The Race to the Top Innovation Fund Report
A Look at 19 Trailblazers in Georgia Education

By Brandon Wilkerson

THE **GOVERNOR'S OFFICE**
of STUDENT ACHIEVEMENT

Georgia's Innovation Fund
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Acknowledgements

The Governor's Office of Student Achievement (GOSA) produced this report as a part of Georgia's statewide evaluation of Race to the Top. GOSA, formerly the Office of Education Accountability, strives to increase student achievement and school completion across Georgia through meaningful, transparent, and objective analysis and communication of statewide data. In addition, it provides policy support to the Governor and, ultimately, to the citizens of Georgia through:

- *An education report card that indicates the effectiveness of Georgia's education institutions, from Pre-K through college;*
- *Research initiatives on education programs in Georgia and corresponding findings to inform policy, budget, and legislative efforts;*
- *Thorough analysis and straightforward communication of education data to stakeholders;*
- *Audits of academic programs to ensure that education institutions are fiscally responsible with state funds and faithful to performance accountability requirements; and*
- *Collaborative work with the Alliance of Education Agency Heads (AEAH) to improve education statewide.*

GOSA also houses three innovative educational programs:

- *The **Governor's Reading Mentor Program** places 15 reading instruction mentors in elementary schools across the state to coach teachers on effective reading instruction.*
- *The **Governor's Honors Program** is a four-week, summer residential program designed to provide intellectually gifted and artistically talented high school students challenging and enriching educational opportunities.*
- *The **Innovation Fund**, created under Georgia's Race to the Top plan, provides competitive grants for applied learning, teacher and leader recruitment, and charter planning with a particular focus on Science, Technology, Engineering, and Math (STEM).*

While GOSA's direct affiliation remains with the Governor's Office, it also works closely with all of Georgia's education agencies, including the Georgia Department of Education (GaDOE), the University System of Georgia (USG), the Department of Early Care and Learning (DECAL), the Technical College System of Georgia (TCSG), the Georgia Student Finance Commission (GSFC), and the Georgia Professional Standards Commission (GaPSC).

For more information on GOSA's statewide evaluation of Race to the Top implementation in Georgia, please visit *http://gosa.georgia.gov/statewide-evaluation*.

Introduction

In 2010, Georgia created the Innovation Fund with $19.4 million from its four-year Race to the Top (RT3) federal grant. Administered through the Governor's Office of Student Achievement (GOSA), the Innovation Fund has provided competitive grants to eligible organizations – including local education authorities (LEAs), traditional public schools, charter schools, nonprofit organizations, and institutions of higher education (IHEs) partnering with K-12 schools and districts – interested in planning, implementing, and scaling innovative education programs that advance student achievement throughout Georgia. In addition, the fund also operates the Innovation in Teaching Competition, which recognizes and rewards Georgia's innovative K-12 teachers and makes their resources available to other educators.

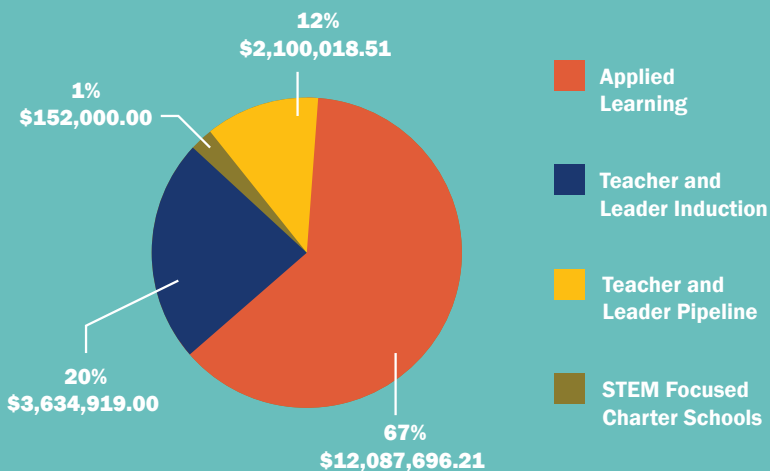Grants had to focus on one or more of the following four priority areas:

- *Increasing K-12 applied learning opportunities for students, with a focus on science, technology, engineering, and mathematics (STEM) programs,*
- *Creating teacher and leader induction programs,*
- *Growing the teacher and leader pipeline, and*
- *Developing or expanding STEM-focused charter schools.*

Interested organizations submitted applications that were reviewed by staff at GOSA, the Governor's Office of Planning and Budget, and the Governor's policy office. Each application was scored by at least two reviewers according to a rubric that called for evaluation of the proposed program's design, impact, budget, and capacity for implementation, among other factors. The Innovation Fund Advisory Board reviewed the program scores and made recommendations to the Governor, who made the final selections.

TABLE 1. RT3 INNOVATION FUND FUNDING AMOUNT AND PERCENTAGE BY PRIORITY AREA

- **Applied Learning** — 67% $12,087,696.21
- **Teacher and Leader Induction** — 20% $3,634,919.00
- **Teacher and Leader Pipeline** — 12% $2,100,018.51
- **STEM Focused Charter Schools** — 1% $152,000.00

Using three rounds of funding, Governor Nathan Deal awarded 23 grants, totaling $17,974,633.72. Twenty of the grants were implementation grants, and three were planning grants. Twelve grants funded K-12 STEM-focused applied learning programs, and eight grants funded teacher and leader induction or pipeline programs. Table 1 provides a breakdown of funding by priority area.

Over the course of the grant period, GOSA has monitored, evaluated, and provided support for these grants through quarterly

progress reports, mid- and end-of-year evaluation reports, and site visits. Most grantees were scheduled to receive funds through September 2014, but the U.S. Department of Education provided a no-cost extension of the grant period through June 2015 to grantees with remaining funds.

In his fiscal year 2015 budget, Governor Deal included $5 million in state funds to GOSA to continue the Innovation Fund work with additional grants. In December 2014, GOSA administered the first round of those grants to 18 applicants.

The following report provides a vignette describing each implementation grant funded through the RT3 Innovation Fund. Each vignette gives a first-hand glimpse into a program's daily activities, details the design and history of the program, and analyzes quantitative and qualitative outcomes. In addition, each vignette concludes with lessons learned from that grantee that can be applied elsewhere in the state.

Each vignette is written such that it can stand alone, apart from this report, as an account of grantee work and accomplishments. The report also includes a brief summary of the work completed on the three planning grants.

Implementation Grant Categories

Applied Learning

The applied learning programs focus on the real-world application of STEM (Science, Technology, Engineering, and Math) knowledge. These 12 grantees seek to ignite student interest in STEM subjects, leading to higher academic achievement and, post-graduation, the pursuit of STEM careers.

Induction/Pipeline

The seven induction/pipeline programs aim to improve teacher recruitment, retention, and professional development. These seven grantees are implementing co-teaching programs, mentoring opportunities, new teacher residencies, and induction and orientation protocols that will attract and cultivate the top talent in education.

21st Century Academy of Environmental Studies Rockdale County

A Noteworthy Endeavor

Introduction

At Memorial Middle School, the period-ending bell rings. Students fill the hallways, conversing energetically. Each carries a notebook that appears swollen, as if ready to burst from the ink-filled pages of their growing knowledge. These interactive notebooks represent a cornerstone of the program. Using the Cornell Notes system, the students meticulously organize subjects into questions, headings, and summaries. The notebooks also feature enhancements and additions, such as sketches, worksheets, and cut-outs, that serve to further explain the material (in addition to swelling the pages).

The students journey to the next class in their schedules, some of which will feature lessons from teachers, while others offer lessons from peers *as teachers*. In the *21st Century Academy of Environmental Studies*, students frequently facilitate the instruction, a strategy that promotes self-confidence, preparation, and high expectations. The students respond with high achievement. The school's focus on environmental sciences and proximity to major universities allows for the exploration of biology, life science, epidemiology, environmental toxicology, and other subjects. School faculty make use of a large undeveloped area, including a small creek that flows through it, to incorporate lessons in ecology, geology, and natural resource management.

Memorial Middle School students excelled at – even dominated – recent academic showcases, winning multiple prizes at regional and state science fairs, social studies fairs, and oratorical contests. The school's debate team medaled 70 times in the Atlanta Urban Debate League in

2013-2014, the team's first time in competition. The program also provides inquiry-based, hands-on learning experiences, including DNA testing, blood typing, and gel electrophoresis. Additionally, students can access STEM experts and professionals through special lunch events and distance learning.

Where It All Started

Since 2000, Rockdale County has experienced demographic shifts creating a majority minority, high need school district. The county's percentage of students eligible for free and reduced price lunch has increased from 25% to 65%. Its African-American and Hispanic population, students often underrepresented in STEM, increased from 26% to 71%. To address the new needs of the district, the county implemented the 21st Century Academy of Environmental Studies at Memorial Middle School in September 2012, utilizing a $677,000 award from the Innovation Fund. The program offers an advanced STEM curriculum that incorporates technology, hands-on experiences, and project-based learning.[1]

Program Overview

The 21st Century Academy of Environmental Studies seeks to accomplish the following:

- **GOAL 1:** *Prepare students to be lifelong learners through rigorous, technologically enhanced STEM curriculum*

- **GOAL 2:** *Improve student outcomes and inspire creative, critical, and analytical thinking*

- **GOAL 3:** *Increase awareness of STEM careers and establish an accessible community of STEM scholars[2]*

Rockdale County's *21st Century Academy of Environmental Studies* serves 6th through 8th grade students at Memorial Middle School. The program's framework progresses from general exploratory activities, to more in-depth training activities, and finally to individual and small group investigation of real-world problems. Classrooms make significant use of technology, encouraging use by faculty as a teaching tool and use by students as a learning tool. Lessons may incorporate technological applications through data analysis, digital resources, data collection, multi-media presentations, videoconferencing, and web development.

The program also implements the AVID (Advancement Via Individual Determination) system school-wide, which cultivates a college-going culture focused on student motivation and achievement. Some of system's initiatives include Cornell note taking, AVID binders, and inquiry-based tutorial. Cornell note taking is a practical, orderly approach to keeping a notebook. It promotes reflection on and application of knowledge. Coupled with this strategy, the AVID binders help students compile the class agenda and all supplemental materials into one interactive notebook. The inquiry-based tutorial method makes students responsible for instructional review by posing higher order thinking questions to teachers.
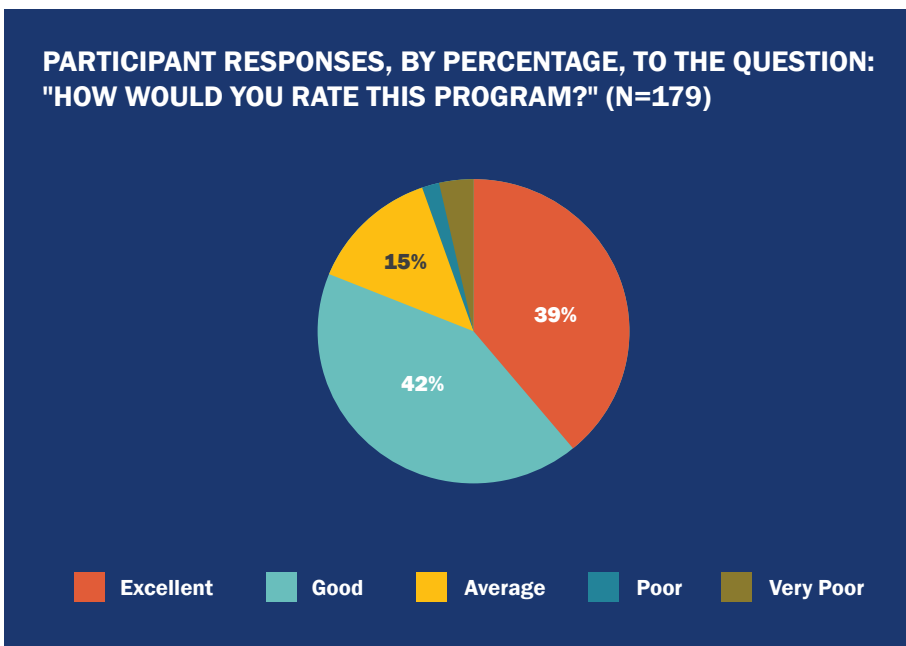
[1] Rockdale County's Grant Proposal, July 2012
[2] Ibid

Over participants' middle school years, the program will expose them to multiple environmental science disciplines, including biology, life science, epidemiology, ecology, geology, and soil science, among others. It additionally offers STEM enrichment camps during the fall, winter, and spring break periods at no cost. These camps provide interactive learning experiences that strengthen science and math skills while also showcasing career paths. Some of the camp topics include environmental concerns, soil and water testing, the impact of cell phones, use of topographical maps, and the effects of exponential growth. These activities generate interest in STEM subjects and careers and also prepare students for more advanced STEM-based education. Rockdale County expects Memorial Middle students to be ready to transition into rigorous high school programs, such as Rockdale Career Academy or Rockdale Magnet School for Science and Technology.

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=179)

- Excellent
- Good
- Average
- Poor
- Very Poor

Outcomes

For middle and high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement. The 2013-2014 results indicated a statistically significant rise, from pre- to post-program, in Intrinsic Motivation, Self-Management/Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM).

More specifically:

- *Participants made particularly strong gains in Intrinsic Motivation. Before the program, approximately one-third of participants strongly agreed they were motivated by goals of mastery, learning, and challenge. Following the program, approximately one-half strongly agreed.*

- *Students' perceptions of their self-management/self-regulation, as exhibited by abilities like completing tasks on time, finishing tasks they begin, and managing time, also improved. Students who agreed or strongly agreed with the statement, "I finish whatever I begin," rose from 57% to 72%.*

- *Overall, more than 80% of students (142 out of 178) rated the program as good or excellent.[3]*

The *21ˢᵗ Century Academy of Environmental Studies* served 360 students at Memorial Middle School during the 2013-2014 school year. This represented an increase of 56 students from the 2012-2013 school year. Participants competed in multiple academic contests during the 2013-2014 school year. Ninety students presented experiments in the Rockdale County science fair, with 15 qualifying for regionals and 12 qualifying for state (out of only 15 possible spots for the region). Ultimately, the state science fair honored nine program students as Broadcom MASTERS – Math, Applied Science, Technology, and Engineering Rising Stars. (Semiconductor manufacturer Broadcom Corp. sponsored the fair.) At the Georgia Junior Science & Humanities Symposium, three program participants presented research, a first for middle school-aged students at the event. Additionally, 12 students qualified for the state social studies fair, with three winning grand prizes.

Students also performed well on the CRCTs in Math, Science, and Reading. For the 2013-2014 school year, 100% of 6th, 7th, and 8th graders achieved Meets or Exceeds scores on their Reading CRCTs. For Math courses, approximately 97% of 6th and 7th graders and 98% of 8th graders scored in the Meets or Exceeds range. For Science courses, approximately 97% of 6th graders and 98% of 7th and 8th graders achieved Meets or Exceeds. Rockdale County intends to continue the program. The county anticipates that significant local funding as well as in-kind services will fund the program. It will continue to fundraise, apply for grants, and to seek partnerships with organizations for donations.[4]

Conclusion

The 21ˢᵗ Century Academy of Environmental Studies allows middle school students the opportunity to experience a variety of engineering, science, and math subjects, provides an understanding of the college requirements for STEM degrees, builds effective communication skills, and teaches lessons applicable to life and the world outside of school. The academy also serves as a logical early entry point for students interested in attending the Rockdale Career Academy or Rockdale Magnet School for Science and Technology.

PROGRAM TAKEAWAYS

Promising Practices

- The program adopts innovative, effective strategies, such as the AVID system and extensive application of technology.

- Students enjoy special access to STEM experts and professionals through lunch-and-learn events, speaker presentations, and field trips.

Lessons Learned

- School leadership recognized the need, going forward, to increase the budget for science and math lab supplies, which proved to be high demand.

[4] Rockdale 21ˢᵗ Century Academy of Environmental Studies End of Year Report, 2013-2014
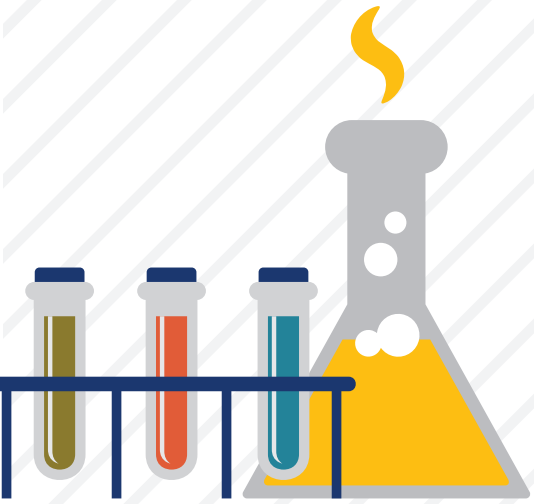
Barrow County's Direct to Discovery
Science on the Big Screen

Introduction

Every student watches the massive screen on which a scientist discusses, and demonstrates, chemical reactions. Though Barrow County is more than 50 miles from Atlanta, this 10th grade chemistry lesson comes straight from a lab at Georgia Tech, taught by a professional engineer with all the accoutrements– white lab coat, black countertop, Bunsen burners, and every shape of beaker and flask. The scientist's lesson is streamed live, having been inspired by collaboration with the students' teacher. Through the Direct to Discovery program, eight different scientist-teacher teams create lessons that align with the Georgia Performance Standards.

The live session is automatically downloading to the students' tablets, which are provided on a one-to-one basis by the program as an advanced educational technology tool. To cultivate a deeper understanding of the curriculum, students will review and reassemble the footage on the devices using a media editing toolset. Students may choose to cut or emphasize sequences for greater relevance or enhance the lesson with their own findings from the internet. The school's media archive offers additional royalty-free resources they can use to make the material more accessible, exciting, or relatable. These edited works, as well as original video shot with the tablets' cameras, will be integral to the students' assignments during the school year, including term papers and reports, data models, and science projects.

The program also offers video lessons in biology, earth science, human anatomy & physiology, calculus, and physics, all facilitated by experts in those fields. Additionally, the school's Math Integration Specialist (MIS), funded through Direct to Discovery, creates a bridge between the science courses and the mathematics essential to those courses, while also assisting with the new, perhaps unfamiliar, technology. The MIS also collaborates with teachers to ensure students receive engaging curriculum that integrates both strong math instruction and the use of the program's technology offerings.

Where It All Started

The Direct to Discovery program began in September 2011, following a $1,800,000 award from the Innovation Fund. Barrow County sought the grant to match the growing demand for a technically adept workforce and to improve its school system – the district had not achieved Adequate Yearly Progress since 2004. Additionally, the county recognized the significant changes in its population. In 10 years, the county has grown 57%, and more than half of its students now qualify for free or reduced lunch. To meet Barrow County's educational goals, the Direct to Discovery program provides hands-on, inquiry-based, real-time STEM experiences that utilize cutting-edge technology.[1]

Program Overview

Direct to Discovery seeks to accomplish the following:

- **GOAL 1:** *Develop long-term, network-based teaching and learning collaborations between practicing research scientists and teachers in middle and high school math and science classes*

- **GOAL 2:** *Create interactive course enhancements delivered by scientists and graduate students that bring heightened relevance and interest into the study of math and science*

- **GOAL 3:** *Improve the mastery of math skills in elementary school to prepare students to fully participate in the advanced science and math opportunities awaiting them in middle and high school.[2]*

The Direct to Discovery program uses a high technology framework to bring engaging STEM content to students in Barrow County. The initial intervention begins for elementary school teachers through a partnership with the ArtsNOW organization, a professional learning provider. Teachers from all eight county elementary schools attend professional development workshops on teaching strategies and participate in the development of a lesson plan resource bank. The resource bank collects lessons that target specific math and science state standards for use by educators throughout Barrow County. This training and access to resources helps elementary teachers prime their students for the more rigorous math and science courses in the coming grades.

For middle and high school teachers, the program arranges long-term collaborations between eight Barrow teachers and eight leading scientists, many from Georgia Tech. These pairs act as teams to create three to five one-hour lesson plans that explore the work of the
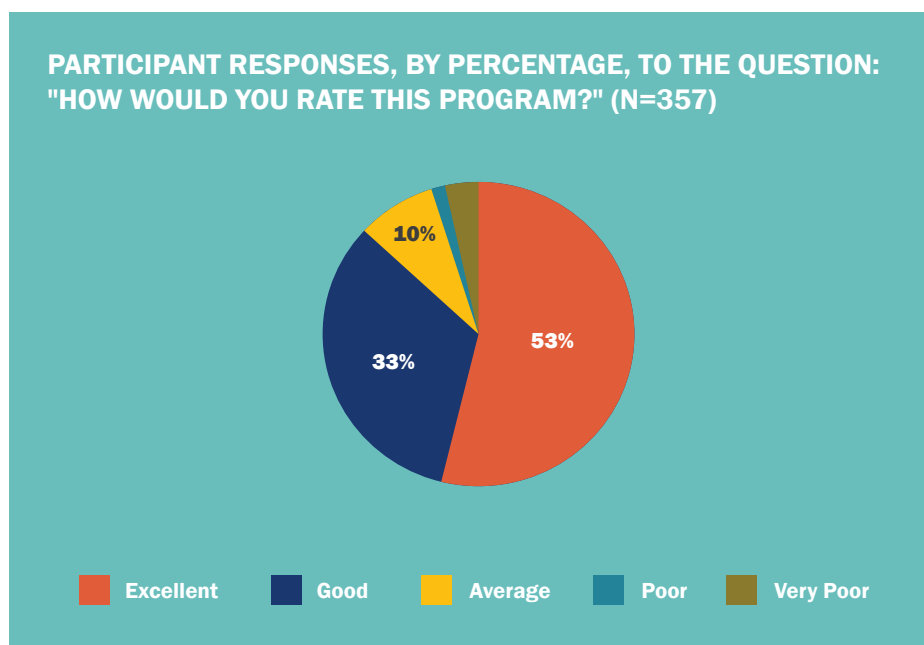
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scientist within the context of the state instructional standards. The teams design the lessons to be interactive, since they will be delivered by scientists from college or laboratory sites, broadcasting to 55" monitors in the classrooms. The program deploys the eight sessions in multiple classrooms concurrently, allowing exposure in 25 science and math courses across the county's middle and high schools.

