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**GEMS**

**Great Explorations in Math and Science**

**Central Michigan**

**GEMS Center**

**2014 - 2015**

**GEMS ANNUAL REPORT**

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**INTRODUCTION**

This annual report outlines what the GEMS (Great Explorations in Math and Science) Center at Central Michigan University has accomplished during the 2014-2015 academic year. It also states our goals for the coming year and the partnerships and programs we are working on.

The GEMS Center was established in January 2005 through funding provided by Research Excellence Funds (REF), as well as foundation grants from the Dow Corning Foundation and the 3M Foundation. Three cohorts of teachers totaling 62 teachers were trained as GEMS Associates by the Lawrence Hall of Science, the science outreach center of the University of California, Berkeley. GEMS and other programs are housed at the Lawrence Hall of Science. The Central Michigan GEMS Center is one of 20 centers and 50 network sites across the United States. It is the only GEMS presence in Michigan.

We welcome comments and suggestions on our programs and professional development opportunities. You can contact us using the information below.

Sincerely,

Jim McDonald, Director

Central Michigan GEMS Center

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**CENTRAL MICHIGAN UNIVERSITY**

**GEMS CENTER**

**ORGANIZATIONAL STRUCTURE CHART**

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**Central Michigan University**

**President: Dr. George Ross**

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**GEMS Center**

Director: Dr. James McDonald

**College of Education and Human Services**

**Dean: Dr. Dale-Elizabeth Pehrsson**

**Associate Dean: Dr. Betty Kirby**

**GEMS Center Staff**

Jim McDonald, Director

Lynn Dominguez, Associate Director

Jason Artero, Associate Director

Samantha Burko, Student Associate

Trisha Funk, Student Associate

Allison Short, Student Associate

**GEMS Advisory Board**

Angela Barris, Mid-Michigan Children’s Museum, Saginaw, MI

Mandy Bolen, Principal, Clare Primary School, Clare, MI

Patricia Cotter, Accountant, Accounting Services, CMU

Ranay Gursky, Lead Teacher, Child Development Learning Lab, CMU

Jill Johnson-Hilty, Academic Advisor, Center for Student Services/EHS, CMU

Heidi Mahon, Director of Student Services/CST, CMU

David McCausey, Teacher, Renaissance Public School Academy, Mt. Pleasant, MI

Darcy McMahon, Meta4

Bill Mishler, Professor, Teacher Education & Professional Development, CMU

Patrick Seeling, Professor, Computer Science, CMU

GEMS Advisory Board Meetings: December 8, 2014 & May 5h, 2015

**Faculty Fellows**

Jim McDonald, Teacher Education and Professional Development

Lynn Dominguez, Recreation Parks, and Leisure Services Administration

Jason Artero, Teacher Education and Professional Development

Lori Irwin, Recreation Parks, and Leisure Services Administration

Darcie Shafer, Recreation Parks, and Leisure Services Administration

**GEMS Leaders 2014-2015**

Allison Short Samantha Burko Kelsey Croce Erica Howland

Tod Carnish Malory Juzyk Maggy Wiergowski

Trisha Funk Natasha Zimmerman Virginia Moore

**Super Saturday Instructors 2014-2015**

Kelsey Croce

Virginia Moore

Erica Howland

Matt Belanger

Sydnye McCleery

Emily Reppuhn

Megan Angeli

Tod Carnish

Haley Moll

Andy Brozek

Heidi Travis

Laura Lukkari

Madine Ahmed

Ananda Merneedi

Allison Short

Samantha Burko

Taylor Williams

Emily Lynch

Jessica Pennington

Andrea Dejong

Laura Hall

Maggy Wiergowski

Kelcy Gudenau

Briana Chandler

**MAJOR FUNCTIONS OF THE GEMS CENTER**

|  |  |  |  |
| --- | --- | --- | --- |
| **FUNCTION** | **DESCRIPTION** | **USERS/**  **RECIPIENTS** | **OPERATIONAL DATA OF**  **WORK INVOLVED** |
| GEMS Workshops | Conduct GEMS workshops throughout the academic year to enhance the participant’s professional development and to assist pre-service teachers with the hands-on experience needed to teach in the classroom; provide professional development experience to include on their resume. | Teachers, Pre-service teachers, Students, Administrators | GEMS Directors, Leaders, Secretary and student. Preparation for the workshop, supplies, kits, guides, copying of materials. |
