

2013

Sustainable Child:

Farm to School &
Community
Partnership



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Catawba River District

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Index

- 1. Introduction3**
- 2. Project Overview4**
- 3. The PROBLEM.....5**
- 4. Four-Phase Approach7**
- 5. Goals and Outcomes.....9**
- 6. Four-Phase Vision.....9**
- 7. Project Team13**
- 8. Funding13**
- 9. Effectiveness Measures13**
- Appendix14**

1. Introduction

Communities become sustainable and, if economically challenged, resilient through education. Our government systems make it challenging to address issues at the community level. School Boards focus on academics and try to support health/wellness, and career readiness (economic development/jobs). Cities focus on economic development and try to support education and health/wellness. Counties focus on health/wellness and the environment and try to support education and economic development. However, the biggest challenges facing our children—especially our economically challenged children—require the support and involvement of all levels of government. How do we address and overcome the three epidemics facing nearly half of all urban school children?

Academic Achievement Gap * Childhood Obesity * Nature Deficit Disorder

SUSTAINABLE CHILD

Sustainable Child is the term the Catawba River District uses as the foundation of the “social” component of a concept known as Triple Bottom Line.

The Catawba River District, North Carolina not-for-profit corporation, serving a 16,000-acre, two-county area bisected by the Catawba river, was formed in 2007 to be the collaborative, community-based platform where all facets of community, government and education could come together to focus on what it would take to support the transition toward sustainable community.

Triple Bottom Line supports the balance between economic, environmental and social (education, quality of life) components of community (see figure 1). Economic sustainability requires a strong diverse social component with employment and buying power to support business. Environmental sustainability requires education, education which proves every product developed first began with a natural resource. Social sustainability is often described as quality of life. At the community level this means a compelling desirable place to live, work, recreate, and raise a family. It is a place where children achieve a quality education making them career and/or college ready; a place where children desire to return as contributing members of their community.

A sustainable child is one who is empowered to be successful personally, professionally and as a “sustainable community” member. Growing a sustainable child takes commitment and collaboration from all sectors of the community beyond traditional education.

Figure 1



2. Project Overview

Over the past three years, the Catawba River District, its Executive Board, Board of Advisors and team of K-20 Learning World Advisors, have developed a base of programs, communications networks and partnerships to support the definition of sustainable/resilient communities and sustainable child.

Our accomplishments can be found on our web site www.catawbariverdistrict.org, including:

- Eco- Footprint Sustainability Challenge (11 schools, 2 school systems) – grant awarded by Piedmont Natural Gas
- West Mecklenburg High School Green Star Uptown Charlotte Field Trip (Sustainability Initiatives and STEM jobs) – seeking funding
- NC STEM Science Festival coordinated with Eco-Footprint demonstrations and awards
- Whitewater Middle School STEM Raptor Field Trip – seeking funding through Arts and Science Council
- 2013 will be 3rd Annual 5th Grade STEM Interactive Learning Laboratory
 - ‡ Addition program details in the Appendix

We believe the cornerstone of a sustainable community is education and that education expanded to embrace community through initiatives like farm to school sets that foundation.

3. The PROBLEM

It takes a community-focused non-profit to provide the collaboration and advocacy needed to affect positive change leading to sustainable community. Education is the key to a sequence of factors that build on one another. Successful schools generate the market desirability for mixed price housing which is needed for commercial development leading to jobs. Schools have their hands full with what is already packed into their academic and regulatory demands. They have neither the resources nor expertise to effectively engage at the community, government or corporate level. Cities provide infrastructure and focus on economic development. They certainly understand the need and value of successful schools and often support initiatives such as youth employment and community development, but they seldom directly engage with schools. County government normally also supports social services, health and environment protection and, while they support schools from a capital construction and sometimes from a health standpoint with school nurses, there is never a comprehensive coordinated effort. Each of these areas of government operates individually, sometimes in limited partnership but not in true collaboration.

Table 1 below summarizes the initial collaboration of schools in the Catawba River District partnership, illustrating the high level of economically disadvantaged students in these schools and the community. This cycle has the potential to be broken through implementation of the following sustainable child initiatives.

