2014-2015 Innovation Fund Planning Grants

By Jaclyn Colona

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INTRODUCTION

The Innovation Fund, administered through the Governor's Office of Student Achievement (GOSA), invests in school districts and public schools to plan, implement, and scale innovative education programs with the potential to dramatically improve student achievement throughout Georgia.

TABLE 1. INNOVATION FUND PRIORITY AREAS

Teacher and Leader Induction/Development programs focus on building new and veteran teacher and leader capacity to improve student achievement in high-need schools.

Birth through Age Eight Language and Literacy programs will create high-quality and productive learning environments. Programs aligned with this area provide children from birth to age eight with the necessary social, academic, and healthcare resources, to fully develop their language and literacy skills.

Development and Replication of Blended Learning School Models offer schools and districts the chance to create plans for a formal education program in which a student learns in part through online learning, with some element of student control over the time, place, path, and/or pace and in part through a traditional school setting.

Applied Learning with a Focus on STEM Education integrates the fields of science, technology, engineering, and mathematics. Applied learning provides an opportunity for students to integrate classroom content with authentic, real-world (personal, career, community, society) experiences.

The Innovation Fund began in 2011 as a $19.4 million grant competition created under Georgia's Race to the Top (RT3) Plan. With that funding, the Innovation Fund provided 23 grants to programs focused on providing applied learning opportunities, creating teacher and leader induction programs, growing the teacher and leader pipeline, or developing or expanding charter schools. To continue the Innovation Fund's investment in creating and testing solutions to Georgia's most challenging education problems, Governor Deal appropriated state funding for Fiscal Years (FY) 2015, 2016, and 2017.

During RT3, agencies received large implementation grants – ranging from $200,000 to $1.7 million – that lasted between two and three years. Some grantees discovered that, while their plans seemed feasible on paper, they were too broad to successfully implement over a two- or three-year period. Other grantees spent a large portion of the grant period planning– leaving them little time to implement their programs. From this challenge, GOSA decided to offer planning grants as a more efficient investment of Innovation Fund grant money. These planning grants provide schools and districts between $5,000 and $10,000 over one year to plan or plan to scale a program related to one or more of the Innovation Fund priority areas (described in Table 1). Over the course of the year, grantees may plan a program through various activities, including visiting successful programs; assessing the needs of their students, teachers and community; analyzing student, teacher and school-level data to determine the exact target population they might want to serve; establishing key

partnerships; and providing professional development for teachers and leaders. Following a successful planning grant, the same organizations may seek an implementation or scaling grant to carry out their program fully.

In FY15, the Innovation Fund awarded its first round of ten planning grants to nine organizations. In alignment with the planning grant mission, recipients spent one year developing various aspects of an innovative program. This report summarizes the outcomes for the FY15 planning grantees.[1] Each profile highlights the need for the planning grant, the grant's goals and planning activities, how the grantee utilized the funds, and the grantee's next steps.

[1] In FY15, the Innovation Fund awarded ten planning grants. This report profiles the eight planning grantees that successfully completed the grant obligations.

CLARKE COUNTY SCHOOL DISTRICT

PLANNING WITH STE(A)M AT JJ HARRIS ELEMENTARY

INTRODUCTION

Clarke County is home to several of Georgia's post-secondary institutions. University of Georgia, Athens Technical College, and Piedmont College have left an indelible mark on the county and spurred growth in business, technology, and the arts.[1] Despite this growth and strong university presence, students in the Clarke County School District (CCSD) deal with significant impediments to academic success, including low literacy rates, limited access to educational resources, and high residential mobility.[2] One Clarke County school, Judia Jackson Harris Elementary Charter School (JJ Harris), faces such uphill battles. On the 2014-2015 Georgia Milestones test, only 32.6% of JJ Harris third through fifth graders scored proficient or above on the science assessment, and only 18% of JJ Harris students achieved the proficient level or above on the math assessment.[3] These data are lower than the state averages of 39% and 34.8% for science and math, respectively.[4] JJ Harris decided to piggyback on the county's growth by improving student engagement and academic achievement through the integration of science, technology, engineering, art, and mathematics (STE(A)M) across the curriculum. Thus, the *Inquiring Minds STE(A)M Program* was born, which offered JJ Harris faculty an opportunity to develop their strengths as STE(A)M teachers.

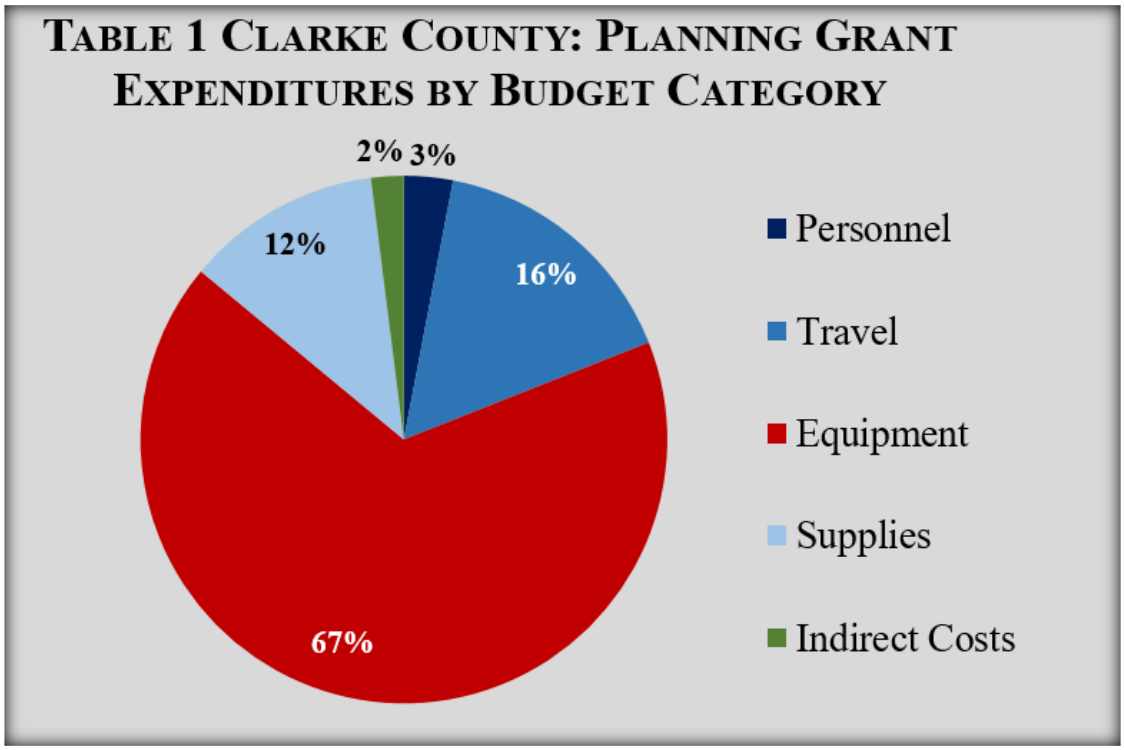
GOALS

JJ Harris received a $10,000 Innovation Fund planning grant to develop the *Inquiring Minds STE(A)M Program*, which aligned with the Innovation Fund's Applied Learning with a Focus on STEM Education priority area. Table 1 shows how JJ Harris utilized its grant funds to work towards the following four goals:

- Form an *Inquiring Minds STE(A)M Program* planning team comprised of JJ Harris teachers, administration, an instructional coach, as well as a University of Georgia (UGA) professor, and other representatives from the local community;
- Visit sites implementing STE(A)M instructional strategies;

[1] Clarke County School District, GOSA Planning Grant Proposal, 2014.
[2] Ibid
[3] GOSA Report Card, Judia Jackson Harris Elementary School
[4] GOSA Report Card, State of Georgia Elementary Schools

- Develop a STE(A)M professional learning plan for JJ Harris faculty and administration; and
- Finalize plans for full implementation of *Inquiring Minds STE(A)M Program* and secure funding for 2016-2017 school year.



