



Supporting, Harnessing, Inspiring, Nurturing, Empowering

### **Executive Summary**

Utilizing an innovative method of formal dance training integrated with rigorous math instruction, SHINE for Girls consistently creates girls who are curious, inspired, and love to learn; as a result, our program is able to improve girls' math scores and spark their interest in mathematics and dance. To date, girls in our programs have repeatedly seen over a 70% improvement in math scores and confidence as measured by pre and post tests and surveys across several programs running in numerous states. The success of our program has led to positive feedback from national media sources including CNN, CBS, Fox, the Boston Globe—and most importantly from the girls, parents, and teachers.

Women hold less than 25% of STEM jobs. Yet, women in STEM jobs earn 33% more than comparable women in non-STEM jobs. This results in a lower gender wage gap for women in STEM versus non-STEM jobs, emphasizing the importance of STEM careers for women. With SHINE for Girls, we have designed an affordable program that addresses these challenges at a pivotal time while appealing to young girls. Furthermore, being a high school or college mentor is an incredible opportunity to lead, engage in service, and access a valuable network of women in STEM. Our short-term objective of empowering 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade female students with both the confidence and mathematics skills to understand and embrace math leads into our long-term goal to create a pipeline of next-generation leaders in STEM fields.

SHINE for Girls is successfully able to:

- ✓ Employ kinesthetic learning, more effectively enabling girls to understand and retain material from math class
- ✓ Augment the school experience by changing girls' attitudes towards math and their own abilities, resulting in higher participation in classrooms, more time and effort spent on homework and extra-curricular learning, interest in joining school math teams, and higher test scores
- ✓ Cover all of the basic concepts from the Common Core math standards for 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grades
- ✓ Teach dance and choreography to young girls and provide them an opportunity to perform, creating confidence that will translate to success in all fields
- ✓ Mentor young girls in a nurturing, all-girls, collaborative environment in which girls can thrive and believe in their own abilities

SHINE for Girls was designed to supplement and support the classroom experience. Our innovative program provides a number of services and resources to enable students, parents, teachers, and administrators to benefit from our unique offerings. We provide:

- ✓ Pre and post assessment of students
- ✓ Multi-level curriculum designed to support the Common Core math standards for 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grades
- ✓ Formal dance training and choreography culminating in a final performance
- ✓ Customized mentor training specific to SHINE for Girls
- ✓ Access to our online system
- ✓ Materials required to run the program
- ✓ Continuous support throughout the program for students, parents, teachers, and administrators
- ✓ A local and national network of women in STEM
- ✓ A positive and safe after-school space for students
- ✓ All contracts and legal waivers

By partnering with our organization, we can engage in a mutually beneficial collaboration to attract students to an after-school program that will 1) develop their proficiency in math and 2) improve their overall confidence and attitudes towards math. Purchasing the program begins with a standard package for 20 girls for 12 weeks, although the program is also offered in 8 and 10 week sessions. The program runs once a week for 3 hours. At a cost of \$3,000 for up to 20 students, the cost per student is \$150.



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### **Program Overview**

Every middle school teacher has had a girl in a math class say, “I can’t.” SHINE for Girls turns the “I can’t” around by creating an environment in which girls not only realize that they can, but that they want to. Utilizing an innovative method of formal dance training integrated with rigorous math instruction, SHINE for Girls consistently improves girls’ math scores and sparks their interest in mathematics. While current classroom methods can be effective, SHINE for Girls is able to engage students in the subject matter in a unique manner that provides a novel perspective on the material. SHINE for Girls uses a new method based in kinesthetic learning that effectively supplements the classroom experience.

Research has found that it is our learning process, not our intelligence, that is the most important factor in determining our abilities—making it of vital importance to examine how we teach our students. So we must ask, how are we most effective at learning and retaining information? Is it when we are hearing, seeing, doing, creating, or is some combination of the above? Recently, multi-disciplinary learning has been recognized as a way of allowing students to make connections between seemingly disparate subjects. SHINE for Girls takes this model to the next level by connecting the different ways in which we learn, and this process enables a more effective understanding and retention of information.

In kinesthetic learning, movement and action replaces more passive forms of learning, such as listening to a lecture. Everybody has probably experienced the effectiveness of this style of learning. No matter how many years it has been since you learned, most people can still ride a bike and swim across a pool. Adults are able to play piano pieces they once knew, and remember the moves to dances performed when they were children. Yet, they can no longer recite the capitals of all the states or the elements in the periodic table—all information once memorized. No matter how much we memorize, recite, and study, our muscle memory seems to trump our brains alone. We learn best when we combine mind and body. SHINE for Girls uses our bodies to their fullest advantage to enhance and reinforce mathematics taught in the classroom.