Table 1

	2012-2013 School Size	Economically Disadvantaged			
		Grade	Title 1	Economically Disadvantaged (Estimated)	%
High Schools					
West Mecklenburg	1,894	9-12	Y	1,375	72.6%
Middle Schools					
Whitewater Middle	891	6-8	Y	729	81.8%
Elementary Schools					
Catawba Heights	290	Pk-5	Y	183	63.1%
Ida Rankin	645	Pk-5	N	326	50.5%
Mountain island	666	K-6	N	348	52.3%
River Oaks	596	K-6	Y	449	75.3%
Whitewater Academy	690	K-5	Y	621	90.0%

Total	5,672			4,031	71.1%
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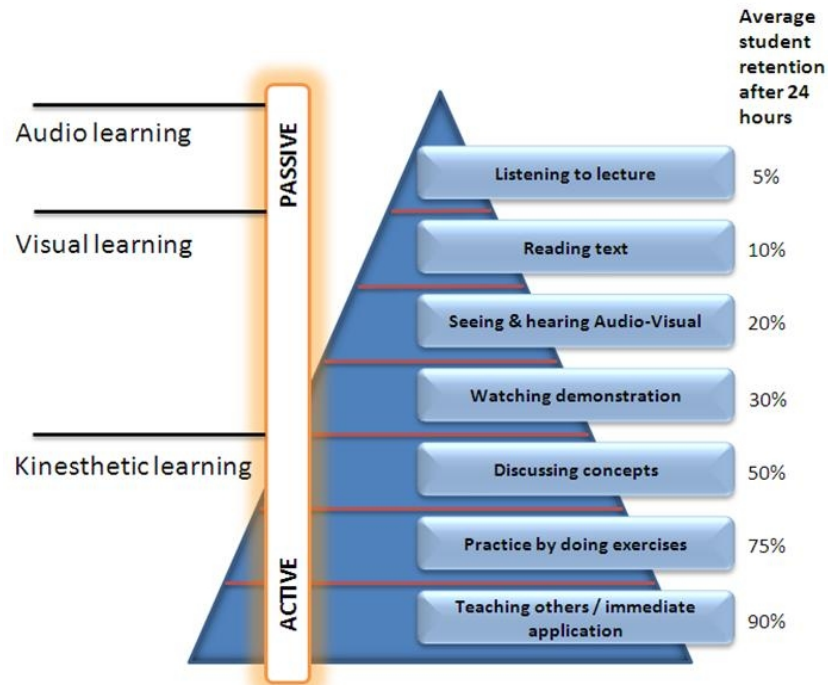
School attendance zones are most often developed under politically influenced policies of individual school boards, again without consideration of community or sustainable economic development. School systems, especially in urban areas, have schools in upper income demographics with minimal economically disadvantaged students and schools in lower demographic areas with significant numbers of economically challenged students. This problem can easily be demonstrated in Table 1 which outlines the schools involved with the Catawba River District.

There are over 3,600 economically disadvantaged students in our current partnership with two school systems. As an extension of the community and school challenges described above, the students themselves in these schools face many challenges. These students are considered especially at risk of:

1. Not achieving their full academic potential due to lack of experiential learning opportunities;
2. Dropping out of school;
3. Lacking direct exposure to jobs and careers and connections to post-secondary educational opportunities;
4. Suffering from long term health and quality of life Issues related to 30% obesity (Healthy Child Report);
5. Lacking connections to the full range of environments available to them: business, nature, and community;
6. Becoming a liability rather than an asset to the community.

Research is now available showing successful models which incorporate community and hands-on learning and achieve success. The Learning Pyramid is an illustrative example of the proven effectiveness of experiential learning. As shown in Table 2 below, retention increases from 5% to 75% when active, hands-on learning is incorporated into academics.

Table 2



The Learning Pyramid

Attributed to National Training Laboratories Institute
For Applied Behavioural Sciences, Bethel, Maine

A highly recognized, inspirational and successful approach of incorporating hands-on learning can be found through gardening and environmental education which is fully realized in our Farm to School/ Sustainable Child model. This approach collaboratively addresses the three national epidemics of academic achievement gap, childhood obesity, and nature deficit disorder.

4. Four-Phase Approach

A core component of *Sustainable Child* is an emerging national movement called Farm to School. The Catawba River District has embraced Farm to School as a key component of the overall Sustainable Child strategy and foundation for an array of outdoor learning opportunities.

Farm to School encompasses many facets, including schoolyard gardens, outdoor classrooms and learning laboratories, sustainable working farms, greenways, community gardens and incorporating local food into school curricula and cafeterias. Transforming existing school buildings, school campuses and in some instances area parks into a series of living laboratories for learning is the focus of this project. Developing these school and community based hands-on laboratories is a significant step toward developing Sustainable Child.