ACTION STEPS

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track the progress towards their goals, the actions taken, items that have changed from the original proposal, and the next steps. The following summarizes the actions JJ Harris completed during the grant period:

- Formed the *Inquiring Minds STE(A)M Program* planning team comprised of 12 members, including JJ Harris teachers and leadership, as well as UGA professors and the CCSD Coordinator of Grants and Research. The planning team met throughout the planning period to discuss STE(A)M instructional strategies and participate in workshops;
- Created an after-school Robotics Program at JJ Harris. The program – comprised of teachers and students – focuses on machine building and programming;
- Visited Drew Charter School in Atlanta, Georgia. There were several key takeaways from this visit:
    - Project-based learning (PBL) is fluid and should be integrated throughout the day;

    - School-wide engineering projects are an effective method to engage students;
    - Planning periods should be used to collaborate with other teachers in designing PBL lessons and units; and
    - Showcasing students' work helps them progress academically.
- Visited Savannah STEM Academy in Savannah, Georgia. Key takeaways from the visit include:
    - An effective STE(A)M curriculum integrates the subjects seamlessly;
    - JJ Harris would benefit from professional learning workshops on digital literacy; and
    - JJ Harris needs to shift the school culture to one that is comfortable integrating technology across the curriculum.
- Professional development (PD) began with the JJ Harris faculty and leadership. UGA professors and their students provided PD workshops to the JJ Harris community. PD topics included:
    - PBL;
    - Teaching creativity in the classroom;
    - Robotics; and
    - 3D printer integration.
- Finalized plans to implement PBL in JJ Harris classrooms.

Next Steps

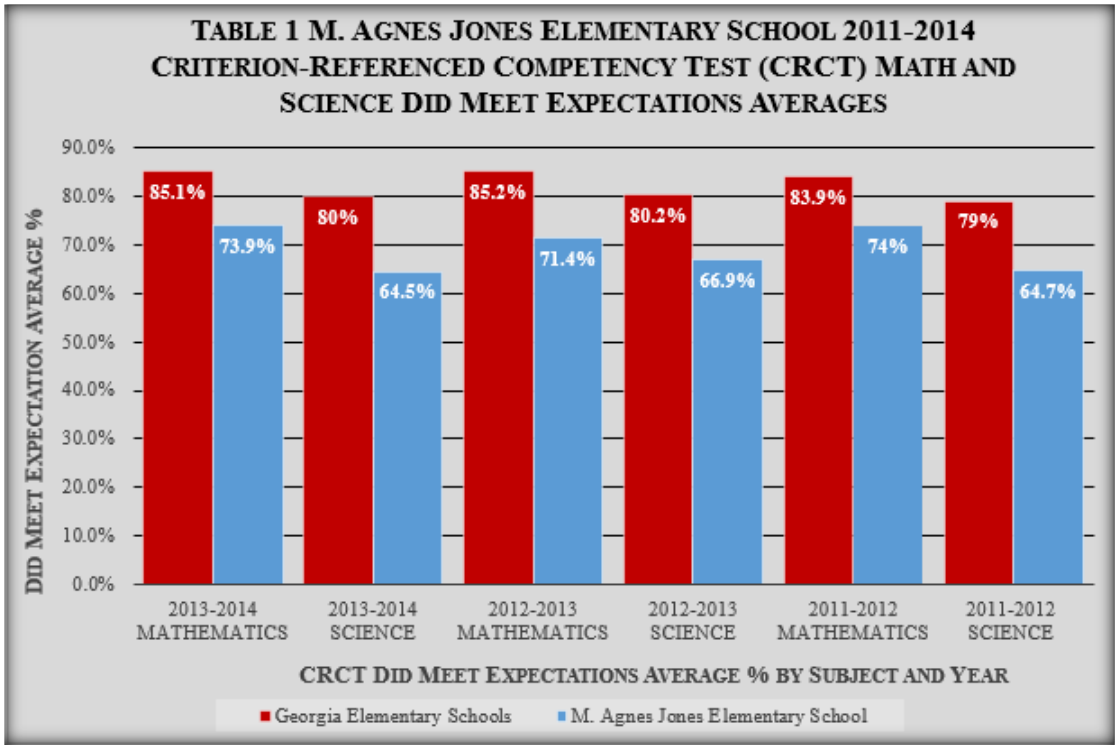
JJ Harris committed to bringing its students, teachers, and administration into the 21st century when it decided to incorporate STE(A)M throughout the curriculum. The Innovation Fund planning grant gave JJ Harris the chance to visit exemplars in STE(A)M

education, provide its faculty professional development, purchase STE(A)M supplies, and finalize plans for a PBL and STE(A)M model. As a result of the planning process, JJ Harris learned that its faculty was not yet comfortable fully embracing STE(A)M PBL. This lesson prompted school leadership to continue transforming the school's culture to eventually make the shift to a rigorous, integrated STE(A)M curriculum.

EDUCATING THE STEM WAY AT M. AGNES JONES ELEMENTARY

INTRODUCTION

Currently, minority and female populations are the "underrepresented majority" in science, technology, engineering, and mathematics (STEM) fields – although they make up 70% of the college population, only about 45% receive STEM degrees.[1] To better prepare minority students for STEM college majors and careers, schools across the nation – like Atlanta Public Schools' M. Agnes Jones Elementary School (MAJ) – are experimenting with new and inventive ways to teach STEM. MAJ – located in Atlanta's West End community – serves a student body that is 99% African American and comes from a neighborhood where over 95% of residents are of low socioeconomic status.[2] In the 2013-2014 school year, only 73.9% of MAJ students met expectations on the Georgia's Criterion Referenced Competency Tests (CRCT) in third, fourth, and fifth grade math. In the same year, only 64.5% of MAJ students met expectations on the science CRCT. [3] Table 1 shows MAJ data for the 2011 through 2014 CRCT. For each year, the average for students statewide who met expectations in math and science was at



[1] Executive Office of the President, *Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, And Mathematics,* 2012 (Washington, D.C.), i.
[2] Georgia State University Research Foundation, Inc., GOSA Planning Grant Proposal, 2014
[3] Governor's Office of Student Achievement Report Card, M. Agnes Jones Elementary School

