READING ON WHEELS 2016 REPORT

PROGRAM DESCRIPTION

The 2016 Reading on Wheels Program (ROW) was a seven week initiative aiming to engage Montgomery's youth during the summer with access to our fully stocked mobile library and STEM (science, technology, engineering, and math) learning labs. This program, offered by the Montgomery Education Foundation (MEF) in collaboration with Montgomery Public Schools, the Montgomery City-County Public Library, and the Montgomery County Commission, targeted Montgomery Parks and Recreation Department community centers, local YMCAs, Boys & Girls Club, and church youth programs to ensure communities across the county were given access to a dynamic summer learning experience. The primary goal of the program was to provide academic and focused learning opportunities for Montgomery children ages six to twelve years in order to prevent the summer learning loss that most students experience when their minds are not actively engaged during the summer.

Since 2004, the Montgomery Education Foundation has funded and implemented the summer Reading on Wheels program. Historically, two buses have traveled the county allowing children to check out books each week and maintain ongoing literacy access while out of school. In the summer of 2015, a STEM program expansion model was implemented as a pilot at eight sites in the Montgomery area. In 2016, full scale implementation of the seven week STEM curriculum occurred at each of the 16 sites visited. The ROW staff traveled to two sites per day, spending approximately two hours at each site, based on terms agreed upon between MEF and each site director.

Reaching on average 1,000 students a week, the Reading on Wheels program continued to serve the community with access to our collection of over 1,500 titles. While students had the opportunity to check out books week after week they also were introduced to new scientific concepts through our STEM learning curriculum with topics ranging from engineering to Newton's Laws of Motion (detailed further below). Each week the ROW staff began with a brief review and reinforcement of the previous lesson before an introduction, demonstration, and discussion of the new lesson of the week along with the corresponding learning objectives. Students then broke into small groups, each lead by a ROW instructor, for participation in the hands-on activities.

Program survey results reinforce that participants would otherwise lack significant engagement in literacy and STEM if the ROW program did not visit. Beyond the visits from the ROW bus, literacy and STEM is not a programmatic focus at a majority of our sites. When our 2016 sites were surveyed, 100% answered "yes" or "maybe" to having their children participate in the 2017 Reading on Wheels program.

STEM CURRICULUM OVERVIEW

Week 1: Engineering

Activity:

Summary of Activities:

- Project Name: GUMDROP Structures

Objectives:

- Introduce the engineering design process
- Discuss planning and construction
- Learn about teamwork and collaboration

Week 2: Electricity and Energy

Activity 1:

Summary of Demonstration:

- Project Name: Energy Ball

Activity 2:

Summary of Activities:

- Project Name: Squishy Circuits

Objectives:

- Learn basic principles of electricity by fashioning circuits from play dough, batteries, wires, and LEDs
- Define, recognize, and build a closed circuit
- Define, recognize, and assemble series circuits
- Explain why a closed circuit is required for any electrical device to operate
- Describe the transformations of energy that occur in the circuit
- Distinguish the difference between a parallel circuit and a series circuit

Week 3: Heat and Energy

Activity:

Summary of Demonstration:

- Project Name: Solar Tube

Objectives:

- To understand the density of hot air vs. cold air
- To understand the absorption of heat
- To discuss volume and temperature
- To introduce Archimedes' principle and buoyancy

Week 4: Bio Systems

Activity 1:

Summary of Activities:

- Project Name: Spontaneous Order from Disorder

Objectives:

- Introduce thermodynamics, density, solubility, and miscibility

Materials:

- 2 Poly Density Kits
- 2 Bottles 91% Rubbing Alcohol
- 2 Bottles 70% Rubbing Alcohol

Activity 2:

Summary of Demonstration:

- Project Name: Escaping Water

Objectives:

- Introduce process of "capillary action"

Week 5: Chemistry

Activity 1:

Summary of Activities:

- Project Name: Diapers: The Inside Story

Objective:

- To see how chemistry is used to help disposable diapers work
- To see how the lining of a diaper reacts to liquids
- To discuss physical and chemical changes

Activity 2:

Summary of Activities:

- Project Name: Fluorescent Magic Sand

Objectives:

- Introduce hydrophobic and hydrophilic properties

Week 6: Laws of Motion

Activity 1:

Summary of Demonstration:

- Project Name: Balloon Helicopter

Objectives:

- To teach students about the physics of gases, lift, Newton's laws of motion, aerodynamics, and to use creative engineering skills

Activity 2:

Summary of Activity:

- Project Name: Balloon Rocket Car

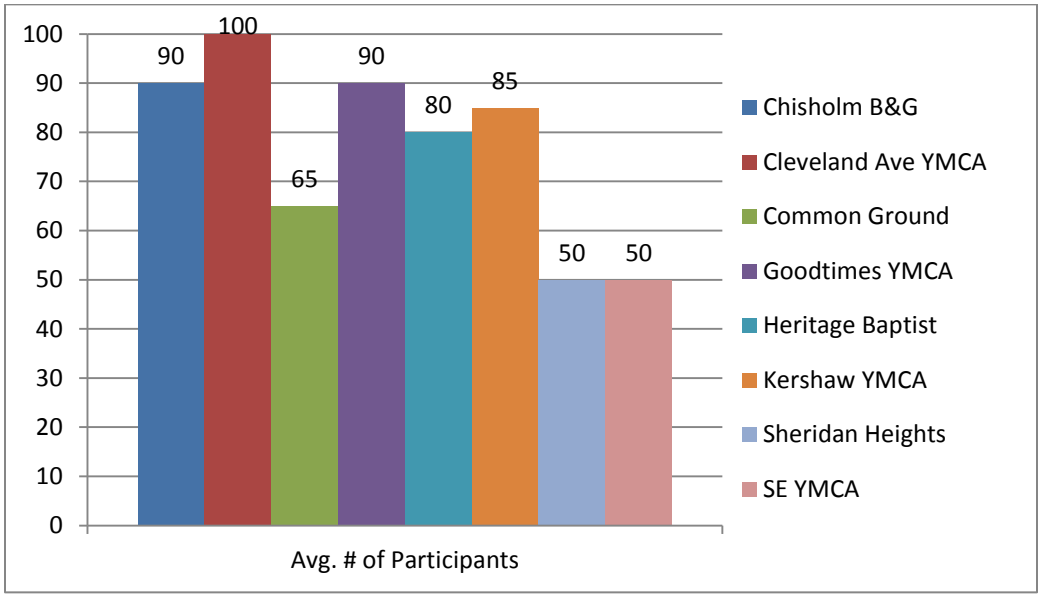
Objectives:

- To teach students about the physics of gases, thrust, Newton's laws of motion, aerodynamics, and to use creative engineering skills.