| Provide Resource Material | Keep GEMS guides, kits and other related reference materials available in our office for use with workshops, lesson plans, teacher requests and to provide the means to purchase these materials. | Teachers, administrators, pre-service students, general public. | GEMS Secretary responsible for the control, maintaining and ordering of GEMS guides, kits and additional materials. To maintain appropriate costs and specifics of each item. |
| Family Science Night | Family Science Night is an opportunity for parents and their children to come together for an hour at a local school to do hands-on science as they visit a number of stations with a different science activity. | Teachers, students, pre-service students, organizations | Preparation of the presenters, pre-service students, and organizations. |
| Ocean Science Sequence/  Professional Development | GEMS Center will offer workshops on the new Ocean Science Sequence developed by the Lawrence Hall of Science. The materials will provide teachers with a standards-based tool for teaching basic science using the ocean as a compelling integrating context. The materials will be grounded in current research on teaching and learning and designed to connect to the National Science Education Standards, the Ocean Literacy Essential Principles and Fundamental Concepts, and to a large sample of state science standards. | Professional Teachers, pre-service teachers | GEMS Director, Secretary and student. Preparation for the workshop, supplies, kits, guides, copying of materials.  Creating flyers, keeping track of registrants, payments, etc. |
| KIDZ Science | GEMS has developed a new series—the **After School Kidz Science** program. Based on tried-and-true LHS curricula, these “little GEMS” are adapted for use in after school programs, Girls and Boys Clubs, Scouts, recreation and camp programs, or any out-of-school programs. |  | GEMS Director, Secretary and student. Preparation for the workshop, supplies, kits, guides, copying of materials.  Creating flyers, keeping track of registrants, payments, etc. |
| GEMS Partnerships | National Charter School Institute | GEMS Center, Angie Irwin | Working together to create and implement programs/workshops with the GEMS Center. |
| GEMS Partnerships | Meta4, Inc. | GEMS Center, Darcy McMahon | Working together to create programs that will be beneficial for Meta4, Inc. and the GEMS Center. |
| GEMS Partnerships | Mount Pleasant Discovery Museum | GEMS Center,  Jennifer Fields | Work together to bring awareness of Professional Development to Charter Schools; including, GEMS Guides/Workshops, Super Saturday, Family Science Night |
| GEMS Partnerships | CMU Mid-Tier Program | GMES Center,  Jennifer Quick | Partnering with Jennifer Quick as a vehicle to get the word out to schools about Professional Development, The GEMS Center, GEMS Guides and Kits, GEMS Workshops. |
| GEMS Partnerships | GEMS Advisory Board |  | An advisory Board made up of a wide range of individuals from teachers, students, administers, to brainstorm ideas for the GEMS Center. |

**ADVISORY BOARD**

Advisory Board Meeting – Fall 2014 (December 8, 2015)

1. Welcome and Introductions
2. Overview of GEMS
3. Review Fall 2013
4. GEMS
5. Super Saturday
   1. Flyer for Spring 2015
   2. Instructors and volunteers
   3. Marketing: schools and organizations
   4. Implementation
   5. Review Fall 2013 program
   6. Thoughts/Advice
6. Spring Schedule of Workshops
   1. Proposed Schedule
   2. Getting the Word Out
7. STREAM Involvement Nights – Family Math, Family Science, & Family Engineering
8. Closing Thoughts
9. Next meeting

Advisory Board Meeting – Spring 2015 (May 5, 2015)

1. Pizza & Pop
2. Welcome and Introductions
3. Overview of GEMS
4. Role of Advisory Board
5. Director’s Report
   1. New developments
   2. Review Fall 2013/Spring 2014
6. GEMS Workshops
   1. Proposed Fall Schedule
   2. Getting the word out
   3. Topics
7. Super Saturday
   1. Review of Fall 2013/Spring 2014
   2. Proposed Fall 2014 Program
   3. Spring 2014 Parent Survey Results
   4. Thoughts & suggestions
8. STEM Involvement Nights – Family Math, Family Science, & Family Engineering
   1. Fall 2013/Spring 2014 Events
   2. Parent Survey Results
   3. Thoughts & Suggestions
9. Closing Thoughts
10. Next meeting

