



NEWSLETTER

Math Literacy | Is the Key | to 21st Century Citizenship!

A student's math literacy journey: Jevonnie, p. 1

Jevonnie, a high school senior in Broward County, FL, shares his math literacy journey.

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Student voices his math literacy journey: Jevonnie

I struggled through middle school. I barely made it to high school. The summer between 8th and 9th grade all athletes were required to be involved with the Young People's Project (YPP) and the Algebra Project. I was really not optimistic because it was doing math in the summer and all I wanted to do was work out and play football. But it was a totally different experience than what I envisioned it to be. The Algebra Project classroom when we started school was the same. I was like, "oh, my gosh! I have math at 7:30 in the morning, every day." Then I went and I was like... "wow this doesn't feel like a math class." For the majority of the class you are not sitting down. You are walking around, collaborating, talking with your friends, your peers, doing work with them. Ms. Caicedo is breaking things down. We would be so intrigued and involved in the lesson....

As a YPP Math Literacy Worker (MLW) I got to see things outside of what my mind was always fixed on, which was sports. The kids came in and we started teaching them and I got to see the 'mini-me's' - I got to see how I was in them. To see how fast I have grown and how the Algebra Project has lifted me up from such a low-level failing student to a high level 3 student and participating and becoming a man. In the Algebra Project [and YPP] they teach you more than just math, the math learning experience, they teach you to teach.

Bob Moses & Henry Hipp's' virtual Fireside Chat 11/5/20

re: the Gates Foundation's Balancing the Equation Algebra program: <https://www.youtube.com/watch?v=PZGh8stKrCA&feature=youtu.be>



Practitioner's Use of the 5-Step Curricular Process, p. 4

Three min. video by ETS, SIUE, YPP & AP - with Room 212 Photography presented at NSF STEM-for-All Showcase 2020

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The Algebra Project in Broward County - Highlights:

BCPS Office of Academics prepared a video this fall; see: <https://www.browardschools.com/domain/12424>

Algebra Project high school teachers share experiences:

Paola Caicedo: I've been teaching for eight years. I started off as an Algebra Project teacher at Miami-Northwestern High School in Miami-

Dade County. Four years ago, I was given the blessing and opportunity of teaching the Algebra Project here in Broward County.



I see a lot of benefits for myself, (and) for the students, in terms of the pedagogy and culture in the

classroom. Our experiential curriculum provides access to learning with what students have, rather than what we think they should have.

Whatever knowledge they come into the classroom with, we use that to push the learning and the growth.

In Algebra Project classrooms you'll see peer-to-peer mentoring where students are actually helping each other. So, I may not be seen as the only teacher in the classroom. Every student in the classroom is a teacher and we can learn from each other. We have a sense of accountability to learn, to grow in the mathematics, being able to collaborate with each other, being able to know that within a group. Every person has a role and everyone has something to contribute. I think that's such a powerful idea because students sometimes feel that math may not be their thing. But being in a classroom where you have to do math, where you have to write, where you have to present, where you have to speak, where you have to create arguments and provide evidence and make claims, it gives everyone this opportunity to be successful, to feel like, "you know what, I can figure it out because I have a team who can help me with that."

I definitely see the impact on my students that this collaborative culture has and of valuing mistakes. I reflect on how my students entered my class in their 9th grade year and they are now Seniors. A lot of them really hated math, a lot of them did not feel confident, a lot of them had this defeated mindset of, you know, "math is not my thing, I don't think I'll ever be able to be good at math, to be strong." As Seniors, they are all on track for graduation. I think it's beautiful.

Now with this COVID-19 Pandemic, in our virtual class I see kids helping each other, even though they're not physically there, they'll unmute themselves and just help each other, and figure it out. Their work ethic is at a different level in comparison to 9th grade. They hold each other accountable and leave no man behind.

For me besides, quantitatively, how successful they've gotten, I see them

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as mathematicians. You know, we like to call them mathematicians. They love to explore now, they love hearing each others' conjectures and each others' arguments. They're open to making mistakes and are open to learning and putting forward maximum effort to learn.