The Catawba River District has taken these best practices and developed a 5 Phased approach and 7 point Project Model as the implementation strategy for Sustainable Child. This transition will be long term, with proven effective components which can be put in place now. The 5-Phase overview is as follows:

Four-Phase Approach to Sustainable Child

PHASE 1 – Maintain and continue to grow existing School Gardens as proven, effective hands-on learning tool.

PHASE 2 - Expand hands-on learning to incorporate “real world” skills and connections to jobs/careers. The school campus becomes a learning laboratory. School gardens and outdoor classrooms evolve into platforms for academic success, health and nutrition awareness around food, nature and building eco-systems.

1. Schoolyard Gardens Expansion and Coordinators
2. Schoolyard Garden Protocols
3. Professional Development/ Mentoring for Teachers
4. Health and Wellness Initiative
5. STEM-focused Field Trips, Competitions, and Enrichment Programs

PHASE 3 – Design, fund, build and operate a locally sources line of ketchup. Expand the current culinary and food programs at West Mecklenburg High School and incorporate work-study needs of students to design, build and implement a line of ketchup, using locally grown tomatoes from school gardens and area farms.

PHASE 4 – Design, fund, build and operate a sustainable working farm on an education platform, identifying in conjunctions with several area partners.

5. Goals and Outcomes

The Catawba River District will establish a model for Sustainable Child through a multi-faceted, community-based approach which utilizes best practices in kinesthetic learning including the environment, energy, eco-footprint and food eco-systems to specifically address:

1. **Academic Achievement Gap** of the economically disadvantaged students through a collaborative series of STEM-focused, environmentally-based, hands-on learning initiatives.
2. **Childhood Obesity** trends by embedding physical activity and nutrition through educationally focused, engaging hands-on learning initiatives integrated with garden and environmental programs.
3. **Nature Deficit Disorder** through the use of schools and campuses as living classrooms, which educate students about the environments in which they live and offer inspiring methods to reduce their eco- footprint.
4. **STEM**-focused job and career awareness through early “real world” exposure and involvement with corporations, business ideas and career role models and mentoring.

6. Four-Phase Vision

PHASE I: Schoolyard Gardens as hands-on classroom extension

Schoolyard Gardens or Farm to School (the more comprehensive term currently associated with education incorporating locally grown food, health and nutrition) is rapidly becoming a national phenomenon. A significant amount of research can be found expounding upon the successes of the use of schoolyard gardens to enhance curriculum while positively affecting the physical activity, health and nutrition of students, teachers and parents. Every school has an opportunity to be successful with Farm to School, even those in identified food deserts (geographic areas without nearby access to healthy food choices). However, economically disadvantaged areas such as those outlined previously in the Catawba River District’s partnership schools need additional support in order to effectively implement farm to school principles.

ACTIVITY A: The Catawba River District has raised funds through corporate partnerships to establish and expand schoolyard gardens both directly and through a collaboration with Rivendell Farms, a sustainable working farm. Over \$6,500 has gone into the construction of 12 raised bed garden boxes, plants, equipment and supplies. Hundreds of hours of volunteer time have been dedicated to introducing students to gardening and connecting those experiences back to curriculum. Each school is developing a master campus plan which includes components such as schoolyard gardens, composting, wildlife habitats, outdoor classrooms and other STEM-focused demonstration projects. At the middle school level, connections to job/career awareness are integrated into the curriculum. Plans are underway to add 10 additional garden boxes, expand schoolyard gardens and incorporate construction-related projects appealing to middle and high school students.

Many lessons have been learned including:

- Though passionate in their interest, a large number of students and many teachers have little or no understanding of the outdoor environment. Schoolyard gardening begins with a basic understanding of the outdoor environment from soils to bugs to plants and beyond – all educational opportunities for teachers, and wonderful curricular connections for students.
- Teachers are taught to teach in a finite, indoor classroom. Asking them to bring their classes outside is a foreign concept and intimidating to them. Additional professional development and support is needed for this proven effective approach to be accepted by current teachers.
- Students want to be active and explore. In addition to providing hands-on learning opportunities for required curriculum content, school gardens also build team work, critical thinking skills and creativity. Schoolyard gardens have proven to be not only effective in academic achievement, but also successful in influencing health, wellness and nutritional attitudes.