**GEMS CENTER WORKSHOPS**

|  |  |
| --- | --- |
| **SPRING 2014 WORKSHOPS** | |
| DATE | WORKSHOP | | # | DESCRIPTION |
| 1/24/14 | Treasure Boxes | | 3 | In this engaging, innovative series of mathematics activities, children create personal collections of recycled, "found," and inexpensive objects and investigate their properties, calling many important science and math skills into play. |
| 2/07/14 | Build It! Festival | | 0 | This GEMS festival session includes a wide assortment of classroom learning-station activities that emphasize construction, geometric challenges, and spatial visualization. Activities involve students in free exploration of materials and lay the foundation for mathematical challenges. |
| 2/21/14 | Acid Rain | | 0 | In this stimulating unit, students learn about acids, bases, and the pH scale; make “fake lakes” and determine how their pH changes after an acid rainstorm; present a play on the effects of acid rain on aquatic life; determine the effects of various dilutions of acid on seed germination; and hold a town meeting to discuss possible solutions to the problem of acid rain. |
| 3/21/14 | Bubble Festival | | 0 | This delightful unit uses 12 tabletop activities, including bubble shapes, bubble measurements, and bubble skeletons, to present exploratory lessons in math and science. The learning-station approach to guided discovery encourages independent thinking and cooperative learning while bringing great fun and excitement to the classroom. |
| 4/11/14 | Ocean Currents | | 0 | This GEMS guide helps students gain fascinating insights into our ocean planet through innovative activities. They learn how wind, temperature, salinity, and density set water into motion, and they make an “in-depth” investigation of the key physical science concept of density. Learning is placed in a real-world context. |
| 4/25/14 | Mystery Festival | | 5 | This popular forensic science unit features two imaginative and compelling mysteries; one for younger and one for older children. Students learn to distinguish evidence from inference and conduct crime-lab investigations such as thread tests, powder tests, DNA comparisons, chromatography, and fingerprinting. |
| **FALL 2014 WORKSHOPS** | | | | |
| 9/05/14 | Math on the Menu | | 0 | In this engaging series of cooperative activities, students open, equip, and expand a fictional Mexican restaurant...with all the attendant real-life mathematical challenges. Students eagerly apply different problem-solving strategies as they plan and enlarge the tostadas menu, determine different combinations of ingredients, analyze costs, set prices, and address interior logistics when the restaurant expands to a second location. |
| 9/19/14 | Build It! Festival | | 0 | This GEMS festival session includes a wide assortment of classroom learning-station activities that emphasize construction, geometric challenges, and spatial visualization. Activities involve students in free exploration of materials and lay the foundation for mathematical challenges. |
| 10/03/14 | Acid Rain | | 0 | In this stimulating unit, students learn about acids, bases, and the pH scale; make “fake lakes” and determine how their pH changes after an acid rainstorm; present a play on the effects of acid rain on aquatic life; determine the effects of various dilutions of acid on seed germination; and hold a town meeting to discuss possible solutions to the problem of acid rain. |
| 10/24/14 | Frog Math | | 17 | In an artful interweaving of mathematics and literature, this lively series jumps off from one of the well-known Frog and Toad are Friends stories, "The Lost Button." The story leads to free exploration of buttons, then sorting and classifying and a game of Guess the Sort. Students design their own buttons and use a graphing grid to organize data. |
| 11/07/14 | Environmental Detectives | | 0 | In this case, the "crime" is a mysterious environmental calamity—a fish die-off that began five years ago. Students investigate the many potential causes of the fish dying, including chlorine pollution, acid rain, erosion and sediment pollution, predator-prey relationships, phosphate pollution and algal blooms. |
| 11/21/14 | Chemical Reactions | | 0 | An ordinary Ziploc bag becomes a safe and spectacular laboratory as students mix chemicals that bubble, change color, get hot, and produce gas, heat, and odor. Chemical Reactions explores chemical change, demonstrates endothermic and exothermic reactions, and develops  skills in observation, experimentation, and inference. |
| **SPRING 2015 WORKSHOPS** | | | | |
