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2012 Sonia Kovalevsky Math for Girls Day Report

Association for Women in Mathematics, Lincoln University of Missouri

Donna L. Stallings
stalling@lincolnu.edu

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Association for Women in Mathematics
Sonia Kovalevsky Middle School and High School Mathematics Days
Supported by National Science Foundation

SK DAY SUMMARY REPORT

(Please complete this form in addition to your complete report.)

NAME OF INSTITUTION: Lincoln University

REPORT SUBMITTED BY: Mrs. Donna Stallings_E-mail: stalling@lincolnu.edu

DATE OF SK DAY: April 27, 2012

EVENT WEBSITE: <http://www.lincolnu.edu/web/dept-of-computer-science-mathematics-and-technology/sonia-kovalevsky-math-for-girls-day>

COPY OF PROGRAM/SCHEDULED INCLUDED: ☒ YES ☐ NO

ATTENDANCE:

Number of Teachers: 9

Number of Students: 84

Number of Minority and Under-represented Teachers: 0

Number of Minority and Under-represented Students: 16

Number of assistants: 32

DEMOGRAPHICS on SPEAKERS: Additional information contained in complete report.

Males= 2; Females = 5; African American=3; Caucasian=4

PARTICIPANT EVALUATIONS INCLUDED: ☒ YES ☐ NO

FEATURED ACTIVITY: "Good Bread...Good meat...Good God...Let's Eat!"

LIST THREE THINGS THAT WORKED WELL FOR YOUR SK DAY:

- 1) The new group building competition was enjoyed by all the student participants. This was a new addition to the program that took the place of the team test. We moved the venue to the university gymnasium and allowed the girls to spread out across the gym and build, build, build.
- 2) The usage of the website to register participants for the event made the process more efficient. We also changed our registration form to include names of each participant. This helped us create certificates of participation prior to the event so that we could hand them out before the day ended.
- 3) We had fewer registrants this year and initially were concerned. This worked to our advantage as we could not have hosted the building competition with more than approximately 85 students in the university gymnasium. If we decide to host a similar program next year, our target attendance number will be 85.

Featured Activity
7th Annual Lincoln University
Sonia Kovalevsky Math for Girls Day



**Poplar Christian
Health Service**

“Good bread...Good meat...Good God...Let’s EAT!”

Minister Lolita M. Poplar, Founder and CEO

www.poplarchristianhealthservice.com

Email: poplarchristianhealthservice@yahoo.com

Food is awesome! And cooking is one of the best ways to practice math skills. Cooking involves activities that include measuring ingredients, setting temperatures, and calculating food costs. Minister Lolita Poplar used her training as a Certified Food Psychology Coach and Personal Fitness Chef to help the girls enjoy math in the kitchen.

To set the tone, each student received a large chef’s hat which they decorated and wore during the workshop. Minister Poplar did a brief presentation on the significant relationship between cooking and mathematics. For hands-on experience, the “she chefs” divided into five work groups to practice specific math skills.

- Budgeting (Groups 1 and 2): “With a budget of \$7.00, use the grocery sales papers to create a wholesome meal for a family of four (4) people. Remember to consider the list of staple ingredients.”
- Temperature conversion formulas (Group 3): “Convert each cooking, holding, or storage temperature to Fahrenheit or Celsius using the following formulas:
 $^{\circ}\text{F} = (^{\circ}\text{C} \times 9/5) + 32$ or $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$.”
- Measurement, portion sizes, creativity, and teamwork (Group 4): “Using the provided ingredients, create smoothies for everyone! Try to make all portions equal. Remember to write all recipe ingredients and steps as you go.”
- Ratios, fractions, and cross-multiplication (Group 5): “Pick a recipe that serves 4 or 6 people. Using the example to solve for x , convert the recipe to serve the number of students in this workshop.”

Everyone enjoyed delicious smoothies at the end of the workshop. Minister Poplar and the girls had fun practicing math in the kitchen. Poplar Christian Health Service would be thrilled to support the 8th Annual Lincoln University Sonia Kovalevsky Math for Girls Day!

May 15, 2012

Sonia Kovalevsky Days Selection Committee
Association for Women in Mathematics
11240 Waples Mill Road Suite 200
Fairfax, Virginia 22030

Dear Sonia Kovalevsky Selection Committee Members:

On behalf of the Computer science, Technology, and Mathematics faculty and local Jefferson City community I would like to thank you for awarding Lincoln University with the Association for Women in Mathematics Sonia Kovalevsky Math for Girls Day Grant.