Because movement allows a student an alternative approach to the information, students learn when they are receptive. This breaching of mental barriers is especially significant for young women, who are more likely to self-limit their abilities because of the social stigma associated with mathematics and STEM (Science, Technology, Engineering, Math) fields. SHINE for Girls teaches in an all-girls environment allowing our students to build self-confidence without any external social pressure.

The SHINE for Girls unique approach to teaching augments the school experience by helping girls become more excited, confident, and engaged math students. By introducing and reintroducing concepts from the standard national middle school math curriculum, students are able to discover material in a new way, realize their own capabilities, and ultimately become more receptive in the classroom. Furthermore, changing girls’ attitudes towards math and their own abilities results in higher participation in classrooms, more time and effort spent on homework and extra-curricular learning, and interest in joining school math teams. To date, girls in our programs repeatedly seen over a 70% improvement in math scores and confidence as measured by pre and post tests and surveys across several programs running in numerous states. This has resulted in positive feedback from national media sources including CNN, CBS, Fox, the Boston Globe—and most importantly from the girls, parents, and teachers.

The exceptional SHINE for Girls programming was created by Kirin Sinha, a recent female MIT graduate in Theoretical Mathematics and Electrical Engineering / Computer Science and recipient of the prestigious Marshall Scholarship. Sinha also holds a Masters degree in mathematics from the University of Cambridge. In addition to teaching and tutoring, Sinha began specifically developing math curriculum for women after noticing that she was the only woman not only in her math classes, but also winning national math competitions. She recognized in order to shine in math a girl needed to 1) want to excel and believe in her capability to do so and 2) be provided



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the tools to succeed. Her background as a professional level dancer gave Sinha the inspiration and unique background to create an entirely new approach to teaching mathematics. From these experiences and after years of honing the curriculum, SHINE for Girls was created.

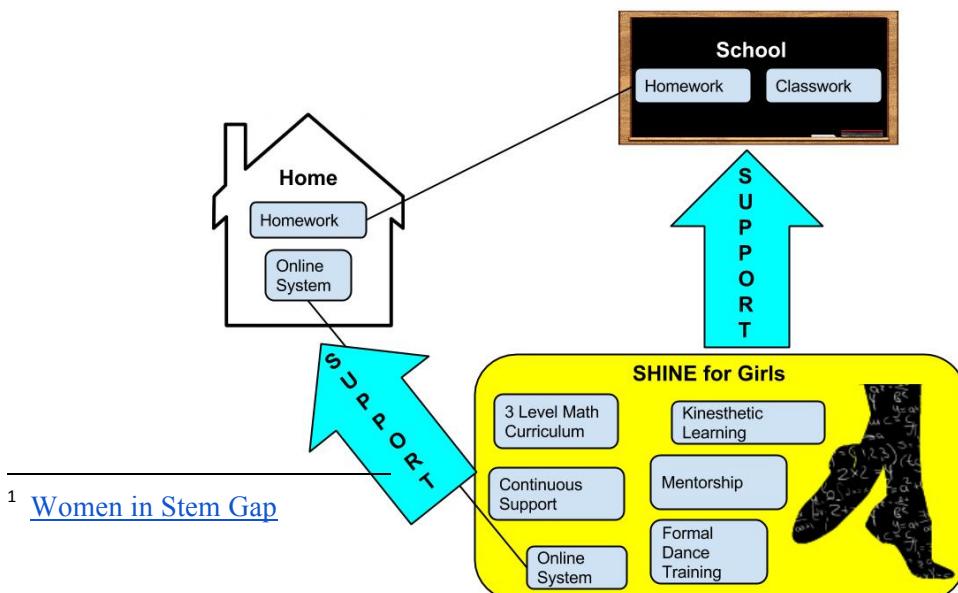
### **Background**

Research has shown that women lose confidence in their abilities to succeed the math during middle school, which in turn affects the number of women that pursue STEM based careers. These young attitudes towards STEM have a large-scale impact. The 2011 Women in STEM<sup>1</sup>: A Gender Gap to Innovation Report from the Department of Commerce confirms that our STEM workforce is critical to America remaining globally competitive. While women fill half of the jobs in the US economy, less than 25% of them hold STEM jobs. This number has not significantly changed in the last decade despite the growth in the number of college-educated women in the overall workforce. Women in STEM jobs earned 33% more than comparable women in non-STEM jobs, resulting in a lower gender wage gap for women in STEM versus non-STEM jobs.

