed The We the People Math Literacy Alliance in 2016, to spread the word, organize the nation's educational leaders, and bring quality math education to historically marginalized students of color in every state, community, and school in America. Bill was fortunate to be invited by Bob to participate in the early development of the Alliance in 2016 and 2017. Since then New England College, and our students, have become some of the many foot soldiers in this movement, who are fighting for the right of all students to have a quality education.

The central premise behind the work of the Alliance, and our work at New England College, is that math literacy is fundamental to getting a quality education and a decent job today. We are living in the Digital and Information Age of the 21st Century. Just as the literacies of reading and writing were essential for getting a good job in the Industrial Age of the 20th Century, Bob Moses has taught us that math is a new "basic literacy", that every child will need to develop, in order to have a real shot at gaining access to a good education and good paying job today. Math literacy, especially for children of color, will open up vast new educational and career opportunities, and thereby allow each child to gain access to living a happy, healthy, life, and equitably engage in the pursuit of happiness in the 21st Century.

> *"We hold these truths to be self-evident, that all men [people] are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness."* **US Declaration of Independence**

Flagway™: A Gateway to Math Literacy

This study documents the development and implementation of Bob Moses' Flagway program at NEC. Flagway is a game-based, hands-on, highly competitive, physical, math learning game designed to be led by young, near-peer, student coaches or mentors, who with proper training will take on the roles of Math Literacy Workers (MLWs).

Those of us who believe in the power of Flagway reject the biases and mindset of "adultism"—the idea that adults know it all, should always be in charge, and have the right to exert their powers to dominate, tokenize, and manipulate young people (Fletcher, 2015). Flagway is built upon the idea of young people teaching, guiding, and learning math from other young people.

Flagway is also built on the principles of culturally responsive teaching (CRT) (Hammond, 2015; Ladson-Billings, 1994). Culturally responsive teachers believe that a person's "culture" is central to their learning. A person's cultural identify shapes the ways in which they think and understand the world. Culturally responsive pedagogy requires teachers to serve their students as facilitators of learning rather than taking on didactic roles. CRT believes that learning must be student-centered, rather than adult centric (Andrusiak et al., 2020). Teachers who apply principles of CRT believe in the potential that lies within EVERY child, regardless of their race, ethnicity, socioeconomic status, or family circumstances. Culturally responsive teachers hold high expectations for all students and hold parents and members of all cultures within our communities in high positive regard (Hammond, 2015).

Since those first meetings of the Alliance, our NEC students and Bill have received several years of training from the Young People's Project (YPP, n.d.), sister organization of Bob Moses' Algebra Project (Algebra Project, Inc., 2020). YPP trains young people from high schools and colleges to become Math Literacy Workers. YPP has shared the values and philosophy of Bob Moses, SNCC, and CRT with our students and me. They have taught us

ways to help elementary and middle school students learn how to play and ultimately to lead a set of math and team building games needed to play and compete in the Flagway Game™.

The NEC Flagway program was designed following the first meetings of the We the People Alliance, in collaboration with the Young People's Project (YPP) who invited NEC to serve as one of several National Flagway Training Hubs, as we all work to disseminate Flagway and math literacy as a civil right, across the U.S..

> *"Over the past two and half decades, there have been 'little springs' popping up . . . people have decided they want to own a piece of this problem . . . people in schools have been working it, people in universities have been working it."*
>
> Moses (We the People Alliance: Math Literacy for All, 2018)

New England College is one of dozens of colleges and universities, non-profits, educational leaders, and student voice and advocacy groups that came together to form the We the People Alliance, under the vision of Bob Moses, his colleagues from SNCC, the Algebra Project and the Young People's Project, the National Science Foundation, and many others. Through this work, we hope to address the failure of our schools and our nation to serve the needs of so many of our young people.

This article critically examines the historical problem of educational inequity in the U.S., by sharing important stories from the past that have shaped the field of education today in ways that contribute to educational inequality. The authors explore the ways in which science and math have been used to institutionalize racism and classism in our nation's policies and institutions. This exploration will lead to a deeper understanding of and discussion about the philosophical and theoretical roots of the Flagway program, through an examination of the critical role of "youth" in this work, and how youth leadership and student voice (Mitra and Gross, 2009) serve as key components of the program. The first section of this article further describes the "Arch of Flagway", which summarizes the mathematical skills and concepts that

the program helps students to learn by playing the Flagway Game. Finally, the first section examines how NEC became one of those "little springs" that have popped up across the country, as Bob Moses said, to take ownership of the problem of educational inequity.

The second portion of this PAR study discusses the ways in which the values, key concepts, and challenging ideas about anti-racism and cultural competence were presented to NEC students as part of an NEC undergraduate, service-learning course called, *Is Math Literacy a Civil Right?* The authors discuss the Flagway Training that NEC students received to prepare them to take on their roles as Math Literacy Workers (MLWs) and how these youth-voice and service-learning based pedagogies fit within a philosophical and pedagogical framework that aligns with culturally responsive pedagogy.

In the final section, the participants share stories and qualitative evidence demonstrating some of the "visible effects" of the Flagway program on NEC students and the elementary and middle school students with whom the NEC students and I have worked in 2019 and 2020. From an analysis of all of the work and results of this program, the authors have developed a set of recommendations for continuing to expand and influence the educational policies, practices, and priorities that must change if educators expect to reduce the gaps in educational, economic, and quality of life opportunities for students. We also propose several key steps that can refocus our nation's commitment to ensure that educators more fully address the human needs and rights of all children.

Background of the Problem

The problems that Flagway has been designed to address are deep and wide. This article cannot do justice to or offer a full discussion of the problems that have led to the need for this program. Rather than attempting to list or show evidence of the many factors that have contributed to the problems of social and educational inequality in America today, the authors have chosen to share a crucial story that captures the essence of problems that began over a century ago, and that still impacts the lives of American children, schools, and society.

The American Eugenics Movement and the Mismeasurement of Intelligence

> The United States has an imperfect history. Some of our darker chapters include slavery, the decimation of Native American populations, and atrocities committed during our various wars. A quick survey will reveal that most Americans have learned about or at least heard of these events. However, ask the average person about the "eugenics movement" and you are likely to get blank stares. (Buche, & Rivard, 2014)

The problems that Flagway seeks to address can be boiled down to a problem with numbers; the meaning of numbers, the uses of numbers, and the power of numbers to change people's lives, for better or for worse. There is one specific number that has been reified and taken on an especially powerful role in U.S. society and people's lives, over the last century. That number is the IQ or Intelligence Quotient. But it is not so much the IQ itself that is at the heart of the problem. It is just as important to understand how the creation of the IQ score is intertwined with the problem of social and educational inequality, and how a social movement that is vaguely familiar to most of us, called the American Eugenics Movement, has made a lasting imprint on the thinking, school practices, and lives of many Americans (Gould, 1981; 1996).

The term eugenics stems from the Greek word meaning "good" or "origin" or "good birth". The term was coined by Francis Galton, cousin to Charles Darwin. During the early 1900's, the Eugenics Movement took hold in communities across America and Europe. These ideas about improving the natural, physical, mental, and temperamental qualities of the human family (Norrgard, 2008) became viewed as wholesome, sensible, and socially desirable.

But these ideas that were refined, spread, and nurtured in America during the early years of the 20th century, also became the underbelly of the White Supremacy Movement and eventually spread to the National Socialist or Nazi Party that rose to power in Nazi Germany.

We are all familiar with the principle ideas of the Eugenics Movement, ideas like genetic superiority, selective breeding, the elimination of undesirable genetic traits, etc. (Fendley, 2020). The implications and effects of these ideas were revealed to the world, in all their horror, toward the end of WWII, but these ideas have been commonly associated with Hitler, not America.

No wonder the American Eugenics Movement and these ideas of genetically based racial supremacy lost face and dissolved from American history after WWII, once the world saw their power to destroy common decency and rationalize the killing and marginalization of entire peoples. But we wish to share another story that preceded the rise of Hitler and the Nazis in Germany, the story of the history and growth of the standardized testing and intelligence testing industry in America. This story will, we hope, offer some important links between this faded history of the American Eugenics Movement and the power that prejudice and mathematics have had to shape people's lives.

The Story of the IQ

For more than a century, predominantly white, American educational and psychological researchers have used "science" and "data" to develop an immensely powerful and profitable "intellectual and psychological testing" industry (Benson, 2003). Ask any American student about their experience with testing, and you will get an earful!

Tests are used for everything. Academic testing is pervasive in schools for nearly all subjects and skills. Personality tests are used in business and industry to choose the right workers. Dating sites use tests to help people find their soulmate. People must pass tests to become teachers, doctors, lawyers, massage therapists, nurses, police officers, or citizens. Taking tests to prove one's mettle has become a normal, natural, and inevitable expectation in our culture. What most people do not know is that the historical roots of psychological, intellectual, or cognitive testing in the U.S. was one of the foundational pillars and tools of building a "meritocracy" in the U.S. (Appiah, 2018). This notion of American meritocracy promised that every person would have an equal chance to an education and positive life

chances based on their personal merit rather than family ties and influence. But the notion of merit never strayed far from deeply engrained beliefs and practices associated with systemic racism (Appiah, 2018).