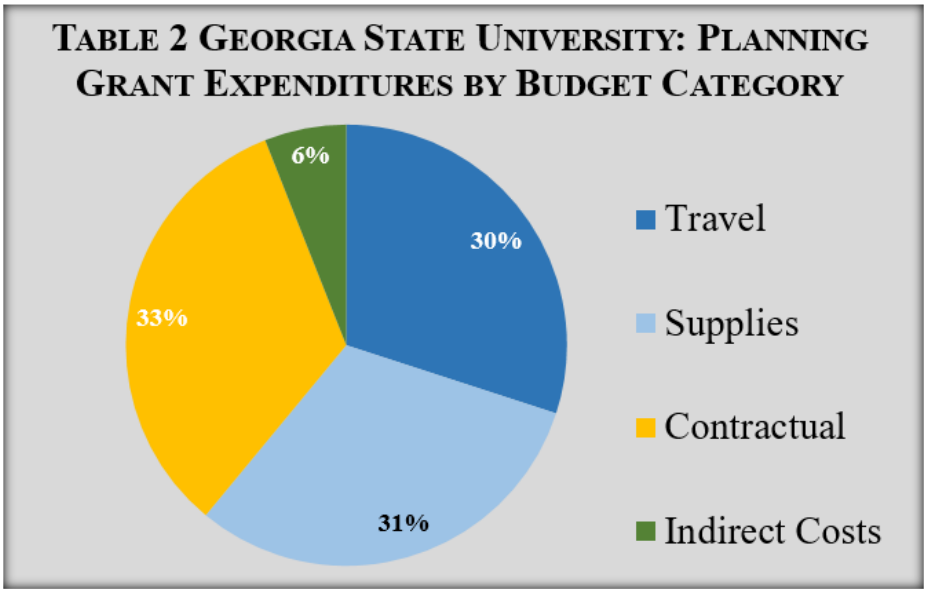
least a 9.9 percentage points higher than the average for MAJ students. To change these statistics and ensure its underrepresented students are equipped for success in the STEM fields, MAJ partnered with Georgia State University (GSU) to provide its teachers with strategic professional development to transform STEM instruction.

Goals

The GSU and MAJ partnership received a $10,000 planning grant to implement *Educating and Empowering Urban Teachers and Students in Quality STEM Classroom Infusion*. The grant aligned with the Applied Learning with a Focus on STEM Education and Teacher and Leader Induction/Development priority areas. The grant's focus was to train educators to teach STEM across the curriculum to prepare students for higher-level STEM classes and, ultimately, a STEM-centered workforce. Table 2 shows how GSU utilized its grant funds to work towards the following three goals:

- Assess MAJ teachers' and leaders' STEM knowledge and training needs to inform professional development workshops;
- Provide teachers with a variety of trainings in STEM applied learning methods; and
- Develop an assessment tool to evaluate the quality of teaching and learning during project-based learning (PBL) and STEM instruction.

Table 2 Georgia State University: Planning Grant Expenditures by Budget Category



Action Steps

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track progress towards their goals, the actions they have taken, items that have changed from the original proposal, and the next steps. The following is a summary of this grant's action steps.

- Administered a needs assessment survey to teachers and utilized the results to create a comprehensive professional development plan. Specifically, the results showed that, although teachers showed strengths in STEM content knowledge, they showed room for growth in implementing STEM applied learning techniques.
- The MAJ faculty and leadership participated in several professional development activities including:
    - The GSU Partnership Retreat;
    - Georgia STEM Forum;
    - School-wide PBL training;
    - Project Lead the Way training;
    - GSU STEM Teacher Academy; and
    - International Society for Technology in Education Conference.

- Third through fifth grade teacher teams conducted "lesson studies" – an approach where teachers create a lesson plan, teach it while observed by their peers, and incorporate observation feedback into their practice. As a result, participants reported that their lessons were more effective than they were prior to participating in a lesson study. In addition, pre-K through second grade teachers now plan to incorporate lesson studies to strengthen their professional practice.
- Developed the STEM Applied Learning Assessment Rubric which incorporates relevant Teacher Keys Effectiveness System (TKES), STEM applied learning, and PBL standards. MAJ administrators and fellow educators can use this tool to provide standards-based feedback to help teachers incorporate effective STEM instructional methods.

Next Steps

As a result of the Innovation Fund planning grant, *Educating and Empowering Urban Teachers and Students in Quality STEM Classroom Infusion*, school leaders report improvements in teacher instruction and student engagement, and teachers report higher confidence in teaching STEM across the curriculum. In addition, MAJ teachers continue to participate in professional development to stay current with STEM education trends. Because of the momentum MAJ and GSU built during the planning grant, they plan to seek additional grant funding, potentially through an Innovation Fund implementation grant, to continue organized professional learning on applied STEM education.

JACKSON COUNTY SCHOOLS

21ST CENTURY CLASSROOMS TO INSPIRE 21ST CENTURY MINDS

INTRODUCTION

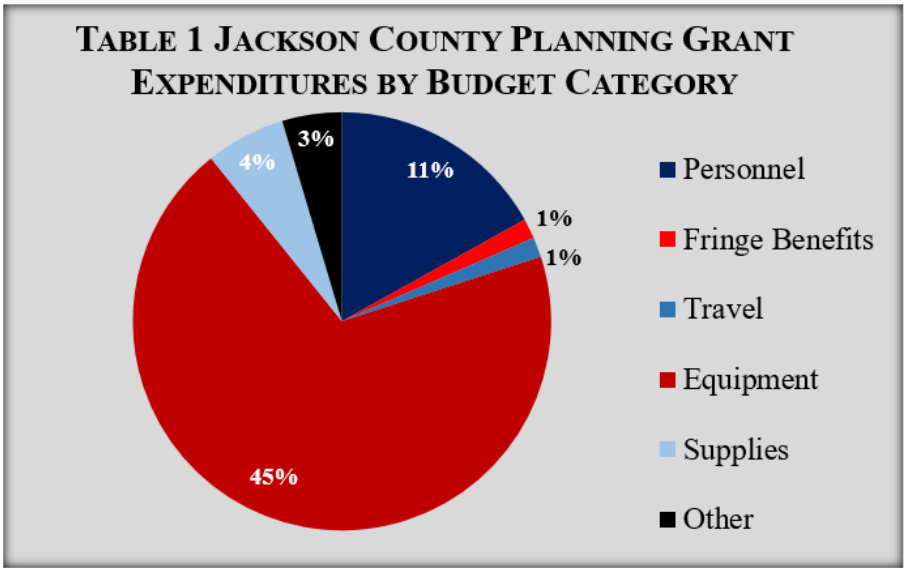
In 18 select classrooms across Jackson County, students lounge on bean bags with laptops – their fingers tapping away on keyboards in a new rhythm of learning. In these same rooms, other students' desks are clustered together as they tackle tough math problems, real-world problems, and the challenges that come with successfully working as a group. Were it not for the students' youth, an observer might mistake these classrooms for a college library rather than elementary, middle and high school classrooms. These classrooms are part of Jackson County Schools (JCS) commitment to a 7x24x365 learning model, which utilizes blended learning to engage students both inside and outside of the classroom. Blended learning is an alternative to traditional education that allows a students to learn at their own pace in part through online learning and in part in a brick and mortar school setting. To make the transition from traditional to blended learning, JCS applied for and received an Innovation Fund planning grant for *Innovative, Student-centered, Personalized Instruction that is Rigorous and Engaging (INSPIRE).*

GOALS

JCS received a $10,000 Innovation Fund planning grant to develop *INSPIRE*. The grant aligned with the Innovation Fund's Development and Replication of Blended Learning School Models priority area. Table 1 shows how JCS utilized its grant funds to work towards the following four goals:

- Create a planning team to establish a blended learning culture throughout the district by:
    - Visiting blended learning facilities, and
    - Conducting blended learning book studies.
- Use school and district data to determine how blended learning can address JCSs' academic needs;
- Pilot blended learning in model classrooms across the county and collect data to determine blended learning's initial impact; and

- Inventory its current technology infrastructure to determine additional resources needed.