With SHINE for Girls, we have designed an affordable program that addresses these problems at a critical time while appealing to young girls. Our short-term objective of empowering 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade female students with the confidence and mathematics skills to understand and embrace math leads into our long-term goal to create a pipeline of next-generation leaders in STEM fields. Additionally, we expect to positively transform and impact art students that are attracted to dance by teaching them the math skills necessary to achieve financial stability and encourage arts integration in schools by providing students with formal dance training. By creating a nurturing environment in which girls can thrive and believe in their own abilities, SHINE for Girls creates confidence that will translate to success in all fields.

### **SHINE for Girls and Your Schools**

SHINE for Girls provides your schools with a fun 12-week after-school program that incorporates math and dance in an innovative and successful manner. Combining action and intellect, SHINE for Girls requires physical activity that increases concentration and mental performance. The dance element of the program works to increase the girls' self-confidence, teamwork, and discipline. Girls have the opportunity to perform their choreography in front of their friends and family at the end of the program at a dance recital, and take pride in all their work from the semester. By partnering with our organization, we can begin a mutually beneficial collaboration to attract students to an after-school program that will 1) develop their proficiency in math and 2) improve their overall confidence and attitudes towards math, often resulting in higher test scores and participation in classes.





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**Resources:**

SHINE for Girls provides:	School provides:
<ul style="list-style-type: none"><li>✓ Pre-assessment of students</li><li>✓ Multi-level curriculum designed to support the Common Core standards for 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grades</li><li>✓ Formal dance training and choreography</li><li>✓ Customized mentor training specific to our program</li><li>✓ Materials required to run the program and access to an online system</li><li>✓ Continuous support throughout the program for students, parents, teachers, and administrators</li><li>✓ Program Dashboard to analyze progress of both individual students and groups of students</li><li>✓ Post-program assessment</li><li>✓ Dance recital at the end of the program</li><li>✓ A local and national network of women in STEM</li><li>✓ Mentorship for girls by girls</li><li>✓ A positive and safe after-school space for students</li><li>✓ All contracts and legal waivers</li></ul>	<ul style="list-style-type: none"><li>✓ Access to local students and mentors</li><li>✓ A space in which to hold the program</li><li>✓ Finances to purchase the program</li></ul>

**Online System:**

Our customized online system contains all of the SHINE for Girls curriculum and serves several functions:

- Analytics – mentors can keep track of which questions a student answers correctly
- Program Dashboard – a summary of the overall statistics of a student or group of students
- Access – a convenient way for students to track their progress and work on the problems from any computer
- Continuous Feedback – the national branch is able to adjust our curriculum for maximum efficacy throughout the program based on the questions students are answering correctly and incorrectly
- Anonymous Data – no personal student information is stored in the system and all of the data is stored anonymously in our national database

**Support:**

SHINE for Girls was designed to provide support to students, parents, teachers, and administrators. Our standard package includes:

- Access to our staff – our national branch is available every day via phone or email to address any questions or concerns that may come up during the program. We are able to send a trained member of our staff to your program if necessary
- Weekly Feedback – mentors and students can provide weekly feedback via a form we will provide to ensure that each week runs smoothly
- Site Visit – a trained member of our national branch will visit your location to train mentors
- Progress Reports – parents and teachers can request updates on a student's progress throughout the program
- Open Communication Channels – anyone can email us at [shineforgirls@gmail.com](mailto:shineforgirls@gmail.com) with any concerns and we will respond within 24hrs



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**Mentors & Training:**

SHINE for Girls' mentors are local high school or college women who have qualified based on their math background, tutoring experience, dance experience, attitude and enthusiasm, and the results of a background check. Our ideal student-mentor ratio is 3-1, but can go to 5-1. The mentor training involves a customized online certification system along with a half-day mentor training session held by the identified head mentor. It will be scheduled in conjunction with the school, and the date of the session will be advertised as part of the mentor application. Details of the training and requirements can be found in an accompanying mentor information document, available on request. The training will cover among other things:

- 1) Overview of the program
- 2) Weekly structure
- 3) Each weekly activity in detail
- 4) How to safely and effectively teach dance
- 5) Tutoring conduct
- 6) How to communicate with parents / guardians and teachers
- 7) Final performance details
- 8) Dealing with conflicts and other challenging situations
- 9) Expected mentor behavior
- 10) Legal and liability issues
- 11) Review of curriculum concepts