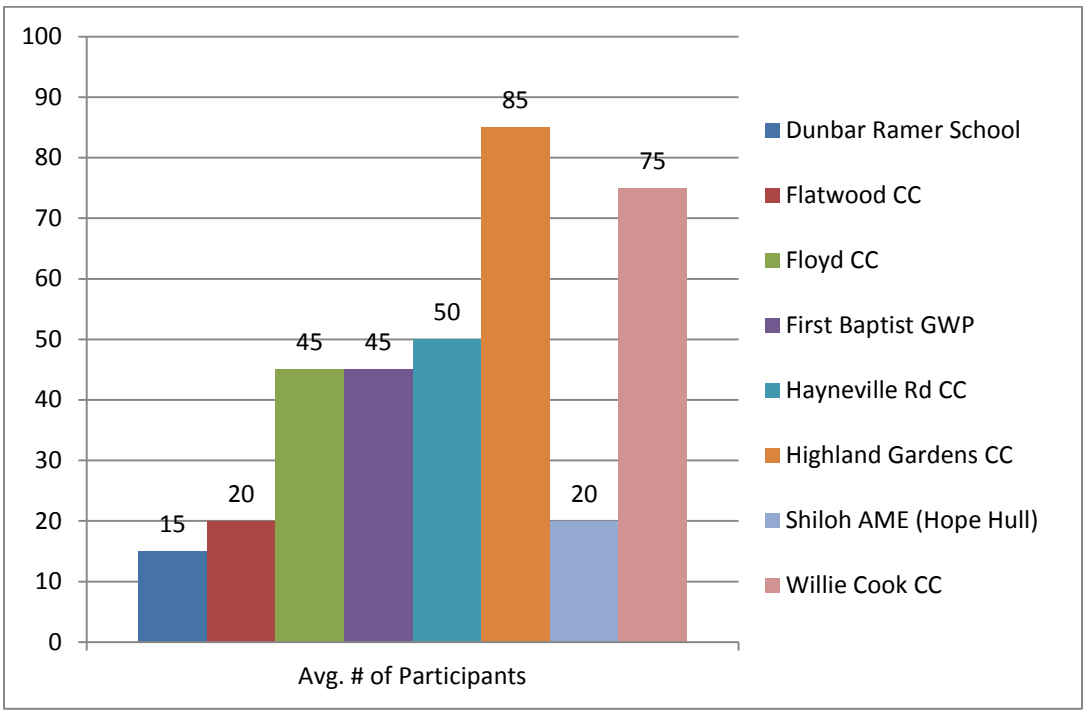
Week 7: REVIEW WEEK

STUDENT PARTICIPATION

Bus 1



Bus 2



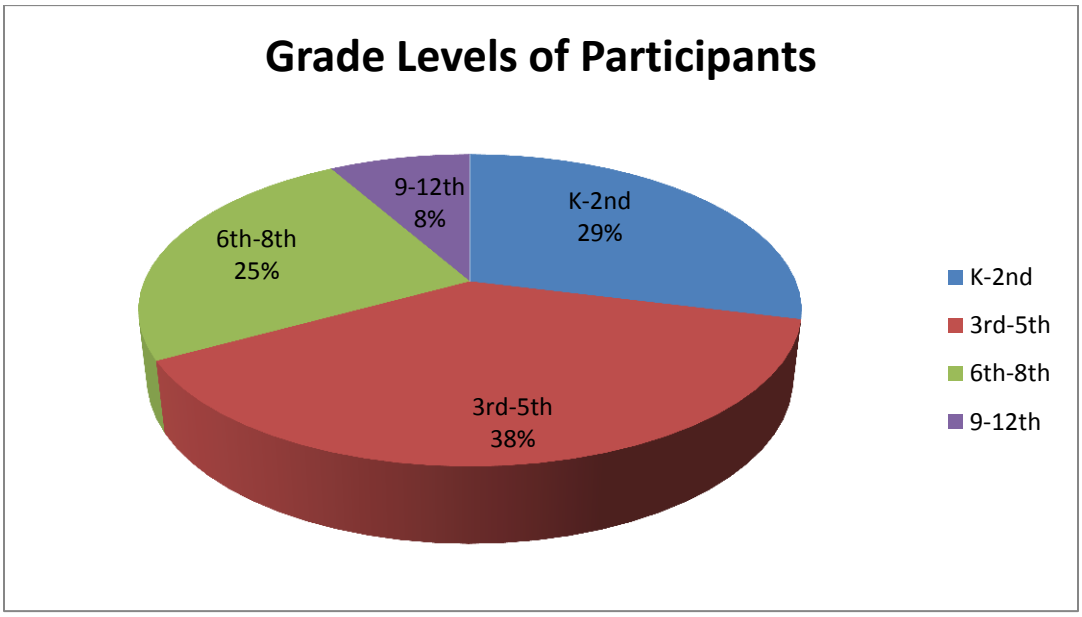
Avg. Student Participation Overall: 965

SURVEY RESULTS

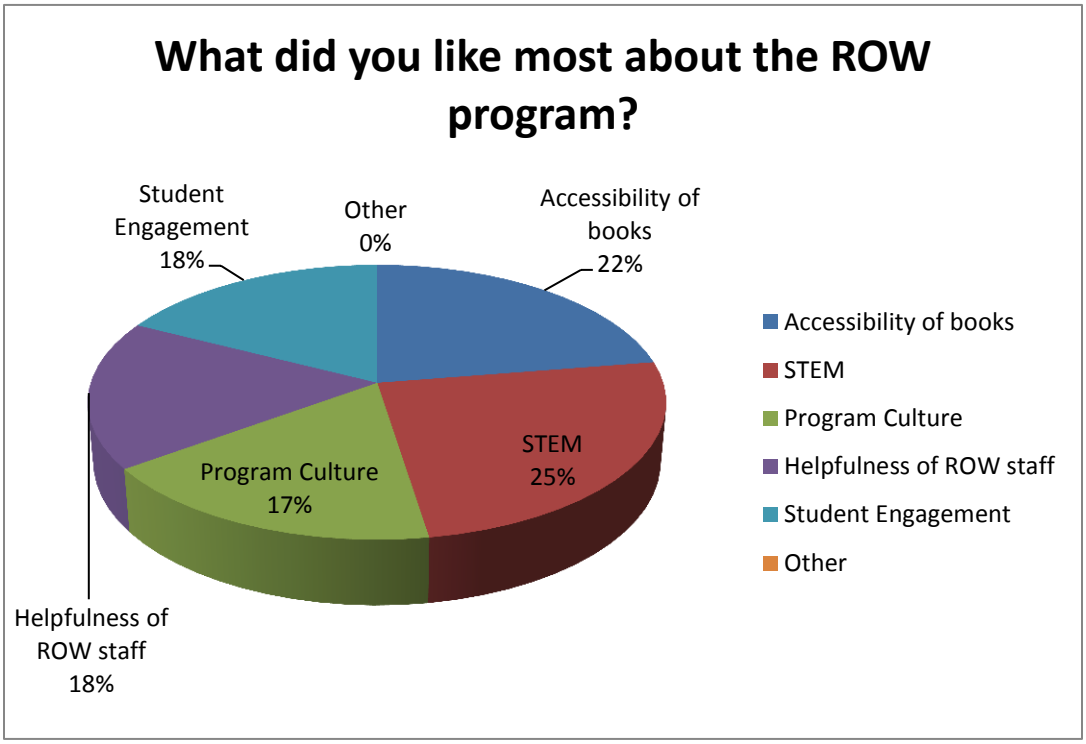
MEF's director of the Reading on Wheels program conducted a survey at the conclusion of the seven week program. The following questions offered in the survey were answered by the participating site director at each location visited throughout the summer:

98%	Agreed that Reading on Wheels participants level of engagement was good or excellent
100%	Agreed that the quality of the Reading on Wheels staff interactions with participants was good or excellent
100%	Agreed that the Reading on Wheels staff's level of professionalism was good or excellent
100%	Agreed that the quality of instruction from Reading on Wheels staff was good or excellent
100%	Agreed that their level of satisfaction with the Reading on Wheels STEM curriculum was good or excellent

Reading on Wheels serves participants of various grades and age ranges based simply on the population at the visited site. The chart below represents that range of students engaging in both the STEM and literacy components of the program:

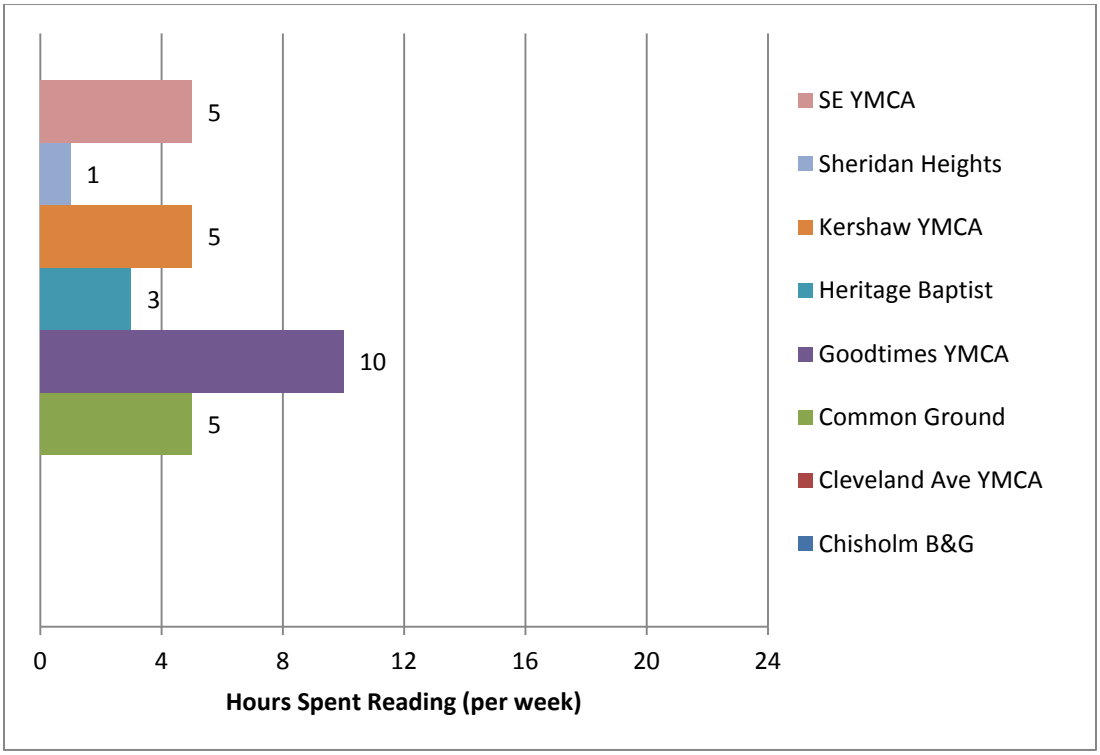


As a site director, what did you enjoy the most about the program for your kids?



If the ROW program did not visit how much time (hours) would students spend on reading?