ACTION STEPS

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track the progress towards their goals, the actions taken, items that have changed from the original proposal, and the next steps. The following summarizes this grant's action steps and findings:

- Created a planning team consisting of the superintendent, one teacher representative from every school in the district, a media specialist, district technology staff, and district curriculum staff. The planning team held monthly meetings to determine blended learning best practices. Select meetings included book studies of *Blended* by Michael Horn and Heather Staker and *Go Blended* by Liz Arney.
- Visited blended learning schools to identify best practices. Table 2 lists the schools visited.
- JCS teachers participated in professional learning activities to learn about digital curriculum resources and blended learning.
- Developed a blended learning pilot program tailored to JCS's needs that could:
    - Personalize student learning;
    - Create an engaging and challenging academic environment; and
    - Align content to the Depth of Knowledge (DOK) level of standards.

JCS teachers applied for the opportunity to implement student-centered, blended learning in their classrooms. With the help of the Innovation Fund planning grant

TABLE 2. SCHOOLS VISITED
Hall County's EPICC Academy, Hall County, GA
Impact Academy, Henry County, GA
Gwinnett County's Online Campus, Gwinnett County, GA

and JCS district funding, the district created 18 model classrooms. During the pilots, the district provided ongoing feedback and support to teachers to ensure that they were implementing effective blended learning strategies. The county evaluated the pilot's effectiveness based on teacher feedback.

- Held an Innovative Bus Tour for teachers, leaders, and community members to observe JCS model classrooms at West Jackson Elementary School, West Jackson Middle School, Gum Springs Elementary School, East Jackson High School, and East Jackson Middle School.
- Inventoried the current technology infrastructure to determine needs of the district.

Next Steps

Through a strategic combination of district and planning grant funds, JCS piloted blended learning in 18 classrooms across the county and ignited enthusiasm for blended learning across the district. Based on the activities the district completed using the Innovation Fund planning grant, JCS will move forward with an informed and strategic plan to personalize learning for each JCS student.

MERCER UNIVERSITY

DEVELOPING EFFECTIVE STEM EDUCATORS FOR THE 21ST CENTURY

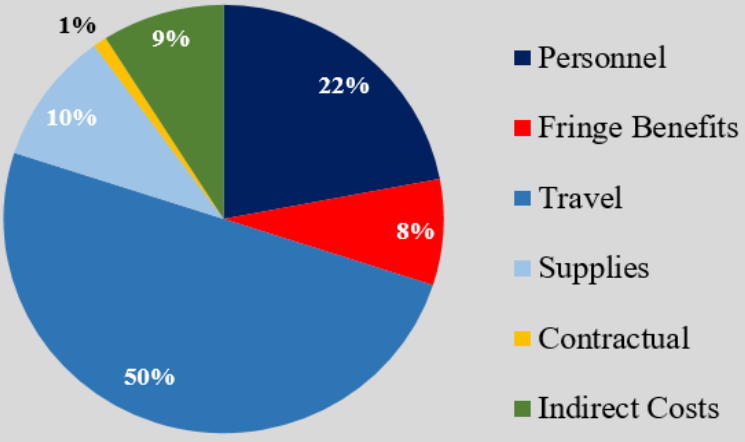
INTRODUCTION

As the country's demand for a STEM-literate (science, technology, engineering and math) workforce increases, education stakeholders are striving to implement innovative teaching strategies to meet this need. Currently, Georgia offers a pathway for schools that are effectively integrating a rigorous STEM curriculum to become STEM certified. However, until the summer of 2016, there was not yet a pathway for *teachers* to earn a STEM-certification or endorsement. Using STEM-certified school practices as a model, Mercer University, in partnership with Georgia Southern University (GSU), wanted to develop an endorsement program to train educators on effective STEM instruction. The partnership's ultimate goal was to receive approval for this endorsement from Georgia's teacher certification body, the Georgia Professional Standards Commission (GaPSC). Mercer University and GSU used their Innovation Fund planning grant to conduct a needs-assessment with STEM-certified schools, conduct a comprehensive review of STEM programs in the United States, and develop the parameters of an interdisciplinary STEM teacher endorsement.

GOALS

The partnership received a $10,000 Innovation Fund planning grant to carry out *Interdisciplinary STEM Teacher Endorsements: A Pathway to Improve Teacher Capacity in 21st Century STEM Reasoning Modalities*. The grant aligned with the Innovation Fund's Applied Learning with a Focus on STEM Education and Teacher and Leader Induction/Development priority areas. Table 1 shows how Mercer University utilized its grant funds to work towards the following five goals:

TABLE 1 MERCER UNIVERSITY: PLANNING GRANT EXPENDITURES BY BUDGET CATEGORY



- Collect information on the practices of STEM certified schools;
- Collaborate with local institutions to gather information about the STEM skills needed for the workforce;
- Conduct a literature review to glean the current state of STEM education in the United States;
- Identify STEM programs across the country and incorporate best practices into the endorsement plan; and
- Complete an endorsement petition and submit it to GaPSC for review and adoption.

Action Steps

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track progress towards their goals, actions they have taken, items that have changed from the original proposal, and next steps. The following summarizes this grant's action steps and findings:

- Interviewed teachers and administrators from 16 schools in Georgia. Nine schools were STEM-certified and six schools were non-certified. Table 2 lists the STEM-certified schools, and Table 3 lists the non-certified schools. The partnership utilized information from interviews with STEM-certified schools to develop professional development recommendations for the STEM endorsement. Specifically, the final petition integrated the following techniques: student tracking, rubric-making, collaboration between faculty and local community, and assessment-building. In addition, based on the interviews, seven themes emerged as salient to STEM-centered instruction:
    - STEM as Interdisciplinary
    - STEM as a Way of Thinking
    - STEM as a Clearly Defined Construct
    - STEM as a Process
    - STEM as Collaborative
    - STEM Pedagogy
    - STEM as Knowledge of Content and of Assessment

Table 2. STEM-certified Schools Interviewed

Brookwood Elementary, Forsyth County Schools

Carrollton Elementary, Carrollton City Schools

Cowen Elementary, Spalding County School District

Henderson Mills Elementary, DeKalb County School District

Forsyth Central High, Forsyth County Schools

Lanier High School Center for Design & Technology, Gwinnett County Public Schools

Marietta Center for Advanced Academics, Marietta City School District

Rockdale Magnet School for Science & Technology, Rockdale County Public Schools

STEM Academy of Bartlett, Savannah-Chatham County Public Schools

- Interviewed local STEM businesses to understand their workforce needs. Table 4 lists the businesses that participated in the interviews. Businesses highlighted several vital skills that they believed students should begin building in the classroom, including collaboration, communication with different stakeholders, data analysis, perseverance, problem-solving, stress-management, and professionalism. They also suggested that teachers should understand business operations so that they can provide students with soft skills instruction.