This was our seventh year hosting a "Lincoln University Sonia Kovalevsky Math for Girls" Day (LUSK). The event was held on Friday April 27th, 2012 from 8:30am to 2:00pm. Our initial goal was to host over one hundred young ladies from St. Louis, Kansas City, Jefferson City, Columbia, and the Bootheel areas of Missouri and East St. Louis, IL in grades eight through twelve along with their teachers. I was happy to register 84 young ladies and their teachers as we made a significant change in the type of competition this year so that additional personnel and space were a key component to the program's success.

Five speakers committed to attend the event and present student workshops focusing on the relationship between mathematics and different careers. Speakers for the LUSK event included Lincoln University faculty, former students, and a nutritionist. Enclosed is a report of the day's events, the event brochure, participant evaluations, and copy of the local newspaper's article on the math day.

Please do not hesitate to contact Mrs. Donna L. Stallings regarding the enclosed report.

Sincerely,

Mrs. Donna L. Stallings,
Assistant Professor of Mathematics
Math for Girls Day Coordinator

SONIA KOVALEVSKY MATH FOR GIRLS DAY REPORT 2012

The seventh annual Lincoln University Sonia Kovalevsky (LUSK) Math for Girls Day was held April 27th, 2012 from 8:30am to 2:00pm on the campus of Lincoln University in Jefferson City, MO.

Prior to the event, the LUSK mathematics day committee revised their web page so that parents & teachers could register and gather information regarding the day's events. In addition to registration information, the website contained past reports, maps to campus, contact information, evaluation information, up to date program, and links to funders.

Teachers and parents printed their registration forms from the website and then faxed or emailed them along with at \$25 registration fee to the mathematics department office. Registration ended on March 30, 2012 with approximately 40 students and 5 parents/teachers registered. The registration due date was extended to accommodate more schools and 84 students were registered along with 12 teachers/chaperones by April 15. The following schools were in attendance:

- Jefferson City, MO – Calvary Lutheran High School
- Jefferson City, MO – Thomas Jefferson Middle
- Wardsville, MO – Blair Oaks Junior High
- Jefferson City, MO – Homeschooled students
- Jefferson City, MO – Lewis and Clark Middle
- Jefferson City, MO – Jefferson City High School
- Eldon, MO – Eldon Middle School

Once the registration form and \$25 registration fee were received, the LUSK committee provided attendance confirmation letters, payment receipts, driving directions, exam guidelines, and a list of workshops. As a result of past evaluations, teachers were asked to review the workshop descriptions with their students and encourage them to choose up to three workshops prior to the actual event. Information about the workshops was sent ahead of time in response to past evaluations and comments provided by teachers who stated that

their students did not have enough time to consider which workshops to choose. In addition, some participating teachers did not feel as though enough time and detailed descriptions were provided prior to choosing workshops. The planning committee will continue to adjust how information is disseminated so that teachers and students have ample time to review workshop titles, descriptions, and career connections prior to attending the event.

Many of our past evaluations by students, teachers, and LU faculty have requested that we expand the program to include more schools and allow more than 15 students from each school. During this year's event, the LUSK committee again decided not to fulfill that request. The event limited each school to 16 registrants and two chaperones to keep workshops and activities at a manageable level where speakers could interact one-on-one with participants. While the attendance was decreased to 84 participants this year, the committee felt the decrease was more manageable for LU facilities and personnel. In future years, the total attendance will remain at approximately 85 students.

The 2012 LUSK day committee instituted significant changes to this year's program in response to past surveys. Teacher workshops were eliminated so teachers could participate in activities with students; the team competition was transformed from a test to a Design Squad engineering team activity; and students chose one workshop session rather than two.

The following information was compiled from biographical information reported by participants. All participants did not complete the forms and in some cases some participants answered only some of the questions asked. The information includes responses from students and their teachers/parents.