Student interaction with the experts' lessons continues even after viewing the sessions. The program issues tablets to everyone involved in the lessons, from teachers, to students, to scientists. The students download the live sessions and develop digital media skills by editing and manipulating the content. They may make significant additions to the recording, including information gleaned from their own research, photos and video from the district media archive (available without royalty costs), or original video recorded with the tablets. To ease the transition into the new technology and curricula, a Math Integration Specialist (MIS) assists the district. The MIS, acting as both a math coach and technical equipment expert, helps teachers integrate the math and science portions of the lessons and guides the effective use of the program's technology.

Outcomes

For high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management and engagement. The questionnaire results for 2013-2014 indicated a significant rise, from pre- to post-program, in the categories Intrinsic Motivation, Self-Management/Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM). The Direct to Discovery program also added an additional construct to the survey: Self-Efficacy (i.e., confidence in one's ability to succeed). Students reported increases in this construct for 2013-2014.

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=357)

| ■ Excellent | ■ Good | ■ Average | ■ Poor | ■ Very Poor |

53%
33%
10%

More specifically:

- *Participants made particularly strong gains in Intrinsic Motivation. Before the program, approximately 50% of participants reported a preference for challenging class work. Following the program, that percentage rose to 73%.*

- *The percentage of students considering a career in STEM rose from 41% before the program to 52% after the program.*

- *In response to questions on Self-Efficacy, 67% of students, before the program, agreed with the statement, "I am certain I [can] understand the ideas taught in this class." Following the program, that percentage rose to 82%.*

- *Overall, approximately 86% of students rated the program as good or excellent.*

The program served 1,353 students during the 2013-2014 school year, including 481 at the middle and high school level and 872 at the elementary school level through ArtsNow. Participants performed well on the EOCT for Physical Science, a course that utilized the program. Ninety-five percent (95%) achieved scores of Meets or Exceeds Expectations, with 55% scoring in the Exceeds range. Below the high school level, 8th graders demonstrated strong results on the CRCTs, with an 84% Meets/Exceeds rate for math and a 78% Meets/Exceeds rate for science. While these numbers are not fully attributable to the program, they represent an eight percentage point increase in both subjects compared to rates before the program.[3]

Conclusion

Direct to Discovery boosts student engagement and interest in STEM through a hands-on, technology-rich approach. Additionally, with its early interventions in elementary school and professional development of teachers alongside experts and professionals, the program builds a solid foundation for improving students' academic success. By providing computing devices and incorporating the use of complex media applications, Direct to Discovery will also help produce a technically proficient workforce. Barrow County intends to continue the program after the grant's end. The county has sought additional program partners in diverse fields and industries that can contribute to future lesson plans and valuable student interactions. To secure adequate funding, the county has applied for multiple grants, including the U.S. Department of Education's Investing in Innovation Fund.
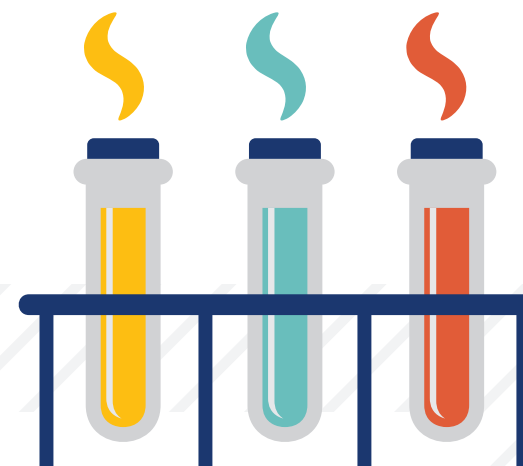
[3] Direct to Discovery's End-of-Year Report 2013-2014

PROGRAM TAKEAWAYS

Promising Practices

- Elementary teachers receive professional development, then contribute their new knowledge and skills to a lesson plan resource bank targeting specific math and science state standards. All teachers in the county may access the bank as a pedagogical resource.

- The schools reap practical benefits and cost savings through innovative, multi-purpose use of the program's media equipment, such as district-wide conferencing.

Lessons Learned

- Program leadership concluded that the schools would benefit from a liaison position that facilitates communication and mediation between internal and external partners.

- The program presented a steep learning curve, and the schools encountered technical difficulties as well as mistakes during implementation. A slow growth model with a small population allowed for management of early obstacles.
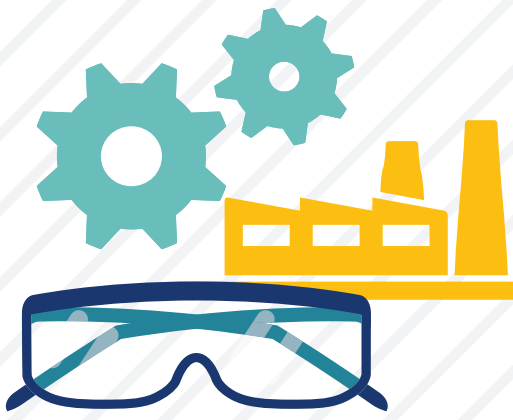
Carroll County's STEM for Life

It Pays to Learn

Introduction

Safety is paramount on the Southwire manufacturing floor. All guests, like the workers, don protective glasses and earplugs. The sound of industry – the whirring of drills, the grinding of presses – fills the warehouse, from the smooth concrete floor to the rafters high above. Young men and women stand at their stations, playing an essential role in a number of Southwire's processes: assembling large wooden spools, coiling and bagging wires, and attaching fittings to electrical equipment known as conduits.

Learning is paramount inside the STEM for Life classrooms. All academic instruction takes place in one quadrant of the warehouse, housed in a sound-proofed building-within-a-building. The modern, well-equipped classrooms feature lessons in mathematics and physical sciences, as well as training in electrical, mechanical, and industrial components and robotics. During the semester, students also complete rotations through skill-based instruction, gaining life and work-based knowledge of self-management, safety, and personal finance.[1]

Because of the STEM for Life program, these students/employees receive both an education and a paycheck. Though most are considered "at-risk" at the beginning of the program, they go on to earn credits toward graduation, a competitive wage, and a sense of belonging in the community. They obtain job skills that, by definition, are in-demand. A portion of each year's cohort graduate and immediately become full-fledged, pre-trained employees of Southwire, the sponsoring company. All parties benefit.

[1] Carroll County School System's Grant Proposal, June 2011

Where It All Started

The STEM for Life program began in 2011, following a $1,000,000 award from the Innovation Fund. Carroll County sought to address an unacceptably high dropout rate at some of its schools. The state of Georgia averaged a 3.5% dropout rate, yet six schools targeted for the program averaged 5%.[2] The county had already witnessed success through 12 for Life, a program begun in January 2007. 12 for Life targeted area high school students, but focused primarily on job training and life skills. This pre-existing partnership with Southwire, the wire and cable manufacturer that employs and pays the students, simplified the implementation of STEM for Life. Using the grant, the county created a program with additional elements, such as enhanced life skills training and a rigorous STEM curriculum.

Program Overview

STEM for Life seeks to accomplish the following:

- **GOAL 1:** *Increase high school graduation rates*
- **GOAL 2:** *Improve workforce readiness skills*
- **GOAL 3:** *Prepare students for advanced study and careers in STEM[3]*

The STEM for Life program recruits at-risk students from six Carroll County high schools: Bowdon, Central, Mt. Zion, the GOAL Program, Temple, and Villa Rica. It identified these schools due to their below average dropout rates (5%) compared to the state as a whole (3.5%). The program selects students using a rubric that gives weight to the typical markers of disengagement from school: academic failure, behavioral problems (not leading to expulsion), economic disadvantages, and absenteeism. This method helps the program serve the groups with the greatest need.

The program relies on a public/private partnership, dating back to 2007, between Carroll County and local manufacturer Southwire. All activities take place at the Southwire 12 for Life facility that includes a quality assurance laboratory and centralized raw materials warehouse. STEM for Life offers participants a combined experience of classroom time and manufacturing floor duties. They gain an education, earn money, and build life skills within a supporting environment that offers summer school, tutoring, mentoring, transportation, and postsecondary advising. The program allows flexible school credit recovery, providing an alternative path to graduation.

STEM instruction focuses on real-world, applicable lessons in industry-related mathematics, physical sciences, and other core subject areas, plus training in robotics and electrical, mechanical, and industrial components. Students master basic school subjects, then undertake the state-adopted career pathway in manufacturing. The program also devotes class time to instill life/work skills, such as measurement, communication, financial literacy, and healthy work habits. Carroll County School System instructors teach the courses, with West Georgia Technical College providing instructors for dual enrollment and Accel classes, which grant college credit. Depending on the class schedule, the students earn hourly wages working part-time for Southwire either before or after their lessons.

[2] Carroll County School System's Grant Proposal, June 2011
[3] Ibid

Outcomes

For high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management and engagement. The questionnaire results for 2013-2014 indicated a significant rise, from pre- to post-program, in the categories Intrinsic Motivation, Self-Management / Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM). The ALSQ also asks students to rate the program overall. For the 2013-2014 school year, on a 5-point Likert scale where 1 equates to very poor and 5 equates to excellent, approximately 85% of students (out of 150 surveyed) rated STEM for Life as good (a score of 4) or excellent.

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=150)

49%   35%   11%

■ Excellent   ■ Good   ■ Average   ■ Poor   ■ Very Poor
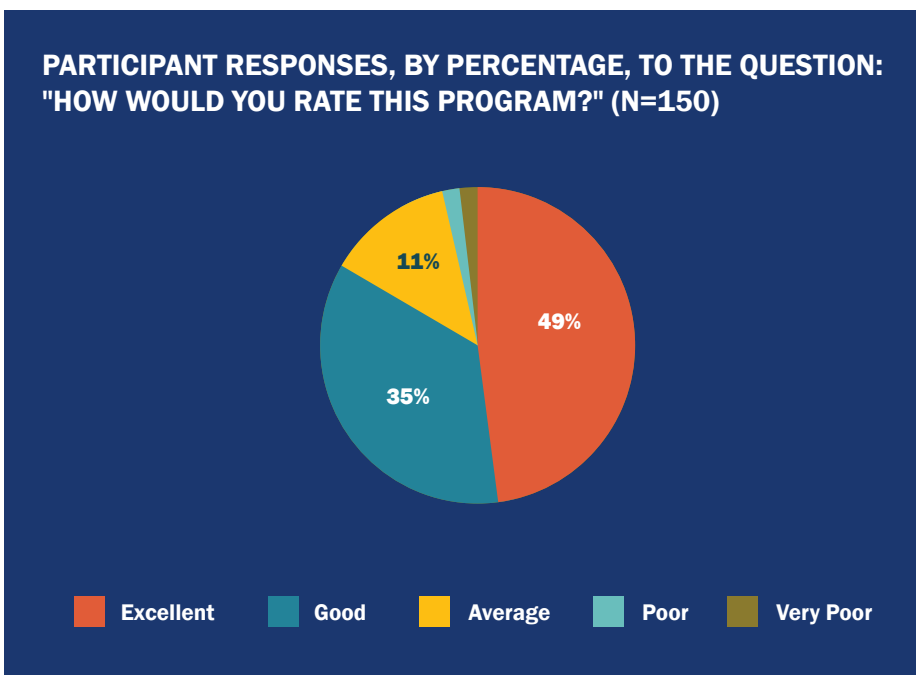
STEM for Life served 257 students during the 2013-2014 school year. One hundred percent of students experienced a gain in at least one of the workforce readiness skills including problem-solving, communication, and self-management. Only 1.6% of enrolled students (four) had more than 15 absences from school, reflecting a 7.8 percentage point decrease from the previous year. Out of the 119 students eligible to graduate with a regular diploma at the end of the 2013-2014 school year, 114 achieved that goal (a rate of 95.8%). Students who were not eligible to graduate were on track to do so—100% earned at least one quarter of the credits required for a regular diploma. A total of 76% of students indicated they now plan to pursue postsecondary education (including two-year college and professional school), an outcome far exceeding the goal of 55% for the year.

Participants also performed well on academic tests. Eighty-five percent of the students (34 out of 40) who took the Georgia High School Graduation Test scored proficient or better in Science and Math. One hundred percent of the students (20 out of 20) who took a Math EOCT (Math I or Math II) met or exceeded the standards. Similarly, 100% of the students (36 out of 36) who took a Science EOCT (Physical Science or Biology) met or exceeded the standards.[4]

Conclusion

STEM for Life continues to expand upon the success story of 12 for Life. The data indicate that participants achieve a greater likelihood of graduating high school because of the program. They also gain concrete work experience and workforce-relevant STEM skills that can serve them in ongoing employment with Southwire or propel them to new careers. Citing demand from both students and industry, Carroll County and Southwire intend to continue the program after the grant's end. Southwire has launched a version of the program already in the state of Alabama and anticipates further replication. The program has secured an Investing in Innovation grant that will aid in this pursuit, allowing STEM for Life students to go on reaping the rewards – some directly monetary – of education and hard work.
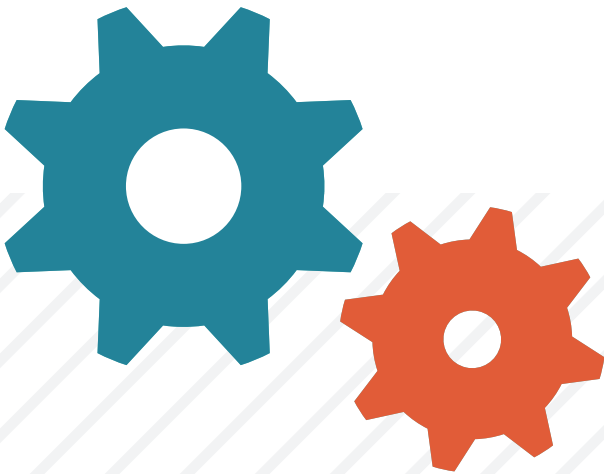
Promising Practices

- The program relies on a strong industry partnership with Southwire, a locally headquartered manufacturer.

- Students enjoy wraparound services and support. The life skills classes provide instruction applicable to practical matters such as securing and paying back a loan, building a credit score, and effective communication.

- The selection process places weight on the most at-risk behaviors and attributes, targeting those most in need for enrollment.

Lessons Learned

- Emphasizing and incentivizing attendance from the start produced better work habits among participants. The program prioritizes school by barring students from the work floor due to unexcused class absences.

Drew Charter School Partners of Innovation
Multiplying by Success

Introduction

In one classroom – a studio, to be precise – the students practice an elaborate routine for dance class. The choreographer draws inspiration from a sculpture inside the school courtyard, created by a local STEAM artist-in-residence. Students not interested in dance have other options for special enrichment, including music, Spanish, and visual arts. Students take these courses in addition to a schedule loaded with STEM subjects, a combination made possible by extra allotments of time. At the Drew Charter School (Drew) Elementary (grades K-5) and Junior (grades 6-8) Academies, the school day is 90 minutes longer and the school year is five days longer than traditional Atlanta public schools. In sum, the students will receive an additional 40 days of instruction compared to their peers in other schools. Students benefit from the extended time by receiving additional academic core classes, as well as enrichment courses. Teachers benefit from the extended hours as it allows them to have additional planning time each day.

There are other special opportunities in store today. A college student arrives and checks in at the office. She is not here as a student teacher, however. A STEM major at Georgia Tech, she will tutor a Drew student as a math mentor. These mentors visit during the school day, making scheduling an easy task, but also facilitating consultations with their mentees' teachers on areas of concern. Students from Drew also have the opportunity to visit Georgia Tech's Ferst Center to meet artists, participate in activities related to National Engineering Week, and learn from faculty and staff in various departments at Georgia Tech.

The learning opportunities extend to Drew teachers as well. The school's Faculty Cohort Program, a joint venture between Drew and the private Westminster Schools, helps faculty from across multiple disciplines collaborate on projects, hone classroom practices, and discuss professional development experiences. In addition, Drew organizes a Math and Science Task Force that hosts STEM workshops and presentations to help teachers more fully engage students in kindergarten through 8th grade. Teachers learn to write lab reports, design experiments aligned to state instructional standards, and implement hands-on curriculum.[1]

Where It All Started

Drew's origins can be traced to the East Lake Foundation, a group started in 1995 to revitalize Atlanta's East Lake neighborhood. The Foundation has invested $31.5 million in the community over two decades, building a YMCA, an early education and family center, and the Charles R. Drew Charter School. The Partners of Innovation program began during the 2011-2012 school year, following a $1,000,000 award from the Innovation Fund. Drew applied for the grant because it recognized a community need for greater academic engagement and student success. In 2011, the school's service area was 97% African-American, a group traditionally underrepresented in STEM fields. Seventy-eight percent (78%) of its students also qualified for free or reduced lunch, and many will be the first in their families to attend college. Prior to founding the K-8 charter school in 2000, the local elementary was one of the lowest performing in the city and state. The Senior Academy campus opened in July 2014. Extending Drew's reach to high school-aged students allowed a true cradle-to-college pipeline.[2]

Program Overview

The Partners of Innovation program seeks to accomplish the following:

- **GOAL 1:** *Drive students to become problem solvers and critical thinkers*
- **GOAL 2:** *Provide staff with professional development consistent with national and Georgia staff development standards*
- **GOAL 3:** *Make students competitive with students across the nation and the world[3]*

Partners of Innovation is the first of two Drew programs utilizing an award from Race to the Top (this report also details the second, Partnership for Expansion). Drew focused the grant's implementation toward hands-on STEM learning experiences for students and focused professional development for teachers. To deliver on its goals, the school partnered with Georgia Tech's Center for Education Integrating Science, Mathematics, and Computing (CEISMC), Georgia State University's (GSU) School of Music, and Westminster Schools' Center for Teaching. The partnerships allow Drew to offer an array of academic and professional development opportunities for teachers and students alike.

Student-centered academic activities funded by the grant include math mentoring, project-based and problem-based learning, and applied learning through arts integration. The math mentoring activity brings Georgia Tech students to the school for one-on-one math tu-

[1] Drew Charter School's Grant Proposal, June 2011
[2] Ibid
[3] Ibid

toring. In addition to differentiated instruction, math mentors monitor student progress through regular discussion with Drew math faculty. The program sponsors a project-based and problem-based learning activity that brings together each grade level at the school to design a major, student-led interdisciplinary project. The Center for Teaching provides support through supplemental resources and professional development focused on the project-based curriculum. One arts integration program, called Sound Learning, involves artists-in-residence from the GSU School of Music working with teachers and students to create hands-on music lessons that promote higher order thinking and decision making.

Faculty-centered professional development activities funded by the grant include the Faculty Cohort Program, the Science Learning Center, and professional learning communities (PLCs). Through the PLCs, Drew teachers across grades and disciplines meet monthly, where they plan, collaborate, and support each other. The Faculty Cohort Program brings together six teachers from Drew and six from Westminster Schools for a team-based collaborative effort focused on increasing content and pedagogical knowledge. Teams complete a research project that applies theory to strategies to improve student outcomes at Drew. The Science Learning Center, sponsored by the National Science Teachers Association, offers an online resource to science teachers in grades 4-8. Teachers have access to a database of study units, a forum to develop experiment ideas, and tools for assessment and evaluation. Teachers can earn certificates based on the skills they develop through the learning center.

Outcomes

For middle and high school-level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement.[4] The 2013-2014 results indicated a statistically significant rise, from pre- to post-program, in Intrinsic Motivation, Self-Management/Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM). More specifically:

- *Participants made particularly strong gains in Intrinsic Motivation. Before participating in grant activities at Drew, approximately 37% of participants agreed that they preferred challenging class work. At the time of the survey, that percentage rose to 61%.*

- *Students' perceptions of their self-management/self-regulation, as exhibited by abilities like completing tasks on time, finishing tasks they begin, and managing time, also improved. Before participating in grant activities at Drew, 51% of students reported finishing all their tasks. At the time of the survey, the proportion rose to 70%.*

Students in the program demonstrate strong academic results. For the 2013-2014 school year, Drew earned an 86.3 rating (out of 110) on the College & Career Ready Performance Index (CCRPI), an accountability metric that considers a school's performance in three categories: achievement, progress, and achievement gap, with additional points possible for innovation and high-need student populations. Additionally for 2013-2014, 100% of 8th grade Coordinate Algebra students at Drew passed the EOCT (60% scored in the "Exceeds" category). By comparison, 21.9% of Atlanta Public School students and 38.6% of students statewide passed the Coordinate Algebra EOCT that year. The school also produced strong results in music during the 2013-2014 school year. Both the orchestra and band earned the highest rating – Superior – for their annual performances at the district music evaluation. That same school year, the

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[4] Drew students in 6th to 9th grade completed the questionnaire, with no disaggregation of results. Therefore, the outcomes presented span students from both Drew programs.

school chorus, with membership from the Junior and Senior Academies, earned a Silver award at the Southern Star Music Festival competition.

The program's external evaluator also conducted focus groups with students at the end of the 2013-2014 school year to gauge reactions to the learning environment. The conversations occurred during after-school programs for K-5th students, and in homeroom periods for 6th-8th graders. Among the responses:

- *The students reported receiving individual attention from teachers, which they believed was unique to Drew.*
- *Middle school students expressed pride in having more academic responsibilities compared to their time in elementary school.*
- *Students believed that the school placed high expectations on them, but they felt the workload was manageable.*

Drew's external evaluator also conducted a satisfaction survey for the 2013-2014 school year. The survey reached 55 students in 3rd-5th grade and 266 in 6th-8th grade. Key findings include:

- *86% of 3rd-5th graders agreed or strongly agreed with the statement, "I am happy with my experiences as a student at Drew Charter School." 88% of 6th-8th graders also agreed or strongly agreed.*
- *87% and 86%, respectively, of 3rd-5th graders and 6th-8th graders agreed or strongly agreed that they liked working on projects in class.*
- *80% and 88%, respectively, of 3rd-5th graders and 6th-8th graders agreed or strongly agreed that they get to devise solutions to problems when working on projects.*

Conclusion

The Partners of Innovation program creates multiple opportunities for both students and teachers at Drew Charter School to develop new skills and succeed. This integrated approach to both sides of the education equation, as well as an integration of the STEM and arts disciplines, delivers positive outcomes for a high-need population. The school reaches students at various ages and points in their academic lives, laying a foundation for years to come, whether those years take place in high school, college, a career, or all three.

Much of the grant money went to support or build upon pre-existing core activities at Drew, including professional development and student opportunities. The school considers these activities critical to its mission. For additional funding, Drew has secured a $5,000,000 grant from the Bill and Melinda Gates Foundation directed toward the four years following the 2013-2014 school year.