TABLE 3. NON-CERTIFIED SCHOOLS INTERVIEWED

Carrollton Middle, Carrollton City Schools

Carrollton High, Carrollton City Schools

Gilbert Elementary, Walker County School District

Jenkins High School, Savannah-Chatham County Public Schools

Ridgeland Hills High School, Bryan County School District

Rossville Middle School, Walker County School District

Saddle Ridge Middle School, Walker County School District

- Examined STEM credentialing pathways in the United States. This review deepened the partnership's understanding of national STEM credentialing trends and informed components of Georgia's STEM endorsement.[1] The key takeaways from the review include:
  - Five states have state-certified STEM credentialing pathways (Arizona, Maryland, Pennsylvania, Tennessee, and Utah);
  - Maryland, Pennsylvania, and Utah offer STEM endorsements for teachers;
  - Arizona and Tennessee offer STEM education certifications; and
  - Only Pennsylvania addresses STEM credentialing for K-12.

[1] Information regarding STEM credentialing is current as of Mercer's review in 2016.

- GaPSC created a task force to develop the Georgia STEM Pathway endorsement. The petition was completed, presented to, and accepted by GaPSC. The endorsement contains the following curricular items gleaned from interviews and the national review:
    - Engineering design practices;
    - Authentic research practice and experiences;
    - Problem-based learning in an authentic and relevant content (place-based);
    - Application within and across disciplines; and
    - The habits of mind, including critical thinking, systems thinking, model-based reasoning, data-driven decision-making and quantitative and computational reasoning.

TABLE 4. BUSINESSES INTERVIEWED

Caterpillar Inc.
DIRRT Environmental Services
Georgia Power
Gulfstream Aerospace
Hussey, Gay, & Bell
O'Brien & Gere
Southwire
Tharpe Engineering
U.S. Army Corps of Engineers
Weyerhaeuser Corporation

NEXT STEPS

The partnership's plan to create a STEM Pathway endorsement showed their dedication to reforming STEM education in Georgia. GaPSC accepted the petition and the state officially began offering the endorsement on October 15th 2016 – allowing postsecondary institutions to incorporate the STEM endorsement as part of their education programs. In addition, GSU is piloting a digital badging program that offers teachers the STEM endorsement training with the flexibility of online learning. With an endorsement program offered by GaPSC, teachers will be better equipped to guide their students to STEM mastery.

MOREHOUSE UNIVERSITY

SPREADING SCIENCE LITERACY ACROSS GEORGIA

INTRODUCTION

In a Clayton County high school science class, a teacher used the Scientific Literacy Center's (SLC) STEM Careers page to show her students that nearly all jobs require knowledge in science, technology, engineering, and mathematics (STEM). When a student commented, "Well I want to be a cosmetologist. Why do I need science for that?" the teacher guided her to the SLC's cosmetology page, where it highlights the STEM involved in the field. Images of young women and traditionally underrepresented groups line the pages of the SLC, fulfilling Morehouse University's vision of what a diversified STEM world could look like.

In a Clayton County high school science class, a teacher used the SLC's STEM Careers page to show her students that nearly all jobs require knowledge in STEM. When a student commented, "Well I want to be a cosmetologist. Why do I need science for that?" the teacher guided her to the SLC's cosmetology page, where it highlights the STEM knowledge and skills involved in the field.

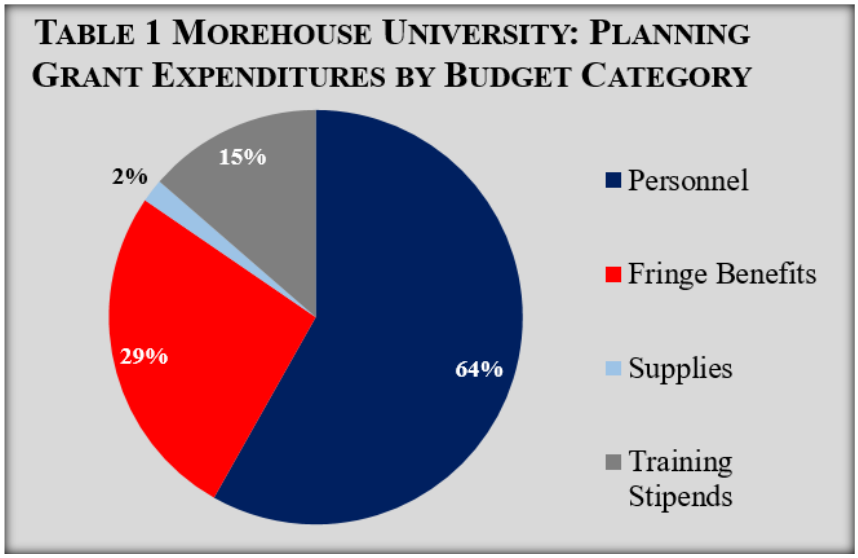
The SLC developed from Morehouse University's Race to the Top grant, in which they developed and implemented a summer training program for Clayton County teachers and summer STEM program for gifted and advanced placement Clayton County students. Specifically, the summer program trained educators in delivering inquiry-based instruction and then allowed these educators to hone their practice by teaching students over the summer. To expand the program, Morehouse created the SLC – an online hub for educators which includes standards-based STEM curricula, lessons, and activities similar to those from the original summer program. The site's ultimate goals are to increase minority student success rates in high school STEM courses and to stimulate their interest and participation in STEM majors upon graduation. To meet these goals and expand the SLC's reach beyond Clayton County, Morehouse University sought the support of an Innovation Fund planning grant.

GOALS

Morehouse University received a $10,000 Innovation Fund planning grant to expand the SLC in two ways: (a) increase the site's resource bank; and (b) develop a strategy to market the site to Georgia and national school districts. The grant aligned with the Innovation Fund's area of Applied Learning with a Focus on STEM Education. Table 1 shows how Morehouse University utilized its grant funds to work towards the following three goals:

- Train teachers to use the SLC and pilot the site in their classrooms;

- Evaluate the site's utility in a classroom setting and measure teacher and student participants' experience; and
- Form a Think Tank Planning Committee to develop and implement an outreach campaign for disseminating the SLC into all Clayton County STEM-related classrooms, with the ultimate goal of implementation in science classrooms across the United States.



ACTION STEPS

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track the progress towards their goals, the actions taken, items that have changed from the original proposal, and the next steps. The following summarizes the grant's action steps:

- Provided a summer training on using the SLC in the classroom to 30 high school teachers;
- Formed a Think Tank Planning Committee – comprised of teachers, administrators, curriculum specialists, and an evaluator –to assess SLC's usage and provide feedback on a monthly basis. The final marketing plan incorporated the feedback; and
- Began development of a marketing plan to expand SLC's reach.