| 1/30/15 | Build It! Festival | | 2 | This GEMS festival session includes a wide assortment of classroom learning-station activities that emphasize construction, geometric challenges, and spatial visualization. Activities involve students in free exploration of materials and lay the foundation for mathematical challenges. |
| 2/20/15 | Acid Rain | | 0 | In this stimulating unit, students learn about acids, bases, and the pH scale; make “fake lakes” and determine how their pH changes after an acid rainstorm; present a play on the effects of acid rain on aquatic life; determine the effects of various dilutions of acid on seed germination; and hold a town meeting to discuss possible solutions to the problem of acid rain. |
| 2/27/15 | Math on the Menu | | 0 | In this engaging series of cooperative activities, students open, equip, and expand a fictional Mexican restaurant...with all the attendant real-life mathematical challenges. Students eagerly apply different problem-solving strategies as they plan and enlarge the tostadas menu, determine different combinations of ingredients, analyze costs, set prices, and address interior logistics when the restaurant expands to a second location. |
| 3/20/15 | Treasure Boxes | | 0 | In this engaging, innovative series of mathematics activities, children create personal collections of recycled, "found," and inexpensive objects and investigate their properties, calling many important science and math skills into play. |
| 4/03/15 | Bubble Festival | | 0 | This delightful unit uses 12 tabletop activities, including bubble shapes, bubble measurements, and bubble skeletons, to present exploratory lessons in math and science. The learning-station approach to guided discovery encourages independent thinking and cooperative learning while bringing great fun and excitement to the classroom. |
| 4/17/15 | Mystery Festival | | 0 | This popular forensic science unit features two imaginative and compelling mysteries; one for younger and one for older children. Students learn to distinguish evidence from inference and conduct crime-lab investigations such as thread tests, powder tests, DNA comparisons, chromatography, and fingerprinting. |
| **UPCOMING FALL 2015 WORKSHOPS** | | | | |
| 9/11/15 | Invisible Universe | | 10 | In an investigation of the electromagnetic spectrum students examine wave motion, then face challenges at “invisible energy” stations, including infrared (TV remote); radio; ultraviolet (black light) and others. They learn that these have become powerful tools in astronomy. Students are also introduced to Gamma Ray Bursts and ponder the most powerful explosions in the Universe. Many color images are included in the “Tour of the Universe.” |
| 9/25/15 | Acid Rain | | 15 | In this stimulating unit, students learn about acids, bases, and the pH scale; make “fake lakes” and determine how their pH changes after an acid rainstorm; present a play on the effects of acid rain on aquatic life; determine the effects of various dilutions of acid on seed germination; and hold a town meeting to discuss possible solutions to the problem of acid rain. |
| 10/02/12 | Math on the Menu | | 8 | This unit provides strong math learning experiences in a real-world context, as students plan and expand menus, determine ingredients, analyze costs, set prices, and design a restaurant floor plan. Students work with data organization and analysis, explore aspects of statistics, and strengthen their sense of numbers, math, and money. |
| 10/23/15 | Treasure Boxes | | 15 | From postage stamps to bottle caps, a child's precious collections are natural starting points for guided exploration and mathematics activities, and can galvanize discussion of environmental concepts. In this engaging, innovative series of mathematics activities, children create personal collections of recycled, "found," and inexpensive objects and investigate their properties, calling many important science and math skills into play. |
| 11/06/15 | Moons of Jupiter | | 12 | Observing and recording moon orbits over time, students reenact Galileo’s historic telescopic study of Jupiter’s moons and learn why his observations contributed to the birth of modern astronomy. Students experiment with craters, create scale models, and take a tour of the Jupiter system. |
| 11/20/15 | Early Adventures in Algebra | | 20 | Designed to build a foundation in algebraic thinking for students in the early primary grades. Students learn the important role zero plays in our number system, solve for unknowns, explore equality and inequality, and are introduced to algebraic symbols. Builds crucial scaffolding for more complex algebraic reasoning in later grades. |