Many of the most influential scientists who created these tests were motivated by explicit and implicit biases and beliefs about "heredity and race" that stood at the center of the American Eugenics Movement. Tests and mathematics were used to "empirically demonstrate" the "innate" superiority and inferiority of specific racial and ethnic groups, immigrants, and children (Gould, 1981).

The first standardized tests were developed by Alfred Binet in France. A small but powerful group of "intelligence scientists" brought Binet's standardized tests to America at the dawn of the 20th century. H.H. Goddard, L. M. Termin, and R.M. Yerkes, and others, took these new tools of psychological and intellectual "testing" and "misapplied" them, according to their original inventor (Gould, 1981; 1996).

Binet had devised his cognitive assessment tools and procedures for "formative" educational purposes: to identify individual student's cognitive strengths and deficits, at a given time, for the purpose of diagnosis and remediation by schools and teachers. These same assessment tools, in the hands of these American scientists, were used from the very beginning to 'scientifically" evaluate, judge, sort, label, and discriminate against people of color and poor people based on what they viewed as "fixed"—or genetically predetermined—levels of intellectual capability. These practices dramatically betrayed Binet's intentions for the use of his original tests, which were to evaluate, intervene, and improve student intellectual abilities through education. Binet's own words clearly make this point:

After learning of Binet's breakthroughs in cognitive testing in France in 1908, Henry Goddard translated the Binet-Simon Intelligence Scale into English, so he could use the test on his own psychiatric patients, as Director of Research at the Vinland School, a training school for "feeble-minded" girls and boys. Goddard's use of these tests was shaped by the fact that he

was a devout Eugenicist. He used these new tests to determine the levels of "feeble mindedness" or mental defectiveness of his patients. These "scientific data" could then guide and inform his decisions to place patients who scored in the lowest range of the test into asylums, or residential schools for the feebleminded, thereby permanently isolating them (and their flawed genetic material) from society (Gould, 1981; 1996).

> "Some recent philosophers seem to have given their moral approval to these deplorable verdicts that affirm that the intelligence of an individual is a fixed quantity, a quantity that cannot be augmented. We must protest and react against this brutal pessimism; we will try to demonstrate that it is founded on nothing." (Alfred Binet, 1911, p. 141)

Many American cities and towns adopted Goddard's approach. Eugenics driven laws were passed in states and local communities across America to implement forced sterilization programs. Once hidden lists of US citizens, who were forcibly sterilized based on this logic, have been surfacing routinely in cities and towns across the U.S. over the last several decades. The promise and undeveloped talent of generations of children were exterminated under these forced sterilization policies and laws (Gould, 1981; 1996).

Another important breakthrough in the field of cognitive and intellectual testing came about in 1912. William Stern, a German psychologist, calculated the results of these cognitive tests to fit within a clear, concise, and easily understood mathematical paradigm. Stern took the scores of previous intelligence scales, then divided the subject's "mental age score" on the test, by their "chronological age", and multiplied the resulting fraction by 100. Voila! The IQ score was born (Stern, 1914).

Once a person's total intellectual capacity could be captured and summed up with one simple, single number, it became easy to use this score to show which Americans were born "intelligent" and which were "unintelligent" human beings. This simple calculation, using the IQ

score, combined with the ideology of Eugenics, provided "scientific" fuel to stoke the fires of the Eugenics Movement and their beliefs about hereditarian roots of innate human inequality.

Goddard and his colleagues had previously used the general term "mental defective" to describe mental disability or dysfunction in people. But with the new IQ score paradigm, he introduced a clearer, more specific set of descriptive labels to describe those who fell along the intelligence continuum. "Idiots" were those poor souls who scored between 0 and 25 on the IQ tests; "imbeciles" scored between 26 and 50; and "morons" scored between 51 and 70. One surviving remnant of this era and the Eugenicists are these three words: idiot, imbecile, moron. Most kids today fully understand that these terms mean "stupid".

Lewis Termin further developed Binet's tests at Stanford and created the highly popular, and still-used, Stanford-Binet Intelligence Scale. Termin was a respected pioneer in the field of educational psychology and a well-known Eugenicist. He was known for his studies of highly gifted students with "extreme talent". Termin advocated for his intelligence tests to be universally administered to all children across the nation, to identify the "geniuses" among our population, and to develop plans to "socially manage" society using these data on the intelligence of American citizens. Testing would asses "intellectual merit" and provide a rational way of screening young people for admission to higher education, whereas, previously, these decisions were made based primarily of family connections and ability to pay (Appiah, 2018).

Termin proposed dramatically different educational settings and opportunities for those with high and lower levels of intelligence and intellectual promise. Termin was responsible for the adoption of social and educational policies, to control access to educational, vocational, and life changing opportunities based on IQ testing. The higher one's IQ score, the wider the doors of opportunity would be open. With access came the economic, social, and political rewards associated with those "positions of merit" all made available by having the right test scores (Appiah, 2018).

But it was our final Eugenicist, Robert Yerkes, who took the science of IQ testing and the ideologies of the Eugenics Movement to a national, systemic level. Yerkes began his college education at the turn of the 20th century in Biology at Harvard. After graduating, he taught at Radcliff in the field of Comparative Psychology. Yerkes went on to take on influential roles as Director of Psychological Research at Boston Psychopathic Hospital and served as president of the American Psychological Association (APA).

Using his influence as President of the APA, Yerkes and the APA were enlisted to develop several programs for the U.S. Army during WWI. They conducted the first large-scale psychological intelligence studies of over one million soldiers in the U.S. military using their new Army Intelligence Tests. Yerkes and his co-researcher, Carl Brigham, reported their important findings back to the military brass, the U.S. Congress, and the entire scientific community (as cited in Gould, 1981). The Army tests "empirically" confirmed *the "innate intellectual superiority of white Americans*". Their research was reported to have confirmed that there had been an overall decline in American intelligence, to the point where over 47% of white draftees in the U.S. Army during WWI scored in the range of "feeble mindedness" on their tests. The studies confirmed that levels of intelligence among blacks and newer immigrant groups were even lower than these feeble-minded white soldiers (Gould, 1981).

Obviously, the numbers of immigrants coming to America at the turn of the 20th century were booming, due to the industrialization of the nation. Yerkes and Brigham concluded that the results of the Army Intelligence tests showed that the integrity and security of both the U.S. military and the nation itself were at risk due to the "genetic intermingling" of the races in America (Gould, 1981). There is an ongoing debate in the scientific community as to whether or not these scientists, and the use of their Army based intelligence testing findings, were in fact the basis for the Immigration Restriction Acts of 1921 and 1924, but regardless of their intent, these studies had a profound impact on the nation (Snyderman & Herrnstein, 1983).

In 1921, America shut its doors to the influx of Jews attempting to escape persecution in Eastern Europe. In 1924, The Reed Johnson Act expanded the bans to include Asians and placed additional dramatic limits on immigrants from Eastern European and all other nations.

People of color and poor Americas were cast in the same unfavorable light as these foreign immigrants. The Eugenicist claims that black and brown and poor Americans were cursed with defective genetic stock, and that these groups were destined to remain at the bottom of American society took root.

The notion of judging entire groups of other human beings to be inferior to yourself is the essence of racism. The persuasive power of science and (supposedly) easy to understand numbers like IQ scores, were used by these respected and influential American figures to scientifically and permanently divide our society through the creation of a set of beliefs, institutions, and systems that remain firmly intact, in many cases, over a century later.

Caroline-Hodges Persell (1981) called the development of this hierarchical system of beliefs, and the social and institutional tools required to reinforce it, a "Structure of Dominance". She described an American caste system that began with pervasive and powerful ideas, values, and beliefs associated with the racial superiority of white people that permeates the consciousness of the nation. Members of non-white subgroups are systematically singled out, and continually subjected to routine and pervasive macro- and micro-level aggression. They are denied educational, economic, and personal access and opportunity. And too often, the victims of this Structure of Dominance even begin to believe in their own inferiority. Persell claims that the pain and damage to people's lives caused by this Structure of Dominance and its resulting social inequality in America is incalculable. This article will examine newer models and theories of racial inequality and the ways in which race has become a permanent fixture in American society below, as we discuss how Flagway offers one approach to undoing some of this damage.

Charles Darwin (1839) said it best, when he proclaimed in his influential book on evolution called the *Voyage of the Beagle*, "If the misery of our poor be caused not by the laws of nature but by our institutions, great is our sin" (p.500). We hope that exploring this hidden history of the American Eugenics Movement, its influence on the development of the standardized testing industry, and the creation of racial hierarchies in the U.S. will provide a contextual lens that shows why educational and social justice programs like Flagway are so essential in our nation today.

Conclusion

The purpose of this study is to share the results of New England College's efforts to do something that may begin to help undo the historical marginalization of people of color and poor Americans. NEC's Flagway story provides a pathway toward hope, support, and access to educational opportunity for students who have a right to develop their full potential. This PAR study will demonstrate the effectiveness of Flagway and the ways in which NEC students have applied respectful, engaging, and culturally responsive pedagogical practices. It will also show in some anecdotal, but important ways, the initial effects of participation in Flagway on the learning of mathematics by students who have fallen into the bottom quartile on standardized tests of mathematics achievement, and the college students who work with them.