The program works. Providing this good pace for students to actually learn, and giving them the freedom to learn, the freedom to explore, to make mistakes, to be friends and also to be a team has made them as successful as they are now.

Crystal: I've been teaching high school math at June Jordan School for Equity (JJSE) in San Francisco for the past 15 years. In 2014, I was introduced to the Algebra Project (AP) by a colleague, Marcus Hung, who proposed we incorporate Road Coloring and Trip Line (units) in our classrooms. We also started attending AP conferences to learn more about the Alliance and build our network with other AP schools. We quickly realized our mission as a school for social justice and our practices within the classroom lined up with the mission of the Algebra Project.

JJSE's math department is centered around addressing and interrupting inequities within the classroom and improving access and participation among our students. One of the ways we do this is through an intentional group practice called Complex Instruction (CI) [Elizabeth Cohen and Rachel Lotan, 1994]. The goal of CI is to address and possibly change the inequitable dynamics that can play out among our students due to race, gender, and other conditioned academic status. We believe that if we can create environments of dialogue within our classroom and change the minds of our students (and ourselves) around what it means to be mathematically smart, we can then increase student participation and therefore, student math literacy.

The work we saw with other AP schools was very similar. The importance of a shared experience among students and creating a class community where the students and teachers were together for more than just one year, resonated with our work at June Jordan. We met students from New York, Florida and even neighboring schools in California, who felt empowered by their experience and used their math literacy tools to organize and work within their communities.

We also found the AP curriculum to be very conducive to a group worthy environment and a very effective teaching tool. Unlike traditional math text, the curriculum allows students to explore and think about mathematics from multiple access points, which is vital when it comes to collaborative learning. The curriculum also gives students access to abstract mathematics by making it very tangible through shared experiences and engaging models. Every time we reach the end of the Road Coloring unit in my class, my algebra students not only have a clear understanding of functions through red and blue roads, but they end up making sense of functions even when they see them in traditional precalculus text.

I'm currently still teaching Road Coloring in my algebra classes, and over the past 5-6 years we at June Jordan have participated in the

Algebra Project in different ways. Two of our teachers taught the Young People's Project curriculum through our after school and internship programs. And I've worked as a visiting Experienced AP Teacher for Summer Inductions in Flint Community Schools in Michigan.

Overall, my work with the Algebra Project has merged well with my teaching practices and my school's work with changing inequities in the classroom. I'm so glad I was introduced to the Algebra Project six years ago and I am eager to learn more from other students and teachers within the emerging national We the People - Math Literacy for All Alliance.

Quality Education as a Constitutional Right - virtual Town Hall 7/9/2020 & follow up:

The 60 minute QECR Town Hall is on YouTube: <https://youtu.be/pWqiyZFcIe8>, and was hosted by SNCC Legacy Project, Teaching for Change, XQ Institute and the Algebra Project, with more than 50 co-sponsor organizations. For related resources, see: <https://qualityeducationasaconstitutionalright.org/>

Practitioner's Use of the 5-Step Curricular Process - NSF STEM for All Showcase 2020:

With support from a NSF Discovery Research program research award #162117, ETS, the Algebra Project, the Young People's Project, and Southern Illinois University Edwardsville are collaborating to develop a learning progression-based assessment for the concept of function and to validate its interpretation. This 3-min. video focuses on the work of practitioners and how they use the 5-Step Curricular Process to support students' understanding of the concept of function. <https://stemforall2020.videohall.com/presentations/1898>

Dr. Alan C. Shaw, Bill Crombie, et al., mix computer science & math in middle schools:

Supported by National Science Foundation award #2031490, "Supporting computational thinking for middle school mathematics students through diagrammatic reasoning and representational logic", Dr. Shaw, Crombie, et al., have initiated research to study conjectures about the learning of computational thinking through the development of a curricular and pedagogical intervention that adds a computational environment to the Algebra Project. This study will engage all students in a predominantly African American middle school in Clayton County, GA. This research seeks to demonstrate how the use of various types of computational thinking can increase conceptual understanding, visual reasoning, and representational logic. In pursuit of this outcome, this project is seeking to determine to what extent a specific type of simulation and modeling application can enable teachers and middle-school students to use visual reasoning and spatial logic when analyzing mathematical functions. Students in this intervention will work collaboratively in small groups among themselves, and with near peer mentors and tutors, to examine shared experiences that are grounded in mathematical and computational logic. Through their ongoing collaboration and discourse, the students will determine solutions for various tasks and challenges that they are presented. In addition to using visual reasoning and spatial logic in this work, students will also learn to use Python scripts and functions to aid them in their analyses