PROGRAM TAKEAWAYS

Promising Practices

- The program invests in targeted professional development and coaching for teachers, leading to more successful and innovative teaching and learning.

- Drew incorporates cutting-edge technology and technical support into daily school life, yielding significant returns for student academic outcomes and teacher satisfaction.

Lessons Learned

- Supporting collaboration between the arts-oriented enrichment teachers and the STEM-oriented classroom teachers resulted in unique interdisciplinary courses and projects.
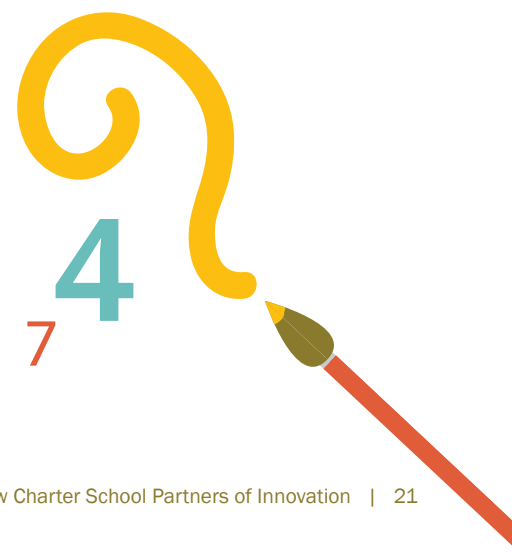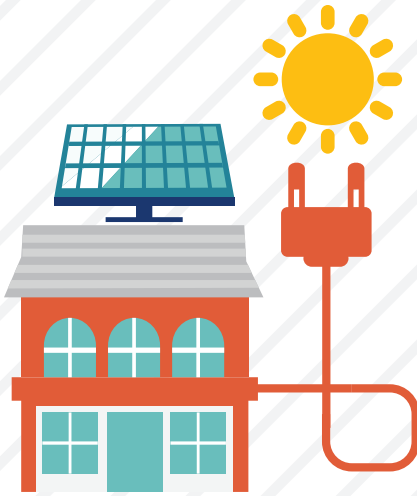
Drew Charter School Partnership for Expansion
A Welcome Addition

Introduction

A summer 2014 visit to the Drew Charter School (Drew) Senior Academy leaves a distinct impression: everything looks new. Not just for being recently built, but modern, even futuristic – a place for a unique approach and fresh ideas. Floor to ceiling glass walls in the classrooms let sunlight fill the interior space. Outside, a tiered system of awnings ensure that the sun, when it reaches particularly penetrating angles, does not overheat the room or create glare. The school has other plans for the sun's power. A solar panel cluster on the roof converts the energy for a portion of the school's daily use. Drew also collects and redirects rainwater to create positive environmental impacts and teach students about conservation. The innovations do not stop there. The school offers wireless internet from corner to corner. Students can sit on the long, bleacher-esque stairs while completing assignments on their laptops. The stairs, as well as the countertops above lockers, feature electric sockets if batteries run low. If seats are in short supply, students can wheel their mobile desks into common areas for impromptu meetings. Visitors may wonder if they entered a high tech start-up in San Francisco rather than a high school in Atlanta.

The new Senior Academy opened its doors to students at the start of the 2014-2015 school year. The Class of 2017 (current sophomores) are among the first enrollees, the vast majority of whom attended Drew for 9th grade in a temporary building as the new facilities finished

construction. This expansion into the high school grades completes the Drew cradle-to-college pipeline. The pipeline serves birth-to-four through the East Lake Early Learning Academy and Sheltering Arms Early Education and Family Center. Drew Charter School serves Pre-K to 5th grade through its Elementary Academy, grades 6-8 through its Junior Academy, and grades 9-12 as a result of the completion of the Senior Academy expansion. Instruction for all grades occurs on Drew's campus in Atlanta's East Lake neighborhood. Drew's curriculum focuses on STEAM (STEM curriculum inclusive of the Arts), with high expectations for student achievement.[1]

Where It All Started

Drew's origins can be traced to the East Lake Foundation, a group started in 1995 to revitalize Atlanta's East Lake neighborhood. The Foundation has invested $31.5 million in the community over two decades, building a YMCA, an early education and family center, and the Charles R. Drew Charter School. The Partnership for Expansion program began in June 2012 when the Atlanta School Board approved an amendment to the school's charter regarding its plan to expand K-8 enrollment into grades 9 through 12. Later that year, it won a $749,000 award from the Innovation Fund to implement STEAM and Project-Based Learning in the new Senior Academy. Drew applied for the grant because it recognized a community need for greater academic engagement and student success. The school's service area is 83% African-American, a group traditionally underrepresented in STEM fields. Sixty-two percent (62%) of its students also qualify for free or reduced lunch, and many will be the first in their families to attend college. Prior to founding the K-8 charter school in 2000, the local elementary was one of the lowest performing in the city and state. The Senior Academy campus' opening in July 2014 extended Drew's reach to high school aged students for a true cradle-to-college pipeline.[2]

Program Overview

The Partnership for Expansion program seeks to accomplish the following:

- **GOAL 1:** *Create a high school that provides real-world learning opportunities*
- **GOAL 2:** *Ensure that Drew students are prepared to excel in 21st century colleges and careers*[3]

Partnership for Expansion is the second Drew program utilizing an award from Race to the Top (this report also details the first grant program, Partners in Innovation). Drew applied the second infusion of grant funds toward expansion of grades 9-12. The school serves students in Atlanta's East Lake and Kirkwood neighborhoods. The expansion increased the student population from approximately 1,000 for the 2011-2012 school year to 1,200 in the 2013-2014 school year. It anticipates raising this number above 2,100 by 2022.

Drew spent the 2012-2013 school year engaged in the development of its new high school, the Senior Academy. As a key element of this plan, it identified and courted effective high school leaders and began the recruitment and training of teachers. Alongside this human capital development, Drew began designing an integrated STEAM approach that aligned with the state's instructional standards, 21st century skills, and career and college readiness indicators. From 2012 to 2014, the school also expanded its project-based music technology program – made possible through a partnership with Georgia State University's School of Music – for 8th and 9th graders. In September 2013, the high school welcomed rising 9th graders who will become the first graduating class in 2017. Instruction occurred in a temporary facility, since the new Senior Academy building did not open until the 2014-2015 school year.
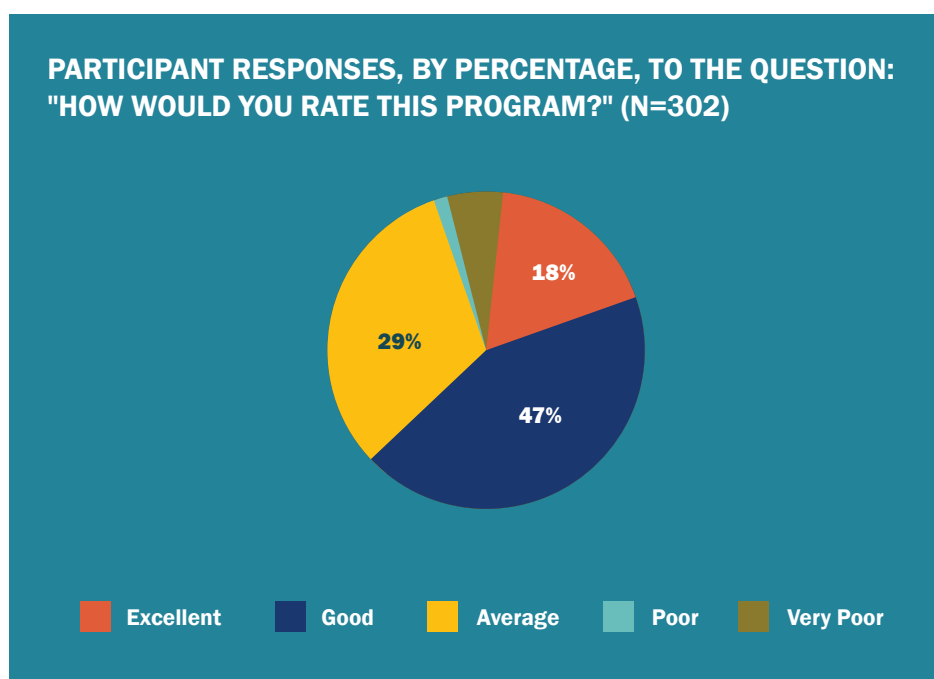
[1] Drew Charter School's Grant Proposal, July 2012
[2] Ibid
[3] Ibid

The school offers rigorous academic instruction for students and professional development for teachers. It implemented many initiatives using a Race to the Top grant for its Partners of Innovation program in the years prior to the expansion. Drew offers math tutoring from college students through a partnership with Georgia Tech, project-based and problem-based learning, and applied learning through arts integration. School leadership also selects and incorporates appropriate technology into instruction. Professional development for teachers includes in-school professional learning communities (PLCs) and a faculty cohort program through a partnership with the private Westminster Schools. Each of these activities grant teachers additional resources, support, and collaborative time. Drew and Westminster Schools initiated the faculty cohort program through their Center for Teaching joint project. The Center also offers consulting on curriculum development and best practices, mentoring, and teacher exchanges between public and private institutions.

This report's summary of the Partners of Innovation grant has more detailed information on the school's innovative instructional strategies and opportunities for teachers' professional development.

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=302)

18%
47%
29%

Excellent   Good   Average   Poor   Very Poor

Outcomes

For middle and high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement.[4] The 2013-2014 results indicated a statistically significant rise, from pre- to post-program, in Intrinsic Motivation, Self-Management/Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM).

More specifically:

- *Participants made particularly strong gains in Intrinsic Motivation. Before the program, approximately 48% of participants agreed that the program's subject matter was useful to know. Following the program, that percentage rose to 68%.*

- *The percentage of students interested in working in a STEM field also increased. Before the program, 39% of students agreed that they were considering a career in STEM. After the program, the proportion rose to 48%.*

- *Overall, 65% of students rated the program as good or excellent.*

[4] Drew students in 6th to 9th grade completed the questionnaire, with no disaggregation of results. Therefore, the outcomes presented below span students from both Drew programs.

With 2017 marked for the first Senior Academy's graduating class, the metrics for graduation cannot be reported yet. The school has set high goals in this regard, aiming for a 100% graduation rate with all students aware, eligible and prepared for post-secondary education opportunities. In terms of assessment results, for the 2013-2014 school year, 100% of 8th grade and 34.7% of 9th grade Coordinate Algebra students at Drew passed the EOCT (60% of the 8th graders scored in the "Exceeds" category). By comparison, 21.9% of Atlanta Public School high-school students and 36.7% of high-school students statewide passed the Coordinate Algebra EOCT that year. For 2013-2014, 90.5% of 9th grade Analytic Geometry students at Drew passed the EOCT, versus 21.4% of 9th graders passing in Atlanta Public Schools and 53.8% statewide. The school also produced strong results in music during the 2013-2014 school year. Both the orchestra and band earned the highest rating – Superior – for their annual performances at the district music evaluation. That same school year, the school chorus, with membership from the Junior and Senior Academies, earned a Silver award at the Southern Star Music Festival competition.

The program's external evaluator also conducted focus groups with students at the end of the 2013-2014 school year to gauge reactions to the learning environment. The conversations occurred during homeroom periods. Among the 9th grade students' responses:

- *Many reported a strong inclination towards STEAM careers.*

- *The students commonly expressed that the school workload could become stressful at times, but they still felt excited to attend Drew.*

- *The most memorable learning projects modeled authentic experiences and had relevance to real-world problems.*

Conclusion

The Partnership for Expansion program allows Drew to provide a cradle-to-college pipeline students in the East Lake area of Atlanta. Drew employs a STEAM theme (combining STEM and Arts curriculum) within a framework of project-based learning, equipping students with the critical thinking and problem solving skills, as well as the creativity, needed to tackle the challenges that the 21st century college student and workforce will face.

Through the infrastructure expansion, Drew is increasing the population it serves. It also continues to offer core academic and professional development activities that benefit both teachers and students. For additional funding, Drew has secured a $5,000,000 grant from the Bill and Melinda Gates Foundation directed toward the four years following the 2013-2014 school year.

Promising Practices

- The school's connection with the East Lake Foundation builds trust with the community, facilitating a high standard of education as part of ongoing revitalization efforts.

- The program invests in targeted professional development and coaching for teachers, leading to more successful and innovative teaching and learning.

Lessons Learned

- The school provided laptop and other advanced technology to all students, but teaching students to care for and protect those learning tools required significant investments of time, training, and resources.

- The understanding and application of student achievement data became more difficult for teachers following the implementation of project-based learning and STEM-based instruction. The school determined it must engage teachers in the process and provide training in assessment technology.

Georgia Southern University Research & Service Foundation's Real STEM

Immersed in a Healthy Environment

Introduction

Students sit in small groups, engaged in round table discussions of their experiments. The current lesson covers rocketry. The students are eager to test their theories on the optimal shape for the miniature rocket's nose cone. They have high expectations for the first launch, which requires them to consider both the apex of flight and the chance for a safe, controlled descent. The designs incorporate power and practicality in equal measure. Real STEM encourages the students' creativity, and often the learning – like the much-discussed rocket – is self-propelled.

Statesboro High School's counselors recommended the class to some students, though most learned of it through friends or teachers. The participants represent a cross-section of the student body seldom seen in one class – freshmen through seniors can enroll in Real STEM to learn the unique curriculum centered around energy and the environment. For a community on the coastal plains of Georgia, the students can find these real-world subjects and their impacts just outside the school's doors.

As the class nears its end, the instructor dims the lights for a slideshow depicting the students' recent field study. In the pictures, students wear tall green hip-waders as they brave the chilly waters of a Bulloch County creek. They collect water and leaf samples to test the effects of fertilizer runoff from nearby sports fields. The experiment seeks evidence of hypertrophication – a word derived from ancient Greek, meaning "overgrowth." Hypertrophication of algae can disastrously

upset the balance in an ecosystem. The students continue to test the leaf samples carefully, learning how best to act on their real-world findings. A well-functioning ecosystem requires healthy, controlled growth. In a parallel to the lessons, the Real STEM classroom displays its own healthy growth, as the process of education nourishes young minds.

Where It All Started

The Real STEM program began in the 2012-13 school year, following a $700,000 award from the Innovation Fund to the Georgia Southern University Research & Service Foundation. Georgia Southern University partnered with seven research institutes and four school districts in southeast Georgia – Burke, Camden, Bulloch, and Ware – to develop problem-based, hands-on STEM learning modules that explore the environmental and energy issues facing the state's lower coastal plain. The program also aims to reignite student interest in STEM, boost STEM achievement, and promote STEM careers.

Program Overview

Real STEM seeks to accomplish the following:

- **GOAL 1:** *Engage students with the challenges of environment and energy impacting Georgia's coastal plain communities*

- **GOAL 2:** *Increase student interest in STEM subjects and careers*

- **GOAL 3:** *Develop STEM-literate citizens who make informed decisions on issues affecting their lives*[1]

The Real STEM program focuses on the lower coastal plain of Georgia, a region consisting primarily of rural and low socio-economic status counties. Implementation occurred in grades 9 through 12 in the Bulloch County, Burke County, Camden County, and Ware County districts, potentially reaching thousands of students in schools that have historically failed to meet Adequate Yearly Progress. This region allows an intersection of demographic populations underrepresented in STEM fields and an environment rich in field research opportunities. The area features coastal barrier islands, native pine forests, and extensive wetlands, including tidal marshes and swamps. It faces the ecological issues of biodiversity loss, drought, and contamination, all entailing STEM-oriented challenges for the community.

The program utilizes three teams for implementation. Team members are not necessarily exclusive to one team. Team 1, made up of research scientists, college-level STEM educators, and master high school teachers, identify relevant STEM concepts underlying issues in the coastal plain. These concepts inform the Real STEM science mod-

[1] Real STEM Evaluation Report, October 2013 – May 2014

ules. Team 2, made up of STEM educators, master teachers, and the program coordinator, transition the concepts to an appropriate level for high school students. Team 3, made up of the program coordinator and a school's professional learning community (PLC), develop the lessons and assessments that encompass real-world problem-based and place-based learning. The PLCs are interdisciplinary units that allow teachers to collaborate and provide content and pedagogical support to one another. Team 3 then implements the lessons in their respective high schools and promotes the program to students.

As a result of this planning process, students enjoy hands-on ecological field visits to local sites, visits to research institutes, and in-class virtual presentations by scientists, events that usually occur every month. Lessons require the students to utilize scientific design, engineering design, data analysis, and quantitative reasoning in problem solving. Additionally, the program confers advantages to teachers involved in the PLCs. They have the opportunity to attend a one-week summer field campaign at research institute partners, gaining professional knowledge and skills to apply in the classroom.

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=32)

6%
47%
47%
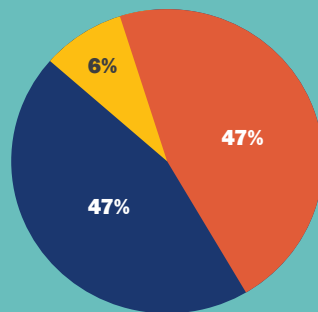
■ Excellent   ■ Good   ■ Average   ■ Poor   ■ Very Poor

Outcomes

For high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement. The 2013-14 results indicated a statistically significant rise, from pre-to post-program, in Intrinsic Motivation and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM).

More specifically:

• *Participants made particularly strong gains in Intrinsic Motivation. Before the program, approximately 51% of participants agreed that it was important to learn what the program was teaching. Following the program, that percentage rose to 76%.*

• *The percentage of students interested in working in a STEM field also increased. Before the program, 40% of students agreed that they were considering a career in STEM. After the program, the percentage rose to 53%.*

• *Overall, 94% of students rated the program as good or excellent.*

Real STEM served 300 students during the 2013-14 school year. Students demonstrated strong attendance numbers in the program, with 98% daily attendance average across all schools. Additionally, 100% of enrollees completed the program during the school year, with zero suspensions. However, the program reported a lack of strong data related to student learning. It anticipates measuring positive effects in ensuing years, after teachers gain confidence in presenting problem- and place-based research experiences.

To improve cross-site data collection for outcomes in subsequent years, the Real STEM management team identified specific reasoning skills for 2014-15 outcome measurement – scientific reasoning, engineering design reasoning, and quantitative reasoning. The team designed an assessment that will be administered for all participants going forward.[2]

Conclusion

Real STEM delivers problem-based instruction on environmental and energy issues with immediate practical application to the program's surrounding region. Students learn both in the classroom and in the field, absorbing concepts identified by professional scientists and college-level educators. The participating faculty also gain support, skills development, and opportunities for collaboration through the PLCs and the program's links to institutes of higher learning and research sites. In December 2014, the program won a $200,000 scaling grant from the Innovation Fund. Georgia Southern University will use the new grant to expand, over a two-year period, into as many as five new school districts, with Henry County and Fulton County being likely additions. To facilitate the expansion, the program will partner with Mercer University in the Macon and Atlanta areas.

[2] Real STEM End-of-Year Report 2013-2014
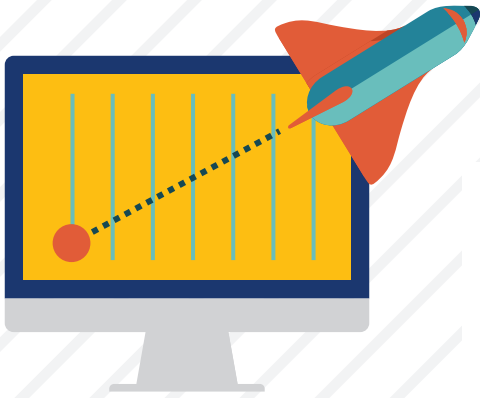
Georgia Tech Computational Thinking
An Upward Trajectory

Introduction

"This is real science," says one Clarkston High School student approvingly, offering a succinct description of Computational Thinking (CT). The CT physics course, which requires students to simulate and solve real-world problems using computer algorithms, is unheard of in Georgia outside of the small number of high schools implementing Georgia Tech's Race to the Top-funded program. The curriculum presents STEM concepts through projects and experiments that go beyond simple memorization of formulas. Students construct models of physical phenomena – the effect of drag on a projectile, for example – and present their findings to the class as if addressing a panel of scientists and experts.

On this day, a panel of STEM experts has gathered – a former video game developer, a web designer, and a software engineer. Through the program's mock interviews, the students will present posters with the technical details from a motion capture experiment to the panel. Prior to the session, participants received advice on appearance, professional demeanor, and showmanship. They are all smartly dressed – the boys in slacks and button-downs, the girls in skirts and blouses on the day of the presentation. The panel queries each student on the scientific foundations of the experiment. The students reply with pinpoint accuracy, pointing out the data in their posters and drawing on their newly acquired knowledge. At the close of interviews, the experts and presenters eat pepperoni pizza together, conversing more casually.

The Computational Thinking curriculum provides students with rigorous and practical experiences in science and programming. Commonplace technology has advanced to a point that students can capture experimental data simply using their cell phone cameras. Recording, analyzing, and presenting the data behind principles of physics in this real world setting far surpasses the typical high school science course approach. The students, like the projectiles of their experiments, are quickly going places.

Where It All Started

The Computational Thinking program began in summer 2012 with faculty training workshops that introduced the curricular materials and overall approach. The Georgia Department of Education funded this segment. The program's classroom implementation began in fall 2012, through a $431,000 award from the Innovation Fund. Participating high schools include Clarkston, North Atlanta, and Parkview. In the grant application, Georgia Tech identified two critical needs that the project would address: (1) overcoming Georgia students' achievement gaps on national standardized assessments compared to other states and (2) the lack of curricula integrating scientific practices with content.[1]

Program Overview

Computational Thinking seeks to accomplish the following:

- **GOAL 1:** *Implement computational thinking curricular materials for physics in Georgia high schools*

- **GOAL 2:** *Foster a sustainable community of Georgia teachers with expertise in computational thinking*

- **GOAL 3:** *Develop STEM-literate citizens who make informed decisions on issues affecting their lives[2]*

The Computational Thinking program integrates smart phones (particularly useful for their ability to record) and computational models into one year of high school physics instruction. It focuses on conceptual understanding, model making, and multiple representations as routes to real-world STEM-based problem solving. Students study forces and motion by observing, recording, and analyzing hands-on experiments – dropping objects of differing mass and shape, for example, to learn about air resistance. The curriculum, which aligns with Georgia's instructional standards, deemphasizes formula memorization and paper-and-pencil solving methods in favor of programming and effective use of technology. This approach to science mimics that of professional scientists, who do not rely on the time-consuming manipulation of formulas to solve problems. To prepare teachers for the new curriculum, the program offers a two-week summer training workshop on the best methods for implementing the new curriculum and technology.