Literature Review

There are two important theoretical frameworks that provide a rationale for bringing the work of Bob Moses and the Flagway Program to NEC. First, it is important to understand how a "predominantly white institution" (PWI) like NEC is developing and offering curricular and instructional options to our rapidly growing population of students of color, and to demonstrate how this work fits within the traditions of Culturally Responsive Pedagogy (CRP) (Bell, 1992; Crenshaw, 2011; Delgato and Stefencic, 2001). Second, the Cultural Proficiency Framework (Lindsey, et al., 2019) adds important dimensions to NEC's efforts to raise its level of cultural awareness and proficiency, which will enable the college to more fully and successfully support

all members of our diverse educational community. This article will demonstrate the ways in which these theoretical frameworks and the Flagway program are embedded within the traditions of the civil rights movement, the ways in which Flagway is centered around the essential element of Youth Voice, and how the empowerment of youth as leaders, mentors, and role models plays an essential role in successful social and educational change.

Critical Race Theory and Access to Math Learning

Critical Race Theory (CRT) (Bell, 1992; Crenshaw, 2011) is a broad intellectual movement with deep roots in Critical Theory, which has focused on Marxist, neo-Marxist, feminist, indigenous, LGBTQ, and emancipatory theories and research. Recent applications of CRT have focused on legal biases and barriers to equitable treatment of people of color. CRT uses critical theory to examine power relations in society, and the ways in which social, and cultural issues, especially social inequality, relate to race. CRT states that white supremacy and white racial power are embedded in all aspects of American society, and they are deliberately and systematically maintained over time. CRT examines the roles that ideologies play in justifying and sustaining social inequality, and the ways in which institutional, economic, and legal structures perpetuate inequitable access and lower levels of opportunity for non-white individuals and communities to support and sustain white power and supremacy (Delgato & Stefencic, 2001).

It is important to point out that CRT critics sometimes point to the field as being overly negative and pessimistic, however, they make the point that stories of social justice, emancipation, and expanding civil rights, freedoms, and opportunities are essential messages associated with this field. Recent bestselling books, such as *How to Be an Antiracist* (2019) by Ibram X. Kendi, and *White Fragility: Why is it so hard for white people to talk about race? (2018), by Robin DeAngelo* are being widely used by schools, business, and other organizations to challenge norms and habits in the workplace and schools to bring about new awareness of racism, and to bring about much needed change.

In the context of this study, my students and I use our understanding of CRT to assert that students of color whose families have been historically marginalized, disenfranchised, and denied equal access to educational, economic, health-related, and basic social services, deserve and must demand equal access to educational opportunities, especially in the area of mathematics.

One of the villainous components of our entrenched and inequitable educational system has been to establish Algebra as a "gateway" that disproportionately serves as a "barrier" to higher level math classes and higher education for non-white or middle-class students (Strauss, 2017). Algebra has historically been taught in highly traditional ways, using pedagogies that are not typically culturally, linguistically, or personally responsive to the unique needs of students of color, poor students, or many other students who struggle with math. For millions of students—especially students of color and poor white students—access to the education system begins and ends with Algebra. Algebra puts walls in front of black, Latinx, and poor white students in relation to higher education options and opportunity (Nicholes, 2020). This translates directly into reducing financial earning power over the lifetimes of these students, which means that they will have severely limited opportunity to gain "generational wealth" for their families. And so, the cycle of poverty and lack of education and career advancement is sustained by these structures of dominance. Enabling students of color to overcome these barriers has been the essence of the work of the Bob Moses and the Algebra Project since the 1980's; and these efforts earned him the McArthur Genius Award in 1982 (Moses & Cobb, 2001) .

Cultural Proficiency

Another important theoretical framework for this study is the Cultural Proficiency Framework of Lindsey et al. (2019). Cultural Proficiency pertains to both individuals and institutions. Our work at NEC is an effort to build both the cultural proficiency of our college as an organization, as well as the cultural competence and proficiency of our students, faculty, and

staff. The story of NEC's journey toward becoming a more culturally proficient institution of higher education goes something like this:

1. Although we would claim that many of our cultural deficiencies have been unintentional, NEC has long served as an unwitting partner in the process of "cultural destruction" of people of color. The college was founded after WWII with an unabashed mission to provide access to higher education and career advancement for white, suburban, middle class males, from the Northeast. Early on, NEC chose not to place much weight for admission on students' standardized test scores. This opened opportunities for young, white (mostly) men, to gain access to higher education and professional career opportunities through NEC. Little effort or attention was paid to enrolling people of color, and NEC developed as a predominantly white institution (PWI).
2. NEC has begun to acknowledge what Lindsey et al. (2019) describe as *Cultural Incapacity and Cultural Blindness*. The NEC community is starting to see that our institution has been part of the historic, national enterprise of contributing to and sustaining racial inequity and injustice. We are recognizing that we have failed to understand and acknowledge racial and cultural differences that existed in our college's DNA— our recruitment procedures, financial aid practices, faculty hiring, student support systems, and pedagogy.
3. Now that NEC is more fully acknowledging these facts, the college is working to address these deficiencies and thereby entering a stage Lindsey (2019) calls "Cultural Pre-Competence". The college is admitting a much more diverse student body. Administrators, faculty, staff, and our students are working to learn more about cultural competency, diversity, equity, unconscious bias, micro aggression, and culturally responsive pedagogy. The institution is setting up infrastructure, new programs, and new staff and offices to support our students of color, and the college

is collecting and analyzing data in new ways. Though our community has much work to accomplish to become a fully-functioning culturally responsive institution, NEC is committed to continuing our push forward—to become more culturally aware, empathic, equitable, and competent and to invite our students to join us in this work.

4. Over the next several years, NEC administrators, faculty, and staff will be committed to becoming increasingly "culturally competent"*;* serving as effective advocates for ALL students and ALL people, especially those who have been traditionally underserved and marginalized. The retention and graduation rates for all students will continue to increase. Concrete steps will be taken to ensure that measurable changes will be seen for our students of color, and the climate and culture of the college will become safer, more inclusive, and welcoming toward and supportive of all students. NEC's president has assembled a college-wide taskforce made up of members of her senior administration, faculty, staff, and students to review all NEC policies, programs, curriculum, and learning opportunities for our students of color. She and the Board of Trustees have created 5 full-tuition scholarships, in the name of George Floyd, that will be awarded annually to diverse students to ensure that the college provides additional opportunities for students of color to enroll at NEC and earn their college degrees and enter the professional workforce.
5. NEC will continue to build its "Cultural Proficiency" and these changes in philosophy, programs, and practices will begin to infiltrate deeply into our relationships throughout the community. Pedagogical practices will become increasingly personalized, culturally responsive, student-centered, and tied to critical inquiry by creating empowering roles and authentic learning experiences and opportunities that allow students to identify and solve important problems together. Community outreach will be prioritized, and students will increasingly learn from and alongside respected national anti-racism and equity leaders, as well as from and with their NH

neighbors. NEC will share what it is learning locally, regionally, and nationally, modeling and advocating for antiracist policies, programs, and pedagogy in our region and state.

6. The hope of the Flagway program participants is that NEC will continue along our current path toward becoming a National Flagway Training Center. The goal is that NEC will become a source of student learning about issues of social justice, educational equity, and culturally responsive mathematics pedagogy. If NEC is successful, students will develop advocacy skills, agency, empowerment, and institutional pride, as they work to address issues of educational equity and math literacy at the local, regional, and national levels.

This is how we view our pathway toward cultural proficiency at NEC.

Conclusions

This literature review has highlighted key theories and fields of research that have informed the design of this study and served as the backbone of NEC's Flagway Initiative. Through integrating of these important ideas, this study will demonstrate how stories can communicate experiences and ideas and unlock the human imagination. The literature clearly displays the connections between this project and Critical Race Theory (Bell, 1992; Crenshaw, 2011), as it relates to addressing historical and pervasive educational inequity in math literacy. This review of the literature has examined the important links between access to math, educational opportunity, and economic security. And finally, this review introduced the Cultural Proficiency Framework (Lindsey et al., 2019) and applied that to the journey on which NEC has embarked. These theories have highly practical implications for the design and understanding of NEC's Flagway Initiative. The goal is that readers will see these connections even more clearly in the following sections.

Methodology

This study is framed around a Participatory Action Research (PAR) design, intended to provide a rich description of the work NEC students and the college have been doing for the past two years, to help address the problem of inequity in schools. The NEC Flagway story highlights the challenges and opportunities that are at play when it comes to asking a group of predominantly white, middle class college students to assist groups of struggling elementary and middle school students of color in learning math. The research question that this study addresses is, "In what ways does participation in Flagway at NEC, affect elementary, middle school, and college students?"

Research Design

There are several reasons why we chose to use a Participatory Action Research (PAR) Design for this study. PAR is based in social justice (Kemmis et al., 2014). The goal of PAR is to not only improve problematic educational issues within a school and/or district and in education in general, but also to correct issues of injustice and inequity in society. According to Efron and Ravid (2020), "The focus of participatory action research is on change, promotion of democracy, and equity. Its advocates take into account that teaching and learning are nested within political and social dimensions" (p.10). Action research involves deep, critical reflection about problematic issues and the data collected related to the interventions developed to address those issues to improve schools. Participatory action research has the added goal "to unmask injustice and inequities, and to enhance practitioners' commitment to becoming agents of change within the school and beyond" (Efron and Ravid, 2020, p. 12).