Bus 1



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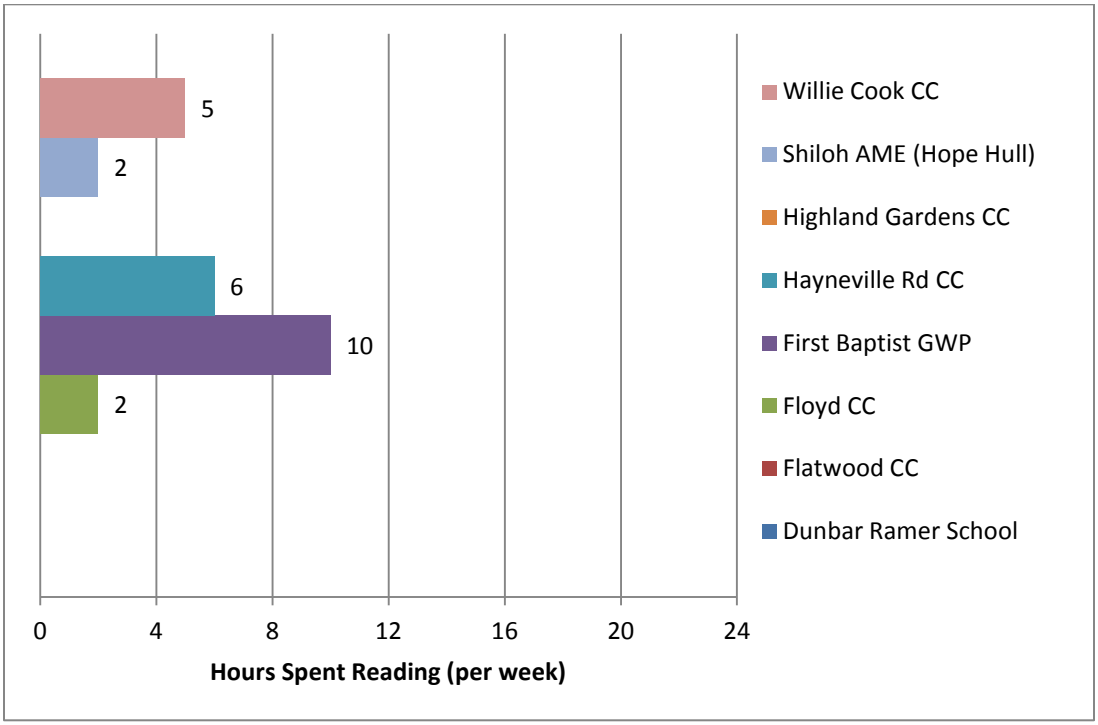