Also see, Shaw, A., & Crombie, W. (2020). "Incorporating Computer Programming into Mathematics Curricula to Enhance Learning for Low Performing, Underserved Students." Proceedings of FECS 2020 - The 16th International Conference on Frontiers in Education: Computer Science and Computer Engineering, 2020, Las Vegas, Nevada.

Algebra Project work in the Saint Louis Metro Area

As anyone who has been involved in community organizing knows, building a local network takes time and requires community allies. Work in the St. Louis metro area has been building over the last five years with a network of people interested in ensuring students receive the quality math education they deserve.

The work began with the awarding in 2016 of the NSF grant #1621117, “Development and Empirical Recovery for a Learning Progression-Based Assessment of the Function Concept”, with co-PI Greg Budzban, then dean of the College of Arts and Sciences at Southern Illinois Univ. Edwardsville. Regional work comprised collaborating with local school districts to collect data on the developed assessment items during cognitive interviews of students as well as pilot testing. Students across the greater St. Louis metro area were involved. Budzban notes, “the importance of building these next-generation assessments with critical student input from communities that have been overlooked in the past cannot be overstated”.

Recently, additional collaboration with St. Louis Public Schools has been made possible with the assistance of Saint Louis University (SLU). Important initiatives are being spearheaded with the help Dr. Gary Ritter, School of Education Dean, and Josh Goldman, director of community engagement for the School. Budzban and Bill Crombie are leading professional development workshops on the Algebra Project Road Coloring module and conversations with community and professional leaders in St. Louis are discussing the possibility of creating an early-college high school focused on preparing underserved students for the health professions.

“The foundation of the Algebra Project is ‘bottom up’ organizing to develop excellent mathematics literacy for traditionally under-served students,” said Ritter, “and the leaders of the group want to get involved with students in our St. Louis City community. For me, at a Jesuit Institution with a focus on social justice, this partnership is a wonderful opportunity.”

Supporting professional learning in Flint Community Schools

During the spring of 2020 and through a June/July summer induction for students and teachers, the Algebra Project, The Ohio State University Math Literacy Initiative, Young People’s Project and Youth Quest collaborated with Flint Community Schools in Flint, MI to support elementary and middle school teachers and students in school and outside of school. Planning for spring semester support will begin in January 2021.

African Americans and Racial Justice: Ella Baker, SNCC and the Organizing that Anchors the Algebra Project and Young People’s Project, by Bob Moses

The 2020 Democratic National Convention promoted “We The People” as its framework for moving the nation through the current existential threat to its practice of democracy. Its presidential nominee, now President-Elect Joe Biden, reached into revered Civil Rights history to quote Ella Baker: “Give people light and they will find the way”. Ella put her faith in the youth: “To me young people come first, they have the courage where we fail”.

The Student Nonviolent Coordinating Committee (SNCC) field secretaries, the 18 to 22 year olds who initiated its 1961 Mississippi Voter Registration Insurgency (I was an outlier at 26) had the courage. Courage enough to earn the respect for and commitment to a voter registration insurgency by black sharecroppers, day laborers, domestic workers, and small farmers. With tenacity we made plain who we were, where we came from and where we wanted to go. We absorbed Ella’s ways of working: to pick up pieces or put together pieces out of which organization might come. Our biggest and, in hindsight, extraordinary outcome was the Mississippi Freedom Democratic Party

(MFDP) which included the emergence of Unita Blackwell, Annie Devine, Victoria Gray, Fannie Lou Hamer and Hazel Palmer as exemplars of Ella's theory: Strong people don't need strong leaders.

Ella's light lit the MFDP when, at the 1964 Democratic Convention, it challenged the caste system which the National Democratic party harbored from 1875 down to 1964 in the Southern Wing of the Party which, Judge Wisdom identified as the "manifestation of the will to white supremacy".