One of the most important developers of the concept of participatory action research was Paulo Freire (1970; 1998). Freire was concerned with the ideas that teachers were missing in their teaching and research. His colleague, Donaldo Macedo, wrote in the Foreword of the book, *Pedagogy of Freedom: Ethics, Democracy, and Civic Courage* (Freire,1998), that Freire contended that "teaching requires a recognition that education is ideological"; "Teaching always

involves ethics"; "Teaching requires a capacity to be critical"; "Teaching requires the recognition of our conditioning"; "Teaching requires humility"; and "Teaching requires critical reflection" (Location 106, Kindle edition). This means, for example, that educators must understand how and why, with all of the advances available in education and in society, so many students fail to be successful in school. Freire (1970;1998) believed that all teachers should teach to the freedom of all students. Freire (1998) wrote: "The educator with a democratic vision or posture cannot avoid in his [their] teaching praxis insisting on the critical capacity, curiosity, and autonomy of the learner"(p. 33, Kindle Edition). When people say that this ideal is a pipe dream, Freire responds:

> I prefer to be criticized as an idealist and an inveterate dreamer because I continue to believe in the human person, continue to struggle for legislation that would protect people from the unjust and aggressive inroads of those who have no regard for an ethical code that is common to us all. (p. 116, Kindle Edition)

The goal of education—for teaching and for research—is to make the world a better place.

PAR is a perfect research design for this study because making society more inclusive and ethical toward all people, especially those whom society has left out, should be the goal of any educational programming and research. Flagway has been developed to help make education equitable to those students who have been left behind. NEC, as an educational community, is addressing its role in becoming a increasingly antiracist and inclusionary institution. This study is the first step in the process for NEC's Flagway Initiative to help the college, local schools, the state, and the nation become more ethical and equitable by giving students, who have been shackled by "the system", the tools they need to achieve educational access and opportunity that will allow them to more fully realize their constitutional right to "life, liberty and the pursuit of happiness."

Narrative Data Methods

Narrative data collection techniques have been effective for this study in a variety of ways. First, stories are a powerful way to share information. The practice of storytelling goes back to the very beginning of humanity. There must be some reason why storytelling has lasted so long as a form of communication, entertainment, and learning. Recent research, using Magnetic Resonance Imaging (MRI) by Yaun et al. (2018), reported in the *Journal of Cognitive Neuroscience*, indicated that storytelling activates a section of the brain referred to as the "narrative hub". The authors conclude that "people adopt an intrinsically mentalistic and character-oriented perspective when engaging in storytelling, whether using speech, pantomime or drawing" (p. 1310). This research provides further evidence that narrative communication reaches deeply into the human brain, causing strong cognitive and emotional responses. Wang and Geale's research (2015) also suggested that narrative inquiry has an underlying philosophy that enables the illumination of real people in real settings through the "painting" of their stories.

According to Wang and Geale (2015), narrative inquiry is also important because it raises the voices of students who otherwise would have remained silent. The idea of amplifying the voices of students whose parents gifted them with beautiful names like Naveah, Aphasana, Momen, Serenity, Yahya, and Dheyaa, suggests that Flagway is serving a population of American children that may often go unnoticed in their schools and communities or whose names may trigger unflattering and misguided stereotypes or mental images among white teachers or fellow students, which can only deepen their marginalization. Sharing the words, stories, and the profound learning of my mostly white, middle class, NEC students, whose parents gave them names like Taylor, Stephanie, Colin, Kayleigh, Thomas, Brianna, Cole, and Hayleigh, helps to characterize the cultural "positionality" of my students, as their words convey things they have learned about educational equity, social justice, and their own naivete about the multicultural, pluralistic world.

Wang and Geale (2015) also explain that Narrative inquiry employs story-telling as a way of allowing participants' realities to be shared with a larger audience. Sharing the stories of middle school students, who live and attend school in one of NH's largest cities, and students from NEC will hopefully engage and inspire many others to "own a piece of the problem," as Bob Moses said. Our hope is that the stories shared in this article will inspire others to step up and take their place as antiracist advocates (Kendi, 2016; 2019) within their families, schools, and communities.

One powerful application of storytelling has been adopted within the field of Critical Race Theory (CRT) research. Hartlep writes in his 2009 review of research on Critical Race Teory,

> the idea of storytelling comes from its powerful, persuasive, and explanatory ability to unlearn beliefs that are commonly believed to be true. CRT calls this concept "storytelling" and "counter-storytelling". This dichotomy—storytelling and counter-storytelling—is predicated upon the belief that schools are neutral spaces that treat everyone justly; however, close examination refutes this . . ." (p. 10)

Purpose

This study explores the pedagogical and personal experiences of elementary, middle school, and college aged students who participated in the Flagway program during 2019 and 2020 in diverse schools in one of NH's largest cities. The authors present qualitative research through narrative inquiry in ways that will amplify the voices of the elementary, middle school, and college students. This participatory action research study will, hopefully, communicate to and inspire other colleges and schools to engage their students in strategies like Flagway, to help them support math literacy and learning for all students in their regions. Finally, another goal is that teachers and school leaders who read this article will see the value in moving beyond traditional, adult-driven, and curriculum-focused teaching methods and models, and begin to apply the power of near-peer mentoring, game-based pedagogy, or other culturally responsive teaching and learning methods to engage students who have traditionally failed

academically in math, and enable them to successfully and joyfully engage in rigorous mathematics learning.

Methods

Over the past two years, we have worked with numerous Department Chairs, Deans, Vice Presidents, Directors of Cultural Diversity and Inclusion, and several faculty and staff colleagues to launch a Flagway initiative at NEC. The NEC Flagway program has engaged over 25 undergraduate students so far, through an undergraduate course supported by the General Education Program and the Education Department called, *Is Math literacy a Civil Right?* The course meets once a week for 4 hours to have enough time for student training and class work, as well as time to travel to work in an inner-city after school program once a week for 7–10 weeks with elementary and middle school students.

The NEC student participants learned about Flagway, how to play many different math games, how to prepare the students for learning, and how to run our Flagway Tournaments with the amazing support of Maisha Moses, Executive Director of the Young People's Project (YPP). YPP is the sister organization of the Algebra Project. Maisha and several of YPP's young staff members have provided training for our NEC students.

This project has received funding and support from NEC as well as from an outside non-profit that received a large federal grant to provide services to low performing students across the state of NH. Working closely together, we have all built a version of Bob Moses' Flagway program at New England College.

We have worked with several community partners as we developed and implemented the program. Flagway has had excellent support from our K-12 school partners, and we have worked closely with the Assistant Superintendent of Schools for Curriculum and Instruction, principals from the first elementary school where we initiated our first Flagway Pilot Program, and the principals from the four middle schools whose students have participated in the program.

We invited a local educator named Sumi to work with us, because of his experience as a long-time advocate and activist in the city. Sumi works for a local non-profit in the city's high schools to provide support for students of color who want to develop their skills as leaders. Sumi also serves as the high school basketball coach at the largest and most diverse high school in the city. He brought along five of his high school students who participate in his youth leadership organization to work alongside the NEC students to teach the Flagway game to middle school students.

The authors have tried to capture the process that we have used to implement Flagway over three semesters, between Spring 2019 and Spring 2020. This study addresses the research question: "In what ways does participation in Flagway affect elementary, middle school and college students?" To address this question, this article reports on:

- Observations of NEC students being trained to become Math Literacy Workers (MLWs) by our Young People's Project trainers.
- Student reflections during class discussions and on written assignments about the history of the civil rights movement and the connections between our work at NEC and the Algebra Project, YPP, the We the People Alliance, and the Flagway Program.
- Student discussions and reflections on class readings related to cultural competency and antiracism.
- Student written reflections and stories that reflect their experiences meeting and working with diverse groups of elementary and middle school students.
- Hundreds of pictures of students playing team building and math games, working together in groups to run the Flagway structure, and competing in our first NH Flagway Tournaments. In this article we share a few of the images that we have collected to show the program in action.

- Small group discussions that were held at the end of the program with middle school students to understand what happened to them as math learners because of their work with their NEC Flagway coaches.

Developing the Flagway program has been a process of trial and error, start and stop, one step forward, one step backward. We believe that telling a number of key stories to illustrate the major milestones and challenges we faced on our journey would be the best way to capture the essence of the Flagway program and some of the important effects of this experience on both our younger students and the NEC students who have helped to build and run this program..

Participants and Setting

Three groups of students participated in the Flagway program and in this study. The first group consisted of three groups of college students who took our three,15-week *Is Math Literacy a Civil Right?* classes (6-8 students per class x 3 semesters). The NEC undergraduate students represented first year college students through college seniors, who enrolled in the course in Spring, 2019, Fall, 2019, and Spring, 2020. Each semester we held multiple training sessions and a weekend training retreat, to prepare for our 7–10-week after-school program in the inner-city NH schools.

The second group of participants was a group of approximately 45 elementary school students from grades 4–5 who participated in our Flagway Pilot Project and a few of their parents who attended the first annual NH Flagway Tournament (see Figure 1).

The third group of participants was a group of approximately 90 middle school students from grades 6–8 who participated in our Flagway middle school program, in the Fall of 2019 and Spring of 2020. Note that the 45 students who attended in the third cohort (Spring,2020) attended only the first meeting before schools closed due to Covid-19.

