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A CENTURY OF LEADERSHIP IN
MATHEMATICS AND ITS TEACHING

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LEADERSHIP NOTES FROM THE FIELD

Mathematics department faculty have prior experience and outside interests that enliven and enrich the instruction they deliver in the classroom. They often take leadership roles, and the scholarly environment at Teachers College is uniquely supportive of their reflection on the character and meaning of leadership.

In the following section, *Leadership Notes from the Field*, authors present the stories of projects of special importance to them. Three articles discuss the building of schools. Stuyvesant has arguably the strongest mathematics program of any public high school in New York City. Stuart Weinberg and Maryann Ferrara chronicle the development of that mathematics department, which they chaired in turn over many years. The HELP Primary school in Uganda and the Nambale Magnet School in Kenya are at the opposite end of the economic spectrum, but they too teach mathematics to youngsters. Peter Garrity and Nicole Fletcher discuss their assistance to the development of the school in Masese, Uganda. Similarly, Phil and Loretta Smith participated with the Nambale school's founding, and they write of the complex project of funding and building a new school in a developing country.

Among the common threads to these articles—the power of mathematics education to lift the less fortunate, the personal rewards of serving others, the time and effort it takes to build a school—the most pertinent to our leadership theme is *collaboration*. At Stuyvesant leadership is spread across the faculty and the levels of the organization, “shared leadership.” For the Nambale school a charismatic priest sparked the work and contributions of many individuals and groups, “distributed leadership.” The Mathematics department at Teachers College is itself a highly collaborative environment. It is fitting that we close the Journal’s leadership issue with personal observations by department faculty regarding the collaborative nature of leadership.

A School in Western Kenya

J. Philip Smith

Loretta K. Smith

Teachers College Columbia University

Good leadership requires commitment, a sense of purpose, and a feeling for what is possible, but does not necessarily require the presence of a single individual called “the leader.” The successful educational undertaking described here exhibits a form of distributed leadership, where many individuals and organizations cooperate to achieve a common end without a clearly defined leader or unified organizational structure.

Keywords: Kenya, leadership, fundraising, African elementary school

My¹ first encounter with Africa came in the 1980s when, as part of Teachers College’s collaboration with the Peace Corps, I spent time in Gambia, joining Bruce Vogeli to teach in-service courses for Peace Corp volunteers and local educators. Unfamiliar land forms, strange animal life, odd juxtapositions (“Kuanda Rice and Cement Store,” read one sign) greeted us at every turn. Yet when we began teaching in the sparse classroom of a local college, things immediately became familiar. The ideas, the terminology, the mathematical language, even the student questions, made it easy to forget the cultural and language gaps separating many of those present. It was as though the genie “mathematics” had transformed the strange into the familiar. An elusive affinity was in the air.

The affinity became more apparent when observing the value placed on education by the citizens of the country. Not only did we meet dedicated local teachers, but, as a new school year was starting during our sojourn in the country, we observed files of young children wending their way across fields carrying chairs and small tables on their heads. School is important! No money for furniture? We’ll bring our own! Commitment—yes. Capital resources—no. I thought then that, should the opportunity arise, I’d like to join those children, at least figuratively, and demonstrate the value I place on education, though hopefully without furniture on my head.

One of Manhattan’s notorious graft-seeking scoundrels once remarked, “I seen my opportunities and I took ’em.” We don’t normally think of Boss Plunkitt’s behavior as a cornerstone of good leadership, but sometimes leadership does consist of recognizing and acting on a good opportunity when one presents itself. Given the social nature of the educational endeavor, not many ideas are created, developed, and seen through to fruition by a single person. Our ultimate commitment to what became a school in Kenya was a case of acting like Boss Plunkitt.

About 10 years ago, through church and community activities, the two of us became acquainted with an Anglican

priest, Evalyn Wakhusama, then pursuing graduate work at Yale University. A native of Kenya, she had left her husband and four children to spend a period in the United States studying. One of her dreams, it became apparent, was to build in her country an elementary school for poor children from broken or destroyed families. Many children in Africa, for example, have been orphaned by the HIV/AIDS crisis. Such children generally have guardians, but no parents, and their educational prospects are dim, at best. The more Evalyn’s American friends thought and talked about her aspirations, the more feasible the notion became. Kenya has fine teachers, good architects, good builders, and plenty of people who are strong supporters of education. The missing ingredient, once again, was money: little capital was available for a school, particularly a school in one of the poorest parts of the country.

One of the 19th Century’s experts on capital once wrote, “Capital is a collective product, and only by the united actions of many members . . . of society can it be set in motion.” Recognizing some truth in this idea and sensing an opportunity, a number of us began plotting to mobilize capital. What resulted was a classic case of “distributed leadership.” No single person raised all the funds, no single person was really “in charge,” but a number of people took it upon themselves to see the project through to a successful conclusion. The leaders of Christ Church in Bethany, Connecticut, spearheaded an effort to reach out to Rotary Clubs, individuals, other churches, and community groups for signs of interest, and slowly but surely funds were raised to acquire land and launch a building project. It’s a lot of work! A non-profit charitable organization needed to be created to receive donations. Plans and ideas went back and forth from Africa to the US. In time, the project was launched, the land acquired, electricity and running water obtained, classrooms, a food service building, and sleeping quarters erected. (Roughly half the students are resident at the school during the weeks when it is in session.) The Nambale Magnet School opened in January of 2009.

A project of such magnitude calls for trust, an understanding of intercultural differences, and, above all,

¹ First person references here refer to the first author.