STUDENT ATTENDANCE INFORMATION

(INFORMATION OBTAINED FROM EVALUATIONS)

GRADES	2006	2007	2008	2009	2010	2011	2012
6	66	0	6	1	0	0	0
7	0	0	2	0	1	0	12
8	0	60	41	14	36	24	41
9	19	11	14	6	6	10	4
10	3	11	10	6	12	11	12
11	6	12	12	31	34	27	5
12	0	2	10	3	1	1	8
HOMESCHOOLED	1	0	0	0	0	0	0
NON-RESPONSIVE	2	0	1	2	7	2	2
TOTALS	97	96	96	63		73	84

Race	2006	2007	2008	2009	2010	2011	2012
African American	0	0	1	0	0	0	0
American					2	0	0
Asian	9	0	3	1	0	0	6
Black & White	0	0	0	1	0	0	0

Black	15	12	20	13	17	14	6
Caucasian	1	0	0	0	0	0	0
Hispanic	1	0	1	0	6	4	1
Mixed	1	2	0	0	0	0	0
Mulatto -Black & White	0	3	0	0	0	0	0
Native American	0	2	0	0	0	0	0
Non- responsive	2	0	0	0	0	4	2
Other	1	0	0	0	1	5	3
White- American					1	0	0
White	67	77	71	48	70	50	66
Total	97	96	96	63	97	77	84

AGE	2006	2007	2008*	2009	2010	2011	2012
11	10	0		0	0	0	1
12	53	0		2	0	1	2
13	2	6		2	10	5	25
14	4	57		11	24	20	25
15	16	13		7	7	9	5

16	5	9		14	15	14	10
17	4	9		22	22	24	10
18	0	2		2	1	1	4
NON-RESPONSIVE	3	0		3	11	1	2
TOTAL	97	96		63		75	84

TEACHER/PARENT ATTENDANCE INFORMATION

RACE	2006	2007	2008	2009	2010	2011	2012
AFRICAN AMERICAN	5	6	2	6		0	0
WHITE/CAUCASIAN	8	5	10	11		11	9
HISPANIC	0	0	1	1		0	0
TOTAL	13	11	12	18		11	9

Drs. Carolyn Mahoney, Ruthi Sturdevant, Sivanandan Balakumar and Mrs. Donna Stallings, Program Coordinator opened the day with a welcome to kick off the seventh annual Sonia Kovalevsky Math for Girls Day. The 2012 LUSK Day theme was Breaking Barriers...Connecting Dots. The day began with a light continental breakfast and registration. Lincoln University professional math tutors and pre-service teachers helped begin the event by setting up tables, giving out name tags to participants as they arrived, helping students sign up for workshops, and collecting surveys. Each participant received a LUSK Day bag that contained an event program, LUSK Day pencil, Blue Tiger stuffed animal, LUSK Day mini-notepad, and LUSK Bracelet/Jump Drive. Teachers and speakers received a LUSK bag, pencil, ruler, notepad, and water bottle.

Participating teachers submitted names during pre-registration into teams of four prior to arriving in preparation for the team problem solving competition. Teams were randomly assigned one of five different projects prior to their arrival.

Project Titles:

1. Build a Rubber Band Car
2. Build a Kicking Machine
3. Build a Kinetic Sculpture
4. Zip Line
5. Heavy Lifting Machine
6. Balloon Rocket (Teachers)

Teams were given 80 minutes to build, test, and adjust their projects. The committee chose 12 judges; 6 students and 6 faculty members who met with each team to ask questions and evaluate projects. Judges provided comments via a short ranking form based on specified criteria. At the close of the team competition, students had the opportunity to choose from five different workshop sessions which were limited to 15 students to allow speakers to provide individual attention and hands on activities. Evaluations suggest we continue to rotate speakers to provide workshops that have more variety, hands-on activities, and more relation to varied career options.

Engineering Competition Judges

1. Dr. David Heise (Computer Science Faculty), Edmund Surratt (student)
2. Dr. Richard Presberry (Retired), Dr. Sivanandan Balakumar (Department Head)
3. Mrs. Mary Kabiri (Retired-mathematics), Brandi Drummond (student)
4. Mr. Justin Jackson (Mathematics Faculty), Marcel Cooks (student)
5. Dr. Quingxia Li (Mathematics Faculty), Mary Gardner (student)
6. Dr. Nihal Siriwardana(Mathematics Faculty), Chasity Bopp (student)

SEMINAR SPEAKER INFORMATION

STUDENT SEMINARS

Mr. Eugene Matthews, LU Criminal Justice Faculty
A Portable Sherlock Holmes
Male, African American

Mr. Carl Poplar, Poplar Christian Health Service
"Good bread... Good meat...Good God...Let's Eat!"
Male, African American