**SUPER SATURDAY PROGRAM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Class name** | **Grade** | **#** | **Description** | | |
| **SPRING 2014** | | | | | | |
| Elephants and Their Young | Pre-K | 13 | | | In a series of lively activities, children make model elephants out of paper and cardboard, then devise elephant puppets with sock-trunks. They create models of elephant’s ears, trunks, and tusks; make elephant sounds; and sing the “Elephant Song.” As they role-play, using their “trunks,” foraging for food, and searching for water, the children gain insight into how elephants live in the wild. They are also introduced to the concept of conservation and encouraged to think about commercial alternatives to ivory. | |
| Eggs Eggs Everywhere | K | 14 | | | In a gentle and engaging exploration of animals that hatch, children study real and plastic egg-layers, including turtles, fish, snakes, and birds. Through role-playing, sorting, organizing, graphing, and exploring shape and movement, students develop an understanding not only of the process of egg-laying and hatching, but of the animals themselves, their roles in the life cycle, and fundamental mathematical concepts. | |
| Early Adventures in Algebra | 1-2 | 14 | | | This course is designed to build a foundation in algebraic thinking. Using the compelling context of “Zero the Hero,” students learn the important role zero plays in our number system. In a series of activities, including engaging games and challenges, students solve for unknowns, explore the concepts of equality and inequality, and represent and analyze mathematical situations using algebraic symbols. | |
| How Does the Earth Move?/Moon Phases | 3-5 | 9 | | | Students will focus on how the rotation of the Earth causes the apparent movement of the Sun as well as night and day. They will model the Earth’s orbit around the Sun. Students will additionally make observation of the Moon in the sky and notice patterns in the Moon’s cycle of phases. They use a model to explain the Moon’s phases and what causes eclipses. | |
| **FALL 2014** | | | | | | |
| Penguins and Their Young | Pre-K | 12 | | In a series of lively activities, children learn about the penguin's body structure, its cold home of ice and water, what it eats, and how emperor penguin parents care for their young. A life-sized poster invites the students to compare their heights and body structures to those of this four-foot-tall bird. Children experience a penguin's icy home by playing with cork penguins in a tub of "icebergs" and water. Using paper-bag penguins, the students create dramas on a paper-ocean scene complete with floating ice, and continue role- playing when baby penguins "hatch" from plastic eggs. | | |
| Mother Opossum and Her Babies | K | 7 | | In this engaging exploration, children learn about opossums & other marsupials, and about animal behavior in general. Drama, role-playing and art are interwoven with science, math, & language arts as students make model opossum pouches, create baby opossums with pip-cleaner tails, and sniff out and munch on opossum snack. Throughout the unit, children gain practice measuring, estimating, and counting, and sum up their discoveries in a book of concepts. | | |
| Liquid Explorations | 1-2 | 24 | | This unit is a great way to introduce younger students to the properties of matter and an excellent physical-science unit for primary grades. In a series of fun and fluid activities, young students explore the ubiquity and properties of liquids using introductory language and simple concepts. They play a classification game, observe how food coloring moves through different liquids, and create secret salad-dressing recipes and an "Ocean in a Bottle." | | |
| Schoolyard Ecology | 3-5 | 9 | | In the course of these activities, students learn biological sampling techniques and develop mapping and related mathematical skills recommended by the National Council of Teachers of Mathematics for this grade range. Practicing gentle stewardship, they collect temporary specimens—including ants, spiders, and other often-maligned animals—in "shake boxes" in order to study them as individual and interdependent organisms. There is ample opportunity to relieve students of their fears of certain crawly creatures and to explore why some animals seem to provoke such reactions. | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SPRING 2015** | | | | | | |
| Tree Homes/ Animal Defenses | Pre-K | | 20 | | Beginning with an imaginary defenseless animal, this highly visual course will teach children about defensive adaptations in the animal world. It will introduce biological concepts of predator/prey and help students recognize defensive structures and behaviors. The activities will also focus on appreciation for trees and the animals that live in them, stimulating children’s interest in the natural world and emphasizing the biological need for warmth and shelter. Students will use role-play to understand adaptation and deepen their math learning by sorting, classifying, and measuring. | |
| Frog Math/ Treasure Boxes | K | | 18 | | In an artful interweaving of math and literature, children will develop strategic-thinking skills and are introduced to the concept of probability. This course will also build on children’s fascination with collections of small, everyday objects to introduce discrete mathematics, statistics, numbers, logic, and language in a cooperative learning environment. Graphing, sorting, and classification activities will also encourage appreciation for recycling. | |
| Matter/ Involving Dissolving | 1-2 | | 21 | | In a succession of intriguing hands-on learning station activities, students will gather, apply, and reflect on physical evidence, just as scientists do, and learn what matter is—and what it is not. Students will learn about the properties of solids, liquids, and gases, and apply this knowledge to common objects in the world around them. Here students will also explore the concepts of dissolving, evaporation, and crystallization. Using familiar substances, they will create homemade “gel-o” colorful disks, and crystals that emerge on black paper to make a “starry night.” | |
| Ocean Science | 3-5 | | 11 | | Students will engage in exploring ocean currents, features of the ocean floor, ocean habitats, ocean organism diversity, ocean food webs, adaptations to the ocean environment, and human interconnections with the ocean including exploration, technology, pollution and solutions. This course will help students understand the climate ocean connection and climate change curriculum they will be exposed to in upcoming grades. | |
| **UPCOMING FALL 2015** | | | | | | |
| Ladybugs/ Hide a Butterfly | | Pre-K | |  | | In a series of observational and role-play activities, children learn about ladybug body structure, life cycle, defensive behavior, and favorite foods. They absorb the mathematical concepts of counting, symmetry and pattern as they indulge their curiosity about this charming insect. Students will also learn about butterflies through the creation of a mural meadow in which paper animals will gradually tell the stories of camouflage, predator/prey, and survival behavior in the real outdoors. There is ample opportunity for students to talk about small animals they’ve seen in real grass-and-flower environments. |
| Eggs Eggs Everywhere | | Pre-K | |  | | In a gentle and engaging exploration of animals that hatch, children study real and plastic egg-layers, including turtles, fish, snakes, and birds. Through role-playing, sorting, organizing, graphing, and exploring shape and movement, students develop an understanding not only of the process of egg-laying and hatching, but of the animals themselves, their roles in the life cycle, and fundamental mathematical concepts. |
| Buzzing A Hive | | K | |  | | Students get a good introduction to the honeybee’s extravagant communication system, intricate behavior, and an appreciation for our interdependence with these and all insects. In a series of guided-discovery activities, the children make paper bees and learn about bee body structure, act as bees in a beehive drama, perform bee dances to learn how bees communicate directions and learn about bee predators and honey robbers. |
| Sifting Through Science/ Investigating Artifacts | | 1-2 | |  | | Students will explore objects and their properties at three different learning stations. Students investigate materials that sink or float, magnetic and nonmagnetic objects, and sand-and-bean mixture with elements that can be sifted and separated. Students will also engage in activities related to anthropology, archaeology, and diverse Native American and world cultures. Teams of students sift through “artifacts” learning the skills required for excavation, map-drawing, and curatorship. They will also create stories, sort objects, and make masks from these objects. |
| Mystery Festival/ Crime Lab Chemistry | | 3-5 | |  | | Students will study a "crime scene," then conduct crime-lab tests on the evidence, analyze the results, and try to solve the mystery. The many crime-lab procedures include thread tests, powder tests, DNA comparison, chromatography, and fingerprinting. Students will visualize the molecular nature and behavior of matter, as they create and revise models and consider the advantages and limitations of models. |