LEADERSHIP NOTES FROM THE FIELD



The dining hall at the Nambale Magnet School, Nambale, Kenya



Cheerful students in the classroom

forbearance, faith and determination. American donor: “Why are they buying cows and chickens? How is that part of the educational mission?” Kenyan response: “That’s what you do here. If you have cows, chickens, and vegetables you eat better and can sell the excess to the community. Eventually we want to be self-sustaining.” American lawyer: “Where are the cost estimates and the invoices for this activity?” Kenyan response: “Don’t you trust us? Do you really think we are being dishonest?” Nonetheless, all parties to the undertaking (and there were lots of parties) did figure out how to work together in relative harmony.

The ability to develop a network of supporters—and to uncover the existence of other networks capable of offering support and aid—is a crucial part of effective leadership in many projects and has certainly played a big role in the case of the Nambale Magnet School. The school’s American supporters founded *WIKS-USA, Inc.*, a registered 501(c)(3) charitable organization, enabling it to collect tax deductible donations for the school. WIKS-USA interacts with a Kenyan WIKS (The Women’s Initiative in Knowledge and Survival), established and registered in that country by Rev. Wakhusama

as a Non-Governmental Organization. We also discovered a group located in Eastern Connecticut known as American Friends of Kenya that once or twice a year fills a shipping container with books, medical supplies, wheelchairs, glasses, etc. destined for sites in that country. We have shipped material to the Magnet School through the auspices of AFK.

We ourselves travelled to Kenya for the school’s dedication ceremony in August of 2009. Kenyan university faculty, the Anglican bishop of Kenya, and other dignitaries spoke, and the local populace turned out en masse. There was even a raffle to raise additional funds. (One local resident contributed a chicken for that raffle.) The young children thoroughly enjoyed the dedication events, joining in the singing and dancing. A “hello” to one young pupil elicited the response, “I am fine. Thank you.”

At the time, the school was home to students in pre-kindergarten, kindergarten, and first grades only, but what a lively place! The classrooms were bright and cheery, looking very much like an attractive elementary classroom in one of the New York suburbs. (The language of instruction is English, knowledge of which is important for an ambitious



Boy and girl enrolled in the Nambale Magnet School, Kenya



The authors and their daughter helping with the planting on the school grounds

LEADERSHIP NOTES FROM THE FIELD

young Kenyan. The curriculum is up-to-date. Except for the context of problems and examples, the mathematics taught at the school is roughly similar to that encountered in the United States.)

Today the school stands on over eight acres of land in Nambale in the western part of Kenya, not far from Kisumu and Lake Victoria. Home to over 200 students ranging from pre-K to grade 5, the school employs a staff of 29, including a head teacher (responsible for curriculum development and faculty matters), teachers and teachers' aides, a social worker, a secretary, a facilities superintendent, food-preparation staff, a maintenance worker, a gardener, a laundress, and security personnel. The annual operating budget is approximately \$130,000. An addition to the classroom, food, and dormitory buildings is a new residence for a housemistress and her family, as well as a fish pond, home to a tilapia farm providing an additional food source for the school community.

The school is achieving its mission of providing a good education for a significant number of children in a very poor part of the world. Many students, coming to school for the first time and preparing to learn, eat, and sleep at the school for the next several weeks, arrive with nothing but the clothes they are wearing. They have nothing else to bring, often not even a pair of shoes. (Controversies over whether or not to wear the school uniform are nonexistent.) Roughly half of the enrolled students are on full scholarship and live in the dormitories, their way paid by continuing donations raised in Kenya and the United States.

The future? No one is resting on laurels here: plans are underway for a Nambale Secondary School so that students currently enrolled can continue their education. You can "visit" the Nambale Magnet School yourself at www.nambalemagnet.org.

Shared Leadership in the Education of the Gifted: The Stuyvesant Experience

Stuart Weinberg
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Stuyvesant High School

Stuyvesant High School is a New York City institution for gifted students with an educational heritage deeply rooted in the tradition of Science, Mathematics and Technology. This article describes Stuyvesant's Program in Mathematics and a leadership model of shared responsibility and leadership-by-example. The article concludes with a brief narrative on the teaching of mathematics.

Keywords: leadership by example, gifted students, shared responsibility

In the years since the founding of Stuyvesant High School in 1904, the mathematics department has endeavored to provide its students with a high quality program in mathematics. That has meant responding to changes in society and to changing views about the way in which mathematics is taught and learned.

Stuyvesant began as an all-male manual training high school with courses focused on engineering and housed in a venerable but overcrowded building on East 15th Street in Manhattan. Today, Stuyvesant is a coeducational school of over 3,000 students who travel from the city's five boroughs to a ten story state-of-the-art facility in the north end of Battery Park City. Last year, more than forty percent were considered economically disadvantaged and qualified for free or reduced lunch. They come to benefit from Stuyvesant's tradition of excellence in mathematics, science, and technology and sit in classes that often have enrollments of 34 students. Last year, forty six percent of the graduating class were National Merit

winners, finalists, semifinalists, or commended students. The average SAT math score was 728.

The math-science-technology offerings are embedded in a broader program of courses and activities that is able to meet the needs of a student population endowed with diverse talents and interests. Stuyvesant students can apply for 112 electives, including 31 Advanced Placement courses. They can join the hundreds of musicians who belong to the Symphonic Band, Orchestra, Concert Chorus, Chamber Choir, or other musical groups. Students can engage in research, join the staff of the school newspaper, be a member of the speech and debate team, join the fencing team, perform community service through ARISTA, be a stage-hand or act in the original theater production SING! or participate in over 100 other student-oriented organizations, publications, clubs and teams. It is a program with great rewards for students who are willing to go beyond the basic academic core. The richness and diversity of the program provides an opportunity