A typical instructional cycle begins with a demonstration of the problem – in one case, how air resistance affects gas mileage. A class discussion follows to establish an overall under-

[1] Georgia Tech Research Corporation's Grant Proposal, July 2012
[2] GT-CT End of Year Report, 2013-2014

standing of the question and its relationship to physics. Students form groups to plan and initiate the model building and experiments that will address the problem. Using computers and cell phones, they analyze the shape of the car, calculate the difference between multiple constant rates of speed, and consider other variables, such as whether the windows are up or down. After much careful thought, the students present a conclusion alongside the data that justify it.

The program also provides students an opportunity to develop professional skills through mock interviews at the end of the school year. The schools leverage relationships with Georgia Tech to bring a panel of technology experts together who question participants on their findings. The interview design resembles the actual hiring process for a technology company. In additional to skill-building, this practice grants the students insight into real-world career processes and exposes them to local STEM professionals.

Outcomes

For middle and high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement. The questionnaire results for 2013-2014 showed increases, from pre- to post-program, in the categories of Intrinsic Motivation, Self-Management/Self-Regulation, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM). More specifically:

- *Although participants reported increases in all constructs, none of the increases were statistically significant. Gains in Self-Management/Self-Regulation approached the threshold for significance, however. For example, before the program, approximately 56% of participants reported being a hard worker. Following the program, that percentage rose to 61%.*

- *The percentage of students considering a career in STEM rose from 52% before the program to 63% after the program.*

- *Overall, approximately 48% of students rated the program as good or excellent.*

The CT program served 165 students during the 2013-2014 school year, including 74 at North Atlanta High, 56 at Parkview High, and 35 at Clarkston High. Students demonstrated strong attendance numbers in the program, with 98.2% daily attendance average. A significant portion of participants belonged to groups traditionally underrepresented in STEM – the Clarkston High class was 56% African-American and 56% female. The mock interviews drew four participants, all from Clarkston High School. The CT teachers at North Atlanta High and Park View High opted not to host the mock interviews due to timing, as they believed the interviews would interfere with the upcoming state testing.

Georgia Tech intends to continue the program. To increase interview participation in subsequent years, the program's management team adjusted the schedule to place the interviews in the fall. The summer workshop for faculty will also present the interviews as an essential component of course planning.[3]

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=27)

- Excellent
- Good
- Average
- Poor
- Very Poor

7%
41%
48%
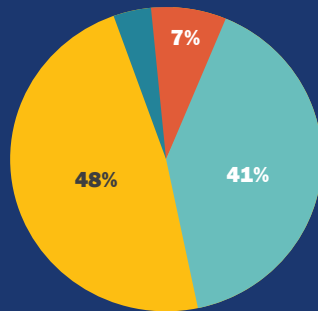
Conclusion

Computational Thinking blends high school physics instruction with modern, real-world approaches to science and engineering. The program equips Georgia students with the critical STEM experiences that members of the workforce must draw on to solve 21st century problems. It also takes steps, through summer training and professional development, to produce a core of effective high school-level STEM teachers. Though the scope is currently small, these methods address many of the issues hindering the introduction of diverse and challenging STEM content. Finally, the program's mock interview sessions link students to the professional world and STEM careers in an exciting and illuminating way. CT students are prepared not only to calculate, but to follow, an upward trajectory.

PROGRAM TAKEAWAYS

Promising Practices

- The program secures experts with significant high-level experience in technology to conduct the mock interviews. Following the interviews, participants have the opportunity to mingle with the experts for casual discussion of careers, STEM, and other topics.

- Class experiments require a low threshold of technology and cost. In many cases, the students used their own cell phones to capture data.

Lessons Learned

- Program leadership began to schedule mock interviews well in advance, having teachers set times for the upcoming semester while planning courses at the summer workshop. To avoid conflicts with end-of-year testing, the program also shifted interviews from the spring to the fall semester.

[3] GT-CT End-of-Year Report 2013-2014

Gwinnett County STEP Academy

Finding a Foothold for Progress

Introduction

The Moore Middle School classrooms are full of activity and movement. Math students sit on the floor or at tables arranging string in complex shapes to demonstrate their understanding of geometry. Science students discuss a multitude of experiments at stations around the room. The class sizes are small, a fact that confers not only financial advantages – through the reduced cost of personal electronic devices – but also major social and pedagogical advantages. The teachers can divide their time, attention, and empathy between each student without losing track of any individual's needs, a school experience uncommon to many overage 8th graders. "We know their whole stories," says one teacher. "We know where they need extra help, whether it's a tricky concept or just keeping up attendance."

The semester is nearly at an end. The students are thriving, due to influences originating both inside and outside the classroom. The students' parents/guardians, prior to the program's start, completed an orientation led by school principals and teachers. This parent/guardian involvement adds a second layer of commitment, ensuring an at-home environment that promoted attendance, homework completion, and appropriate behavior. The program also arranges speaking engagements that feature local leaders, as well as mentoring opportunities from the Gwinnett business community.

Gwinnett County designed the STEM Targeted Education Program (STEP) Academy for the students needing extra attention. The program, launched in the 2011-2012 school year, serves over-age 8th graders at Moore and

Sweetwater Middle Schools. The instruction is focused and differentiated, the learning environment is collaborative, and the students have the opportunity to set the pace and manage their own progress. Access to the online curriculum allows students to pause or rewind lessons, ensuring they master the necessary content skills this time rather than falling further behind. Students who successfully complete the STEP curriculum will make the leap to 10th grade, returning to their peer group.

Where It All Started

In 2011, the Gwinnett County School District recognized that historically only 13% of its over-age 9th graders graduated from high school within four years. To address this problem, the district developed the STEP Academy, a program modeled after South Carolina's successful STAR Academy. The initial implementation occurred during the 2011-2012 school year at Sweetwater Middle School, then expanded to Moore Middle School the following school year. The STEP Academy delivers targeted instruction to at-risk students to ensure they not only graduate, but do so on time. The Innovation Fund awarded a $1,000,000 grant for the program's implementation.[1]

Program Overview

The STEP Academy seeks to accomplish the following for at-risk students:

- **GOAL 1:** *Increase high school graduation rates*
- **GOAL 2:** *Increase postsecondary enrollment and success*
- **GOAL 3:** *Improve workforce readiness*[2]

The STEP Academy selects students entering 8th grade at the age of 14 or older by September 1st of that year, considering them "at-risk" for dropping out. The program employs multiple instructional methods, including individual learning, pair and small group learning, and whole class sessions. Lessons may be delivered via computer, textbook, or through hands-on activities. Whenever possible, the content is connected to the real world and relevantly linked to a career. These methods are designed to keep students engaged, motivated, and focused on successfully completing their education and moving on to the workforce.

In the fall semester, participants' course loads include a blended 8th/9th language arts, math, and social studies curriculum. The math instruction includes introductory courses in geometry and algebra. The fall course schedule is rounded out with three 9th grade-level classes: physical science, health, and healthcare science. Healthcare science is part of the Biotechnology Research and Development (Biotech) career pathway, which can ultimately lead to dual enrollment credits at Gwinnett Technical College during their senior year of high school. These courses include labs run by an instructor from the college.

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[1] Gwinnett County School District's Grant Proposal, October 2011
[2] Ibid

In the spring semester, participants continue their study of algebra and healthcare science but move on to 9th grade-level language arts, world geography, and biology. The upper level curriculum, combined, amounts to seven high school credits. To achieve 10th grade status, aligning them with their same-age peers, the students must earn five credits.[3] Having caught up to peers, STEP Academy students continue in the Biotech career pathway throughout high school. Completing the program successfully results in graduating high school in three years as well as possibly earning college credit and Biotech industry certification.

Outcomes

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=118)
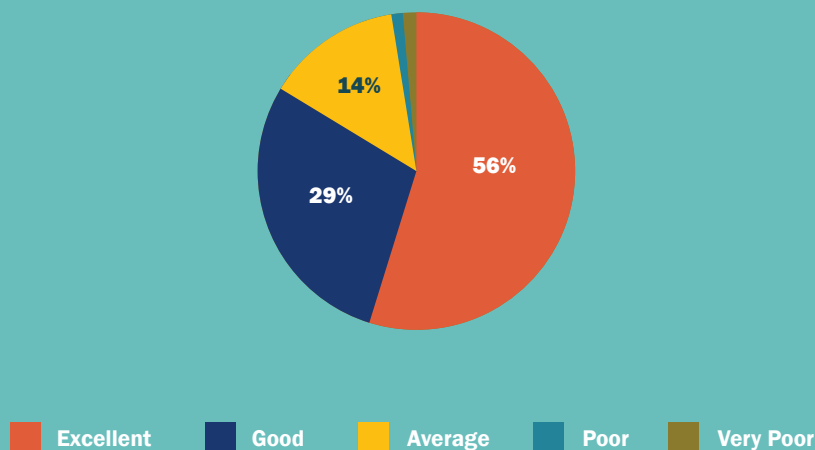
56%
29%
14%

- Excellent
- Good
- Average
- Poor
- Very Poor

For middle and high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement. The questionnaire results for 2013-2014 indicated a significant rise, from pre- to post-program, in the categories of Intrinsic Motivation, Self-Management/Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM).

Students made particularly strong gains in Intrinsic Motivation. Before the program, less than 50% of participants reported seeing the value and importance of learning STEM. At the end of the program, that percentage rose to 78%. Additionally, the percentage who agreed or strongly agreed that they were capable of self-management and self-regulation (as exhibited by such acts as completing assignments on time), rose from 39% at the start of the program to 54% at its close. The ALSQ also asks students to rate the program overall. For the 2013-2014 school year, on a 5-point Likert scale where 1 equates to very poor and 5 equates to excellent, more than 80% of students rated it as good (a score of 4) or excellent.

The Gwinnett schools are each equipped to serve approximately eighty 8th graders per year. For the 2013-2014 school year, Sweetwater Middle enrolled 81 students, with 78 (96.3%) completing the program and moving on to either 9th (one student) or 10th grade

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[3] "STEP Academy." *Communique* December 2012 (2012): 2-3.www.gwinnett.k12.ga.us/. Web. 9 Oct. 2014

(77 students). Moore Middle enrolled 64 students, with 60 (93.7%) completing the program and moving on to either 9th (19 students) or 10th grade (41 students). At both schools, 100% of participants who completed the program earned at least one upper level credit.

Teachers at both schools reported that participating students' showed improvement. Teachers additionally reported the students were more mature and better able to interact with peers. Moore Middle School students scored well on the Reading and Math CRCTs. One hundred percent (60 out of 60) passed the Reading CRCT and 75% (52 out of 60) passed the Math CRCT. Sweetwater Middle School students also produced high scores, with 98.7% (77 out of 78) passing the Reading CRCT and 79% (62 out of 78) passing the Math CRCT.[4]

Conclusion

Gwinnett County's STEP Academy intervenes to help at-risk 8th graders catch up to their peers by completing two years of content in one year. The data indicate that participants have greater confidence in their ability to learn and manage responsibilities. Furthermore, most students who complete the program have achieved promotion to the 10th grade, making up important lost ground. Gwinnett County Schools intends to continue the program after the grant's end, and the district is seeking the necessary funds. For those who have stumbled, the STEP Academy provides an early foothold for the climb to success – in school and in the workforce.
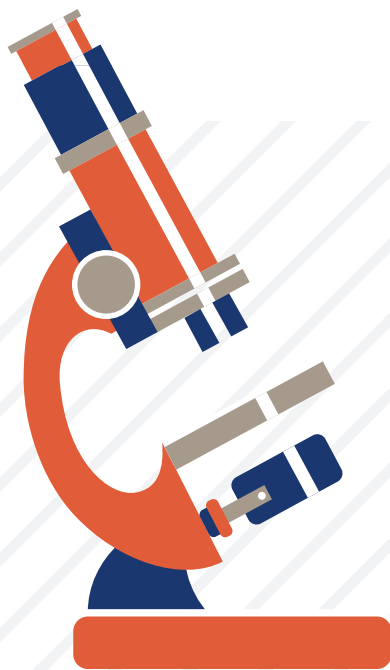
PROGRAM TAKEAWAYS

Promising Practices

- The program intertwines 8th and 9th grade standards to advance the pace of learning. Students go through both sets of standards throughout the year, instead of focusing on one grade each semester.

- The program enjoys significant support from the community, benefitting from partnerships with the local civic groups and Gwinnett Technical College.

- Parents undergo principal-led orientation to cement the in-home commitment to education.

Lessons Learned

- The students required additional counseling support to understand and maintain their new goals and responsibilities. The schools assigned an assistant principal to support the program, but they additionally recommend bringing on a part- or full-time counselor to support students.

- Math emerged as the students' most difficult subject. Students needed extra math instruction and support to catch up to peers.
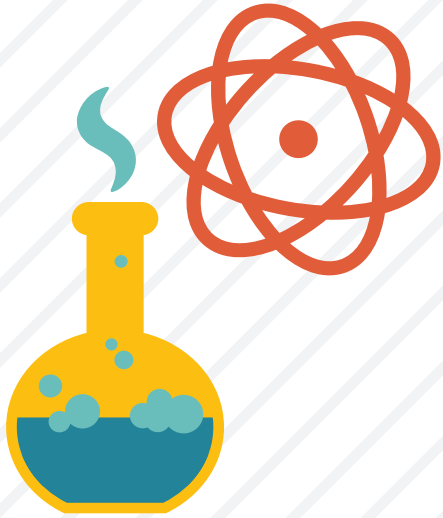
Morehouse College and Clayton County's Student Applied Learning, New Teacher Induction, and Staff Leadership Program

The Blanket Approach

Introduction

Rarely do termites ride a hot air balloon into near space. It may be equally rare for high school students to track and recover the balloon and its cargo, but the Student Applied Learning, New Teacher Induction, and Staff Leadership Program opens up worlds of possibility. The program, which takes place in the summer, offers students applied learning opportunities connecting multiple disciplines, represented broadly by biology, chemistry, and physics. Though this may sound like a standard STEM classroom, the details reveal unique and exciting projects. Launching the termites, for example, calls upon the study of robotics, sustainable energy, electronics, and entomology. Making it even more noteworthy, participants traveled to the Wyoming desert to conduct the launch and recovery.

The program recruits students from the Clayton County Public Schools system, which is made up of 80% minority students. It encourages them to embrace scholarship, leadership, research, and inquiry. To boost STEM competencies and increase awareness of STEM careers, Morehouse grants access to its Scientific Literacy Center[1], an online portal of archives and other resources. Students can browse the digital library of publications, search the career database to uncover information on more than 150 STEM occupations and 90 professional organizations, or watch interviews with more than 40 experts. They can also interact with the Embodied Conversational Agents (ECAs), simulated mentors who discuss potential STEM career trajectories. The professors demonstrate a conversation with

[1] http://diversitycomplete.com/slc/wp/2011

the ECA they have named Lamar. Lamar, a computer generated image of a young African-American biochemist, wears a dark suit and blue tie. Clicking the preset question links prompt him to discuss his role models, his hobbies, and the training needed to become a scientist.

The program also recruits new or early career teachers, teacher mentors, and administrators from Clayton County for a summer of workshops and training that address pedagogical methods, leadership skills, planning and collaboration, or other activities depending on the role of the participant. School leaders attend a two-day retreat centered on reflective discourse and story-telling. Teachers and teacher mentors meet to craft a professional development plan. The program tailors the training and exercises to meet the educational needs of Clayton County.

Where It All Started

Morehouse College, in partnership with Clayton County, initiated the Student Applied Learning, New Teacher Induction, and Staff Leadership Program in summer 2012, following a $1,000,000 award from the Innovation Fund. Morehouse College and Clayton County sought the grant in response to challenges the county had encountered in recent years. Between 2008 and 2011, the school district experienced a lapse in accreditation. All of its high schools have an 80% or greater proportion of students who qualify for free or reduced lunch. The Student Applied Learning, New Teacher Induction, and Staff Leadership Program intends to serve Clayton County's educational needs through student enrichment, improved teacher retention, and school leader preparation.[2]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Help students develop higher order thinking skills through applied learning opportunities*

- **GOAL 2:** *Empower new high school science teachers and leaders to deliver more complex instruction, motivate students and teachers, incorporate high expectations, and make better use of instructional resources[3]*

The Student Applied Learning, New Teacher Induction, and Staff Leadership Program takes a multi-faceted approach to improving the state of education in Clayton County. Summer projects offered on the Morehouse College campus are designed to engage students in science, train school leaders, and improve retention of early career teachers. Activities for all three targeted groups work in concert to reach greater educational outcomes. The program focuses on biology, chemistry, and physics, with additional emphasis reserved for sustainable energy and environmental sciences.

The Research Program and Scholars Research Program consist of activities for high school students. The Research Program lasts five weeks, serving 40 juniors and seniors who are

[2] Morehouse College's Grant Proposal, November 2011
[3] Ibid

bused to Morehouse College each day. During a morning session, they attend a scientific literacy class involving case-based learning, research simulation, STEM career exposure, and personal development. During an afternoon session, they participate in guided inquiry labs exploring sustainable energy and environmental biology. Students design and complete an original research project by the end of the summer. At that time, students will present their findings competitively. The Scholars Research Program also lasts five weeks, serving four selectively chosen rising seniors – criteria include a 3.5 GPA, experience in AP science, and an essay – who reside on campus during the program. Participants at this level attend the same scientific literacy classes, but also conduct original research and work one-on-one with a faculty mentor during the afternoon session.

The New High School Teacher Induction Program consists of activities for teachers with three or fewer years of experience. It recruits seven participants through consultation with principals from the county's high schools. The program lasts six weeks and features three segments. The first segment, lasting one week, involves pedagogical training in the delivery of web-based modules, research case studies, and guided inquiry labs. During this segment, participants also work alongside five teacher mentors to devise a professional development plan. The second segment, lasting four weeks, puts to use the newly acquired skills. The new teachers assist Morehouse faculty by teaching high school program participants. During the third segment, completed in the final week, teachers plan and identify ways to incorporate their new knowledge and advanced curriculum into their specific disciplines. Following the summer, the teachers also receive support during the school year.

The New Leader Training Program brings together new teachers, teacher mentors, and school leaders (principals, assistant principals, or department heads). It serves the seven teachers and five teacher mentors participating in the induction program, as well as seven leaders chosen by the school district. The program takes place over two days in a retreat format. They engage in reflective discourse and create professional development plans.

Outcomes

For high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement. The questionnaire results for 2013-2014 indicated a significant rise, from pre- to post-program, in the categories Intrinsic Motivation,- Self-Management/Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM). More specifically:

- *Participants made particularly strong gains in Intrinsic Motivation. Before the program, approximately 56% of participants reported a preference for challenging class work. Following the program, that percentage rose to 87%.*

- *The percentage of students considering a career in STEM rose from 66% before the program to 88% after the program.*

- *Overall, approximately 82% of students rated the program as good or excellent.*

The program served 44 students, seven new teachers, and seven school leaders during the 2013-2014 school year. Student participants showed positive outcomes – 95% of those graduating in 2013-2014 have been accepted to college. Of these, 73% expect to declare a STEM major. New teacher participants also

reported strong results. Among new teachers' students in Biology, the number passing biology with a C or better rose by 62.4%. These results do not necessarily demonstrate causal increases; however, they show that students who participate in the program, and the students of teachers who participate, are outpacing their peers. The program also surveyed teacher participants on their satisfaction with the summer program activities. On average, the summer 2013 teachers rated the program close to five out of five, indicating it was "enjoyable, effective, and valuable."[4]

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=27)

40%

42%

16%

■ Excellent   ■ Good   ■ Average   ■ Poor   ■ Very Poor
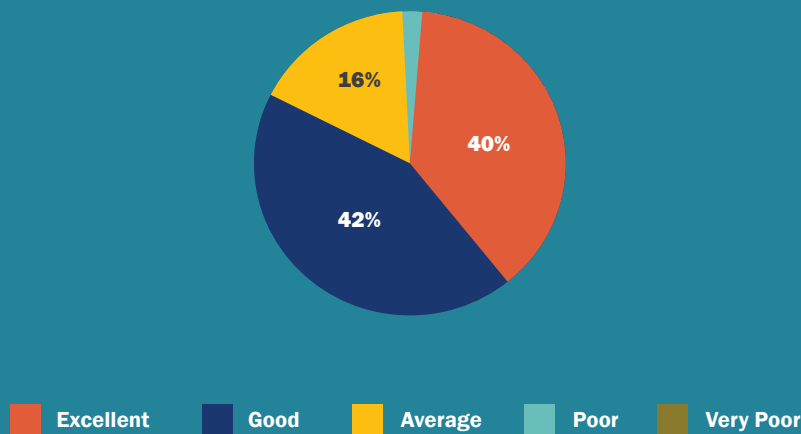
Conclusion

The partnership between Morehouse College and Clayton County brings a multi-pronged approach to educational challenges, offering services to each layer in the county's high schools: students, teachers, and administrators. High school juniors and seniors receive engaging STEM instruction within a collegiate environment. The program, held during the summer months, offers students supplemental lessons without creating any disruption to their normal school year activities. The program also provides professional development activities for early career teachers and school leaders, laying a foundation for success on both sides of the educational equation. Morehouse and Clayton intend to continue the program after the grant's end. Program leadership is seeking sustaining funds, as well as funds that would allow the inclusion of other school districts.

PROGRAM TAKEAWAYS

Promising Practices

- The program capitalizes on out-of-school time by offering students rigorous learning opportunities during the summer, mitigating summer learning loss.

- The program's summer activities address multiple educational variables by training early career teachers and developing the leadership skills of principals and department heads.

Lessons Learned

- Following departures and positions changes within Clayton County Public Schools, program leadership recognized the importance of contingency planning. The program benefited from a stronger record keeping that preserved institutional memory through transitions.