**Curriculum:**

Our copyrighted 3-level curriculum covers the national standard math curriculum for 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> graders. Having a multi-level curriculum allows each girl to work at a pace appropriate for her, and enables a girl to repeat the program several times. [See Appendix 1 for more detail on topics covered.] We provide a pre and post test covering concepts from each module to evaluate how the student has improved and where individual strengths and weaknesses may be. We also evaluate the improvement in confidence and attitude towards STEM based on the girls' responses to a survey. Our program also includes the materials necessary to execute the curriculum (packets, kinesthetic learning equipment, prizes, safe dance gear, supplies for the final performance recital).

**Implementation:**

- Both organizations will commit sufficient time and resources to the project
- Financially Responsible Party has raised the funds for the program
- The School has secured a safe location to hold the program and has set a time to hold the program
- The School and Financially Responsible Party sign the proposal
- The School has purchased the license and right to use the program for the designated term
- Dates and deadlines are decided and added to the website
- SHINE for Girls and The School have identified mentors from neighboring colleges and high schools
- Students apply and are accepted to the program
- SHINE for Girls and The School's liability and risk forms are all complete
- SHINE for Girls provides materials and curriculum and confirms all mentors have completed training
- SHINE for Girls program begins and runs for the designated number of weeks

**Pricing and Licensing:**

Purchasing the program begins with a standard package for 20 girls for 12 weeks. The program runs once a week for 3 hours. At a cost of \$3,000 for up to 20 students, the cost per student is \$150. Please note that our program is also offered in sessions of 8 and 10 weeks. The price includes all of the multiple services and benefits outlined above.



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shineforgirls.org  
shineforgirls@gmail.com

This proposal is valid only with a signed purchase agreement and a valid purchase order.

**Proposal Acceptance and Signatures:**

This proposal is accepted by:

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School / Dance Studio Authority

Date Accepted

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Financially Responsible Party

Date Accepted

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Kirin Sinha, SHINE for Girls

Date Accepted



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## APPENDIX 1: CURRICULUM TOPICS

The innovative and proprietary SHINE for Girls curriculum features 3 different levels and covers the following topics. Some aspects of the topics are only covered in specific levels of the curriculum and others are reintroduced in more challenging ways.

- 1) **Arithmetic and Order of Operations** – PEMDAS, Absolute value, Plugging into expressions, Estimation problems, Exponents (including negative exponents, fraction exponents, and combining exponents)
- 2) **Fractions, Decimals & Percents** – Simplifying fractions, Calculating percents, Conversions between decimals, percents, and fractions, Percent increase and decrease, Rate problems
- 3) **Pre-algebra** – Understanding the use of variables, Isolating and solving for a variable, Solving a system of equations, How to use distance = speed \* time
- 4) **Coordinate Geometry** – Quadrants and how to identify a point, Understanding rotation, reflection, and translation, Identify a positive and negative rate of change, Calculate slope, Find x- and y- intercept, Equation of a line, Parallel and perpendicular lines, Supplementary, complementary and equivalent angles
- 5) **Planar Geometry** – Areas and perimeters of basic shapes, Surface area and volume, Pythagorean theorem, Special triangles, Angles in different polygons
- 6) **Probability and Statistics** – Understanding of mode, median, mean, and range, Basic probability rules, Intersecting sets, Interpreting different graphs and diagrams
- 7) **Advanced Word Problems** – Understanding how to translate a word problem into a simple equation or expression

A typical day in the SHINE for Girls program will include:

**Snacks and Bonding** – SHINE for Girls mentors check in with their students every week. This time also enables the mentors to review any homework and challenge problems from the previous week and gives students a chance to change into dancewear.

**Kinesthetic Learning Activities** – Each week a new topic in math is introduced through kinesthetic learning-based activities developed by SHINE for Girls. These activities are designed to teach the concepts in a new way and excite the girls about the material.

**Dance** – Girls will learn dance in a formal setting from an experienced dancer. They will learn a dancer's warm up and stretching routine, practice technical dance exercises, and rehearse choreography that will be performed in the final recital. Attitude, confidence, teamwork, and dedication will be emphasized.

**Small Group Tutoring** – Students will join their mentors to go through our customized math problems corresponding to their curriculum level and the weekly topic. Girls are encouraged to work together, support and help one another, and lead the group through problems.