NEXT STEPS

In 2012, President Obama's Council of Advisors on Science and Technology predicted that, by the end of the decade, one million more STEM professionals are needed for the United States to continue leading the world in science and technology advances.[1]

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[1] Executive Office of the President, *Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, And Mathematics,* 2012 (Washington, D.C.), i.

Morehouse University responded to this prediction by developing the Scientific Literacy Center. Morehouse believes that, with a wider reach, the site's resources will guide minority students towards STEM mastery, and inspire them to participate in STEM college majors and careers.

Scientific Literacy Center Website Snapshot

STEM Pioneers

This collection of approximately 200 interviews of prominent pioneers in science is a collaboration between HistoryMakers and Carnegie Mellon University Informedia Project.

STEM Organizations

As a STEM student or professional, there are many benefits of being involved in STEM professional organizations.

Why Scientific Literacy?

Our society has an ever-increasing dependency on technology and the scientific knowledge that makes it possible.

STEM Careers

The Scientific Literacy Center has a plethora of STEM careers that benefit undergraduate minorities for the benefit of knowledge enhancement in STEM career fields.

OCONEE RIVER GEORGIA YOUTH SCIENCE AND TECHNOLOGY CENTER

ENERGIZING EDUCATORS TO TEACH STEM

INTRODUCTION

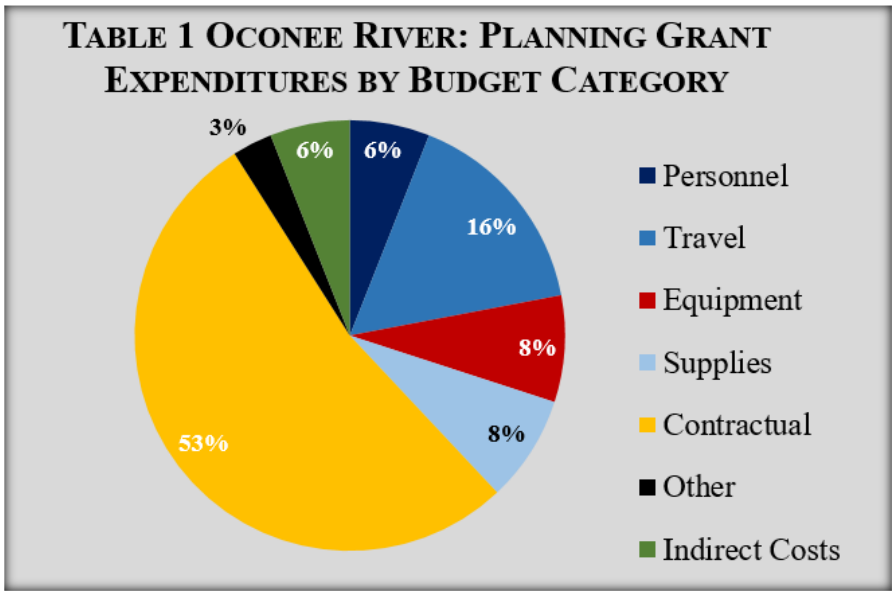
In a Morgan County district boardroom, groups of grade level teachers cluster around tables listening to experts from Georgia Power and Power Partners USA, an electric transformer distributor, about how they might integrate real-world experiences into science, technology, engineering, and mathematics (STEM) project-based learning (PBL) units. This workshop, along with many others, grew out of Oconee River Georgia Youth Science Technology Center's (GYSTC) goal to engage Northeast Georgia educators with the energy industry and train teachers to implement integrated, hands-on, and rigorous instruction that connects to the real world. To reach this goal, Oconee River GYSTC received an Innovation Fund planning grant to develop STEM Network Resources for Georgia (*STEM N-RG).* Through STEM N-RG, teachers – like those in Morgan County – would receive professional development and hone best practices to strengthen STEM instruction.

GOALS

Oconee River GYSTC received a $10,000 Innovation Fund planning grant to develop STEM N-RG. The grant aligned with the Innovation Fund's Applied Learning with a Focus on STEM and Teacher and Leader Induction and Development priority areas. Table 1 shows how Oconee River GYSTC utilized its grant funds to work towards the following five goals:

- Establish key relationships between schools, community partners, and professional development providers to support student achievement;
- Assess the needs of stakeholders, including students, teachers, and community partners;
- Review national best practices in STEM instruction;
- Create professional development resources; and

- Seek funding for full STEM N-RG implementation.



ACTION STEPS

TABLE 2. ADVISORY BOARD REPRESENTATION

Barrow County School System

Clarke County School District

Georgia Power

Green Power EMC

Jackson County School System

Jefferson City School District

Morgan County Charter School System

Northeast Georgia Regional Education Service Agency (RESA)

Oconee County Schools

Power Partners USA

University of Georgia (UGA), Department of Engineering

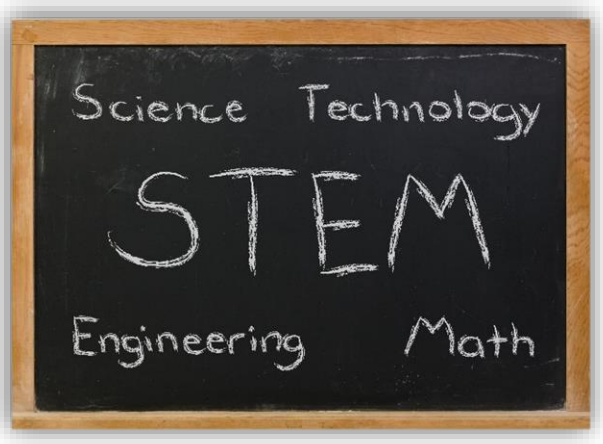
UGA, Office of STEM Education

Walton County School District

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track their progress towards their goals, the actions they have taken, items that have changed from the original proposal, and next steps. The following summarizes this grant's action steps:

- Created an advisory board comprised of school district teachers and administrators, higher education partners, and business partners. For a full list of district partners represented in the advisory board, see Table 2. The advisory board's key accomplishments include:
  - Connecting business representatives, particularly in the energy field, with educators to identify real-world problems that could develop into project-based learning modules; and
  - Developing SMART goals for the STEM N-RG full implementation.
- Conducted a needs assessment of students, teachers, district leadership, and community partners through surveys and focus groups. Key findings from the needs assessment include:

    - Teachers need professional development that incorporates STEM across the curriculum and creating effective instructional materials. Teachers also indicated the need for an instructional framework to guide them in preparing project-based lessons. Finally, findings revealed that teachers need help forging relationships with local businesses.
    - Students learn best through projects that connect the curriculum to relevant, real-world topics.
- Reviewed national best practices in STEM. The review gleaned best practices in two main areas – instruction and support.
    - Instructional best practices include: (a) increasing rigor, (b) giving equal instructional time to science, mathematics, and reading, and (c) explicitly integrating STEM disciplines across the curriculum.
    - Support best practices include: (a) varying approaches to program funding, (b) providing ongoing professional learning and support, (c) providing instructional resources, (d) using the project-based learning model as the common instructional model; and (e) fostering partnerships between community and schools.



