

Integrating STEM for Middle School Enrichment

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ExploreHope

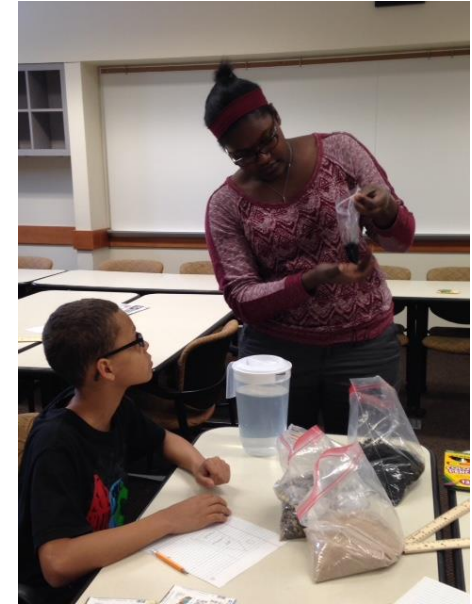
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Outline

- ▶ Step Up Program Origins
- ▶ Step Up Summer Program
- ▶ School Year STEM Enrichment Projects
- ▶ Application to School Day Learning



Origins of a Junior High Program

- ▶ Step Up began as a program to bridge the gap between CASA and Upward Bound
- ▶ Started one session a week after school for 2 hours
- ▶ Recently expanded to 2-90 minute after school sessions a week
- ▶ Last year broadened the scope of the academic component beyond literacy with the design projects.



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Step Up Goals

- ▶ Academic Support
- ▶ Mentoring Relationship
- ▶ Parent Support and Involvement
- ▶ Enrichment Programming
- ▶ Summer Program



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Step Up Summer Program



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Step Up Summer Program

- ▶ 3 years of 4 week camps
- ▶ One 4 week camp has evolved into two 2 week camps
- ▶ Approximately 20 students
- ▶ Main focus on science and engineering based activities that have real life applications
- ▶ Strong literacy component
- ▶ Hands on projects



Average Summer Day

- ▶ Breakfast and Warm Up: 8:00-9:15 am
- ▶ Science/Engineering Activity
9:15-11:30
- ▶ Reading and Writing: 11:30-12
- ▶ Fun camp activity: 1-2:30



Summer Program Themes

- ▶ Watershed Project examining water run off
- ▶ Bicycle Helmets
- ▶ Math and Sports
- ▶ Biomaterials



STEM Activity



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Summer Camp Fun



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School Year Activities



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Regional Math and Science Center Kits

- ▶ Fun short activities that are geared towards all skill levels
- ▶ Various STEM related topics and objects



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Semester Engineering Projects

- ▶ Each semester students work on one STEM project over multiple sessions
- ▶ Past projects include vertical gardens and building challenges
- ▶ Currently working on activities surrounding disease spread and virus outbreaks



Project Focus



- Students have hands-on inquiry
- Students work in small groups with mentors for small group mentoring
- Students present their work to peers and family
- Students study relevancy of the project

Family Math and Science Nights

- ▶ Grand Valley State University Regional Math and Science Center helped coordinate hands on activities
- ▶ Students worked on projects with families
- ▶ Adapted this model for the end of each camp session



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Application to In-School Activities

New Science Standards

- ▶ Place Based Learning Focus
- ▶ Engineering standards
- ▶ Science and Engineering Practices
- ▶ Cross -Cutting Concepts
- ▶ Modify your existing activities
 - decide where students can make their own projects



Your Turn

- Challenge:

Create a life vest for the hippo to float

Instructions:

- Given a set of materials
- Identify the goal of the project
- Brainstorm possibilities
- Build prototypes
- Test
- Retry