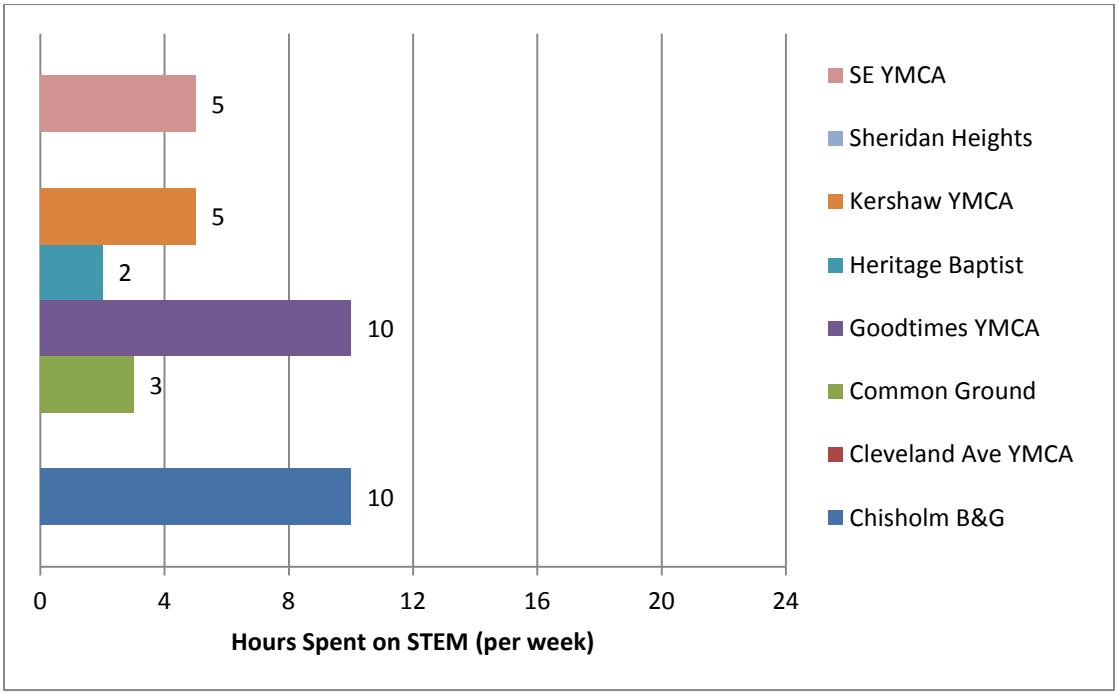
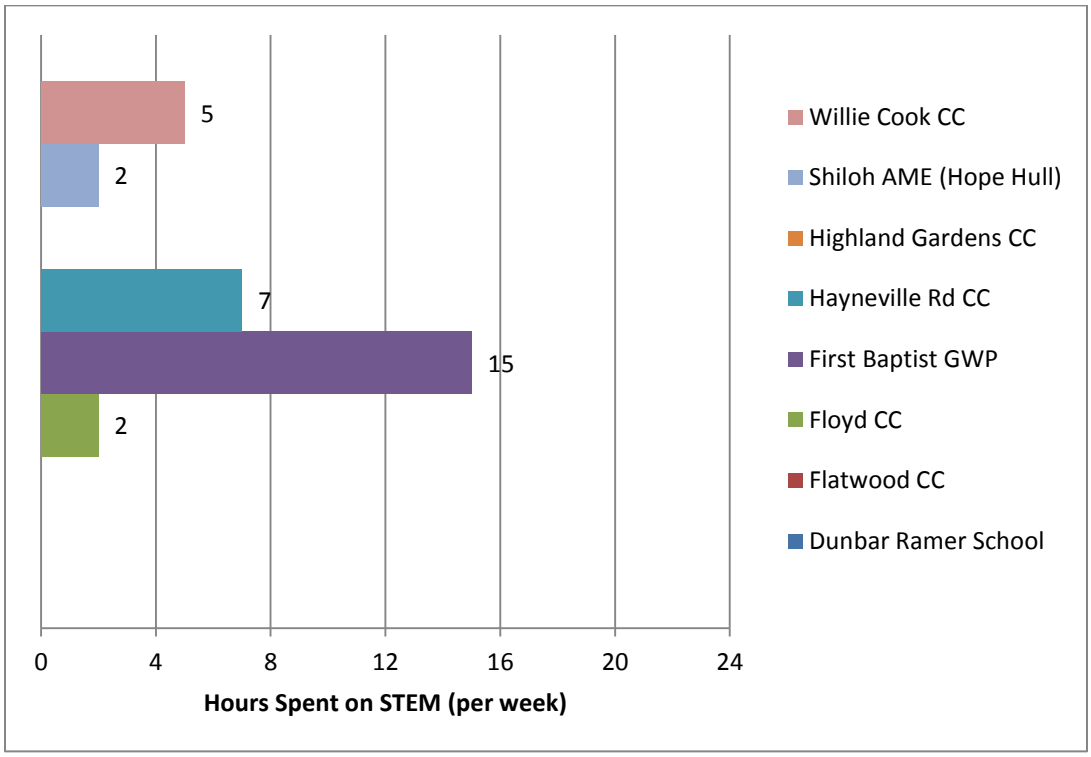