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[4] The Student Applied Learning, New Teacher Induction, and Staff Leadership Program's End-of-Year Report 2013-2014
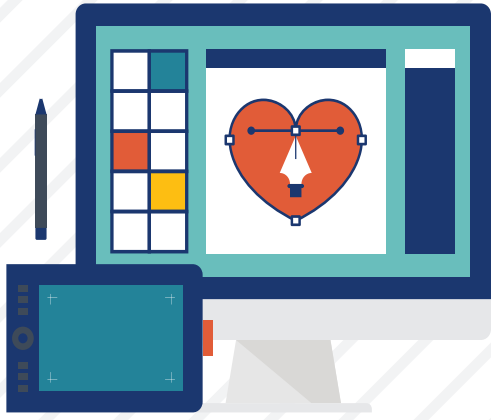
Murray County STEM Academy
Signs and Designs

Introduction

The new design takes shape on screen – a gold fleur-de-lis overlaid with an eagle. A 10th grader uses two important tools – the Corel Draw program and his own steady hand – to complete this Boy Scouts emblem for a local troop's t-shirt order. The STEM Academy calls its logo, sign, and t-shirt business CoSine, a name that cleverly hints at the product (signs) while also paying homage to the trigonometric functions in the students' math lessons. Participating in this business venture teaches the students valuable career skills, including inventory management, proper customer interaction, and safety compliance in the use of equipment and chemicals. Students also gain experience using design software and screen printing machines.

The program offers other unique opportunities. Students in the STEM Academy's Law, Public Safety, Corrections, and Security class take part in hands-on activities involving simulated domestic dispute resolution, handcuffing techniques, and tactical movement with training weapons. In January 2014, representatives from the state's Department of Natural Resources and Department of Juvenile Justice visited to share information on the mission and responsibilities of those agencies. Students gained insight into careers as conservation rangers and investigators.

Murray County's STEM Academy emphasizes the connection between education and future career prospects. It targets retained 8th graders, providing an opportunity not only to make up high school credits and

rejoin their peer group, but also a chance to build soft skills that prepare them for post-secondary education and jobs. Alongside rigorous STEM courses that enhance vocabulary and writing, develop problem solving skills, and model real-world scenarios, the program provides training in punctuality, study methods, teamwork, and research.

Where It All Started

In 2011, Murray County Schools recognized that students who do not pass the English or Math CRCT typically struggle in high school and are at risk of dropping out. The county further noted that 77% of these students in the 2010-2011 school year received a free or reduced lunch. Despite improvements in the graduation rate since 2008, Murray County High School still lagged behind the average rate in Georgia. To address these issues, the district developed the STEM Academy using a $921,000 grant from the Innovation Fund. The initial implementation occurred during the 2011-2012 school year. The STEM Academy aims to propel retained 8th grade students to a higher level of academic achievement, increasing their chances of graduating.[1]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Involve high-need students in technology-driven, applied learning opportunities that increase their problem solving, communication, and self-management skills*

- **GOAL 2:** *Provide early intervention between 8th and 9th grade for students whose test performances put them at-risk for dropping out[2]*

The STEM Academy provides rigorous STEM education, career and technical training, and soft skills development for retained 8th grade students. These students begin the program while repeating the 8th grade and continue with the curriculum and training into high school. The program focuses on catching students up to their peers and allowing them to graduate on time. Teachers in the Academy closely monitor students' math and reading performance and customize instruction to improve achievement in those subjects. Murray County Schools has had relationships with local and regional entities that add to the program's available resources and expertise. These entities include the local Chamber of Commerce, the Sheriff's Department, Georgia Power, Georgia Northwestern Technical College, and the state's Department of Natural Resources.

The program utilizes multiple strategies to increase student engagement. At least once per week, it incorporates computer-assisted instruction. Students use devices most frequently in math courses but also use computers to learn about careers or to complete research projects. Students also have opportunities for cooperative learning. Teachers divide the class into small groups of two to four students who then work together on research and writing assignments. The program also offers CTAE pathways for students in Energy Systems and Law and Justice. Students who participate in the Law and Justice pathway have the option of enrolling in the Criminal Justice program at Georgia Northwestern Technical College after graduating.

[1] Murray County's Grant Proposal, October 2011
[2] Ibid

The Academy also prepares students for post-secondary education and careers by instilling soft skills that focus on self-management, communication, and workforce readiness. The instruction includes lessons on punctuality, ability to learn, cooperation, information gathering, and applying math concepts to industry. The program also replicates real-world experience through the student-run t-shirt and sign business, CoSine. Students involved with CoSine make t-shirts and logos using design software, produce videos for advertising and marketing purposes, and track sales and inventory figures. The business provides students with practical skills while also demonstrating the importance of professionalism.

Outcomes
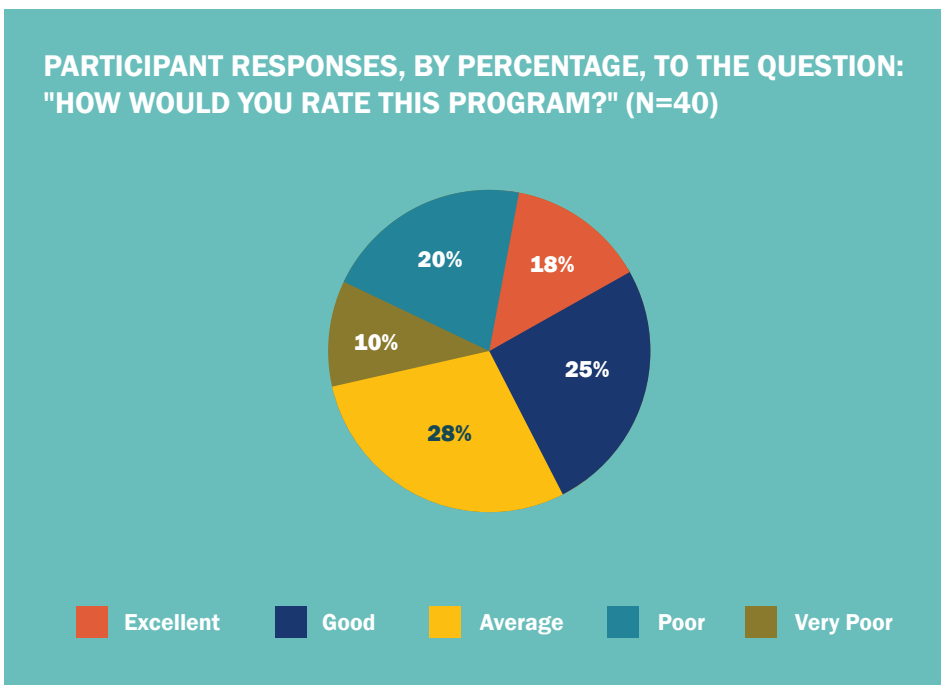
PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=40)

- Excellent — 18%
- Good — 25%
- Average — 28%
- Poor — 20%
- Very Poor — 10%

For high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management and engagement. The questionnaire results for 2013-2014 indicated a rise, from pre- to post-program, in the categories Intrinsic Motivation, Self-Management / Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM). This growth, however, was not statistically significant.

More specifically:

- *The percentage of students considering a career in STEM rose from 22% before the program to 29% after the program.*
- *Overall, approximately 43% of students rated the program as good or excellent.*

The program served 80 students during the 2013-2014 school year. Large portions of these students successfully earned recovery credits that advanced the goal of catching up to their peer group. Eighty-two percent (82%) of 9th grade students and 47% of 10th grade students earned a credit in Analytic Geometry. Seventy-five percent (75%) of 9th grade students, and 74% of 10th grade students earned a credit in English. Among 10th grade students, 79% earned a credit in Public Safety. Although no students have completed a CTAE pathway through the program to date, all 10th graders in the STEM Academy (38) enrolled in Public Safety. Student outcomes for state assessments were mixed. For students taking the Analytic Geometry EOCT in the 2013-2014 school year, 38% achieved Meets

or Exceeds, up from 0% in the school year prior to implementation.[3] For students taking the 8th Grade Math CRCT, 31% achieved Meets or Exceeds in 2013-2014, down from 35% in the prior year.[4]

Although the program has had some positive outcomes with its students, generally both the ALSQ and assessment results indicate that it has fallen short of its goals. Beyond the grant period, the district plans to transition it to an academy of engineering to increase student engagement and outcomes, and is seeking grant funds to do so.

Conclusion

Murray County's STEM Academy intervenes to help at-risk 8th graders catch up on high school credits, build math and reading skills, and acquire career awareness and knowledge. The program also offers unique opportunities for real-world experience through a logo design business. The professional management of a small enterprise benefits the students by building their skills, but also helps them connect education and training with earning potential. While the program has not met its initial expectations, it has provided the district with important lessons learned as it looks to transition toward an academy of engineering.
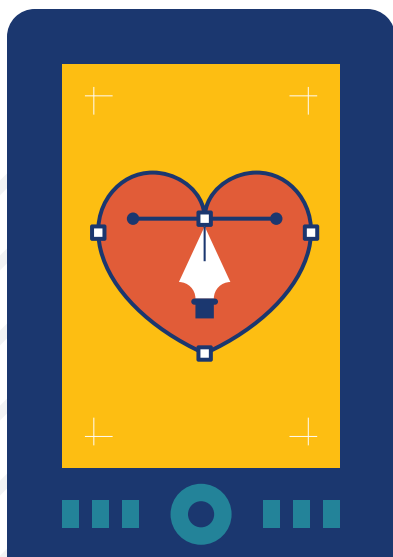
PROGRAM TAKEAWAYS

Promising Practices

- The school system's partnerships with stakeholding entities, such as the sheriff's office and local technical college, provide valuable support and resources to the program.

- By supporting CoSine, a student-run small business, the program offers a unique and appealing way to gain experience and learn skills.

Lessons Learned

- Departures and other staff transitions created disruptions and program delays. The implementation of an online learning program in response to a social studies teacher vacancy yielded unsatisfactory results. Consequently, leadership recognized the importance of contingency planning.

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[3] Murray County STEM Academy End-of-Year Report 2013-2014
[4] Race to the Top Final Report, EOCT and CRCT Results 2012-2013 and 2013-2014

The Museum School
Thinking on All Sides of the Box

Georgia's Innovation Fund
invest. inform. inspire.

Museum Partners

Atlanta Botanical Garden, Atlanta History Center, Alliance Theater Institute for Educators and Teaching Artists, ArtsNow, Fernbank Museum of Natural History, Fox Theater, Georgia Aquarium, High Museum of Art, Michael C. Carlos Museum at Emory University, and Zoo Atlanta.

Introduction

The first grade science teacher drags a massive black trunk to the center of the classroom. Children gather in a semi-circular cluster before it, those in back stretching and standing on tiptoe to peer over the shoulders of their classmates. What could be inside this one? The teacher unlatches each clasp on the bin with a small pop. A boy exclaims, "I have to see it!"

The teacher lifts the lid. Neatly arranged within the box are meteorological instruments – thermometers, a weather vane, and rain gauges. There is a classroom weather center that can explain the sunshine and rain, the wind and clouds. Rather than reading a textbook, the students will learn about the meteorological phenomena of the natural world through an interactive and engaging science lesson.

The black trunk is one of many that the Museum in a Box program, run through DeKalb County's Museum School of Avondale Estates, rents to Georgia public school teachers to bring a museum experience to the classroom. The program's trunks are durable, portable plastic bins that, depending on the lesson, may contain clothing and accessories; an array of audio, video, and print media; and physical examples (or accurate reproductions) of historical and scientific artifacts (such as pine cones, animal pelts and feathers, ropes and pulleys, and whittled Native American lacrosse sticks with hand-woven netting). By creating museum-like experiences for students with limited or no opportunity to visit museums, the program brings a new approach to hands-on, project-based learning across many disciplines.

Where It All Started

Opened in August 2010, the Museum School of Avondale Estates (TMS) conceived the idea for Museum in a Box in response to decreasing school field trip budgets for its own students and students around the state. Noting the benefits of project-based and hands-on learning, TMS developed learning trunks that could replicate a museum field trip while also providing project-based learning experiences. In September 2012, the Innovation Fund awarded TMS $200,000 to create trunks and implement a program to rent them to teachers in other Georgia public schools.

Program Overview

The Museum in a Box program seeks to accomplish the following:

- **GOAL 1:** *Advance students' applied learning and academic achievement by increasing access to hands-on museum-like artifacts and resources*

- **GOAL 2:** *Improve student outcomes by sharing the innovative, proven museum school model with other public schools[1]*

TMS pairs new and veteran teachers to design the trunks, which align with state-approved content standards. After consulting with and/or visiting one of TMS' eleven Atlanta-based museums and learning centers (see sidebar/inset), they draft lesson plans that promote academic rigor through problem-solving and critical-thinking exercises linked to real-world settings. Teachers also create a list of items – some permanent, some consumable – that make up the box's contents. The school purchases the items from curricular partners or other sources. With some trunks, the teachers request that staff members from partnering museums visit the school to provide more context for the items in the box.

While the initial beneficiaries of the boxes have been Museum School students, TMS offers five-week rentals to teachers in other schools, which accomplishes the program's second goal. With the 2014-15 addition of box lessons for the 6th grade, TMS will offer 50 trunks across 24 topics for kindergarten to sixth grade. *(See sidebar/inset for examples of trunk topics.)* This sharing has allowed more than 2,500 students access to museum box lessons. During the 2013-14 school year, 34 teachers from 24 schools in eight Metro Atlanta districts rented the boxes.[2]

[1] The Museum School's Grant Proposal, July 2012
[2] The Museum School Fact Sheet, School Year 2013-2014

TRUNK TOPICS

Kindergarten
Going Wild with Creature Features
Lessons comparing groups of organisms

First Grade
Our Wondrous World
Lessons on the land, climate, and animals on different continents

Second Grade
Georgia Superheroes
Lessons on Georgia's major historical figures

Third Grade
Government is Greek to Me
Lessons on modern democracy and its origins

Fourth Grade
Shooting for the Stars
Lessons on constellations and the night sky

Fifth Grade
Civil War
Lessons on the American Civil War

Sixth Grade
Hydrology (New for 2014-15)
Lessons on water attributes

The Museum School promotes its lending program by distributing informational post cards to schools in metro Atlanta, posting about the trunks and rental opportunities on TMS's Twitter and Facebook pages, and holding orientation workshops on presenting trunk lessons.

Outcomes

The trunks offer authentic, real-world experiences akin to a field trip, creating high levels of engagement and encouraging students to reflect deeply on what they are learning, particularly for students in schools that are unable to take field trips. Like field trips, the box lessons are meant to be memorable and informative – learning infused with adventure and exploration. Researchers at the University of Arkansas measured the educational value of a field trip using a randomized control trial with a field trip to an art museum. They found that students who visited an art museum had significant increases in appreciation for art and critical thinking on art relative to students in schools that did not visit a museum. The gains were particularly high for disadvantaged students. Since museum field trips are rare for many students, the trunks provide a cost-effective alternative that may have similar benefits.[3]

To evaluate the trunks' impact of the classroom experience, the program sends teachers a survey to measure students' engagement, participation, and confidence. Eight of the borrowing schools for the 2013-14 school year responded to the survey (33% response rate). Eighty-eight percent of responding teachers reported *high to very high* student engagement, based on positive body language indicative of listening and attention. One hundred percent of responding teachers reported *high to very high* student participation, based on verbal participation that included relevant questioning and thoughtful expression during the trunk activities and lessons. One hundred percent of responding teachers also reported *high to very high* student confidence during the trunk activities and lessons, based on initiating and completing tasks with limited coaching.[4]

TRUNK RENTALS' IMPACT ON THE STUDENT EXPERIENCE ACROSS EIGHT CLASSROOMS
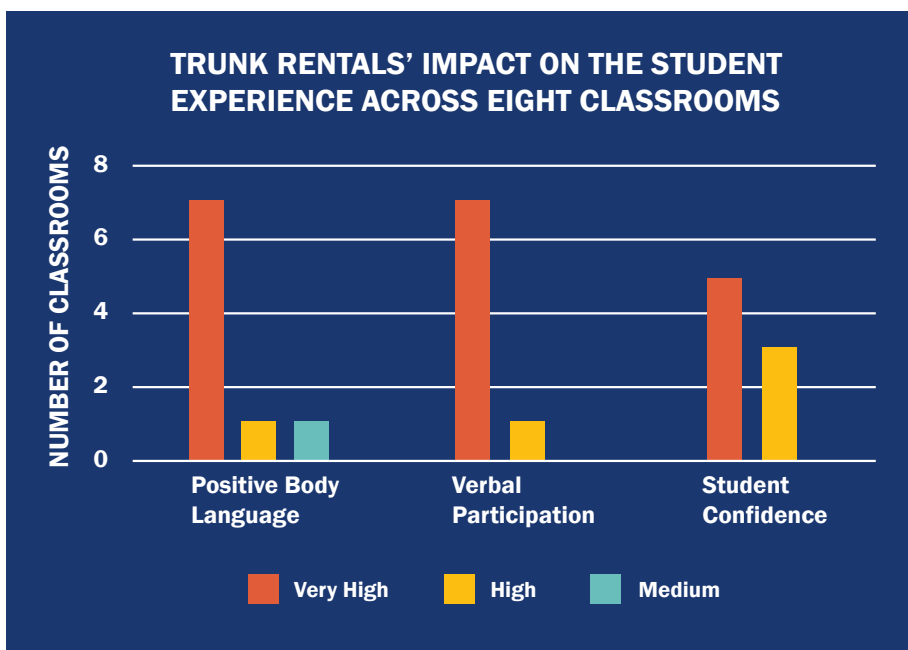
[3] Greene, Jay P., Brian Kisida, and Daniel H. Bowen. "The Educational Value of Field Trips." *Educationnext* Vol. 14, No. 1 (2014). Web. 16 Sept. 2014. http://educationnext.org/the-educational-value-of-field-trips/

These results demonstrate promise for the impact of the trunks on classroom experiences. However, going forward, the Museum School should consider requiring survey responses for rentals, and also have teachers measure student learning through pre- and post-assessments aligned with the trunk lesson.[5]

Conclusion

While using a trunk, teachers can transform their classrooms into the dynamic learning space of a museum. Rather than describe scientific phenomena from a textbook, educators teach through hands-on lessons of experimentation and direct observation. Since the boxes are available for teachers to rent across the state, the Museum in a Box program is providing authentic learning experiences to a growing number of students, many of whom are unable to visit museums or sites. After the grant period, TMS will charge $50 per rental to sustain the program beyond the grant's end. In addition, the school plans to pursue other grants, allowing it to build on the program with new lessons and trunks. Going forward, the trunks will continue to provide meaningful experiences for students. When those trunk lids open – wherever the classroom may be – a journey begins.

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[4] The Museum School's End of Year Innovation Fund Report, School Year 2013-2014

[5] For many of the Innovation Fund Applied Learning programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement. However, the ALSQ is intended for high school level students. Because Museum in a Box serves K-6 students, GOSA did not administer the questionnaire.
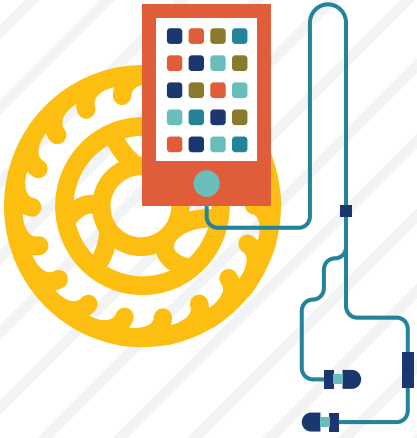
Tift County Mechatronics Partnership

Making Things Work

Introduction

The classroom space, where the students listen to lectures and take notes, appears standard. The desks, whiteboard, and teacher's lectern resemble those of any other class. The similarities end, however, at the edge of this space, where an open wall gives way to a broad, brightly lit workshop. It has a high vault in the ceiling and row upon row of electronics stations – black tabletops featuring complex control panels full of buttons and switches. This is the laboratory where Mechatronics students build, operate, and repair robots, phones, computers, and many other machines or devices.

Mechatronics – so named by combining the words mechanics and electronics – is a multidisciplinary approach to engineering. Tift County High School (TCHS) was the first in Georgia to offer the curriculum, which it developed in partnership with Moultrie Technical College (MTC) in January 2012. The program provides 10th through 12th grade students with hands-on training in the use of mechanical and control systems, electronics, and computers. Local industry informs curriculum design and ultimately benefits from the partnership. Students who graduate are better equipped to enter the work force because of the Mechatronics training. The skills learned are applicable across a number of industries, including manufacturing, transportation, and health science.[1]

The Mechatronics program generally targets students with limited family history of postsecondary education. It may be some students'

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[1] Tift County Board of Education's Grant Proposal, October 2011.

first encounter with a collegiate atmosphere. A visiting MTC professor teaches the course. To generate a culture of respect, the professor and students formally address one another using last names. Eligible students earn credit hours transferrable to any school in the Technical College System of Georgia. Given these responsibilities and expectations, the students thrive. Few leave the program prematurely, and a majority make academic gains that had long eluded them, despite – or perhaps because of – the subject matter being more advanced than their previous courses.[2]

Where It All Started

The Mechatronics program began in January 2012, following a $1,000,000 award from the Innovation Fund. Tift County sought the grant because it recognized the local need for Science, Technology, Engineering, and Math (STEM) training. The county's poverty and unemployment rates both exceeded the national average.[3] The school system began a partnership with a local technical college. The college provided TCHS with guidance and support. Highly qualified college faculty members served as instructors. In addition, a high degree of community involvement ensured there would be students enrolling from day one. In the summer, the program sponsors an 8th and 9th grade-inclusive STEM Camp. The camp establishes a pipeline for underclassman who may be interested in the program.

Program Overview

The Mechatronics program seeks to accomplish the following:

- **GOAL 1:** *Provide an innovative STEM applied learning program for high school students to increase student academic success and graduation rates*

- **GOAL 2:** *Provide STEM educational activities for students and their families to increase student academic success and increase awareness and engagement in STEM careers and educational opportunities*

- **GOAL 3:** *Promote Mechatronics as an integral component of Georgia workforce development[4]*

An MTC professor visits the high school each day to teach the Mechatronics curriculum. Coursework explores the use of technologically advanced equipment, including electronics, hydraulic devices, pneumatic devices, and robotic systems. Students must apply problem solving skills as they program, troubleshoot, repair, or construct various machines and equipment such as video game controllers, traffic lights, tablet computers, and baby monitors. Other students and even community members bring their broken or malfunctioning devices to the class for repairs because of the program's reputation.