The elementary and middle schools in which we have offered Flagway are in one of the largest, most demographically diverse cities in New Hampshire with 86% of the population being

white and 14% of its citizens being people of color. The city has long served as a refugee resettlement community and has become home to a highly diverse citizenry from all over the world. This diverse community is not the norm in NH, as NH is the 4th whitest state in the nation (97% white).

Figure 1

Student Participants in Flagway Elementary Pilot Project

Limitations

There are limitations to relying on stories alone to provide rigorous evidence of any phenomenon or issue, especially if the goal is to generalize findings. The participatory action research study presented here should not be construed as being a rigorous study of the effects of the Flagway program on students' math learning or literacy. That is the next Flagway study that is planned once the program resumes.

The original goal of this PAR study was to employ both quantitative and qualitative data collection methods to develop a complete picture of the effects of the Flagway program for all the student participants. In future research, my students and I will collect more in-depth quantitative and qualitative data through pre-post tests using a nationally normed math literacy

test that is used by the YPP to study the learning effects of Flagway. We will also conduct additional focus groups and collect interview data when the program resumes. We had already collected base-line mathematics test data in the early Spring from our middle school students but were unable to complete the post-test or the program itself due to the pandemic.

Data reported in this study are based on the initial findings gathered before schools shut down the program in March. This in no way suggests that the narrative data in this PAR study is not informative and useful in understanding the Flagway program and its impact on elementary, middle school and NEC students. The stories that follow provide a rich description of the Flagway program as experienced and discussed by participants.

Results

> I have learned that it was a mistake to just accept myself being mediocre at math when I was young. It wasn't until the end of the Flagway training that I realized that I really could learn, understand and apply these mathematical ideas to compete in the game. FLAGWAY has taught me that there are fun ways for me to learn math that really work. (Samantha, NEC Flagway Coach and Math Literacy Worker)

What is Flagway?

Here is how the We the People Alliance Website describes Flagway and how the program was explained to our NEC students on their first day of class and throughout their training.

> The goal of **The Flagway Game™** is to create environments where students can practice and celebrate learning math. There are many ways to create a cultural context in which mathematics emerges naturally from students' experience . . . The Flagway Game was developed by Bob Moses in 1995 to allow students who have historically been denied

effective mathematics learning opportunities to gain access to mathematic skills and knowledge (see Figure 2).

Flagway can be played with students as early as 1st grade. Typically, the game is played with 3rd–6th graders, however, Flagway has been enjoyed by elementary, middle school, high school, college-aged students and adults. During game play students navigate a Flagway structure that is set up in a large open space such as a gymnasium, library, or cafeteria. There needs to be plenty of room for running!

The Flagway structure is a course of radial "paths" that students run based on the Flagway rules (derived from the "Mobius" Function). Speed counts, as well as accuracy, so as students develop into skilled players, several may be running through the course simultaneously, creating dynamics similar to that of a sporting event. Part of the beauty of Flagway is that students can play the game without knowing the rules at first, learning and increasing their speed and accuracy as they play the game. This allows all students to access the game and learn the underlying mathematical principles as they compete in the game. Flagway is designed to support the mathematical thinking, learning, confidence, and engagement of students who score in the bottom quartile of national tests of mathematics. The game provides opportunities for struggling students to build on their understanding of basic number facts by incorporating those facts into a game where students guess, conjecture, reflect on the options in the game, and also tie these mental operations into the kinesthetics of running the patterned network of the game. YPP has created board games and physical games that capitalize on young students' propensity for running, the galvanizing energy of team competition, and the intrinsic sense of achievement when the team has figured out the correct category for a given number.

For the past 2 years, we have worked with our colleagues and students at NEC and have tried to do what Bob Moses taught us to do—which was "to organize" in order to take

action that would help members of our community. So, we created a course at NEC for undergraduate students that would provide them with a space and an opportunity to immerse themselves in the history and traditions of the Civil Rights movement and help them gain cultural competence as they explored issues of educational equity, cultural proficiency, critical thinking, and social justice, through experiential and service learning.

Figure 2

Preparing to Run the Flagway Structure

Things We learned from the Flagway Pilot Program

In the Spring of 2019, we worked with Maisha Moses and her MLWs from YPP to train NEC students to take on their roles as Flagway Coaches in a pilot program. We worked with elementary students who were invited to attend an afterschool Math Club, one day a week for 10 weeks. These students were selected by their principal and teachers because they fell into the bottom quartile in mathematics on state tests. The pilot program involved 8 New England College students who served as Flagway coaches and about 45 4th and 5th graders.

We all learned a great deal through this pilot project about how to play the Flagway Game and engage students in a series of math games that taught them the skills they needed

to learn to play Flagway. One of the most important things the NEC students learned was how important it was to develop relationships with these diverse students who were not great at math.

We often discussed how to apply the things that we were taught by our YPP trainers each week when we traveled the 40 minutes on our NEC van to work with these elementary students. Some of the important ideas students shared about the ways to reach their students during those van rides to the elementary school and back to NEC included:

Relationships

- "It's all about building the relationships first, then the math will come."
- "Take time to get to know your kids."
- "Don't try to be their teacher, just help them learn how to play the games and have fun."
- "It is fine if some kids learn it quickly and others take more time . . . let the students help and teach each other, it is fine if they teach each other how to make their flags, there is really no such thig as cheating!"

The Importance of Snack Time

Week by week the relationships between the elementary students and NEC coaches grew stronger and one of the best ways to connect with the elementary students we found was during snack time. NEC students always brought healthy snacks for the children. The NEC students sat with their elementary student teams during snack time, they talked, watched, listened, and learned a great deal about these children during snack time. The NEC students were shocked at how much the food meant to the young students. Some students always asked for more, some packed their snacks away to take home, some even stole snacks, and the NEC students never questioned it. My students got to see firsthand that food was not always available to their students.

The Power of "Cool"

Our students quickly learned that one of the secrets to helping young people "buy in" to something (like math) is to make it cool. Learning math through games was a cool way to approach this work with struggling students. The younger students could not wait each week for the NEC students to arrive at their school. These younger students admired and looked up to their NEC Flagway coaches. The students seemed honored that the NEC students took an interest in them and wanted to spend time with them. Having young people serve as math literacy mentors and coaches to younger students (near-peer mentors) is one of the most important aspects of the Flagway program. If adults took the same games and activities and tried to teach them to these elementary students, it would just not be the same. The near-peer mentors bring the cool factor to this work and that helps students buy in to learning math.

One other way to make this work "cool" was to create cool Flagway tee shirts. My NEC students designed and purchased Flagway tee shirts for their students and these tee shirts were a huge hit. Developing the design for the Flagway tee shirts each semester became a great project for the NEC students. One semester, our NEC students held a campus-wide tee shirt design contest to publicize our Flagway class. The Tee Shirt Design Contest helped spread the word about Flagway across the campus and helped us recruit new NEC students.

Eventually the Flagway Tee Shirt design contest was won by one of the students in our class named May. May was quite shy, hesitant, and quiet at times, but when she won the Flagway tee shirt design contest and her "very cool" Flagway tee shirts were printed and worn by everybody in our class and all the students in the Flagway program, May also began to come alive and find her voice. As her cool tee shirts gave our students some swagger, identity, and purpose, May's body language and commitment to the program changed and her self-confidence seemed to grow exponentially, when she saw how her love or art and talent as an artist helped her make a significant contribution to the program.

There is a great book about student activism and youth voice by Tina Roseberg (2011), called *Join the Club: How Peer Pressure Can Change the World,* that shows the power of "cool" when it comes to reaching young people. The book describes the incredible success of many civic action and political movements led by young people throughout the world over the last several decades. Here are three examples or models from the book that we have used as models to bring in the "cool factor" to our Flagway work at NEC:

1. A cool, college-aged group of student activists from Serbia created a program called RESIST. This group led college-aged young people throughout Serbia to stand up to "the man"; the man was Serbian dictator, Slobodan Milosevic, one of the most brutal and long-standing dictators in the world. Young people from RESIST used audacious, funny, and fun resistance tactics, some reminiscent of James Bond, the likes of which had never been tried in Serbia before. These strategies for making resistance cool—as opposed to scary—made headlines and got RESIST lots of national attention. RESIST sparked a popular, peaceful uprising that overthrew the vicious dictator. The RESIST youth leadership model was used a few years later to inspire young people throughout the middle east and sparked the Arab Spring!

2. A highly successful teen-inspired and youth-led HIV-Aids Prevention Program, called LoveLife, sprung up in South Africa during the dark times when HIV-AIDS was ravaging the continent. The LoveLife kids did not focus on preaching to their peers about safe sex practices. Instead they organized events and activities and created fun, positive experiences, and messaging targeting youth. They organized amazing free concerts featuring popular musicians; they developed slick radio ads that encouraged young people to aspire to "live life fully and have fun"; and they handed out millions of Love Life tee shirts that young people proudly wore to show that they were part of the LoveLife Movement. The program worked far better than anything that adults had tried before to 'flatten the HIV pandemic curve" and to help young South Africans understand how to avoid HIV-Aids.