If the ROW program did not visit how much time (hours) would students spend on S.T.E.M. (Science, Technology, Engineering, Math)?

Bus 1



Bus 2



PARTNERSHIPS

Several partnerships made it possible for the Montgomery Education Foundation to support the continuation and expansion of the Reading on Wheels program:

The ***Montgomery City-County Public Library (MCCPL)*** houses the ROW mobile library collection in addition to handling book cataloging, inventory, and assortment. In 2016, the ROW director worked alongside MCCPL staff members to solidify a new system for book distribution. Utilizing the SersiDynix program, ROW instructors traveled with a single laptop which linked to the MCCPL network allowing for daily updates to their records and a consistently up-to-date inventory of the mobile library collection. MEF staff distributed special library cards for each student at each site and created rosters with the collected student information. This ensured no loss of books from the collection.

The ***Montgomery County Commission*** and the ***Montgomery Public Schools*** system provide ongoing support to ROW through funding, bus maintenance, and use of facilities.

BOOKMOBILE COLLECTION

Book donations from the Montgomery Education Foundation — **147 titles, 1,306 items**
Books transferred from our Pine Level Library (now closed) to the Bookmobile — **1,934**
Total items added to Bookmobile in 2016 — **3,240**

RECOMMENDATIONS

Entering the twelfth summer of operations under the MEF umbrella, the Reading on Wheels program expanded the efforts of our STEM initiative while upholding the program's commitment to combating summer learning loss and increasing literacy. Significant improvements were made in program delivery, including a revised STEM curriculum, intentional assessment of student engagement, and an expanded library collection. Furthermore, the following details is a summary of recommendations based on weekly debriefs, staff assessments, discussion with partners, as well as observations from the ROW director.

Hiring

- Recruit staff members with emphasis in STEM
- Consider a delay in ROW staff hiring schedule

Structure

- Revise program guidelines. Specified "qualifications" to serve as ROW site will be adopted (time allotted for program, ages of participants, no. of participants, etc.)
- Incorporate intentional reading time with three age appropriate novels over the course of the summer
- Implement additional tools for measurement and assessment of both literacy and STEM instruction
- Register and input all participants prior to week 1 and no later than week 2 in MCCPL system in order to ensure access to mobile collection is maximized
- Research similar mobile-based programs for additional structural considerations

Communications and Site Relationships

- Prepare and confirm summer site schedule no later than May 12, 2017
- Mandate pre-summer orientation meeting between ROW program director, staff, and site directors
- Amend memorandum of understanding as an agreement between MEF and all staff directors in order to better communicate the parameters of the program, including necessary staff support for the program's literacy component
- Plan additional promotion and community outreach to showcase the program

Literacy

- Expand collection to include more non-fiction texts
- Increase focus on literacy component including devoted reading time and tracking/measurement of books being read

STEM

- Specify weekly time for staff preparation ensured preparation for the following week's instruction and enhanced program delivery
- Develop curriculum with increased effectives of instructional delivery and execution
- Assess student engagement and learning based on the curriculum was centered as a priority and will inform curriculum revisions and structural changes for 2017

Instruction

- Consider rotation or tailored instruction for various age groups – to be determined prior to next summer's launch
- Target instruction to reinforce core concepts and using effective learning strategies to check for understanding from students
- Reassess curriculum and best instructional strategies based on observations and input of ROW staff throughout the summer

Partnerships

- Renew and create positive partnerships between MEF and community partners to enhance program quality and success

CONCLUSION

Communications and Site Relationships

- Positive and consistent communication throughout the summer between MEF staff and site staff members allowed for efficient instructional time and organization when arriving at each site
- Establishing a clear agreement in writing between MEF and all staff directors ensured adequate support while on site
- According to ROW instructional staff feedback, communication beyond that of the ROW director and site director will improve efficiency of program delivery could improve with site relationship
- Feedback from site directors and site staff was not only positive but offered insight into how to better serve the community outside of the summer months using the STEM curriculum – a past limitation

Curriculum

- A new STEM curriculum was implemented and carried out with minimal setbacks
- Concepts, delivery, and length of the curriculum and activities will be assessed and improved after feedback
- Project-based learning strategy was very effective in engaging students – site directors noted positive feedback on participant engagement
- Weekly reinforcement needs to be a focus of instructional improvement in order to further gauge retention of the concepts taught
- Program development moving forward will include collection of more data on student engagement and learning

Instruction

- Instructional delivery was significantly improved this summer, however, further recommendations have been made for to reinforce core concepts and gauge understanding
- All activities will be reassessed based on observations of students experience throughout the summer
- Lack of structure at certain sites was a limitation impairing the staff's instructional delivery

Staff

- Instructional staff execution was met with positive reviews from site directors and staff members as noted in survey feedback
- Positive feedback on staff professionalism and communication was key to program success
- Implementation of new curriculum required staff flexibility and adjustments, however, those have been captured for curriculum review

Partnerships

- Overall, positive relationships and open communication between MEF and community partners allowed for the program to run successfully