- Visited the Real STEM Project at Georgia Southern University. Key takeaways from the visit include the need for: (a) buy-in from schools and teachers, (b) common instructional framework, and (c) STEM integration across the curriculum.

Next Steps

During the Innovation Fund planning grant period, Oconee River GYSTC partnered with Morgan County Charter School System (MCCSS) to tailor the program to the district's needs. In 2015, the Governor's Office of Student Achievement awarded MCCSS an Innovation Fund implementation grant for over $620,000 to fully enact *STEAM N-RG* throughout the district. Morgan County's STEAM N-RG now offers kindergarten through ninth grade teachers training in effective STEAM instructional practices and builds teacher capacity through partnerships with local business leaders.

PAULDING COUNTY SCHOOLS

EXPANDING HOPE FOR STUDENTS OF PAULDING COUNTY

INTRODUCTION

The halls of the New Hope Center are abuzz with kids gearing up for their next class. At first glance, nothing seems different about this school. It is clear once students disappear from the hallways, however, that they are not in a traditional high school setting. As students enter their respective classrooms, they begin independently working on laptops at their own pace, receiving individualized support from teachers as needed. These students were offered the chance to participate in a unique model that takes them out of the traditional classroom setting and gives them control over the place, pace, and path of their education. This model is the culmination of Paulding County's Innovation Fund planning grant.

With the revelation that nearly one quarter of its students were not graduating on time, Paulding County School District (PCSD) knew it had to provide more support to its student body. Chronic disciplinary issues and a 43% average of free or reduced-price lunch recipients revealed to the County that many students needed individualized attention that was often difficult to provide in a traditional classroom setting.[1] In fall 2012, PCSD opened the New Hope Educational Center, which offered long-term expelled students and fifth-year seniors an alternative pathway to graduation. By the end of the 2014, the Center's student body had earned over 300 recovery credits. As a result of the program's success, PCSD decided to expand the Center so that more nontraditional students could have the opportunity to accelerate their learning and eventually graduate. The additional groups targeted for the expansion were students requiring flexible school schedules, including athletes, students with demanding work schedules, and students of families who travel. The expansion plan was to develop a blended learning model that would tailor schooling to individual students' schedules and academic needs. Thus, the Paulding Virtual Academy (PVA) was born. The Innovation Fund planning grant allowed PCSD to develop the PVA's curriculum, technology infrastructure, and building blueprints.

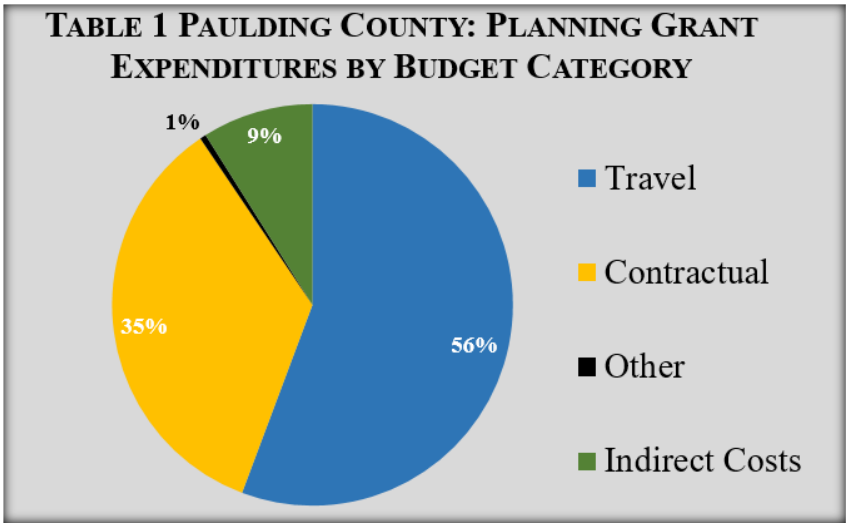
[1] Paulding County School District, "New Hope Academy" (GOSA Planning Grant Proposal, 2014), 4.

Goals

Paulding County School District received a $10,000 Innovation Fund planning grant to plan the *Paulding Virtual Academy.* Specifically, PCSD utilized the grant to explore national blended learning models and assess its community needs. The grant aligned with the Innovation Fund Development and Replication of Blended Learning School Models priority area. Table 1 shows how Paulding County utilized its grant funds to work towards the following four goals:

- Visit and glean best practices from exemplar blended learning programs across the nation;
- Assess PCSD family needs and interest in a blended learning program via meetings and surveys;
- Test and select a Learning Management System (LMS) to suit future PVA students' needs; and
- Develop the full expansion plan, including financing and timelines, as well as garner support from the Paulding County Board of Education.

Table 1 Paulding County: Planning Grant Expenditures by Budget Category



Action Steps

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track their progress towards their goals, the actions they have taken, items that have changed from the original proposal, and next steps. The following summarizes this grant's action steps:

- The planning team, comprised of district leadership, school liaisons, and other community stakeholders, visited seven blended learning programs in Colorado and Georgia. Table 2 lists the blended learning sites Paulding County visited. PCSD selected these sites because of their strong blended learning models and high school nontraditional student populations. Key takeaways from the site visits included how to: implement the flipped classroom model, effectively personalize

student learning, and develop faculty and staff pay scales to support blended learning. Additionally, the team reviewed the LMSs used by each site. As a result, PCSD selected the LMS, Canvas.

- The Florida Virtual School (FLVS) traveled to Georgia to provide a blended learning conference to PCSD stakeholders. The conference focused on key practices to effectively manage a blended learning school, including staffing, budgeting, engaging students, analyzing student data, and evaluating the program. In addition to PCSD stakeholders, representatives from other Georgia school districts, including Atlanta Public Schools, Cobb County Schools, and Forsyth County Schools, attended the FLVS conference.
- The team held two planning retreats to develop PVA plans in three areas: 1) Administration/Finance; 2) Technology/Infrastructure (the Technology/Facilities Committee was created during the retreat to provide technological guidance during development); and 3) College and Career.
- PCSD finalized development plans and the Paulding County Board of Education approved them.

TABLE 2. PCSD SITE VISITS

Aurora Online High School, Aurora, Colorado

Tift Co. High School College and Career Academy Mechatronics Program, Tift County, Georgia

Academies of Excellence, Forsyth County, Georgia

Imp@ct Academy, Henry County, Georgia

Oakes College and Career Academy, Hall County, Georgia

East Hall High School EPPiC Program, Hall County, Georgia

12 For Life, Carroll County, Georgia

NEXT STEPS

When PCSD realized that many of its students needed a nontraditional learning model as an option to succeed, it created the New Hope Educational Center. With the Innovation Fund planning grant, PCSD expanded the Center by planning for the Paulding Virtual Academy. In offering this blended learning model, PCSD hopes to ensure every student has access to a high quality education, no matter the obstacles they face.

