



Application Checklist

Deadline for applications to be received is March 31 at 11:59 PM (EST)

Please see www.innovateSTEMnj.org for the most up-to-date information and instructions regarding applying for the New Jersey STEM Innovation Fellowship.

APPLICATION “TO-DO” CHECKLIST:

- Carefully read the **New Jersey STEM Innovation Fellowship Overview** (See page 2)
 - Complete a current resume. **Save with a filename of: “last name_district_Resume”**
 - Complete the Written Response Question 1 and **Save with a filename of the form “last name_district_WRQ1”**
1. Describe an experience within the last two years that deepened your understanding of how to teach mathematics effectively (**350 words max**). Be sure to describe:
 - a. What you learned;
 - b. What you did differently;
 - c. How you knew it was effective.
 - Complete the Written Response Question 2 and **save with a filename of the form “last name_district_WQR2”**
 2. If accepted to the fellowship you will be learning about and implementing a teaching routine called “number strings” on a regular basis with your students. Number strings are also sometimes called “mini-lessons.” The links below provide access to excerpts from book chapters that describe how teachers can use number strings in grades K-1, 2-3, and/or 4-5. The readings use “mini-lessons” as another name for number strings. (When you read “mini-lesson,” just think “number string”).

[K – 1](#)

[2 – 3](#)

[4 – 5](#)



Choose the grade band that is most applicable to the area of math that you teach and read the associated excerpt. Then:

Please describe what interests you about implementing number strings (aka mini-lessons) with your students in the 2021-22 school year. **(350 words max)**. Use concrete, specific examples as illustrations - "I want to improve my students' skills adding multi-digit numbers" is better than "I want to improve my student's math skills," for example. We're looking for educators who want to learn – don't be afraid to write about aspects of teaching and learning that you want to improve upon and understand more deeply!

- When the resume and written responses are completed begin the application process at <https://forms.gle/VzWyMwndCiRFEYB4A>.
- Arrange to have the **Statement of Assurance** completed and signed by both your school building leader (e.g. principal) **and** school district leader (e.g. superintendent/network leader); the single, two-page document should then be submitted by either the administrator or the applicant. In most cases it will make sense to first secure the endorsement of your school building leader, who can help you to secure the endorsement of your school district/network leader. Please feel free to share the New Jersey STEM Innovation Fellowship Overview document with both administrators.

Deadline for the Statement of Assurance is March 31 at 11:59 PM (EST)

- Arrange to have the **Letter of Recommendation** form completed and submitted by a colleague or coach.

Deadline for the Letter of Recommendation to be received is March 31 at 11:59 PM (EST)

Dates to remember:

- **March 31, 2021:** Applications due
- **Mid May 2021:** Decision letters sent via email
- **Late May 2021:** Fellowship agreement letter / letter of intent due
- **Late August 2021:** Summer Institute at Montclair State University (participation is mandatory and a requirement of the fellowship)

Questions? Contact information is listed [here](#).



Three overlapping hexagons in blue, yellow, and orange are positioned to the left of the title.

New Jersey STEM Innovation Fellowship Overview

The New Jersey STEM Innovation Fellowship is an exciting teacher-leadership program open to experienced elementary teachers and coaches working in New Jersey public schools. Educators accepted to the fellowship will receive a \$5,000 stipend and join a supportive learning community where they will learn about a research-based, innovative math teaching routine alongside talented educators from other New Jersey districts and schools. The program is based on Math for America's (MfA's) fellowship model developed in NYC that has been successfully adapted in other cities and states.

FELLOWSHIP AT-A-GLANCE:

- **Fellowship duration:** One-year renewable fellowship
- **Eligibility:** Currently licensed K-5 math teachers and coaches, with 4+ years of experience, working in a NJ public school
- **Activity:** Educators implement and reflect on an innovative math teaching routine
- **Time commitment:** Summer institute + monthly after-school meetings
- **Locations:** Montclair State University, Princeton University, Rowan University
- **Benefit to fellows:** \$5,000 stipend; high-quality professional learning experience
- **Benefits to schools/districts:** Increased capacity for high-quality math instruction

THE INNOVATION: NUMBER STRINGS

A number string is a brief (10 minute) routine in which a teacher presents a carefully designed sequence of math problems that students solve mentally. Fellows will implement this brief routine in ways that support and enhance the existing math curricula at their school. Number strings can be implemented as a warm-up during the math instruction period, or as a stand-alone activity any time during the school day.

Number strings help students develop computational fluency by deepening their conceptual understanding of fundamental mathematical procedures. Teachers who implement number strings improve their ability to facilitate mathematical discussions and boost their students' mathematical ability and confidence.