Each June, the program coordinates a STEM Camp on the MTC campus aimed at 8th and 9th graders (though any grade level student may attend). The event introduces students to a college environment, while also promoting STEM learning through hands-on experiences and field trips. Field trips typically involve visiting local industries to increase career

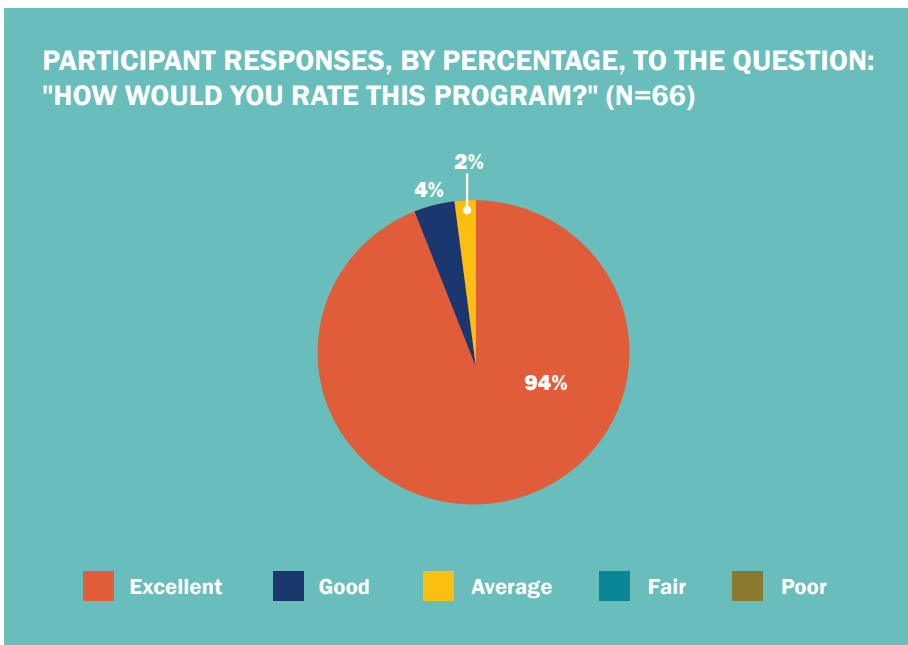[2] Tift County Mechatronics Partnership's End of Year Innovation Fund Report, School Year 2013-2014
[3] Tift County Board of Education's Grant Proposal, October 2011
[4] Ibid

awareness. The hands-on experiences vary widely and have included robotics, surgical technology, and solar power. Twice yearly, the program sponsors a family STEM night that exposes parents to the STEM curriculum and the opportunities available to students in the program.

In January 2014, the school began developing its apprenticeship program. The goal is to arrange apprenticeships for students who have completed two years of mechatronics. With assistance from MTC, the program identified appropriate work locations and designed appropriate supervision and assessment protocols. The apprenticeship program bolsters students' career prospects and strengthens Georgia's workforce. During the spring 2015 semester, six students held apprenticeships at Heatcraft Refrigeration Products and food manufacturer Bell Plantation Inc. Furthermore, upon completion of the Mechatronics program, students earn two technical certificates from MTC and a career work ready certificate, signaling the mastery of specific workplace skills.

Outcomes

PARTICIPANT RESPONSES, BY PERCENTAGE, TO THE QUESTION: "HOW WOULD YOU RATE THIS PROGRAM?" (N=66)

- Excellent
- Good
- Average
- Fair
- Poor

For high school level programs, the Governor's Office of Student Achievement (GOSA) administers the Applied Learning Student Questionnaire (ALSQ), an instrument designed to measure growth in student problem solving, communication skills, self-management, and engagement. The 2013-2014 results indicated a statistically significant rise, from pre- to post-program, in Intrinsic Motivation, Self-Management/ Self-Regulation Skills, and Intent to Persist (i.e., the student aspires to pursue additional education and a career in STEM).

More specifically:

- *Participants made particularly strong gains in Intent to Persist. Before the program, approximately 50% of participants reported a desire to pursue additional education and a career in STEM. Following the program, that percentage rose to 90%.*

- *Students' perceptions of their self-management / self-regulation, as exhibited abilities like completing tasks on time, finishing tasks they begin, and managing time, rose from 53% to 65%.*

- *Overall, 98% of students rated the program as good or excellent.*

Out of the first two cohorts engaged in the program, 100% of the students are on track to graduate, compared to 74.4% for the school as a whole in 2014.[5] Additionally, 100% of the first cohort met or exceeded expectations on the Coordinate Algebra end-of-course test (EOCT). Although 56% of the second cohort met or exceeded expectations on the Coordinate Algebra EOCT, this still exceeded the state's 2013-2014 aggregate pass rate of 40%.[6] These results do not necessarily demonstrate causal increases; however, they show that students who participate in the program are outpacing their peers.

The program has also had other positive outcomes. For the 2013-2014 school year, 86% of participants earned credit hours from the Technical College System of Georgia. In June 2014, Mechatronics students traveled to Kansas City, MO, for the SkillsUSA championship, a leadership conference and competition for high school and college-level technical students from across the nation. More than 5,600 students attended or competed. The six-student TCHS team returned with a 4th place trophy in the mechatronics category, and the team also finished 12th out of 50 in the robotics category.

Conclusion

The Mechatronics program makes an important contribution to Tift County's workforce development. The data indicate that participants exhibit higher academic achievement and a greater likelihood of graduating from high school than peers not participating in the program. They learn marketable, STEM-based skills that will benefit their careers and boost the Tift County area's human capital, meeting the needs of local employers.

Citing demand from both students and industrial sources, the Tift County Board of Education and MTC intend to continue the program after the grant's end. Funding will come, in part, from the dual enrollment arrangement with MTC. The program will also seek in-kind equipment donations or direct financial support from local manufacturers. Mechatronics students, meanwhile, will continue to build – be it knowledge, machines, or a brighter future.

PROGRAM TAKEAWAYS

Promising Practices

- The program maintains a strong connection to the community through the STEM summer camp, family STEM nights, and the repair of personal electronic devices.

- The needs of local industry, including Heatcraft Refrigeration Products, Bell Plantation Inc., and KIA Motors Corp., inform the curriculum design, ensuring that students learn practical, marketable skills.

- The school system's close partnership with Moultrie Technical College raises the program's profile, provides a well-qualified instructor, and facilitates many other critical activities.

Lessons Learned

- Keeping local families involved through special events and publicizing the program's success has driven student demand and boosted enrollment.

- Encouraging students to display their skills, whether through major competitions or the emerging repair shop, has built their leadership capacity.
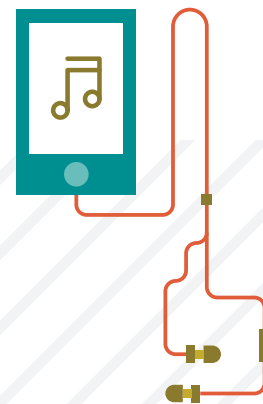
[5] Georgia Dept. of Education K-12 Public Schools Report Card: Graduation & Dropout Rate gaaward.gosa.ga.gov/analytics/saw.dll?PortalPages
[6] Tift County Mechatronics Partnership's End of Year Innovation Fund Report, School Year 2013-2014

Atlanta Neighborhood Charter School: The New Teacher Residency Project

A Chance to Shine

Introduction

The teacher residents embark on the second year of their residencies at the Atlanta Neighborhood Charter School (ANCS). Just last year they graduated from Georgia State University (GSU), earning their teaching certificates and degrees in early childhood education or middle and secondary education. Prior to graduation, the full-time student teachers were first year residents at ANCS. The experience allowed them the opportunity to build classroom skills and hone their teaching practice at the feet of experienced educators. Now, in their second year, the residents transition to associate teacher status. They continue to work in the same classroom with a veteran teacher, but their increasing duties and responsibilities now include planning lessons, assessing student work, and even leading the class on occasion. They welcome the addition of an annual stipend, too.

Opportunities for skill building continue into the second year of the New Teacher Residency Project. Residents attend professional learning sessions, visit other schools to observe teaching, have the option of enrolling in more coursework toward a master's degree or endorsement, and meet with their mentors bi-monthly to review their professional development. The mentors also perform two formal evaluations that gauge the new teachers' progress and help them reflect on their use of specific instructional strategies. The program takes these steps to keep the residents from feeling isolated, or uncertain about

their growth. If they feel overwhelmed, the residents can find support in their critical friends groups. These tight-knit communities of colleagues and coaches share, reflect, and learn from one another.

As the second year comes to a close, the program's director counsels the associate teachers on the next step in their careers. Some will take a full-time teaching position within ANCS, while others may choose to complete another year as associates, filling in their skill gaps until they feel truly prepared for the profession. Still others may return to school for a master's degree, and some may move on to other schools. In each case, the director strives to guide participants toward a position or scenario that is the best fit for them. In cases where the new teachers fully lead a classroom at ANCS or another school, the program continues to offer guidance, interventions, and access to the critical friends groups.

Where It All Started

ANCS resulted from the merger of two Atlanta charter schools. The elementary school, which serves students in grades K through 5, opened in 2001, while the middle school, which serves students in grades 6 through 8, opened in 2005. The school partnered with Georgia State University's College of Education during the 2011-2012 school year and implemented the New Teacher Residency Project, an induction and training program for beginning educators. Both organizations recognized the need for a program that addresses poor retention rates among early career teachers. Additionally, with 30% of its elementary school population and 43% of its middle school population receiving free or reduced lunch, ANCS sought to provide these at-risk groups greater stability and a better chance for academic achievement. To facilitate these ends, the Innovation Fund awarded the program a $918,000 grant.[1]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Mentor and support prospective and early-career teachers as they enter the teaching field*

- **GOAL 2:** *Improve student outcomes in a way that is sustainable and replicable[2]*

The New Teacher Residency Project recruits prospective and early-career teachers from Georgia State University's College of Education. The project focuses on providing teacher support through a three-year cycle of targeted interventions. During the first two years participants, as resident teachers within the Atlanta Neighborhood Charter School, work and learn alongside experienced cooperating teachers. The program utilizes a gradual release model, designating residents as pre-service student teachers during the first year (while the residents continue their education at GSU) and associate teachers during the second year (following graduation and certification). In addition, the program pairs each resident with a mentor. First and second year resident teachers co-teach with a cooperating teacher each day. Mentors observe these activities on a regular basis and determine key areas for growth and development.

[1] Atlanta Neighborhood Charter School's Grant Proposal, October 2011
[2] Ibid.

At the close of the first year, the program invites participants to apply for the second year if interested in continuing the residency. The application calls for reflection on NTRP's contributions to the participants' teaching practices and student interactions. A nominating panel made up of the program director, GSU principal investigators, university supervisors, and campus principals review the results and select four pre-service teachers who will become associate teachers in the second year. Associate teachers take on greater classroom responsibilities, frequently engaging with students independently, planning and implementing lessons, and assessing student work. Mentors continue to support and guide the participants throughout the second year.

During all three years of the residency, participants also have opportunities for structured professional development and peer collaboration. They take post-baccalaureate classes at GSU in content or skill areas that will most benefit their teaching craft. The program also organizes critical friends groups (CFGs) for participants to discuss and examine their experiences. CFG coaches, chosen from the ranks of interested ANCS faculty and trained by facilitators from the School Reform Initiative, a national non-profit focused on developing learning communities, work within the groups to promote inquiry and collaboration. ANCS pays a stipend to the coaches for their time and work supporting residents.

As year two ends, the program director meets with each associate teacher to determine the next step in his or her teaching career. Participants that qualify and choose to continue to the third, final program year will lead their own classrooms. Program support activities, including mentoring, participation in the CFGs, and university-level study of pedagogy continue during the final year.

Outcomes

The program administers mid-year and end-of-year surveys each year to evaluate participants' experiences. The survey instrument measures perceived support within the program and satisfaction with the professional development and skill building. The program also surveys cooperating teachers, mentors, and CFG coaches to determine satisfaction with the program support for their roles. More specifically, for the May 2014 surveys:

- *83% of the residents surveyed reported the program met their need for emotional support from experienced teachers to the greatest extent possible. The remaining 17% reported it somewhat met this need.*

- *58% of residents reported the program met their need for greater understanding of curriculum content. 25% reported that it somewhat met this need.*

- *No residents reported any instances of unmet needs in cases where they requested help.*

- *77% of CFG coaches reported the program met their need for support from the project director to the greatest extent possible. 8% reported that it somewhat met this need. With regard to support from ANCS administration, 31% reported the need met to the greatest extent possible, and 54% reported the need somewhat met.*

The New Teacher Residency Project served 13 residents during the 2013-2014 school year. Over the course of the grant, the program served 32 residents, with 29 continuing as teachers either at ANCS or elsewhere, representing a retention rate of 91%. Additionally, students demonstrated strong outcomes at ANCS for the 2013-2014 school year. For ANCS students taking CRCTs, the percentage who met or exceeded expectations in math totaled 92% for 2013-2014. The percentage that met or exceeded expectations on their Reading CRCTs totaled 99%.[3]

Conclusion

The Atlanta Neighborhood Charter School's New Teacher Residency Project provides prospective and emerging teachers with a cycle of support during their critical early years in the classroom. Its gradual release process, in which mentors periodically give residents new and more complex duties, allows participants to build skills in parallel to the profession's mounting responsibilities. The program uses this induction and training time to improve new teacher retention, which will benefit both schools and students through increased stability. ANCS intends to continue the program after the grant period. It received a five-year, $3 million Investing in Innovation Fund grant from the U.S. Department of Education, allowing an expansion to six schools in the Atlanta region.

[3] Atlanta Neighborhood Charter School's End-of-Year Report 2013-2014

Clarke County
Teach to Learn Partnership
Staying the Course

Introduction

The University of Georgia graduate student wants to teach. She has dreamed of being a teacher since childhood. She has an undergraduate degree and a teaching certificate, but she wonders if she is ready for the classroom. How will her experience with theoretical teaching differ from professional reality? Then, she receives an email from her university's College of Education about the Teach to Learn Partnership with the local Clarke County School District. The program appeals to her because it offers practical classroom training as well as coaching from veteran educators. It even incorporates a paid graduate assistantship. She decides to apply.

The following year, she has become a teacher resident. She attends graduate school full time and spends 20 hours per week teaching, undergoing professional development, and/or conferring with a coach. Her coach, a seasoned teacher with more than two decades' experience, helps her understand the profession's intricacies, the many steps along the path from first time teacher to career educator. The program also sends her to the National Science Teacher Association's convention in Atlanta. At the convention, she attends presentations on creating project-based lessons, reading strategies for forensic science, and integrating math and science concepts.

The teacher resident's coach also mentors newly hired teachers at the school. During those sessions, the teacher resident takes responsibility for her coach's classes. These direct, intensive classroom experiences can account for as much as ten hours per week. She also co-teaches along-

side the coach and attends a series of workshops on an array of topics, including content knowledge, collaboration, and professional practices. In two years, when she completes her residency and earns a master's degree, she hopes to stay in the Clarke County School District and continue her professional relationship with her coach. She is already a colleague; now, she is ready for her own classroom, where she can become an instructional leader at her school.

Where It All Started

Clarke County School District and the College of Education at the University of Georgia leveraged an existing partnership at the start of the 2011-2012 school year to implement the Teach to Learn program. The district had endured significant teacher turnover for three academic years from 2007-2008 to 2010-2011 – turnover among its math and science teachers at the high school level reached 71% and 55%, respectively. This lack of stability and consistency put the student population – of which 78% are economically disadvantaged – at greater risk of dropping out or underperforming. The program aims to improve teacher retention, as well as boost student achievement in math and science, through the coaching and professional development of prospective and early career teachers. The partnership embarked on the program using an $870,000 grant from the Innovation Fund.[1]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Improve and enhance student learning*
- **GOAL 2:** *Improve and enhance the preparation of new teachers and other school-based personnel[2]*

The Teach to Learn Partnership provides coaching and professional development for selected early career teachers (in their first three years of teaching math or science) and graduate students in the College of Education at the University of Georgia (who become teacher residents in the program). The schools involved in the program, all located within the Clarke County School District, include Burney-Harris-Lyons Middle, Clarke Middle, Coile Middle, Hilsman Middle, Cedar Shoals High, and Clarke Central High. Graduate students perform their program residencies in one of these schools. The six schools also employ the early career teachers and the coaches who participate in the program. Coaches qualify, aside from holding long-term experience and being noted as experts in their field, because their students have demonstrated a minimum of a year's academic growth during the school year.

Teacher residents spend 20 hours each week in the target schools while continuing their graduate education full time. Residents, by virtue of acceptance to the program, receive compensation through a university assistantship that provides a tuition waiver and month-

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[1] Clark County School District's Grant Proposal, September 2011
[2] Ibid

ly stipend. The program matches residents with coaches on a one-to-one basis. The residents immediately begin co-teaching in the fall semester, sharing a classroom with their coaches. Coaches provide ongoing feedback and facilitate the examination of student work and standards-based lesson implementation. Residencies last two years, after which the resident, if hired, may choose to continue in the Teach to Learn program as an early career teacher. Early career teachers, like residents, participate in the program for two years.

The coaches also provide mentoring services to the early career teachers following the first four weeks of fall semester. Coaches enter the classroom and guide the new teachers in the same manner as the residents. This additionally gives the teacher residents an opportunity, for approximately ten hours per week, to assume sole responsibility for the classroom. In addition to these experiences, early career teachers and residents (as well as interested coaches and other faculty) attend a workshop series designed by Dr. Sally Zepeda, a University of Georgia education professor. The workshop topics include content knowledge, collaboration, instructional leadership, and reflection on professional practices.

Outcomes

For the first goal, improving student learning, early career middle school teachers' students demonstrated higher achievement on the Math and Science CRCTs. For 6th through 8th graders, the percentage who met or exceeded expectations on their Math CRCTs rose from 73.9% to 86.5% from 2012-2013 to 2013-2014. Over that same period, the percentage that met or exceeded expectations on their Science CRCTs rose from 67.9% to 76.3%.[3]

For the second goal, improving and enhancing preparation of participants, program staff administered an end-of-year survey to evaluate participants' experiences. The survey instrument measures satisfaction, quality of the mentor/mentee relationship, and self-confidence with regard to teaching ability. More specifically, for the May 2014 survey:

- *100% of the coaches surveyed reported being satisfied or very satisfied with the professional development. Of the early career teachers and residents surveyed, 66% and 64%, respectively, reported being satisfied or very satisfied.*

- *88% of early career teachers and 92% of residents reported improvements in their pedagogical knowledge as a result of the program.*

- *The majority of early career teachers (89%) and residents (78%) agreed that they were well-matched with their coaches.*

Aside from achieving all program goals, the Teach to Learn program curbed attrition and turnover. The program served 12 residents, 19 early career teachers, and 13 coaches during the 2013-2014 school year, including one early career teacher who left the program due to a move in the spring semester. At the end of the school year, Clarke County hired five (5) residents, accounting for 42% of the cohort. An additional five residents sought employment with the district, but lack of openings or personal circumstances prevented it.

[3] Teach to Learn Partnership's End-of-Year Report 2013-2014

Among early career teachers, 15 chose to stay with the district, resulting in an 83% retention rate. Among coaches, 11 chose to stay, resulting in an 85% retention rate.

Conclusion

The Clarke County School District and the University of Georgia's Teach to Learn Partnership provides important learning experiences for pre-service and early career teachers at critical points in their education and careers. It builds participants' confidence and skills while providing guidance and assistance in the classroom from experienced teachers. Teach to Learn also confers benefits on Clarke County students by improving teacher retention in math and science. This stability and consistency leads to higher academic achievement for students. After the grant period, the county intends to continue the program on a smaller scale. The schools will reduce the number of teacher residents but utilize substitutes one day per month to allow coaches to assist early career teachers. The program will continue to offer professional learning opportunities but with less frequency than under the grant-funded Teach to Learn program. Although this smaller scale program reduces costs significantly, the county will seek additional funding through grants.

PROGRAM TAKEAWAYS

Promising Practices

- The program benefits from the highly motivated partnership between the Clarke County School District and the University of Georgia. The university's College of Education typically supplies 30% of new teacher hires for Clarke County Schools, ensuring an ongoing interest in teacher retention and success in the district.

- The mixture of authentic class room experience, guided co-teaching, and workshop opportunities creates a rounded approach that builds skills and confidence while also contributing to workplace satisfaction.

Lessons Learned

- Program leadership determined that a 1-to-1-to-1 model – a triad of coach, early career teacher, and resident – proved most effective because it simplified planning, co-teaching, and other team activities. However, that model required shared planning periods, common classes, and a common grade level assignment for the triads.

Fulton County Leadership and Innovation Academy

Taking Charge of Success

Introduction

The principal and her School Governance Council (SGC) begin their charter system leadership training through a face-to-face immersion in the theory of a charter system and effective school governance. For a full day, the SGC learns from district representatives on the opportunities the new framework brings, the roles and responsibilities of the SGC, and effective communication. Attorneys lay out the state laws around open meetings, open records, and other legal concerns such as confidentiality and conflict of interest.

The principal's high school serves Fulton County, a district that transitioned to a charter system governance model in 2012. As a leader in a charter system school, the Fulton County principal's role is different from most principals in traditional schools. To effectively lead her school, she must thrive through shared governance with the SGC, a body that includes parents, community members, faculty, staff, and students who were elected or appointed to their positions. The SGC is responsible for setting and supporting the long-term strategic vision of the school. It also maintains high expectations of the principal and her school. The principal, while a member of the SGC, is a non-voting member, and it is her job to carry out the school's strategic plan.

The Leadership and Innovation Academy also guides the principal in her early interactions with the SGC. Skills addressed include but are not limited to problem solving and conflict resolution, decision making, and change management. She attends workshops with a cohort of

other County principals. Cohort members learn from one another while studying content and leadership skills based on their specific needs. The principal even receives individual leadership coaching from executive coaches with North Highland, an Atlanta-based worldwide consulting firm. These personal lessons, carried out over two years, explore and build upon the principal's approach to shared decision-making, communication, creativity, and collaboration.

Where It All Started

Fulton County began implementation of the Leadership and Innovation Academy during the 2012-2013 school year. The county launched the program in response to the Georgia State Board of Education's 2012 vote approving Fulton County Schools' transition to a charter school system. The county recognized that a successful transition would require well-prepared and highly skilled administrators, as well as an informed and fully involved community. Additionally, the large and growing district – comprising more than 95,000 students – had major achievement gaps between schools, with high poverty schools having graduation rates far lower than the state average. The county pursued charter system status to help support flexible strategies at the district and school level that would address those identified achievement gaps and student needs. Fulton embarked on the program using a $640,000 grant from the Innovation Fund. It offers professional development and coaching for principals and SGC members in order to improve students' educational experiences.[1]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Provide principals with professional development and support that leads to the design and implementation of specialized educational experiences for students*

- **GOAL 2:** *Prepare and certify School Governance Councils for new duties and responsibilities[2]*

In May 2012, the Georgia Board of Education granted charter status to Fulton County Schools. The transition to a charter system, taking place over three years, brings multiple changes. Schools can request waivers from state law to improve achievement or alter spending; the instructional models allow for significant innovation; and School Governance Councils replace the existing local advisory councils. The SGCs design and recommend innovations based on schools' specific needs. The Leadership and Innovation Academy offers coaching, development sessions, and other support to help principals and SGCs adapt and succeed in the new environment.