My own journey was straightforward. When black students from HBCUs were pictured on the front pages of the NY Times in February and March of 1960, I went to see what was going on at Hampton University where my father's brother, Bill Moses, taught architecture. At a mass meeting in Newport News, Wyatt T Walker announced that Dr. King would establish a Harlem Office. Every afternoon I left my job teaching middle school math at the Horace Mann School to volunteer at the Office. Bayard Rustin ran it and I asked him to arrange a summer internship with Dr. King's organization; he sent me to Ella Baker in Atlanta. The SNCC coordinating committee met in Atlanta that summer and made plans for its first South-wide conference that fall. The SNCC office was managed by Jane Stenbridge, who had dropped out of Union Theological Seminary to volunteer. She huddled with Ella and convinced me to use my savings and Ella's list to scout for student sit-in activity across Alabama, Mississippi and Louisiana. Amzie Moore, head of the Cleveland Mississippi NAACP, was on Ella's list. He told me what SNCC should do: recruit students to come to Mississippi and conduct voter registration. I wrote Jane that I would finish my contract with Horace Mann and return in the summer of 1961 to work for SNCC on Amzie's program.

When SNCC put a notice in Jet magazine about its new voter registration program, C.C. Bryant, the head of the McComb NAACP wrote Amzie requesting students. Amzie put me on a bus, C.C. and Webb Owens the treasurer met me at the bus terminal in McComb. The funds I had saved to take me back South were running low, but C.C. and his wife Emma-Jean, put me in the room vacated by their oldest daughter and fed me as part of their family. For my first two weeks in McComb, Webb arrived in a local taxi early every morning to escort me to meet local black business people and discuss SNCC's plan to initiate a voter registration program. A simple plan to bring in two SNCC field secretaries and house and feed them for six weeks. Webb was the trusted treasurer of the local NAACP and after each meeting would make a pitch for \$5 or \$10 towards a fund to support this plan. A fund he kept at home and in his back pocket with meticulous notes about who gave and how much. Together we made the rounds of the churches on Sunday and after two weeks SNCC sent us Reggie Robinson from Baltimore and John Hardy from Nashville.

Clearly I was passed along and had sense enough to do what I was asked or told to do. Obviously there was already an organization, the local NAACP, to provide backbone for the program. In the language of Ella, our job as SNCC field secretaries was to "put together pieces" out of which we could launch a voter registration insurgency. Initially there were C.C. and Webb and the local NAACP, the SNCC field secretaries and a small group of high school students cultivated by Webb. In hindsight, it was the iteration of this process: expanding the local organizations to create the Council Of Federated Organizations (COFO: local NAACP chapters, CORE, SCLC, SNCC and local groups such as the Masons); recruiting more young people from Mississippi to become SNCC field secretaries, reaching into adult populations to recruit small farmers, day laborers, sharecroppers and domestic servants. Fully operational, SNCC and CORE field secretaries organized the infrastructure that enabled the adult populations to gather monthly at the Masonic Temple in Jackson to tackle different pieces of their problems. The adult populations traveled on their own dime; SNCC field secretaries had graduated to a \$10 a week subsistence check and a fleet of second hand Chevys. This grass-roots ground game lacked funding but had the collateral benefit of complete autonomy. In effect COFO took the time to excavate for itself the meaning of Ella's warning: "One of

the things that has to be faced in the process of waiting to change the system, how much we have got to do to find out who we are, where we have come from and where we are going". COFO took on what is "easier said than done".

While their incubation periods have been much longer, the Algebra Project and its outgrowth the Young People's Project continue to negotiate analogous domains. However, these domains are not immune to outside turbulence, disruptions, and violent displacements.