3. Rosenberg (2011) also shared the story of the successful Anti-Tobacco Advertising Campaigns led by young people from several southern states in the U.S., who produced simple, cool, rebellious anti-smoking, anti-corporate TV ads to rebel against Big Tobacco's 35 million dollar cigarette ad campaign, that was developed to target young people to buy their cigarettes. These young activists made it cool to quit smoking. Their public health campaign was designed to show teens that being a smoker meant teens had been manipulated by adults and had "given into the man". These ads revealed to young people that, by smoking, teens were doing exactly what the adult goons from Big Tobacco wanted them to do. This youth campaign was amazingly successful and helped launch a nation-wide movement by young people to choose to move away from buying and smoking cigarettes.

There is power in a cool tee shirt, or a cool message of "resistance or rebellion" to rally young people to a cause. There is also power to "joining and belonging to a "club of your peers" who you see as being cool. The same things happened when NEC college students brought math games and Flagway to these elementary and middle school students. They brought the "cool factor" to math in ways that broke down resistance to math learning. The RESIST activists believed that "a cool tee shirt can change the world!" The Flagway program adopted these strategies about the power of cool near-peer math mentors to teach younger students rigorous mathematical ideas. Helping to fight against systemic racism and educational inequity is seen by our NEC students as a cool thing to do and has made learning about history and CRT engaging for them. Cool really works!

Flagway Moves to the City's Middle Schools

By the beginning of the summer of 2019, we had written and received a sizable grant from a NH non-profit organization that had received a major federal grant to support middle school students who were deemed at risk of dropping out of high school or not aspiring to post-secondary education. This grant will provide full funding for the program for a 2-year period. The grant covers the costs of transportation, two years of Flagway Training from YPP,

instructional materials, the purchase of Flagway Game Structures, lots of healthy snacks for our students, tee shirts, and stipends for our "veteran" NEC students who have become certified FLAGWAY Math Literacy Workers (MLW's) after completing the first class and working at the elementary school. The MLWs play an increasingly important role in developing and implementing the program.

The college is providing matching funds, thereby fulfilling its commitment to the program. This financial support and recognition of the value of the program by our funding partners has provided additional credibility and a source of pride for all of us. YPP is now beginning to share the NEC Flagway Model with other colleges and their YPP programs in several other states, as another approach to engaging colleges as Flagway and YPP partners, to expand the scope of the program across the country.

The Fall, 2019 session of the program with middle school students went incredibly well. Our class met each Monday for two hours to prepare our games and activities and to prepare the NEC students to assume their roles. We gathered up snacks and drinks, white boards, whole number and prime factorization cards, markers, and paper and pencils and loaded up the NEC van each Monday afternoon to travel to the middle school to work with our middle school students.

Each Monday afternoon, the busses would arrive at the middle school, the NEC students would greet the middle school students and reconnect. They always took time to informally mix and mingle, before getting into their teams to play the week's team building games. The team building games spilled seamlessly into simple math games. Each week we worked our way down our list of math games that allowed our students to become familiar with and practice the math skills and concepts that make up the Arch of Flagway (see Figure 3).

The Arch of Flagway

The arch of Flagway is a set of mathematic concepts and skills that are necessary for students to understand to be able to "crack the code" of the Mobius Function, which is at the

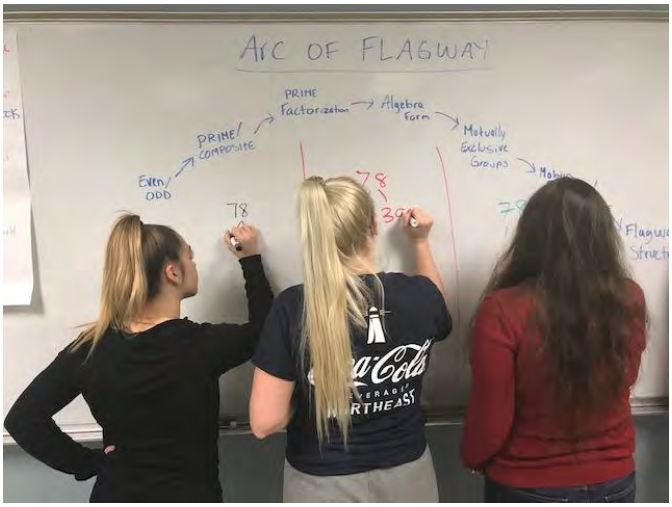
heart of the Flagway game. Here is the sequence of mathematical skills and concepts that both NEC and middle school students learned from our YPP trainers, and that our weekly math games and activities were designed to help students play with, practice, understand, and apply so that that they could play the Flagway Game. We all learned:

- about the properties of **odd and even numbers**.
- to understand **prime and composite numbers**.
- to break down any whole number into its **prime factorization.**
- to create factor trees and compete in factor tree races to build speed and accuracy in prime factorization.
- how to convert prime factors into one of three **mutually exclusive groups,** each representing a different **algebra form**.
- **how to convert those algebra forms into one of three colors** (red, yellow, blue).
- how to put all this information together to **make their Flagway FLAGS**, so they could play the Flagway game.
- how to practice **running the Flagway structure** along the proper colored pathways, at the end of which, they learned how to place their FLAGS to gain points.
- How to build their individual and team **speed and accuracy**, so they could compete successfully against the other teams, and try to WIN the Flagway game!

Our students saw growing evidence each week that these elementary and middle school students were not only learning how to play the math games, but they also learned how to play together and to work cooperatively to compete in the game as a team. Each week we saw dramatic improvements in student focus, collaboration, and positive behavior as they gained social and emotional skills by working together to play the math games and build their speed and accuracy. We saw students begin to rely on one another and acknowledge and appreciate one another's unique talents and skills as teammates for different parts of the games.

Figure 3

The Arch of Flagway Skills and Conepts



Applying Our Learning to Compete in the First Annual NH Flagway Tournament

Our first NH Flagway Tournament (see Figure 4) took place in the spring of 2019 as part of our first pilot project at the elementary school. About 45 elementary students participated and they had a blast. The school principal who had helped us recruit students and organize the weekly after school meetings came and watched his students compete in the Flagway tournament. He brought a few of the teachers to observe their students competing in the Flagway Tournament. We were proud to show the principal and these teachers what their "poor math students" could do. After the tournament, the principal asked, "How can we get this program into the hands of our teachers?"

That first Flagway Tournament demonstrated to the principal and these teachers that these highly diverse students had far more potential as math learners than may have been recognized. It is quite impressive when you see 4th and 5th graders applying pre-algebra skills to try to win the Flagway game and loving it!

Figure 4

First Annual NH Flagway Tournament Winners

When students who score in the bottom quartile on Math tests, demonstrate that they are fully capable of learning basic math and pre-algebra—when taught using more appropriate, culturally responsive pedagogies—teachers and school leaders are faced with the realization that they may be underestimating the talents, abilities, intelligence, and potential of whole groups of students! The Flagway Tournament is a celebration and a testimony to the abilities of marginalized students and hopefully a wake-up call to educators and parents about the untapped potential of these students.

Check out this video showing what the National Flagway Tournament looks like in action.

The Young People's Project.(2019). https://www.youtube.com/watch?v=IFVIU0tuFqk

Middle School Flagway Program

We moved the NEC Flagway Program to three of the four city middle schools in the Fall of 2019, using resources we received through our grant. One powerful way to understand the impact of this middle school program is to fast forward 14 weeks from when we first started training the NEC students from this second class to prepare them to go into the middle schools

and work with a group of 45 middle school students. Below is a description of what happened at the second NH Flagway Tournament held in the fall of 2019.

There were no parents, teachers, or administrators in attendance at this second NH Flagway tournament (which was disappointing to us), so adults did not see the amazing work that their students had done to learn lots of new math skills and concepts. A wonderful part of this second tournament, however, was a point when I noticed that all of the NEC Student Coaches were sitting on a bench together in the cafeteria, away from their teams, watching proudly as their middle school teams worked feverously playing and competing in the Flagway game.

Step by Step guide to Playing the Flagway Game

Here is my attempt to explain what those NEC Coaches were beaming about as they watched their teams competing in the second Annual NH Flagway Tournament:

1. Several teams of students are clustered around their HOME tables at the end of the middle school cafeteria. The Flagway Structure is set up on the floor in front of the teams. At the other end of the cafeteria each team has a NUMBER Table that contains whole number cards ranging from 2–100.
2. A tournament Judge says, "Ready, Set, GO!" and one student player from each team runs as fast as possible from their HOME Table, all the way across the space to their NUMBER Table at the far end of the room, where they quickly choose three random number cards from the scattered pile of cards lying face-down on the table.
3. The player then turns and runs as fast as they can, the length of the cafeteria, back to their team's Home Table, where they throw the three whole number cards on to the table, face up. Each of their teammates is looking at and analyzing the three cards.