The Leadership and Innovation Academy brings together cohorts of principals and SGCs. All cohorts begin with a planning year in which they establish the SGCs and train the principals and SGC members on effective governance and strategic planning. Principals undertake a series of skill building workshops and analytical sessions provided by resource

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[1] Fulton County Board of Education's Grant Proposal, June 2012
[2] Ibid

and management consultant partners including Education Resource Strategies, Greenway Strategy Management, and North Highland, as well as district staff. Principals build their leadership capacity by improving communication, problem solving, conflict management, and other skills. To encourage collaborative learning, some activities involve all principals in the cohort, while each principal also receives personal coaching.

The SGCs' development activities occur over a number of workshops. The first session, commonly referred to as "Governance Training," is conducted in-person and lasts about six hours. The workshop details the SGC regulations, open meeting requirements, and the use of parliamentary style rules of order. Members also learn about student achievement data and effective communication. The next set of trainings focus on the development of the school strategic plan. The trainings lead the SGC members and principals through the strategic planning process, which includes conducting a needs assessment, determining short-term and long-term goals, and developing metrics to track progress. Between trainings, the SGCs return to their schools to develop the plan in collaboration with the principal and his/her leadership team. Additional SGC professional development workshops are conducted either in-person or online and take place after the initial planning year. Those trainings cover school budgeting and requests for flexibility, the process by which the schools receive approval to implement effective, research-based innovations by waiving state or district policies and/or laws.

Outcomes

The Leadership and Innovation Academy administers an end-of-year survey to evaluate SGC members' and principals'/school leaders' experiences. The survey instrument measures satisfaction, feelings of involvement/inclusion, and self-confidence as a result of the professional development. More specifically, for the May 2014 survey:
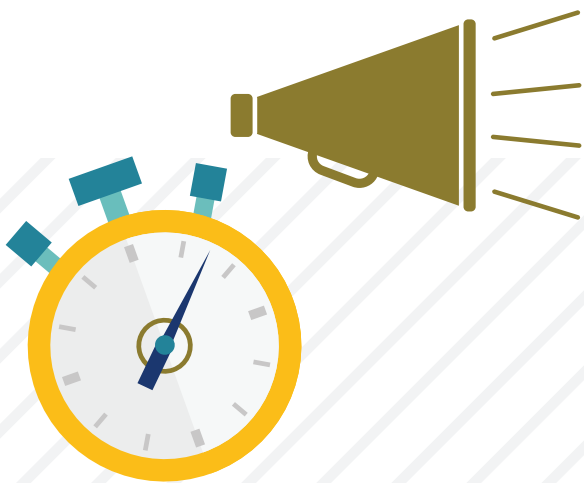
- *94% of SGC members surveyed agreed or strongly agreed they felt included in setting the goals of their schools.*

- *100% of school leaders and 84% of SGC members surveyed agreed or strongly agreed the training prepared them to lead their schools' transition.*

- *86% of SGC members surveyed agreed or strongly agreed their school was prepared to effectively engage parents and the community as a result of the program's training.*

The Leadership and Innovation Academy trained and certified approximately 570 SGC members from the start of the program to the end of the 2013-2014 school year. During this period, it trained 57 principals, 20 from the first cohort and 37 from the second cohort. Fourteen (14) principals left their schools during the period, all voluntarily. Reasons for leaving included relocation, retirement, promotion, or personal circumstances. Many of the 20 schools led by first cohort principals demonstrated positive outcomes on the College and Career Ready Performance Index (CCRPI), Georgia's single statewide accountability system. The CCRPI measures a school's performance in key areas related to college

and career readiness, such as content mastery on state assessments, student attendance, graduation rate (predicted or actual, depending upon grade level), and its ability to close achievement gaps. It also includes a Progress score, which measures the percentage of students exhibiting typical or high growth relative to students across the state with similar prior achievement. Comparing the CCRPI in the 2011-2012 school year (prior to the program's start) to the CCRPI in the 2013-2014 school year (the year the first cohort completed training), 14 out of 20 schools outpaced the state in CCRPI score changes over that time. Ten out of 20 outpaced the district. Over that same period, 10 out of 20 schools outpaced both the state and their districts with changes to their CCRPI Progress scores, meaning that students in these schools are generally improving at a faster rate than the state and district.[3]

Conclusion

Fulton County's Leadership and Innovation Academy addresses the possible skill and experience deficits created by a major shift toward charter system status. The program trains and prepares principals for their new responsibilities and equips them with the knowledge to innovate within an environment where new ideas will be encouraged. The program also supports the School Governance Councils, which will bring a heightened level of involvement between the community and the district. The county will continue the program on a smaller scale, moving toward training principals and SGC members on an as-needed basis (following turnover, for example) once all schools have completed the transition to charter system status. The county will provide most training internally following the grant, but it will seek funding sources to continue externally sourced executive coaching for principals.

[3] Georgia Department of Education, College and Career Ready Performance Index, 2012 through 2014. http://www.gadoe.org/CCRPI/Pages/default.aspx

The Georgia Charter Schools Association: Building the Pipeline of Highly Effective Charter Teachers and Leaders

Offering Alternatives

Introduction

Beth is a corporate accountant who wants to be a teacher. She knows the transition involves many steps, and wants to begin as soon as possible. So, she returns to school to pursue a master's degree in education. With this credential, Beth begins substitute teaching at an Atlanta charter school, but she still requires certification. Discussing her options with colleagues, she learns that some received their certification through a Georgia Charter Schools Association's (GCSA) program called *Building the Pipeline of Highly Effective Charter Teachers and Leaders*. Soon after these conversations, Beth contacts GCSA. Its representative answers her questions and suggests she look into the GaTAPP (Georgia Teacher Academy for Preparation and Pedagogy) and Pre-GaTAPP training programs offered by GCSA.

The program accepts her. Beth, leaving accounting behind, begins the Pre-GaTAPP instruction, learning from in-person training workshops and online resources focused on the state's instructional standards, student progress monitoring, assessment, classroom management, communication, and legal/regulatory basics. She also gains access to mentoring from seasoned teachers, multimedia case studies, interviewing tips, and support preparing for the General Assessments for the Certification of Educators (GACE) or other competency tests. Over the course of the program, she even develops an electronic portfolio of her professional work. Pre-GaTAPP participants work with GCSA to achieve highly qualified status with the intention of securing full-time employment, after which time they may enter the full teacher preparation and certification program (GaTAPP).

While enrolled in PreGaTAPP, Beth spends an entire Saturday at the GCSA training center, where staff walk her through every step of the GaTAPP application. They break it into digestible pieces for her: the application, the transcripts, the GACE exam, her philosophy of education statement, and others. A local school hires her with the expectation that she will earn a renewable certification, which allows her admission into GCSA GaTAPP. GaTAPP focuses on mastering the skills, knowledge, and competencies of teaching, with additional emphasis on the charter environment. The residency-based program allows her to complete work and instructional assignments while teaching in a real classroom. When the program finishes, Beth will be a certified teacher. "It is never too late," she says.

Where It All Started

The Building the Pipeline of Highly Effective Charter Teachers and Leaders began in the 2012-2013 school year. GCSA launched the program in response to multiple factors. It recognized the tremendous growth of charter schools, with charters serving 6% of all public school students in Georgia that year. These schools would need high quality teachers, particularly in the areas of math, science, special education, and foreign languages. Furthermore, GCSA recognized the need for effective charter leaders. It cited a survey by the Bill and Melinda Gates Foundation that identified leadership as the top factor in teacher retention, a critical element in academic success.[1] GCSA implemented the program using a $557,000 grant from the Innovation Fund. The program aims to recruit and certify teachers and to prepare leaders who will raise student achievement in Georgia's public charter schools.[2]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Raise student achievement in Georgia's public charter schools*
- **GOAL 2:** *Recruit, train, support, and retain teacher leaders and charter school leaders*
- **GOAL 3:** *Create a career ladder to retain quality personnel and provide for succession planning*
- **GOAL 4:** *Drive educational reform in Georgia and disseminate these practices amongst all public charter schools and beyond[3]*

Building the Pipeline of Highly Effective Charter Teachers and Leaders recruits, supports, and trains teachers and leaders for placement in charter schools. It offers three non-degree programs, depending on the needs and role of the recruit: PreGaTAPP, GaTAPP, and the Charter Leader Education Specialist program. Its PreGaTAPP program screens and prepares potential charter teachers in an effort to build a pool of effective teacher candidates for charter schools to hire. PreGaTAPP is open to participants with experience inside or outside education. The program features training workshops on the basics of teaching, which build pre-requisite skills and knowledge vital to teacher certification programs. The

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[1] "A First Look for Education Nation." Scholastic Inc. and the Bill and Melinda Gates Foundation, September 2011
   http://www.scholastic.com/primarysources/pdfs/Gates_FullDraftR11TOVIEW.pdf
[2] GCSA's Grant Proposal, July 2012
[3] Ibid

program also offers support services, including mentoring, site visits to Lake Oconee Academy (LOA, a GCSA charter school partner and model school), professional development, interview skills building, and feedback on classroom practice. Participants have access to a charter school job fair through PreGaTAPP, as well. Successful completion results in GCSA recommending participants to school leaders for hire. Once hired, they can transition into the GaTAPP teacher preparation and certification program.

The GaTAPP Program offers an alternative pathway to induction certification, which is now required of all new teachers). GaTAPP caters to the large number of educators coming from outside sectors, many with advanced degrees, as well as those trained in education who currently hold a non-renewable certification. It provides specific training and competencies related to the charter environment as well as best practices needed of all public school teachers. The program focuses on demonstrated achievement on the Professional Standards Commission's GaTAPP rubric, proficiency in core subject areas, and retention in the charter sector.

GCSA obtained state approval to launch GaTAPP as an alternative teacher preparation and certification program in 2011. The program matches participants with a mentor and a support team from both their home school and GCSA. It also facilitates collaboration with LOA, enabling participants to study and replicate the model school's best practices. They learn as residents, acquiring and implementing skills while on the job and during observations at charter schools across Georgia. Participants also develop an electronic teaching portfolio during the program.

GCSA offers two leadership trainings: the CharterLeader In-House and CharterLeader Education Specialist Programs. GCSA focuses on in-house training to provide support to aspiring expert leaders on both business and education practices. The training involves 100 hours of instruction (equaling 10 Professional Learning Units [PLUs]) on education and non-profit leadership standards. Participants train in effective decision-making, use of data, and quality leadership principles. The program aims to instill the business and operational expertise needed to manage a multi-million dollar non-profit enterprise, and addresses diverse matters including labor relations, financial management, plant operations, and legal and regulatory issues. The leadership training programs accept 5 to 10 leaders in each annual cohort.

Outcomes

The program uses exit surveys to evaluate participants' experiences. The survey instrument measures satisfaction, willingness to recommend the program, and perceived quality of the professional development.

More specifically, for the May 2014 survey:

- *83% of PreGaTAPP participants (15 out of 18) reported that the program met or exceeded their expectations. Additionally, 17 out of 18 (95%) reported feeling prepared or very prepared to enter the classroom following the program.*

- *100% of GaTAPP participants (15 out of 15) reported being satisfied or very satisfied with the program.*

- *100% of CharterLeader participants (6 out of 6) reported that the program exceeded their expectations. All six participants also indicated they would recommend the program to other charter leaders.*

PreGaTAPP enrolled 22 participants during the 2013-2014 school year, with 21 completing the program. Of those 21, two received performance ratings (based on attendance, participation, and formal observations) of *Distinguished*, five received *Proficient*, and seven received *Basic*. The remainder (seven) were rated *Needs Development*. Six secured jobs in charter schools and transitioned to the GaTAPP program. GCSA maintains the participants who were not hired, yet are still interested in teaching, in its database of potential hires. GaTAPP enrolled 34 during the 2013-2014 school year, with 21 completing the program. Of those 21, 15 were rated *Distinguished*, and six were rated *Proficient*. The remaining 13 exited the program of their own volition. CharterLeader enrolled six participants during the 2013-2014 school year, all of whom held leadership positions in charter or private schools. All six completed the program and continue to lead schools. Four received performance ratings of *Distinguished* and two were rated *Proficient*.[4]

Conclusion

GCSA's *Building the Pipeline of Highly Effective Charter Teachers and Leaders* aims to address multiple issues facing Georgia charter schools, including the rapid growth and consequent need for teachers, the lack of teacher training that is specific to the charter environment, and the scarcity of charter leaders with the appropriate skillset for managing a non-profit organization and public school. The program offers training, support, and an avenue to certification for prospective teachers with diverse résumés. Additionally, it attracts talented leaders and prepares them to pursue the unique goals of charter schools, particularly student achievement and sustainability. GCSA intends to continue all three programs beyond the grant period, with PreGaTAPP undergoing a name change to become The Aspiring Teacher Institute. GCSA receives adequate funds from program fees to maintain all programs at their present capacity.

PROGRAM TAKEAWAYS

Promising Practices

- The program's combination of in-person and online workshop and professional development opportunities provide flexibility to participants who often work full-time.

- Utilizing a retreat style workshop for school leaders, with working lunches and dinners, promotes collegiality and discussion between participants and mentors.

Lessons Learned

- Program leadership learned to use assessment data and teacher feedback to inform future decisions on program improvements and prioritize specific professional learning opportunities.
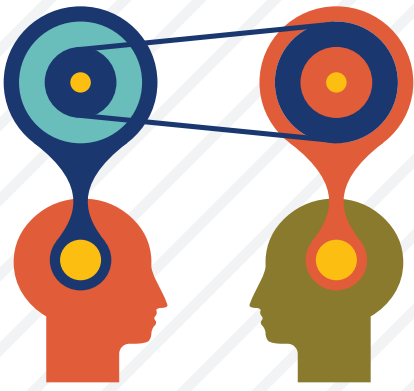
GLISI's Community Partnership for a Quality Pipeline of Effective High School Leaders

Working in Concert

Introduction

The GLISI coach, a trained principal consultant, arrives at East Paulding High for her first of four annual visits. The administration and the coach derive the session objectives from the school's improvement goals and GLISI's assessment of student data. Bearing these objectives in mind, the coach offers an array of support, providing teamwork training for department chairs and course leads, working with the principal on the growth and development of staff, and offering constructive feedback based on observation. The coach also conducts a needs assessment after interviewing department chairs both individually and in groups. The assessment helps identify staff strengths and opportunities for growth that the coach details in a written report to the school's principal.

GLISI's program, the Community Partnership for a Quality Pipeline of Effective High School Leaders, also organizes carefully selected leadership teams into professional learning communities (PLCs). Members of the PLC must complete a written application and receive the endorsement of a district leader. Criteria for selection include professional resilience, strong communication skills, and capacity for self-reflection. The PLCs comprise a variety of education professionals, including counselors, postsecondary partners, and middle school leaders. During PLC sessions – conducted every other month – members receive training in data analysis, monitoring college and career readiness indicators, and effective interventions (based on instruction as well as community engagement) to improve those readiness indicators.

GLISI collaborates with community stakeholders as well, encouraging entities like the local board of education, chamber of commerce, civic clubs, media, parents, postsecondary representatives and faith community leaders to join the effort for school improvement. As part of the program, it initiates an Education Summit, inviting all stakeholders to a research findings presentation that emphasizes the connection between a community's economic vitality and the quality of the local schools. The summit gives rise to a Community Action Plan that outlines the roles all stakeholders can play in creating a high school principal pipeline. GLISI offers extensive support in the plan's implementation by acting as a data resource and a bridge between organizations.

Where It All Started

Beginning with the 2012-2013 school year, the Georgia Leadership Institute for School Improvement (GLISI) chose Paulding County for its Partnership for a Quality Pipeline of Effective High School Leaders. It identified the county based on three criteria: the high schools consistently fell short of Adequate Yearly Progress, principal turnover occurred on average every 2.5 years, and approximately 25% of students starting the 9th grade failed to graduate within five years. The program covers four of Paulding's five high schools, with the remaining high school already being served by a federal School Improvement Grant. To address these issues, GLISI implemented the program with a $523,000 grant from the Innovation Fund. The program aims to prepare and retain leaders who will bring stability to the county's schools and positively impact student achievement.[1]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Increase community awareness, advocacy, and support for building a cadre of capable, knowledgeable secondary school leaders*
- **GOAL 2:** *Develop the above cadre of capable, knowledgeable secondary school leaders*
- **GOAL 3:** *Increase principal retention and build principals' capacity to create a climate of support and growth*
- **GOAL 4:** *Increase student academic achievement and outcomes[2]*

The Partnership for a Quality Pipeline of Effective High School Leaders springs from the collective action of four organizations: GLISI, Paulding County Public Schools, the Georgia Partnership for Excellence in Education (Georgia Partnership), and Thinkgate. The program aims to build a pipeline of effective school leaders in Paulding County that can promote high quality teaching and improved student outcomes, leaving graduates better prepared for postsecondary institutions and careers. It served four principals, 12 assistant principals, 394 teachers, and 6,879 high school students. The program delivered direct services to the district superintendent, the four principals and 12 assistant principals, and 16 qualifying teacher leaders (four from each high school).

[1] GLISI's Grant Proposal, July 2012
[2] Ibid

The program's opening action focused on boosting community engagement. The Georgia Partnership for Excellence in Education conducted research on the postsecondary outcomes of Paulding students, highlighting the potential effects of quality school leaders on those outcomes. It then drew together a body of community stakeholders – including civic and government organizations, media outlets, parents, houses of worship, and others – for an Education Summit where it presented the research findings and crafted a Community Action Plan. This plan defined the community's goals and identified the part stakeholders would play in developing a leader pipeline. Thinkgate, an educational technology provider, offered support by capturing and communicating the data and other outcomes over the course of the program.

GLISI helped implement the program at the school level, and it has assisted district leaders in assembling secondary leadership teams. In addition to the highly selective application process, applicants completed Gallup's Principal Insight, an assessment of motivation to lead, disposition toward collegiality, and commitment to preparing students for college and careers. The teams, once assembled, attended Professional Learning Community sessions featuring evidence-based instruction on analyzing data, gauging college and career readiness, and improving that readiness through both school-based and community-based intervention. Schools also received visits from principal coaches who performed a needs assessment, observed operations, and trained faculty and staff.

Outcomes

The program assessed results using the School Climate Survey, an instrument designed by education leadership consultancy K12 Insight. The survey measures teachers' perceptions of school leadership and faculty relations & support. For the 2013-2014 school year, a majority of teachers at all four schools had positive perceptions of school leadership, with particularly strong consensus at Hiram High School. The program also gathered satisfaction data for the 2013-2014 school year. More specifically:

- *Within the construct School Leadership, 99% of Hiram High teachers agreed or strongly agreed that the principal makes decisions in the best interest of the students. At East Paulding, 95% of teachers agreed or strongly agreed; at South Paulding, that figure was 83%; and at North Paulding, 81%.*

- *Within the construct Faculty Relations & Support, 97% of teachers at both East Paulding and Hiram agreed or strongly agreed that collaboration is encouraged. At South Paulding, that figure was 94% and at North Paulding, 90%.*

- *The satisfaction data showed that 100% of respondents (26 out of 26) agreed they had improved their capacity as leaders.[3]*

The program served 28 school leaders during the 2013-2014 school year, with two leaving for opportunities outside of Paulding County by the end of the period. Students at two of the high schools served showed improved graduation rates for the 2013-2014 school year compared to 2012-2013. At Hiram High, 77.9% of students graduated, up from 75.3%. At North Paulding High, 86.9% of students graduated, up from 84.9%. East Paulding High's graduation rate fell to 74.9% from 82.2% and South Paulding's rate remained relatively flat at 80.1% (compared to 80.4% in 2012-2013).[4]

Conclusion

GLISI's Partnership for a Quality Pipeline of Effective High School Leaders aims to unite the community in Paulding County in building a school leader pipeline that reduces turnover, strengthens teaching quality, and improves the college and career readiness of all the county's high school students. The program offers the organizational support, expertise, and resources necessary to engage and mobilize local stakeholders while simultaneously training principals and teacher leaders to improve the climate and outlook within their institutions. GLISI intends to continue the program's community engagement and training/coaching efforts. It has successfully secured funding for those purposes.
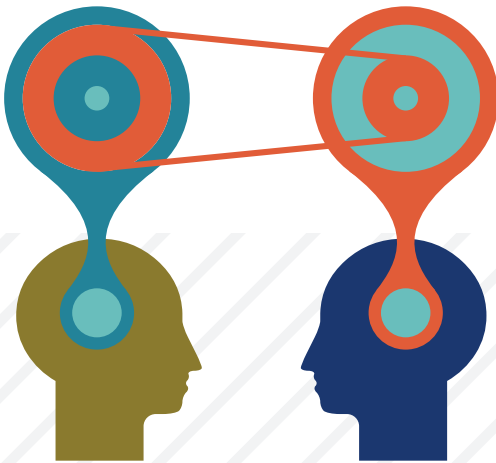
PROGRAM TAKEAWAYS

Promising Practices

- The program's partnerships allow a comprehensive approach that encompasses all layers of the community, including public and private entities, civic groups, parents, and schools.

- The team-based interventions, such as coaching and Professional Learning Communities, allow for internal and external support for participants, and encourage collaboration.

Lessons Learned

- Paulding County's small business base produced fewer "champions" of the project than might have been available in a larger district. Program leadership noted the importance of identifying and mobilizing the most influential business leaders as early as possible.

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[3] GLISI Community Partnership End-of-Year Report 2013-2014

[4] Georgia Department of Education
http://www.gadoe.org/External-Affairs-and-Policy/communications/Pages/PressReleaseDetails.aspx?PressView=default&pid=242

KIPP Teacher Fellows Program
Starting on the Right Foot

Introduction

The student teacher first finds out about the KIPP program from his principal, who recommends looking into it. After school that day, he goes online to search for the KIPP website. He reads the description of the Teacher Fellows Program and finds out many things about the experience. The one-year residency for well-qualified teacher candidates comes with pay equivalent to that of a starting teacher. It entrusts fellows with high-level responsibilities, including co-teaching, support with parental communication, and the teaching of non-core classes such as life skills, study skills, and electives. The student teacher submits an application. Soon after, KIPP leadership invites him to participate in a phone interview. The fast-paced interview goes well, and KIPP invites him to come in face-to-face. In-person, he meets a KIPP team, presents a sample lesson, and answers a series of questions. The program accepts him.