ACTIVITY B: Connect corporations and career role models with schools to support programs (field trips and competitions), speak and help design and work on gardening and other building projects, which support students’ connections to real world skills and requirements for job readiness. While the ultimate goal is college-readiness, these connections focus on student retention through high school to increase graduation rates. Beyond this, students will receive exposure to post-secondary opportunities including college and training programs. Students could simultaneously obtain trade licensing and interim skills—steps that lead to potential enrollment in a community college or university, and eventually to better paying jobs. Many economically disadvantaged students disengage or drop out of high school because they are not able to see themselves making it all the way through college. This activity makes connections in small incremental steps through the community connections and expertise, coordination and support of the Catawba River District.

Current program (field trip):

Annual 5th Grade STEM Hands-On Outdoor Learning Fair in partnership with UNC Charlotte’s STEM Center – second annual field trip with 540 5th graders held September 29, 2012.

Phase 2: Schoolyards gardens and outdoor classrooms become platforms for academic success, healthy and nutrition awareness around food, nature and building ecosystems.

ACTIVITY A: Expand impact of schoolyard gardens by adding schoolyard garden coordinators. These coordinators support the connection between the classroom, the community and gardening, bringing the principals of Farm to School into the classroom. These coordinators have direct community connections as well as gardening expertise, which ensure the gardens are maintained during the summer and that volunteers are identified and local businesses engaged

- ACTION ITEM: Hire 2 schoolyard garden coordinators to work directly with 4 economically disadvantaged schools and be a resource to other schools in this partnership.

ACTIVITY B: Develop schoolyard garden protocols which pull together the numerous requirements and guidelines relating to schoolyard gardens, outdoor classrooms and hands-on STEM focused learning. These protocols will include schoolyard garden basics, plus composting, tastings, wildlife habitat, and a host of web based resources. As teachers and administrators join and leave our partnership schools, a resource is

needed to help bring new educators up to speed with respect to schoolyard gardens. Schoolyard garden protocols are that resource:

- ACTION ITEM: Complete Draft Schoolyard Garden Protocols
- ACTION ITEM: Have protocols reviewed by area teachers, school systems, health department officials and environmental experts to ensure they are comprehensive
- ACTION ITEM: Develop a web-based resource for schoolyard gardens for both school systems. Scope of activity will include putting those protocols on a community accessible web site for use by teachers, students, parents, civic groups etc.

ACTIVITY C: Enhance professional development through providing a professional development mentor to meet with teachers on a regular basis and help them develop curriculum and projects to support teachers striving to expand their teaching to incorporate more experiential learning both within and beyond classroom walls. Many teachers are beginning to attend summer workshops focused on schoolyard gardens. If those teachers have little or no experience in gardening, a summer workshop is not sufficient guidance to implement a successful academics focused schoolyard garden. A mentor is needed for these teachers for the first year after their schoolyard garden workshop.

- ACTION ITEM: Hire Catawba River District team professional development expert to serve as the professional development mentor working directly with 4 economically disadvantaged schools and the effectiveness team

ACTIVITY D: Implement a health and wellness initiative incorporating nutrition, health education, exercise which have been proven to accelerate academic performance, create a calmer more focused class environmental and positively affect the long term health of both students and teachers.

- ACTION ITEM: Hire Catawba River District team medical expert or corporate partner appointee to serve as health and wellness coordinator working directly with 4 economically disadvantaged elementary schools (Whitewater, River Oaks, Catawba Heights) and developing a series of videos for distribution to other partnership schools. *Note:* Dr Oz supported Health Corp is already working with West Mecklenburg High School in this capacity at the High School level and opportunities to coordinate and collaborate are being put into place.

ACTIVITY E: Program (field trips, competitions and projects) Expansion:

- Outdoor Classroom – Involving students in design and construction of an outdoor classroom to be centrally located for use by many area schools with connectivity to Carolina Thread Trail.
- STEM (science technology engineering math) focused programs:
 - Eco- Footprint Sustainability Challenge (7 schools, 2 school systems)
 - Uptown Charlotte Sustainability Field Trip (High School – energy, and STEM jobs)
 - STEM Raptor Field Trip to Carolina Raptor Center (Middle School)

- Educational Greenways--Design and develop educational greenways connecting schools to parks and neighborhoods. These greenways offer a platform for environmental education and healthy alternative connection between schools and community.