4. The player who ran grabs a Blank 3 x 4 column FLAG and writes down the three whole numbers on the number cards in the first column of their Flag from top to bottom.
5. The whole team quickly completes prime factorizations for each of the three whole numbers and the team members check each other's work to make sure the factorizations are accurate. The player, or anyone on the team, writes these factorizations down in the second column of the 3 x 4 column of their FLAG.
6. Then, the player who ran, with help from the team, quickly converts the prime factorizations of all three cards into one of three Algebra Forms and writes the algebra forms for each of the three numbers down in the third column of the Flag.
7. Once the correct Algebra Form has been selected, the students on the team, work together to "crack the code", which means that they translate each of the three algebra forms into a color RED, YELLOW, or BLUE, and they fill out the last column on their flag, writing the names of the colors associated with each of the three whole numbers, in the proper order, to create the final Flag for this turn.
8. The player then runs clockwise around the multicolored paths of the Flagway Structure set up in the middle of the room and enters the Entrance to the Flagway Structure. The Player shows the completed flag to the NEC JUDGE, who quickly checks it. Once the judge say GO. The student "RUNS THE FLAGWAY STRUCTURE."
9. To RUN THE STRUCTURE, the player simply runs to the center DOT of the structure, then follows the three correct colored paths that match with the order of the colors on their Flag.
10. Once a player has run the structure, they place their Flag on the Spot at the end of pathway and exit the structure.
11. The player then runs Clockwise back to their Home table.

12. When that player touches the hand of the next player in line, it is now that player's turn to run to the Number Table, grab three new whole number cards, and run as fast as they can back to their team's HOME Table to create their next Flag, crack the code, and do the whole process again.
13. The teams play 6- or 7-minute Rounds of the game, where student teams make as many runs and as many Flags as possible.
14. At the end of each round, the judges review the flags that were left on the structure by each team. The Judges make sure that the Flags were filled out accurately and placed properly on the structure. Teams get one point for each flag and one point extra if the flag has been filled out accurately, so a team can earn two points for each flag.
15. The teams play 2–3 rounds, take a snack break, and then play the second 2–3 rounds for a Tournament. The team with the most points at the end wins, and those players are then eligible to go to the next level and may ultimately end up traveling to the Annual National Flagway Tournament to compete for the National Flagway Championship.

When one considers all the skills and collaborative group work needed to compete in a Flagway Tournament, it is easy to understand why watching a highly diverse middle school team of supposedly "poor math students" running the structure and playing this complex math game on their own, would give their NEC coaches such pride! Playing Flagway offers powerful assessments of student learning in mathematics, it also offers students a chance to become fully engaged as they use their bodies, their minds, and their teammates' help to solve these amazing mathematical puzzles.

Effects of Participation in Flagway

The Annual National Flagway Tournament, sponsored by YPP, is held in May each year as part of the National Math Festival. Five of our NEC students were invited by YPP to travel to

Washington, D.C., in the spring of 2019, after we wrapped up our first Flagway pilot project. They were invited to help coach student teams from across the U.S. who would be attending and competing in the National Flagway Tournament.

These NEC students worked alongside young MLWs from across the country to lead math games and help run the National Tournament. One of our students, named Shania, one of two young women of color in the class, was invited to be part of a small group of MLWs in Washington, D.C. to accompany Bob Moses as he testified before the U.S. House of Representatives Education Committee, endorsing a new bill that would ensure support for quality education for every child in the U.S., as a civil right (see Figure 5).

Figure 5

Shania, MLW and Co-Director of the NEC Flagway Program

Shania was so inspired by this opportunity, that when she got back to NEC for her senior year, she changed her future plans. Shania was a biology major and planning to start her journey toward medical school and becoming a pediatrician after graduating from NEC. But she was so personally moved by her role as a Flagway Coach and MLW that she was now

determined to become an elementary math and science teacher so she could continue her work with Flagway and YPP and serve the needs of children who struggle with STEM learning in her home city of New York. I hired Shania in the fall of 2019 to become the first co-director of the NEC Flagway program, and she helped me run the program and train the next two Flagway cohorts during her senior year. Shania graduated from NEC and is now a graduate student working to earn her M.Ed. and Elementary Teaching Certification.

Reflections from NEC Flagway Coaches

After participating in the 10-week after school programs and the Flagway pilot program, our NEC students wrote reflections like this, to describe some of the important things they learned.

"My understanding of math literacy as a civil right has changed, over the course of this semester. I did not view math literacy to be in the same conversation as civil rights, prior to entering the course. Now, I view math literacy as having great importance for everyone, especially those students in the bottom quartile. If students can excel in math, they may be able to excel in most other subjects."

"I will seek to inspire these students that have been marginalized in the education system; to view their potential to be far more powerful than the circumstances in their lives which they cannot control. "

"The NEC coaches and I should [find] different ways of inspiring these children to succeed and to have hope in their ability to overcome circumstances that seem futile in their lives, especially as it pertains to math."

"FLAGWAY should be implemented in inner city schools because when you come from an impoverished place, and on top of that, you are a minority student, your chances of going to college are slim. It is a struggle to graduate from high school, coming from poverty, which

> then makes it impossible to ever start post-secondary education. This program has sparked a new passion in me about what this program could really do for our students."

Parents' Roles

Bob Moses says that one of the most important parts of Flagway is to show students themselves as well as their teachers and parents that each of them is fully CAPABLE of learning math. Moses makes this critical connection between high expectations for all children as math learners and quality of life in the 21st century and for generations of families.

Parents and families can also feed into the self-fulfilling prophesy of math failure. Teachers often hear parents say, "Oh, I don't do math." Or "We aren't math people." Imagine the power of these messages and the damaging effects they might have on a child's confidence or motivation to "do math".

The NEC Flagway Program followed Bob Moses' advice and invited the parents of the elementary students to come and watch their children compete in the first NH Flagway Tournament. We ended up with approximately 6 parents who came to watch their children play Flagway. At the half-time break in the Tournament, Bill asked the parents to come out into the hallway while their students were having their snacks. He asked the parents what they thought about their children doing math in this way. The parents were very vocal about their reactions to their children's engagement in the program and to Flagway:

> "I can't believe that he tells me every Monday that he wants to stay after school to do Math Club!
>
> "He has never been able to work with or play like this with other kids", I can't believe it!", one mother said with great shock and surprise.

> "No one in our family is good at math, so we are surprised when she comes home every week saying how much she is loving playing the math games and explains these math ideas to the whole family."

Bill told these parents that, now that they had seen that their children are fully capable of learning math, and that they can be successful and gain confidence as math learners, it will be up to them as parents to "advocate" for their children as math learners in the future, not to buy into the low expectations they may have had themselves for their children as math learners. He also told the parents that they will also need to be prepared to push their child's teachers or their schools to offer different math learning opportunities for their children. Opportunities that do not "turn them off" to math or that convince their children they are incapable of learning math. These parents were surprised that what seemed like a game, was so much more.

Flagway Made a Difference

After the middle school tournament, several of the middle school students began asking the same question, "What do we do next?" We told them that after our tournament there would be the end of December school vacation, and that another group of NEC students would take the Is Math Literacy a Civil Right course in the Spring. Those new NEC students would then be coming back to the middle schools to work with a new set of 40-50 middle school students. These students did not like this answer! They wanted to come back (see Figure 6). They wanted to keep going with Flagway. We felt badly that we had developed these relationships with them and after the10-week program was over, that would be it.

Figure 6

Middle School Students and Their Favorite NEC MLW

Spring, 2020

Our third group of 8 NEC students signed up for the *Is Math Literacy a Civil Right?* class for the Spring semester of 2020. They received their Flagway training from YPP, and we continued to have a few former, experienced NEC MLWs work with this group to prepare them to go into the middle school.

There was a delay in starting the 10-week after school program in the spring due to standardized testing conflicts, so our start date kept getting pushed back later and later into January. February came, and we still had not started with Flagway. Delays in starting the middle school program continued, so while we waited for the schedule to be sorted out so we could begin the program, We contacted a colleague who is the Math Specialist in a rural elementary school in our area. She invited our class to come work with her 4th and 5th grade students, so we could practice our math and team building game facilitation and group management skills. Those sessions went great. Our NEC students gained valuable experience and greater confidence, but we were all eager to get going with the new class of diverse middle school students in the city.

Finally, the day came in late February when we could begin the next Flagway after school program with the middle school students. Our students were not only super well-prepared, they had also been doing a good deal of additional reading and discussion about issues of racial injustice in America, about the civil rights movement, and the ongoing learning, funding, and opportunity gaps and disparities in American schools. More than any NEC students yet, this third cohort of NEC students understood the "equity" issues that were the heart and soul of the Flagway program. So, by the time they met with the new cohort of 45 middle school students, they were pumped up and deeply committed to this work!

We arrived at the middle school early to set up the library into areas where we could meet in small groups with the students. The new group of middle school students arrived excited and at the beginning, things were chaotic.

One thing that was clear immediately was that at least 12 of the students were not new. They were students who had returned from the previous semester. These veteran middle school students hugged the two NEC MLW's who had worked with them the previous semester. Within a few minutes the MLWs brought these veteran middle school students over to me to tell Bill that they had something to show him.

Many of these returning students took out what we quickly realized were their report cards. One student exclaimed, "I went from F's to A's in Math Bill!" Another girl shouted, "D's to B's for me!" Pretty soon the entire room gathered around, and we heard these 12 returning students telling our new NEC coaches about how playing Flagway and the afterschool math games they had done before their December break had helped them understand and succeed in math like they had never done before! It was a huge celebration.

One of the Campus Compact Gear Up Coordinators and Bill decided to pull those 12 returning students aside in three small groups to talk more fully with them while the other, new students, got going with their team building and initial math games. We asked these students two simple questions, "What worked well for you last time? Why did you come back?"

One student jumped right in and said, "I definitely noticed an increase in my grades in math. I was failing before."