**Super Saturday Parent Survey Results –Fall 2014**

**Which class did your child attend?**

* Animal Defenses & Tree Homes: 3
* Frog Math & Treasure Boxes: 2
* Matter & Involving Dissolving: 8
* Ocean Science: 3

**How would you rate class length (3 hours)?**

* Works well – 10
* Acceptable – 1
* Inconvenient – 0

**Was the program location and size of class appropriate?**

* Works well – 10
* Acceptable – 1
* Inconvenient – 0

**How would you rate location (EHS Building)?**

* Works well – 11
* Acceptable – 0
* Inconvenient - 0

**How would you rate class times (9:00am-noon)?**

* Works well – 10
* Acceptable – 0
* Inconvenient – 0

**How would you rate snacks?**

* Works well – 8
* Acceptable – 2
* Inconvenient – 1

**How would you rate tuition ($35/3 weeks)?**

* Acceptable – 1
* Strongly agree – 7
* Agree – 1
* Neither agree nor disagree – 2
* Disagree – 1
* Strongly disagree – 0

**Is the cost of the program ($35/child) a good value for what is offered?**

* Strongly agree - 7
* Agree – 1
* Neither agree nor disagree – 2
* Disagree – 0
* Strongly disagree - 0

**Did you like the parent newsletters that were sent home after every session?**

* Strongly agree – 7
* Agree – 2
* Neutral – 2
* Disagree – 0
* Strongly disagree - 0

**Did you like the opportunity to attend your child’s class on the last day?**

* Yes, very much – 5
* It was alright – 5
* I thought it was a waste of time – 1
* Not really - 0

**Were the teachers knowledgeable in the subject and kept the students engaged?**

* Strongly agree – 4
* Agree – 5
* Neither agree nor disagree – 1
* Disagree – 1
* Strongly disagree – 0

**How would you rate your overall satisfaction with the Super Saturday program for this session?**

* Excellent – 8
* Very good – 1
* Good – 1
* Fair – 1
* Poor – 0

**Would you recommend this program to others?**

* Yes – 10
* No – 0
* Maybe - 1

**What month would you prefer for Super Saturday classes for Fall 2015?**

* September – 3
* October – 8
* November – 4

**Would you like separate classes for each grade level?**

* Definitely – 6
* Yes – 0
* Combined classes for grade levels are OK – 5
* No - 0

**How likely would you be to sign your child/children up for a future session of Super Saturday?**

* Definitely will – 8
* Probably will – 2
* Might or might not – 1
* Probably would not – 0
* Definitely would not - 0