PHASE 4: Entrepreneurial Product Development – Ketchup

Precursor to Regional Food Hub – serving locally grown food at school

West Mecklenburg High School currently has a culinary and foods program and is beginning a schoolyard garden program. These components lend themselves to an entrepreneurial approach to local foods and product development involving work/study students. Harvest Moon Restaurant is a local uptown Charlotte restaurant with a goal of sourcing all their food locally. They have expressed a need for a source of local ketchup. Putting these two goals together is the West Mecklenburg High School Ketchup project which will also serve as a teaching and work/study tool.

- **ACTIVITY:** Develop the comprehensive business/school model for implementation of the Ketchup Project including a comprehensive understanding of capital improvements, regulations, approvals, policies and procedures which must be developed. Model includes the development of a line of ketchup from concept to brand to sale involving students in various disciplines from marketing to work/study to culinary etc.

PHASE 5: STEM focused Sustainable Working Farm

There is no longer a sustainable working farm within the city limits of Charlotte. There is land available adjacent to Whitewater Middle School to design and implement a sustainable working farm and a partnership formed to involve Mecklenburg Cooperative Extension, Rivendell Farm (current sustainable working farm partner). The farm would be designed with education, STEM skills and the local food industry in mind. It will be a type of farm incubator with demonstrations on how to build gardens, understand the protein side of farming and how to establish community cooperatives. The concept of the farm is divided into phased activities.

- **ACTIVITY:** Coordinate the use of a Chicken Tractor (mobile 3 hen house) between partnership schools. Rooster Hill Farms is willing to donate a Chicken in exchange for advertising their Farm and the Chicken Tractor which they build and sell.
- **ACTIVITY:** Develop a master plan and partnership agreement for the Sustainable Working Farm
- **ACTIVITY:** Develop a phased implementation strategy for the farm, and incorporate students in the design, construction and management phases. Management phase includes operations, marketing and sale of products.
- **ACTIVITY:** Develop water demonstration project – environmentally sensitive water systems to maintain farm
- **ACTIVITY:** Develop Farm Incubator and/or partnership with Friendship Trays

- **ACTIVITY:** Develop Solar project to power electric fencing and other needs
- **ACTIVITY:** Fund and Build barn for goats (products: goat hair, mild for cheese, soap, lotion) and a donkey (protects goats from coyotes and dogs)

7. Project Team

As the scope of the project and overall budgetary requirements are being finalized, a remarkable team of experts has assembled to support this vision and, if funding is identified in a timely manner, to support the implementation of this vision. Coordination of these various facets would be the responsibility of Edna Chirico, Executive Director of the Catawba River District. The current team includes:

STEM Curriculum/Teacher Mentor :	Dr. Cynthia Klemmer, PhD
Health/ Wellness/Movement:	Dr. Cecilia Novitt, PE, MD
Grants/Project Management:	Terry Albanese, BA Biology, MS Education
Garden/Build Coordinators:	Beth Mack, Farm to School Expert Jeffie Hardin, Rivendell Farms

8. Funding

Funding is being sought in a three-part approach:

- A. Corporate Partnerships have funded our schoolyard gardens and supported our field trips to date. They partnerships involve key corporations to wish to actively involve themselves in one or more of our initiatives.
- B. Corporate Sponsorships have funded our field trip programs for the past two years and efforts are underway to expand corporate sponsors to cover the expansion of field trips to 3 or 4 per year. Economically challenged students don't have the financial resources either personally or through PTA/PTO to fund field trips.
- C. Grants – The project team has established a three year strategy to apply for grants and foundation funding. Several grants are in process and many others being targeted.

9. Effectiveness Measures

A K-20 Learning World Team formed in 2011 to provide leadership, guidance and advice on Sustainable Child surrounding the identified goals and outcomes listed above. This team includes education experts from public schools, universities, science museums, area parks & recreation departments, as well as private sector businesses, media, government agencies, and other entities in the local community. This team will review the metrics being used to ensure that they represent best practices in assessment and evaluation, and further, that the programs continue to address stated goals and maximize successful results. This group will also

provide guidance on how to phase in metrics as the various components of the Sustainable Child model are being implemented. This approach will begin measuring identified outcomes in early 2013, while setting up a platform for a dynamic longitudinal research project to study the effectiveness of a collaborative, community-based initiative.