Another student said, "I came back because now I do math faster."

One boy said, "Since a lot of the activities that we do involve running, I came back because I really like running and jumping in general, and I feel like that could be helpful to me."

One other student said, "The factor trees really helped . . . doing those helped . . . to break down things and do it as a race, and stuff like that."

We also asked these students to tell us what advice they would give their teachers, to help more kids learn math better as they had done.

One student said, "Teachers should try to incorporate more games in the teaching of mathematics."

Another student said, "My teacher just jumps right into the lesson and sometimes it seems like the students interrupt her because they may not really be ready to learn."

One other remarkable student said, "incorporating movement is another thing that seems to be a good idea. I learn kinesthetically, and so I need to move if I want to learn things. I think our teachers need to learn about kinesthetic learners!"

Finally, one student said, quietly, but determinedly, "I wish we could tell teachers 'don't be so mean'."

On the van ride back to New England College, students in this third Flagway cohort were ecstatic about how their first day with their students went. They had finally gotten to meet the new middle school students. Their games and activities had gone great because they were so well prepared, after the long wait. They spent a lot of time talking about how incredible they thought it was that those 12 students had insisted on coming back and how they had brought their report cards to show us how much they had learned by participating in Flagway. And they were really impressed that these 12 middle school students wanted to become MLW's and help

the new group of middle school students learn to play Flagway. This new class of NEC students was determined to produce similar results as the previous class had done with their students.

Bill told our NEC students that several of the Site Coordinators who worked with these students at the four middle schools as part of a grant program mentioned that they had seen some standardized testing data in January for the Flagway students who had participated in the Fall semester. These test scores, they said, showed dramatic growth in these students' academic achievement scores in math. These coordinators said they would gladly share these test results with us when we came back the next Monday.

I think that first week back, that we received the word that all the schools in the city would be shut down immediately due to the Covid-19 Pandemic. We would not be returning to the middle school. We would not be seeing these middle school students, whom we had met this one time. We would not be seeing those12 students who had returned on their own to stay engaged with Flagway and help their fellow students as MLWs alongside their former NEC Coaches.

Figure 7

NEC Student Begins Her Role as Flagway Coach

Conclusions

We had the rest of the Spring, 2020 semester to try to make something positive out of the shocking situation we found ourselves in as a class when the schools shut down. There is another whole story about the work that this third Cohort of NEC students did in the weeks that followed the announcement of the closing of the schools due to the pandemic.

These NEC students put all of their Flagway games and activities online by making a set of fun videos that demonstrated how to play all the Flagway games we planned to do with the students. They wrote up clear descriptions of each game—using principles of Universal Design for Learning (UDL)—to help ensure that the many ELL students they would have been working with would understand these explanations. They tried to provide an online tool kit that would allow these students, their parents, or older siblings to help the students play many of the games at home, so they might reap at least some of the benefits that they had seen in evidence when those 12 students came back with their report cards on the first day. They created a You Tube Channel and a Google Site to hold all these materials and make them available to the students.

But that story ended with our collective sadness and anger, when we learned that most of the 45 students whom we had met and worked with on that first Monday afternoon in March; Zuyerll, Rouba, Lucia, Tamanna, Rosenna, Xavier, and all the rest, had no internet access; despite the tremendous efforts made by the city schools to quickly build the capacity to reach 95% of their students. It just so happened that the vast majority of the Flagway kids were among the 5% who fell into the abyss of the digital divide.

Our NEC students, in some small, but we hope important, ways, got to feel the power of educational inequity when they learned that their Flagway students would not be able to access their online videos and games that they worked so hard to make available. Our students got to see first-hand the ways in which institutional racism and social injustice works in the real world; how students of color and poor kids and families suffer disproportionally in times of crisis. As

future educators and citizens, we know they will not forget their anger and deep disappointment, or their new understanding of the ways that things often go for kids in the bottom quartile. These NEC students can now more fully understand Bob Moses' primary message and the rationale behind his activism for Quality Education for All students as a Civil Right, and his reasons for creating Flagway.

We are gearing up to offer Flagway online in those middle schools again this fall. The good news is that we may be able to invite more students to join us when we meet online, if they have access by then. We may also be able to invite other rural students from across N.H., who could easily join us online, if they have access. If our program works, everyone will not only learn more about math, perhaps we will be able to bring NH students from rural and inner city schools together to play Flagway. Maybe these students will make some new friends and learn more about each other. Rural white kids playing Flagway with diverse, inner city kids of color might begin to build bridges across these different communities within our state. We cannot wait to see them learn how to pronounce one another's names, to learn which ones are the fastest at making factor trees, who is best at picking out the prime and composite numbers, who is great at running the structure, and which of their teammates are fastest at cracking the code. When these students who live in very different worlds come together to play Flagway, we are confident that they will learn important new things about one another, about themselves, and about their abilities to learn math together that will change their thinking and their lives.

What is clear to each of us at NEC who have been involved in Flagway is that we have seen that Flagway works. It works in multiple and important ways. Here are a few final thoughts that my students shared at the end of our latest Flagway course:

> "Learning about Bob Moses redefined for me what playing an active role in anti-racism means. Reading about the founding of the Algebra project through grassroots efforts was encouraging and refreshing. I am delighted to have provided a small contribution to students through the Flagway program."

> "I have learned that teaching is so much more than just regurgitating information to a room of students. It is caring and giving guidance to the youthful generations. It is the purpose of a teacher to instill courage, confidence, and curiosity in each student. Children are naturally curious, we need to take that curiosity and cherish it, let it thrive and build the desire to learn in our students."
>
> "Being in the class has shown that racism is real, as much as people think it's been put to an end in 1875, to this day it is real."
>
> "By doing the Flagway program, these students are going the extra mile for their education. They are pushing themselves further to do better for themselves. I want to keep encouraging students to have this self-driven motivation."
>
> "I learned about myself, that I have a passion for teaching, but not just teaching, I have a passion for connecting with students on a personal level. Having a good connection with students makes teaching more enjoyable for them and for me as well. I love this course, and I'm grateful that I had the opportunity to learn about Flagway. I learned that teaching can be fun. It's all about having FUN! If you don't have fun while you teach, then you're not doing your job correctly."

Final Thoughts and Recommendations

We hope that New England College's Flagway story may help others begin to change the trajectories of their thinking and behavior about issues of racial justice, educational equity, and powerful, personal effective teaching that every child deserves in America today. We hope it will provide options, choices, and common-sense solutions for other colleges, K-12 schools, and educators and for high school and middle school aged students who want to play critical and unique roles as anti-racist leaders in their schools and communities. Finally, we hope the solutions we discussed here can help us all to more honestly and more fully embrace the democratic and humanistic traditions and values that we proclaim to cherish, and apply them

more fully every day to lift up all students so they can fulfill their potential as fellow human beings.

Recommendations

1. ***Teach the uncomfortable stuff, use it to learn and inspire us all to move forward.***

   K–12 Teachers, college and university faculty, and educational leaders must provide resources, encouragement, and opportunities for students to learn the hidden histories of our nation. We must prepare students to become civic leaders who will think critically and develop clear-eyed, reparative/restorative programs and practices to undo past injustices to black, Latinx, indigenous, immigrant, and other historically marginalized communities.

2. ***Take affirmative steps to bring diverse pedagogies, leaders, teachers, and students into predominantly white institutions.***

   We hope that this participatory action research study demonstrates that there are important things that white, privileged leaders, faculty, and students within the nation's predominantly white institutions (PWIs), like NEC, can do to bring antiracist and culturally responsive pedagogies and learning opportunities like Flagway to our students and institutions. We must step up as white people with privilege, and do the sometimes uncomfortable and hard work to take affirmative steps to bring new teaching and leadership strategies and more diverse people into our organizations to better serve the people and needs of our pluralistic society.

3. ***Fight for socially just, humane laws, polices, and legal solutions to eliminate systemic, institutional racism in our home states and country.***

   We must stand up against systemic educational inequality and social injustice and advocate for a new round of civil rights laws and policies to break through and deliver on the promises of the civil rights movement. Quality education, housing, food security, health care, clean air and water, and access to digital skills, tools, and resources

required for full participation in the 21st century economy and educational system should no longer be a privilege enjoyed by certain groups. These should be available to all children and families and provide access and opportunity for all citizens in the U.S.

4. ***Join the community of nations and commit to ensuring the rights of all children.*** We believe that the American people, schools, colleges, universities, teachers, parents, and economic and political leaders need to revisit our nation's failure to adopt and ratify the United Nation's Convention on the Rights of the Child (UNCRC) (2002). This human rights treaty has been adopted by every country in the world except the U.S. The U.S. needs to adopt the UNCRC to establish new youth-informed and youth-centered norms, policies, laws, and a renewed commitment to guarantee and protect the rights of all children.

These are big steps, and they will not be accomplished easily. Working as true partners with our young people will empower them and enable us to reach these goals. If kids can overthrow dictators, help end the HIV Aids pandemic, and deter their fellow young people from being manipulated to start smoking, then who knows what else they can do? Flagway shows us that all young people are fully capable of learning math, and it shows us that when we work together with young people as partners, we can be inspired to take effective action, and have lots of fun along the way.

For comments or questions for the authors contact

William Preble at wpreble@nec.edu

Carlton Fitzgerald at cfitzgerald@nec.edu

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