**If you could make one change/improvement to the Super Saturday Program what would it be?**

* “Offer more throughout the year”
* “My daughter said she would like more experiments that surprise her. I think they should also be expected to generate hypotheses, which should be listed on the board for them to revisit, so that they are surprised more often. I would also like her to grasp some of the scientific properties of chemicals and materials, ie. acids and bases and why baking soda does what it does.”
* “First day registration seemed a bit chaotic – I would suggest setting up a registration table for each class/grade level. In particular, the preschool age children looked like they could easily get lost or wandered off – better supervision with this age group from downstairs to upstairs classrooms.”
* “Notification of the program (detailed agenda) with names of teachers and their qualifications.”
* “The parent involvement section was good for one of the groups (Ocean) and only OK (math) for the other group, The time of the ocean was too long, and prevented attendance for both parents at math. We like that they are staggered for those with children in different classrooms though.”
* “I did not receive the parent newsletter two of the three times this semester. Also, I like the idea of the parent involvement opportunity, but it was not well orchestrated this time. The parents really weren't needed for the activity and most of the time we were waiting for supplies to be delivered by the teachers.”

**What class (or classes) would your child be interested in taking should they be offered?**

* “Engineering, art”
* “Anything with more experiments in it”
* “My daughter, although in preschool, does science kits at home where she gets to mix things and watch things grow. Much of what she’d done in the Super Saturday program is color pictures. I’d like to see the 4 year olds do basic experiments, too. I, personally, would like to see more math.”

**STEM (Science, Technology, Engineering, & Math) Events**

|  |  |  |
| --- | --- | --- |
| **SPRING 2014** | | |
| 2/06/14, 6:00-8:00pm | Child Development Learning Lab @ CMU | Family Math |
| 2/18/14, 6:00-8:00pm | Clare Library, Clare, MI | Family Math |
| 2/27/14, 6:00-8:00pm | Coleman Elementary School, Coleman, MI | Family Math |
| 3/20/14, 6:00-8:00pm | Gladwin Elementary School, Gladwin, MI | Family Math |
| 4/16/14, 6:00-8:00pm | Gladwin Elementary School, Gladwin, MI | Family Science |
| 4/24/14, 6:00-8:00pm | Child Development Learning Lab @ CMU | Family Science |
| 4/26/14, 1:30-3:30pm | Mid-Michigan Children’s Museum , Saginaw, MI | Family Science |
| **FALL 2014** | | |
| 10/16/14 | Coleman Elementary School, Coleman, MI | Family Engineering |
| 10/21/14 | Child Development Learning Lab @ CMU | Family Engineering |
| 11/11/14 | Clare Library, Clare, MI | Family Engineering |
| 11/15/14 | Mid-Michigan Children’s Museum | Family Engineering |
| **SPRING 2015** | | |
| 1/20/15 | Coleman Elementary School, Coleman, MI |  |
| 1/24/15 | Mid-Michigan Children’s Museum |  |
| 3/3/15 | Coleman Elementary School, Coleman, MI |  |
| 3/28/15 | Mid-Michigan Children’s Museum |  |
| 4/28/15 | Child Development Learning Lab @ CMU |  |

**GEMS CENTER PROGRAMS (2014 – 2015 Accomplishments)**

**GEMS Leaders**

The GEMS Center has recruited a group of 8 preservice elementary and secondary education students to help present our professional development workshops for area teachers and CMU education students. This is an effort to grow future leaders in science and math education.

Expectations for GEMS Leaders are as follows:

1. **Presenting Workshops**: You would take a part in the presentation of three to five workshops during the academic year.
2. **Pre-planning for Workshop presentations**: The faculty mentor leading the presentation would contact you to arrange a time when the GEMS Leaders and mentor would decide who presents what part of the professional development session. At the planning meeting, you would walk through the guide to get an idea of the activities and the direction of the upcoming workshop.
3. **Presentation at professional development**: On the day of the workshop, you would teach your portion of the workshop and assist with the other portions. You would also set up the workshops and help clean up things afterward.
4. **Attend periodic GEMS Leaders Meetings**: Once or twice a semester, we would get together to plan and see how things are going. When you register for classes, we need you to send your class schedule to us so that we can know when to plan meetings, etc.
5. **Represent GEMS**: You would talk with other preservice teachers about GEMS and possibly assist in some of our other professional development activities for teachers.

**Preservice Teacher Workshops**

The GEMS Center conducts professional development workshops for preservice teacher students in both the elementary and secondary teacher education programs. A list of the sessions and the attendance at each session for the last year is contained in the back portion of this annual report.