In June 2016, PCSD received a $10,000 Innovation Fund Shark Tank grant for the TECHtastic Teacher Training (T3) program to strengthen the quality of instruction at PVA. Through T3, ten PVA teachers will earn an online teaching endorsement – focused on understanding the

characteristics of online learners and creating online learning materials – through the Northwest Georgia Regional Education Service Agency (RESA). These teachers will also participate in a Professional Learning Community (PLC) to share best practices related to online learning.

On August 1, 2016, almost 70 students entered the doors of the PVA, flooding the hallways with the excitement of a radically different approach to learning. In offering a blended learning model, PCSD hopes that, in just a few short years, each of these students will walk out these hallways – diploma in hand – ready to succeed in college, a career, and beyond.

TIFT COUNTY SCHOOLS

CREATING EDUCATIONAL @CCESS AT TIFT COUNTY SCHOOLS

INTRODUCTION

Located in southern Georgia, rural Tift County has faced a variety of social and economic blights, including high rates of poverty.[1] Between 2013 and 2015, on average, 76.1% of Tift County students were identified as economically disadvantaged.[2] Despite these challenges, Tift students' performance on the 2013-2014 End of Course Tests (EOCTs) reflected the state averages, and the district has maintained a graduation rate higher than the state average for the last three school years.[3] Upon reflection of the data, however, Tift County recognized a trend in which the percentage of students who did not meet expectations on EOCTs increased from middle school to high school. It identified the need for greater focus on academic performance for middle school students to ensure academic gains when they enter high school. To address this trend and guide middle school students to academic success, the county created Tift @cademy, a blended learning model targeting seventh and eighth grade students that combines traditional learning with online, personalized learning. Using the Innovation Fund's planning grant, Tift piloted the model with 220 students from Eighth Street Middle School (ESMS), with the ultimate plan of tracking the students' progress through high school.

GOALS

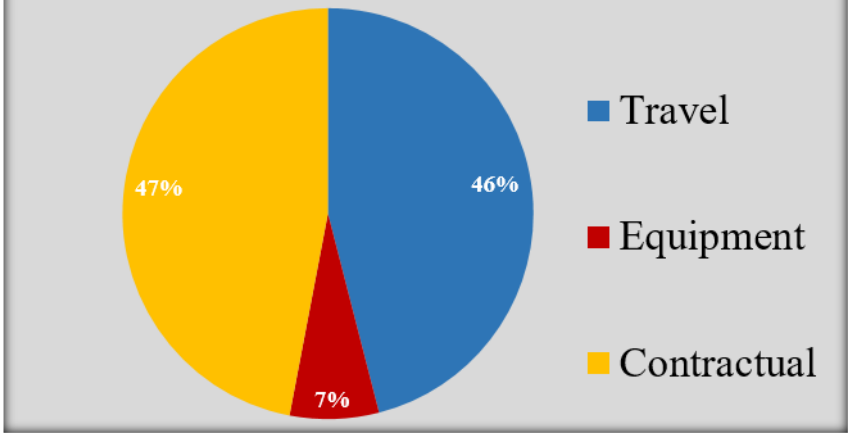
Tift County received a $10,000 Innovation Fund planning grant to develop Tift @cademy. The grant aligned with the Innovation Fund's Development and Replication of

[1] U.S. Census reports poverty rate as 28.6% in 2014, approximately 10 percentage points higher than the state of Georgia.
[2] Governor's Office of Student Achievement (GOSA) Report Card reports economically disadvantaged rates at 83.5% in 2014-2015, 74.4% in 2013-2014, and 70.4% in 2012-2013.
[3] Tift County Board of Education Planning Grant Proposal, 2014. GOSA Report Card reports a graduation rate of 83.2% in 2014-2015, 74.4% in 2013-2014, and 78.9% in 2012-2013; compared to Georgia's rate of 78.8%, 72.6%, and 71.8%, respectively

Blended Learning School Models priority area. Table 1 shows how Tift County Schools utilized its grant funds to work towards the following three goals:

- Develop a blended learning strategic plan that includes:
  - Creating a course catalog for students; and
  - Analyzing the initial impact of the pilot blended learning model.
- Provide teachers and administrators with professional development in blended learning; and
- Develop an outreach campaign to garner support for Tift @cademy from community stakeholders, including local businesses, parents, and students.

TABLE 1 TIFT COUNTY: PLANNING GRANT EXPENDITURES BY BUDGET CATEGORY



ACTION STEPS

The Governor's Office of Student Achievement (GOSA) performs periodic status updates of its grantees. In addition to phone calls, grantees provide bi-annual reports which track progress towards their goals, actions they have taken, items that have changed from the original proposal, and next steps. The following summarizes this grant's action steps and findings:

- Faculty and leaders from ESMS participated in various professional development activities, including:
  - Attended the International Association for K-12 Online Learning (iNACOL) conference in Orlando, Florida. The 2015 iNACOL Blended and Online Learning Symposium focused on the latest trends and research, offered participants interactive sessions, and gave attendees an opportunity to network with leaders in blended and online learning. Tift County faculty and leaders discovered blended and online learning resources to utilize in Tift @cademy.
  - The Clayton Christensen Institute (CCI) – a think tank that conducts research on effective education models, such as blended learning– held a one-day professional development conference for Tift @cademy faculty and leadership.

    - Four ESMS teachers visited Locust Grove Middle School (LGMS) in Henry County, Georgia, which utilizes a lab rotation blended learning model. The lab rotation model allows students 50% face-to-face instruction in a traditional setting, and 50% online learning in a computer lab setting. LGMS faculty, administration, and students discussed instructional strategies and shared the model's benefits with ESMS teachers. Tift County incorporated the lab rotation into its own model because of LGMS' success. In response to the visit, one ESMS teacher said, "seeing the level of student engagement and ownership has left me optimistic for what blended learning could bring to our county."

> *"Seeing the level of student engagement and ownership [at Locust Grove Middle School] has left me optimistic for what blended learning could bring to our county." – Teacher, Eighth Street Middle School*

- Selected Edgenuity – which creates blended learning programs tailored to the needs of each district – to develop the parameters of Tift @cademy. Edgenuity chose Hawthorne Education to provide additional professional development and support to ESMS faculty and leadership to ensure they are equipped to implement effective blended learning instruction.
- Over 200 seventh and eighth grade ESMS students participated in the Tift @cademy pilot. Through Tift @cademy, students had the option to take high school-level courses, as well as foreign language classes.
- Hired an online learning coordinator and a blended learning coach to support teachers implementing the new blended methods.

Next Steps

In 2014, Tift County Schools also received a $173,724 GOSA Connections for Classrooms (CFC) grant. With the help of GOSA's Innovation Fund planning grant, the CFC grant, and district funds, the county provided needed digital infrastructure and high-speed broadband access to every school in the district and tested a new blended learning model. Specifically, the district transitioned to an a la carte blended learning model in grades 7-12, where students take one or more courses entirely online but continue to have brick-and-mortar educational experiences. By 2016, Tift eighth graders had earned over 400 online high school credits, and seventh through twelfth graders had earned over 1,200 online credits.[4] Tift County believes this model will increase the graduation rate and ensure that its students are more equipped to compete at the college and career levels.

[4] Connections for Classroom Grant Program Annual Report, 2016

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