1. Narrowing of Academic Achievement Gap/Nature Deficit Disorder

- a. Schoolyard Gardens and Schoolyard Garden Coordinators to increase hands-on learning and academic success.
- b. Professional Development Mentoring after Summer Professional Development Workshops in collaboration with area school systems and educators. Expand the effectiveness of schoolyard gardening and hands-on learning.
- c. Schoolyard garden protocols to provide guidance and continuity as teachers leave and/ or new teachers become involved.
- d. Expansion of STEM focused programs and competitions exposing students to age-appropriate outdoor experiences tied to curriculum and job/career awareness.

2. Reduction in childhood obesity, improvement in health and fitness

- a. Establish a focused health and wellness initiative with each partnership school wishing to participate through volunteer teachers (repeating the approach of schoolyard gardens). Involve at least 10% of classes (voluntary) – which equates to 500 students (4 to 6 classes per school).
- b. Develop and implement 10 minute movement sessions both in person and through creation of a series of movement videos using fitness experts and area celebrities. Weekly teach conferences, telephone access as needed.
- c. Implement a health/wellness tracking system with Presbyterian Huntersville and Presbyterian Foundation to highlight improvement of voluntary involved students.
- d. Coordinate Health Fairs in partnership with area schools

3. Increased job and/or career readiness which reduces drop-out rate

- a. Connect corporate partners, corporate sponsors with hands-on learning projects and develop a career role model speakers bureau – Edna Chirico who will engage companies directly and through area chambers of commerce
- b. Develop a master schoolyard campus strategy for each school with direct ties to career awareness and readiness.
- c. Engage business partners in hands-on volunteer opportunities through program involvement, career readiness fairs and field trips.

Appendix

2013 Program Outline

Sustainable Child Project Model



2013 Program Outline

February – April Piedmont Natural Gas Eco-Footprint Challenge

GOAL: To design and coordinate a regional school competition in support of STEM skills, and STEM job/career awareness while using individual schools and school campuses as the basis for understanding and reducing the eco-footprint at each school. The Challenge is designed to incorporate experiential learning, teamwork, critical thinking skills while introducing new ideas into the eco footprint discussion.

7 Schools/2 School Systems:

	2012-2013 School Size	Economically Disadvantaged			
		Grade	Title 1	Economically Disadvantaged (Estimated)	%
High Schools					
West Mecklenburg	1,894	9-12	Y	1,375	72.6%
Middle Schools					
Whitewater Middle	891	6-8	Y	729	81.8%
Elementary Schools					
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Mountain island	666	K-6	N	348	52.3%
River Oaks	596	K-6	Y	449	75.3%
Whitewater Academy	690	K-5	Y	621	90.0%
Total	5,672			4,031	71.1.6%

Charlotte Mecklenburg Schools

*Gaston County Schools

April 22 (Friday) West Meck Green Star Uptown Field Trip

GOAL: To organize and support a field trip for 9th grade students, supporting their curriculum and exposing them to the many assets of uptown Charlotte including energy, sustainability, government, transit, and local foods while infusing the field trip with job and career awareness.

STUDENTS: up to 90 students and 9 to 12 teachers/volunteers – 115 maximum

April 5-21 NC STEM Science Fair - tied to eco-footprint

Catawba River District will conclude the Eco-Footprint Competition and announce a winner of this competition in conjunction with the statewide NC STEM science festival.

www.ncsciencefestival.org/event/stem-science-fair

May (Friday) Middle School STEM Raptor Field Trip

GOAL: To organize and support a field trip for 7th grade students, supporting their curriculum and connecting the natural environment to STEM focused jobs and careers. This field trip also addresses health and wellness and nature deficit disorder affecting all, but especially economically disadvantaged students.

STUDENTS: up to 90 students and 9 to 12 teachers/volunteers – 115 maximum

September 29 Third Annual 5th Grade STEM Interactive Learning Laboratory

GOAL: In partnership with UNC Charlotte STEM Center, to organize and support a 5 school field, bringing approximately 540 5th graders to the Duke Energy Explorium to experience a series of STEM focused hands-on learning activities supporting their curriculum and STEM Skills.

STUDENTS: Students from two school district and the following schools participate in this event. CMS: Whitewater Academy, River Oaks Academy, Mountain Island Elementary; Gaston County – Ira Rankin Elementary, Catawba Heights Elementary

Project Model