Typically the topics for these sessions are one of the teacher guides from the GEMS Series of over 70 math and science guides. These guides cover math, physical science, life science and earth and space science.

**Family Science**

Students in the National Science Teachers Association student chapter at CMU and in elementary science methods (EDU 345) have been sponsoring Family Science Nights in area schools for seven years. They need funds to pay for their mileage and consumable science supplies for this service learning opportunity.

The CMU students and faculty advisors have presented Family Science Nights at these local schools:

* Clare Primary School
* Remus Elementary School
* Renaissance Public Academy in Mt. Pleasant
* Farwell Elementary School
* Rosebush Elementary School
* West Intermediate School in Mt. Pleasant

Family science is an opportunity for parents and their children to come together for an hour at a local school and do some hands-on science together as they visit a number of stations with a different science activity.

Why Family Science Nights?

* Have “fun” doing science.
* Bring scientific learning to family unit.
* Encourage doing science at home with everyday materials.
* Spark children’s scientific interest by allowing them to manipulate objects and participate actively.
* Allows interaction with “practicing scientists.”
* Provides forum for presenters to share information about careers in science.
* Stimulates parents’ interest in science and their children’s science education.
* Research shows direct link between parental attitudes and student achievement.
* Builds connections between classroom science and the real world.
* Demonstrates life-long learning amongst parents.

GEMS PERSONNEL CHANGES: None

GEMS FUNDRAISING

The GEMS Center has and is continually working with Development to provide ongoing Grants and Donations to keep the GEMS Center in operation.

Grants received in 2010: Mount Pleasant Area Community Foundations: $2,000. Meemic: $2,000.

Grants received in 2014: $7100 from the Saginaw Community Foundation to bring the Super Saturday Program to the Mid-Michigan Children’s Museum.

DIVERSITY (Staff, Student, Co-curricular activities, social climate): The GEMS Center has recruited GEMS Leaders, Super Saturday Instructors and STEM Involvement Volunteers that are from underrepresented groups. We are very proud of our diversity.

SWOT (Analysis of the GEMS CENTER)

Strengths: GEMS offers a wide variety of professional development and additional training to in-service teachers, professional teachers and students; through its own resources and the partnerships with others. The GEMS Center offers many opportunities that are not available in the surrounding areas.

Weaknesses: The weaknesses would be that there is not enough staff to handle all of the programs it could and would like to become more involve in. The lack of funding is also a big part of this as well.

Opportunities: The GEMS Center offers/provides many opportunities not only to our CMU students, teachers, but students in the surrounding areas. We are able to partner with such programs as Family Science Night, Super Saturday, KIDSZ Science and After School Universe that would not be available to this audience. Professional Development and more programs could be added to make CMU GEMS Center the leading resource for teachers and students in science and math.

Threats: Our biggest threat would be the limitation of funding to help create and offer these programs.

PROGRESS TOWARDS 2014 – 2015 GOALS

We stated the following goals for the 2014-15 academic year:

* Establish Super Saturday program at Mid-Michigan Children’s Museum in Fall 2014 and Spring 2015.
* Revive GEMS workshop program with preservice and inservice teachers.
* Maintain partnerships with area schools for STEM Involvement Events

1. Establish Super Saturday Program at Mid-Michigan Children’s Museum: This goal was postponed for one year in order to allow for planning and marketing of the opportunity to area schools and children’s centers.
2. Revive GEMS Workshops: the GEMS Center received a “Guide Grant” of $3500 from the Lawrence Hall of Science to receive some free guides to give to the participants of our workshops. This has increased our workshop attendance.
3. Maintain partnerships with area schools for STEM Involvement Events: as you can see from the information above we did a robust number of events at area schools. We have decided to discontinue this program since a lot of on campus students do not have transportation and schools cannot support our costs on the program.

PRIMARY GOALS FOR 2015 – 2016 (no more than five):

1. Continue to build the Super Saturday Program in Mt. Pleasant. The program had a new high of 70 students in our preschool through fifth grade program. We are expanding the classes to two preschool classes.
2. Start offering STEM programs at the Mid-Michigan Children’s Museum in Saginaw three to four times per year on a contractual basis.
3. Offer a robust set of workshops for preservice teachers and area educators.
4. Start a GEMS Leadership certificate for our preservice teachers.

CONTINGENCIES/RISKS TO ACHIEVING THOSE GOALS AND STRATEGIES TO ADDRESS: We would like to request the same amount or a slight increase in the amount of works study funds allocated to the GEMS Center.