Mrs. Lolita Poplar, Poplar Christian Health Service
"Good bread... Good meat...Good God...Let's Eat!"
Female, African American

Mrs. Anne Heyen, Lincoln University Nursing Faculty
Nursing Mathematics
Female, Caucasian

Mrs. Jennifer McCord, Lincoln University Nursing Faculty
Nursing Mathematics
Female, Caucasian

Dr. Staria S. Vanderpool, AMASS Program Manager
Building A Baby One Gene At A Time
Female, Caucasian

Ms. Emily Downey, Former LU Student
Build It From Scratch!!
Female, Caucasian

At the close of the workshops program participants enjoyed lunch provided by the main university cafeteria. After lunch 1st and 2nd place student teams received medals (gold, silver) for obtaining the higher rankings during the team building competition. All students received participation certificates. Mrs. Stallings provided a closing and thanked each school for attending.

SUGGESTIONS (FOR OTHERS)/CHALLENGES OF 2012 PROGRAM:

One major challenge of our program is attracting a diverse population of participants. The Lincoln University program was written and has always attempted to attract students who have often been lost, seem uninterested, or lack confidence in mathematics. The misnomer is that a math day is for people who already like mathematics, but we attempt to reach out to those students who typically at the middle school level have decided mathematics is not for them. The types of workshops we provide are to peak their interest in mathematics and show them a side of mathematics that has not been seen before. We hope to encourage them to stay interested in mathematics and consider a minor or double major as they begin to plan for college. A challenge in this area is that teachers often bring their best and brightest with the expectation that there will be “rigor” rather than interdisciplinary enjoyment. I stated in last year's review that one goal will be to advertise the fun side of mathematics and the desire to host those students in our mathematics classes who seem disinterested. I do not believe we did a good job of highlighting this focus. This will again be a focus for 2013. In addition, work has already begun to forge partnerships with the LU Alumni. Ms. Paula Eubanks and Alicia Matthews have agreed to support the program by raising funds to host at least one school from the St. Louis and Kansas City areas. Schools will compete to receive a travel scholarship that will allow up to 16 students and two chaperones to lodge in a local hotel overnight. I hope that by partnering with alumni, we can increase the number of alumni speakers, improve our current activities that attempt to link students to careers in the STEM areas, and improve the diversity of participants.

This year we were fortunate to have two sponsors in addition to the Association for Women in Mathematics. KJLU radio station and the Zonta Club of Jefferson City provided funds that were used to purchase gifts for participants and their teachers. Monies from the registration (\$300) was used to help offset travel expenses for one of the speakers who traveled from Memphis, TN. We hope next year we can continue to provide additional travel grants that will help us sponsor students who could not attend due to a lack of or limited district funding. An additional and continued challenge is how to increase the number of minority participants. The ratio of white to minority participants has consistently been 70:30 since the LU Math Day began in 2006.

Last and most important, I would strongly suggest a meeting after the event not be overlooked to review evaluations and noted concerns and possible improvements.

Our planning committee reviewed evaluations and discussed concerns or changes in preparation for 2013. Below is a short summary of the suggestions made by student participants, teachers, LU faculty, and volunteers.

1. Even though past evaluations requested a large group activity, teachers overwhelmingly asked that we bring back the test, while students requested we continue to leave the test out of the program.
2. Teachers felt as though the building competition did not allow some of their better students an opportunity to "shine."
3. Split the competitions based on age. Host two math days; one for high school and one for middle school.
4. Bring back the test and have two team competitions. A test in the morning and building competition in the afternoon.
5. Some participants have suggested that we host the event on a Saturday and allow parents to bring students rather than schools. This is in response to students who have not been able to attend due to district funding, scheduling conflicts, and transportation.
6. Include music during the competition, decrease the time given to complete the projects, and do not provide as many directions.
7. Stagger lunch and workshops to decrease congestion
8. Provide more workshop choices.

Significant Potential Changes for 2013

I would like to include my mathematics students in every aspect of the grant. I hope to gather a small group of students in the fall and have them meet regularly with me to help write, research, advertise, implement, evaluate, and develop a final report on the 2013 program. I would really like to make this day a project for students in my mathematics classes. I am still working this out, but think it is a small enough grant project where college students could really gain some basic experience in writing and implementing grants. I hope to write a wonderful report next year and let everyone know how this idea succeeded or failed. Have a great year!