It is helpful to recount the most important of these for the Mississippi Voter Registration Insurgency. The first concerned Direct Action vs. Voter Registration. When extreme violence and death disrupted CORE's 1961 Freedom Rides on Greyhound and Trailway buses, SNCC field secretaries out of Nashville carried them forward into Mississippi. While the strains and stresses of Federalism dominated the news, the more fundamental issue was raised when Attorney General Robert Kennedy "threatened" Dianne Nash that some freedom riders could be killed, to which she replied, "We have all made our wills". This disposition to complete the Freedom of a whole people is rarely confronted and barely understood in a society dedicated to maximizing individual opportunity and power under the guise of Freedom. The Student Sit-In Movement penetrated Mississippi on the backs of this drive to free African-Americans from Jim Crow. But Mississippi was not without its own plan.

The current Constitution presents a deep difficulty, not in what it requires, nor in what it forbids, but rather in what the Federal government or a state scopes out as constitutionally permissible. The law permitted Mississippi to handle the Freedom Riders one at a time and to impose on future direct action insurgents long term jail sentences. It was this latter threat that got the attention of SNCC's Atlanta leadership in McComb. When the local black high school students walked out of school and marched downtown, insurgents in the March over 18 were sentenced to two years in jail and had 40 days to raise thousands of dollars for bail. SNCC's chairman, Chuck McDew was bailed out, raised the bail money and mailed it on the 39th day. SNCC decided to focus solely on voter registration in Mississippi. A decision which had a collateral benefit.

The Civil Rights Act of 1957 forbade Mississippi from arresting people for voter registration activities, which meant our identities as voter registration insurgents opened a "legal crawl space". The Civil Rights Act of 1957 neither required nor forbid the Department of Justice from intervening on behalf of voter registration insurgents. Again the dimension of what the Constitution permits was in play. Mississippi could lock us up, but the feds held the jailhouse keys and a legal apparatus that freed us from legal worries and entanglements.

The Mississippi Voter Registration Insurgency involved beatings, jailings, confrontations with highway patrols and sheriffs to be sure, but it also involved murder, Herbert Lee in September '61 and Lewis Allen in January '64, but the violent disruption that murdered Medgar Evers in June '63 changed our plans. We shifted our foci from the Justice Department and the Executive Branch of the Federal Government to running candidates and organizing the Mississippi Freedom Democratic Party (MFDP).

The lessons we learned in the Mississippi Voter Registration Insurgency have all been revisited in the context of the Algebra Project and the Young People's Project over the past three decades (1982 - 2020). While the terrain of Public School Education for 21st Century math literacy is more complex by an order of magnitude, nevertheless certain fundamental requirements remain. The following excerpts from an article in a Skoll Foundation newsletter by Atti Worku about her experiences as a community organizer in Ethiopia cut to the chase.

I realized that the best solutions to issues like poverty and inequality come from the people who are most affected. The families we serve have always determined the direction of our interventions. We understand that our beneficiaries have the most knowledge about the tools they need to transform their lives and transcend poverty, and our programs are thus designed from the bottom up. It is imperative that we acknowledge and bring to the forefront the real consumer: the marginalized people on

the ground. We must ensure that beneficiaries are included in setting the agenda, that their needs are addressed, and that success is primarily measured from their unique point of view. <https://skoll.org/2020/07/29/confronting-modern-philanthropys-role-in-racial-injustice/>

Why the “Algebra” Project? What’s math got to do with it? Public School math is, at one and the same time, collateral damage and collateral opportunity induced by a planet-wide transformation from industrial to information-age economies, politics and culture. It places math on the education table alongside reading and writing and highlights the transition from Arithmetic to Algebraic ways of thinking. In this environment Algebra is available as an organizing tool to demolish the educational caste system and replace it, just as voting was available in the 1960s as an organizing tool to demolish “Jim Crow” and organize for political impact. The question remains, what to replace it with, what constitutes a quality education for young people who will live their lives in the 21st century?

Algebra and Math are available if we can figure out how students and teachers who have been saddled in the 21st Century with a public school education which, at best, is worthy of the 20th, learn to see themselves as people who have the drive and dispositions to read, write and do math and pursue opportunity structures to be active problem solving participants in any solutions. Education, like happiness, must be pursued. In other words, there are the students and teachers encapsulated in the education caste who need to be deeply involved in the crafting of the opportunity structures needed to deliver 21st Century math literacy. But a one-handed shake will not close this deal. The other hand of students and math teachers to engage the opportunities and pursue the math are needed to close the deal.

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