As soon as he becomes a fellow, he begins training in the same district where he likely will work after completing the program. Master teachers and coaches direct workshops where he learns about classroom management, how to effectively teach the state's instructional standards, how to assess student progress, and many other skills. He cannot remember any previous instance in his education or public school experience where instructors delivered the lessons so explicitly and directly. Over the course of the fellowship, he will gradually take on more responsibility for classroom activities such as tutoring, teaching, and lesson planning. Outside the classroom, he gains experience attending field trips, assisting with bus

and detention duty, and facilitating extracurricular events. He interacts with students from all the school's grade levels and assists in or observes every subject area.

At the fellowship's end, he becomes a full-time teacher at a high need, urban school in Atlanta. The program has instilled in him the knowledge, abilities, and mindset to educate economically disadvantaged students from an area with scant history of academic achievement and post-secondary educational attainment. He knows, because of the KIPP induction and training, he has a greater likelihood of remaining in the profession. In five years, assuming he teaches 90 students each year, he will have affected the lives and prospects of almost 500 Atlanta children.

Where It All Started

The KIPP Teacher Fellows Program began its planning stage in the 2011-2012 school year, moving to full implementation for the first time in 2012-2013. KIPP launched the program in partnership with Mercer University and Georgia State University to address some of the challenges faced by students in the Metro Atlanta area. Schools there and in similar areas struggle to attract and retain quality teachers, which perpetuates low achievement among the schools' students. KIPP embarked on the program using a $1,050,000 grant from the Innovation Fund. The program aims to recruit and retain highly effective teachers for work at KIPP Metro Atlanta as well as other area public schools.[1]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Create a highly effective teacher induction program*
- **GOAL 2:** *Increase the pipeline of highly effective teachers in underserved communities*[2]

The KIPP Teacher Fellows Program provides a year-long residency targeting well-qualified beginning teachers capable of assuming a full-time teaching position upon conclusion of the program. The program pairs fellows with highly-trained and qualified mentors who gradually release classroom responsibilities to the fellows throughout the year. KIPP maintains partnerships with the schools of education at Mercer University and Georgia State University, and it actively recruits for the program on their campuses as well as elsewhere to attract qualified candidates who are committed to teaching in a high-need school. Participants in the program, known as fellows, enjoy the status of full-time school-based employees, earning a salary and benefits package aligned with that of first year teachers in the Metro Atlanta area. The fellows may apply for a permanent position with KIPP Metro Atlanta after completing the residency. KIPP Metro Atlanta operates three charter primary/elementary schools, four charter middle schools, and a charter high school. Fellows may also pursue teaching opportunities at other schools.

[1] KIPP Metro Atlanta Collaborative's Grant Proposal, June 2011
[2] Ibid

Fellows gain practical, on-the-job teaching training during their residency through a gradual release model, where they first observe and assist their mentor teacher with planning and presenting lessons. As the year progresses, fellows take on more responsibility for the class while receiving consistent instructional feedback. Fellows also gain experience handing co-disciplinary situations and interacting with parents. They tutor students, teach enrichment classes, and when lead teacher absences occur, fellows serve as substitutes. Additional duties and responsibilities, such as planning and chaperoning field trips, assisting with bus and lunch duties, and organizing extracurricular activities, prepare the future teachers for duties outside the classroom. In conjunction with the practical experience, participants receive training and professional development from master teachers, coaches, and leaders. They attend workshops dedicated to building essential understanding and skills for student engagement, developing instructional objectives, lesson planning and execution, and classroom management. Fellows also benefit from individualized workshops and coaching sessions based on their particular needs. Coaches and mentors observe participants throughout the residency to ensure and reinforce successful results. Informal observations take place at least three times per week, whereas formal observations take place at least five times per year.

Outcomes

The KIPP Teacher Fellows Program enrolled six participants during the 2013-2014 school year, with six completing the program. All of the 2013-2014 participants received Proficient ratings (with other possibilities being Exemplary, Needs Development, and Ineffective) on the program's Teacher Effectiveness Standards. Rated categories include planning, instructional delivery, assessment, learning environment, and professionalism and communication. Four of the six participants are still teaching, including three who teach at KIPP schools. For the 2014-2015 school year, KIPP expects seven participants to complete the program. In 2012-2013, six participants completed the program.[3]

KIPP also administers an end-of-year satisfaction survey to evaluate fellows' experiences. The survey instrument measures satisfaction, willingness to recommend the program, and perceived quality of the professional development. For the May 2014 survey:

- *100% of fellows (6 out of 6) reported the professional development sessions were valuable and helped them feel well-prepared to teach.*

- *100% of fellows (6 out of 6) also indicated they would recommend the program to a novice teacher.*

- *Additionally, 100% of mentors involved in the program (6 out of 6) agreed or strongly agreed their teaching and learning grew as a result of mentoring.*

[3] KIPP Teacher Fellows End-of-Year Reports 2013-2014 and 2012-2013

Conclusion

The KIPP Teacher Fellows Program creates a much-needed teaching talent pipeline for the Metro Atlanta area. The program recruits, trains, and grants valuable experience to prospective educators, while also helping overcome barriers to teacher retention and effectiveness. The program's outcomes also indicate that its methods benefit the mentors who work with fellows, bringing about improvements to their craft as well. KIPP hopes to continue the program, but sources of funding remain uncertain. Principals at KIPP schools will attempt to fit the cost of teacher fellows into the budget as the organization seeks additional grants.

PROGRAM TAKEAWAYS

Promising Practices

- The program adheres to a rigorous selection process that ensures qualified and committed prospects enter the pipeline.

- The program's combination of hands-on teaching duties and training workshops immerses fellows in the school culture as they learn and gain experience.

Lessons Learned

- Program leadership found that mentors performed best when they strongly desired to develop and support novice teachers and had the training to do so. KIPP selected their mentor teachers through a rigorous application process, which included a paper application, interview, and exercise where applicants observed teachers and provided feedback. During the program, KIPP provided instructional coaching for the mentors to strengthen their skills.

- To ensure mentors and fellows were well-matched, KIPP hosted a summer retreat where mentors and fellows developed their gradual release plans for the upcoming school year.

³ Direct to Discovery's End-of-Year Report 2013-2014
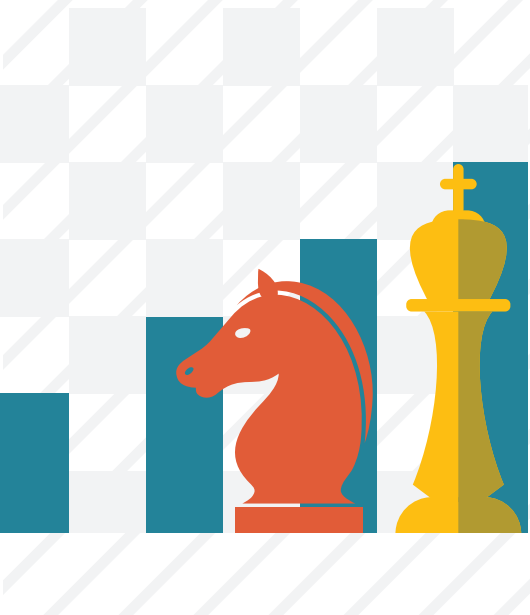
UGA/GAEL Early Career Principal Residency Program

Leading the Leaders

Introduction

The first year principal feels the pressure to succeed. She leads a school with more than a thousand students, with almost 70% receiving a free or reduced lunch. The school's test scores and other student achievement metrics fall short of the state average each year. She and her faculty have managed small improvements over the last two years, but they need additional support. The principal learns of the Early Career Principal Residency Program (ECPRP), a leadership induction program created jointly by the University of Georgia's (UGA) College of Education and the Georgia Association of Educational Leaders (GAEL). She decides to participate.

She joins a cohort of other early career Georgia principals. Most of them lead schools facing difficulties similar to her own. Over the next eighteen months, they will meet 12 times – normally on a Friday or Saturday – to exchange ideas and share their challenges and successes. Some meetings coincide with GAEL conferences, giving the cohort a chance to collaborate with state education leaders. ECPRP also provides professional development during all sessions, bringing in university faculty to train and instruct participants. The principal engages in problem-based learning centered on problems she identifies in her school, including fiscal management, data-driven decision making, and conflict resolution, among many others. Since the program emphasizes reflective practice, the principal reviews school data, determines needs, and develops possible solutions to be used for implementation. An assessment of the implementation results completes the process. She shares her positive results, reasoning and new knowledge with other participants through case studies and interactive learning.

The principal also meets with a trained mentor who holds more than a decade of experience and carries an endorsement from the district's superintendent. The program trains all mentors to prepare them for what may be an entirely new duty. The principal and her mentor agree on a schedule of check-ins, both face-to-face and electronic, for building and executing an individualized plan based on the principal's goals. The mentor provides feedback both to the principal and to the program leadership to ensure progress. The mentor is also available to advise and support her when unexpected issues arise in her school. The principal, once so full of worries, now believes she can bring a bright future to her school.

Where It All Started

The University of Georgia's College of Education, in partnership with the Georgia Association of Educational Leaders, launched the Early Career Principal Residency Program in October 2010. The program, which provides induction and training to principals with zero to three years of experience, typically serves leaders from struggling schools, many of which have large populations of economically disadvantaged students. Consequently, UGA and GAEL initiated the program to address the challenges early career principals face in high need schools. ECPRP's professional learning and mentoring services aim to reduce principal turnover and improve the academic success of at-risk students. To assist in this pursuit, the Innovation Fund awarded the program a $157,000 grant.[1]

Program Overview

The program seeks to accomplish the following:

- **GOAL 1:** *Develop school leaders who have the knowledge and ability to promote the success of all students*

- **GOAL 2:** *Increase the retention rate of principals*

- **GOAL 3:** *Improve principals' ability to support teachers and increase faculty and staff stability in school[2]*

The Early Career Principal Residency Program provides induction services to Georgia principals with less than four years of experience. It accepts up to 25 school leaders per cohort and deploys, over 18 months, a series of strategies and professional development opportunities intended to expose principals to the knowledge and support necessary to succeed in their schools. The professional development opportunities include seminars, meetings with education experts, and performance-based activities that encourage learning while on the job. ECPRP also collaborates with the school district to ensure that every participant has a mentor or coach. These mentors are trained by the district or are eligible to receive training for their roles through the program. The program promotes an overall focus on helping the cohort emerge as a community of learners.

[1] University of Georgia's Grant Proposal, October 2011
[2] Ibid

ECPRP develops training content using the Educational Leadership Constituents Council Standards for Advanced Programs in Educational Leadership, the same standards used by higher education institutions in Georgia that grant Educational Leadership graduate degrees. The standards call for participants to articulate a vision of learning, develop a positive school culture, engage with families and the community, and act with integrity, fairness, and understanding. Participants meet 12 times during the program and follow a calendar of learning that presents topics pertinent to the principals' needs. During the first year, the program focuses on the creation of a school vision and mission, management and recruiting of quality teachers, and use of fiscal resources. The program also guides principals on how to effectively begin and end a school year, as well as other topics. Second year topics include, but are not limited to, data-driven decision making, diversity, community and media relations, and change implementation.

Participants identify problems in their schools related to the topics. Through a problem-based learning process, they plan solutions or responses and then implement them on the job. The program helps build reflective practitioners who routinely assess the results of their actions and who act accordingly based on the results. To support the cohort and keep members connected and collaborating, ECPRP uses a technology platform for communication between participants, mentors, program presenters, and other program agents. Participants can post and discuss their thoughts electronically and access important program materials.

Outcomes

The program administers an end-of-year survey to evaluate participants' experiences. The survey instrument measures overall satisfaction with the program, satisfaction with the coaching, and perceived quality of the professional development. The program also has participants rate themselves, and asks school staff and supervisors to rate the participants in skill areas such as communication, conflict resolution, school finance, technology integration, and others. More specifically, for the May 2014 surveys:

- *100% of the participants surveyed reported being satisfied or very satisfied with the program overall. 71.4% of those surveyed also reported being satisfied or very satisfied with their coaches.*

- *100% of participants reported the professional learning prepared them well or very well for their responsibilities as a principal.*

- *On a 6-point scale, participants' supervisors rated them at 3.0, on average, in the area of managing goals and objectives, 4.0 in communication, and 4.3 in differentiated instruction.*

- *On a 6-point scale, school staff rated the participants at 4.2, on average, in the area of problem solving, 4.6 in school law, and 4.7 in school finance.*

Many of the 10 schools led by grant-funded second cohort principals demonstrated positive outcomes on the College and Career Ready Performance Index (CCRPI), Georgia's single statewide accountability system. The CCRPI measures a school's performance in key areas related to college and career readiness, such as content mastery on state assessments, student attendance, graduation rate (predicted or actual, depending upon grade level), and its ability to close achievement gaps. It also includes a Progress score, which measures the percentage of students exhibiting typical or high growth relative to students across the state with similar prior achievement. Comparing the CCRPI in the 2011-2012 school year (when cohort 2 principals joined the program) to the CCRPI in the 2013-2014 school year (when the principals completed the program), five out of 10 schools outpaced the state and their districts in CCRPI score changes over that time. Over that same period, seven out of 10 schools outpaced their districts – and nine out of 10 outpaced the state – with changes to their CCRPI Progress scores, meaning that students in these schools are generally improving at a faster rate than the state and district.[3]

Conclusion

The UGA/GAEL Early Career Principal Residency Program provides a touchstone for support and a foundation for learning to new school leaders at a critical point in their careers. The induction program builds quality leadership, particularly for districts where the students and the schools have the greatest need for guidance and stability. UGA and GAEL plan to continue the program after the grant period with no major changes to its format or content. A fourth cohort began in January 2014, and superintendents from Georgia districts have already expressed interest in the program's next iteration. Registration fees, in-kind services from UGA and GAEL, and – if necessary – additional grants will provide funding going forward.
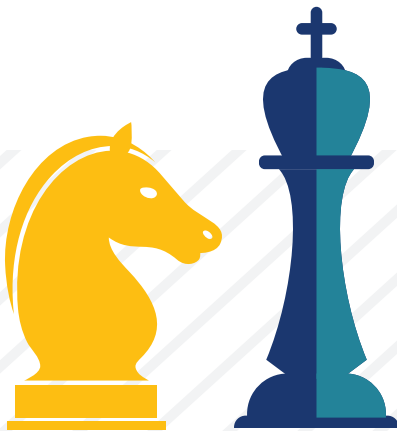
PROGRAM TAKEAWAYS

Promising Practices

- The program's alignment of training topics to critical points in the school year ensures that professional development remains timely and relevant.

- Keeping members of the cohort in contact through a web portal provides flexibility to the busy school leaders.

Lessons Learned

- Mentors' level of engagement was disappointing. Few mentors submitted requested reports on their contact with participants. Program leadership is exploring ways to strengthen the mentoring component for future cohorts.

[3] Georgia Department of Education, College and Career Ready Performance Index, 2012 through 2014
http://www.gadoe.org/CCRPI/Pages/default.aspx

The Planning Grants

The Innovation Fund awarded three planning grants, one during each round of funding. These grants enable Georgia organizations to explore and plan the creation of a charter school.

Hall County

During Round 1, the Hall County School System earned a $50,000 grant to plan and start the Northeast Georgia Regional Charter STEM Academy, a charter high school that would create an engineering pipeline in the northeast Georgia area. The county partnered in this effort with Lumpkin County School System, White County School System, and North Georgia College and State University with the goal of serving 400 to 600 students in grades 9-12. Using the grant funds, county officials traveled to existing charter STEM schools in Ohio and Minnesota that might serve as models for Hall's STEM Academy. The county also secured the services of a consultant who would write the STEM charter petition. Ultimately, the county did not launch a regional STEM Academy due to disagreement among multiple school systems over allowing students to cross district boundaries. In 2013, Hall County established a STEM Program of choice at North Hall High School that accepts applications from students throughout the county.

Smyrna Educational Alliance

During Round 2, the Smyrna Educational Alliance (SEA) sought a $2.55 million grant to create a professional development center for educators and implement a STEM curricular framework for students in south Cobb County. The group subsequently qualified for a $50,000 grant to plan and open the Smyrna Academy of Excellence, a STEM charter school serving students in south Cobb County. SEA partnered with a number of universities, including Georgia State University, Georgia Institute of Technology, Kennesaw State University, and Southern Polytechnic University, as well as other local entities, with the goal of serving 680 students in grades K-6. Using the grant funds, SEA visited a STEM charter school in California that might serve as a model for its plans. SEA also used funds to research and develop its charter petition. Ultimately, the Cobb County Board of Education rejected the charter petition. SEA chose to open a private school, the Smyrna Academy of Excellence.

Greene County

During Round 3, Greene County Schools sought a $52,000 planning grant to explore converting a school in the town of Union Point to a STEAM academy (STEM curriculum inclusive of the arts). Ed Innovation Partners and GT Research Corporation joined the county in this venture. The county used the grant funds to research potential models for its STEAM school. In March 2013, Union Point Elementary School became Union Point STEAM Academy and Elementary School.

The STEM Incubator

Georgia Tech Teach for Georgia/STEM Incubator

During Round 1, the Georgia Institute of Technology (Georgia Tech) received a $1 million grant to implement Teach for Georgia, a program designed to support STEM teachers in rural Georgia. In 2013, Georgia Tech modified and expanded its scope of work to serve teachers and other STEM stakeholders throughout the state. The new scope of work included assessing the STEM needs of K-12, higher education, and business stakeholders, and designing and building a tool to meet those needs. This process led to the STEM Incubator, an online resource that will facilitate networking between K-12 teachers and administrators, nonprofit organizations, postsecondary institutions, and STEM-related industries throughout Georgia. Through the STEM Incubator, teachers will be able to find and upload classroom resources, fundraise for STEM projects, and take online professional development courses. Administrators will be able to connect with other STEM schools and local business partners, as well as locate grant, field trip, and internship opportunities for their schools. Businesses will be able to partner with local schools and districts, fund classroom- and school-level STEM initiatives, and learn about successful models of K-12/industry partnerships. Georgia Tech is testing and refining a prototype of the Incubator. The final version will launch publicly in summer 2015. Since the majority of this project involved planning rather than program implementation, a full vignette is not included in this report.

Conclusion

The Innovation Fund has provided many benefits to Georgia, some realized immediately through the programs – such as the improved outcomes for students, teachers, and schools detailed in this report – and others that will emerge after the grant period has passed. The RT3 Innovation Fund has laid a foundation for coordinated efforts between the state's public and private sectors to support and advance education. In addition, the applied learning programs have initiated thought and inquiry into strategies that create more effective STEM education. The teacher and leader induction and pipeline programs have cultivated strong teacher pipelines and encouraged ongoing teacher and leader development. Looking to the future, the Innovation Fund's accomplishments will serve as a foundation for future education policy and programming throughout the state.

Although Race to the Top concludes in June 2015, Georgia has already continued the work of the Innovation Fund. GOSA has founded the Innovation Fund Foundation, a non-profit that will solicit and receive donations to fund future Innovation Fund work. In addition, Governor Deal's FY15 budget included $5 million for GOSA to administer another round of grants. And, in December 2014, those funds allowed Governor Deal to award 18 competitive grants to programs engaged in the following areas:

- *Applied Learning with a Focus on STEM Education*

- *Development and Replication of Blended Learning School Models*

- *Development and Replication of Innovative Resource Management Models*

- *Teacher and Leader Induction and Development*

As these grants move forward, GOSA will apply the lessons learned through the RT3 Innovation Fund to strengthen these programs as well as seek new ways to create proof points around the state that can transform education for Georgia's students.

Appendix
Innovation Fund: Awards Amounts by Round

Round ONE Awarded Projects

PROJECT NAME	GRANTEE	AWARD AMOUNTS
DCS Partners of Innovation	Drew Charter School	$ 1,039,969.84
Direct 2 Discovery	Barrow County Schools	$ 1,772,325.00
KIPP Teacher Fellows Program	KIPP Metro Atlanta	$ 1,050,000.00
STEM Academy	Hall County Schools	$ 50,000.00
Teach for Georgia/STEM Incubator	Georgia Tech	$ 2,516,161.55 *
AWARDED FUNDS		$ 6,428,456.39

Round TWO Awarded Projects

PROJECT NAME	GRANTEE	AWARD AMOUNTS
The New Teacher Residency Project	Atlanta Neighborhood Charter	$ 918,134.00
STEM For Life Program	Carroll County School	$ 999,911.00
Teach to Learn Partnership	Clarke County Schools	$ 869,895.00
STEP Academy	Gwinnett County Schools	$ 1,048,574.00
Student Learning, Induction, Leadership	Morehouse College	$ 1,042,095.00
Murray County STEM Academy	Murray County Schools	$ 920,906.00
Smyrna Academy of Excellence	Smyrna Educational Alliance	$ 50,000.00
Tift County Mechatronics Partnership	Tift County Board of Education	$ 1,004,762.00
UGA/GAEL Early Career Principal Residency	University of Georgia	$ 156,564.00
AWARDED FUNDS		$ 7,010,841.00

Round THREE Awarded Projects

PROJECT NAME	GRANTEE	AWARD AMOUNTS
Museum in a Box	Avondale Education Association	$ 200,000.00
Partnership for Expansion	Drew Charter School	$ 749,426.88
Leadership and Innovation Academy	Fulton County Board of Education	$ 640,326.00
Building the Pipeline of Highly Effective Charter Teachers and Leaders	Georgia Charter Schools Association	$ 557,151.00
Community Partnership for a Quality Pipeline of Effective High School Leaders	Georgia Leadership Institute for School Improvement	$ 522,751.00
Real STEM	Georgia Southern University Research Corporation	$ 703,296.00
Computational Thinking	Georgia Tech Research Corporation	$ 431,198.00
STEAM TLA Collaborative	Greene County Schools	$ 52,000.00
21st Century Academy of Environmental Studies	Rockdale County Schools	$ 676,849.00
		$ 4,532,997.88

*This amount includes funding for both the Teach for Georgia and STEM Incubator projects. These two projects had overlapping expenses, such as salary, which make it difficult to determine the exact amount of grant funding spent on each project.