Number strings boost student learning: one study found that teachers using number strings in a high-needs, underperforming district were able to approach statewide averages within one year (Fosnot, 2010).

For more information about number strings, see <https://numberstrings.com/>.



FELLOWSHIP ACTIVITY

Summer 2021: Fellows attend a two-day summer institute (late August) at Montclair State University (or remotely) where they will meet other participants and learn about number strings and how to implement them from a nationally renowned expert. (Fellows that live far from MSU will be provided accommodation during the institute).

School year 2021-2022: Fellows implement number strings during their math instruction and attend monthly after-school meetings at a nearby university campus (or remotely) to discuss implementation successes and challenges with other fellows in a supportive learning community.

FELLOWSHIP REQUIREMENTS

To participate in the fellowship, fellows will be required to:

- Attend summer institute at Montclair State University (or remotely) in late August
- Implement number strings as a regular part of their mathematics instruction
- Attend supportive monthly professional learning community (PLC) meetings after school at a participating university campus or remotely
- Participate in blended learning activities with fellows across the state by interacting on an online platform with other fellows between PLC meetings
- Share and discuss artifacts including student work and classroom video* with other fellows in PLC meetings
- Provide data for program evaluation purposes. This data consists of classroom artifacts and completing three surveys over the course of one school year

***About the use of teaching artifacts in the fellowship:** All fellows are required to submit, once a month, teaching artifacts for use in the monthly meetings and program evaluation. These artifacts include, but are not limited to, video of instruction, images of student work, and lesson plans. Ideally, we will be able to collect videos of fellows' implementation of a number string at both the beginning and end of each school year. Video and other artifacts will be discussed in structured, safe, and supportive learning communities to support fellows in implementing number strings in their classrooms. Video will also be used by the fellowship evaluator to understand the educational value that implementing number strings has for educators in the fellowship and their students.

- Video will only be used for professional development and program evaluation purposes – it will not be shared beyond the fellowship without explicit, prior consent of both the educator and district officials
- All district regulations will be followed in the collection of video (e.g. obtaining requisite consent forms prior to filming)





MORE ABOUT NUMBER STRINGS AND THEIR USE IN THE FELLOWSHIP

Ambitious math teaching requires providing students with opportunities to struggle with important mathematics (Hiebert & Grouws, 2007), work on cognitively demanding tasks (Stein & Lane, 1996), and engage in discourse that requires them to formulate their ideas and make sense of the ideas of others (Yackel & Cobb, 1996). Teaching math this way is difficult – even for experienced instructors!

There are many reasons that ambitious mathematics instruction is difficult. However, one promising support for teachers seeking to make their teaching more ambitious is instructional routines (Lampert et al., 2013). Instructional routines create a structure that supports teachers in facilitating discourse, engaging students, and providing opportunities for productive struggle. The routine creates norms around patterns of discourse that allow teacher and students to concentrate on sense-making.

One especially helpful routine is number strings (Fosnot & Dolk, 2001). In **number strings**, a teacher gives students a series of problems, beginning with ones that they can do easily. The string of problems is designed to highlight a specific mathematical idea or structure. By doing increasingly complex problems and explaining how they are solving them, students develop techniques for doing calculations, but more importantly, they connect these techniques to larger ideas about the structure of operations and number system.

In the summer institute NJ STEM Innovation Fellows will learn about how number strings are created and what they are intended to accomplish. Fellows will watch videos of other teachers implementing number strings, and practice implementing in simulated classroom environments with their peers.

To further explore the ideas behind number strings, and see videos of teachers implementing them, see: <https://numberstrings.com> or <https://tedd.org/number-strings/>.

Each fellow will receive a book of high-quality number strings crafted for the grade and content that they teach during the year. Fellows will implement these number strings in the classroom throughout the year, and discuss successes and challenges related to student learning with their peers in the program during monthly cohort meetings. Fellows will also interact and share with one another online.

References:

- Fosnot, C. T. (2010). *Models of Intervention in Mathematics: Reweaving the Tapestry*. National Council of Teachers of Mathematics; Reston, VA.
- Fosnot, C. T., & Dolk, M. L. A. M. (2001). *Young mathematicians at work*. Heinemann; Portsmouth, NH.
- Hiebert, J., & Grouws, D. A. (2007). The effects of classroom mathematics teaching on students' learning. In F. K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning*. Charlotte, NC: Information Age Publishing.
- Lampert, M., Franke, M. L., Kazemi, E., Ghouseini, H., Turrou, A. C., Beasley, H., . . . Crowe, K. (2013). Keeping it complex: Using rehearsals to support novice teacher learning of ambitious teaching. *Journal of Teacher Education*, 64(3), 226-243.
- Stein, M. K., & Lane, S. (1996). Instructional tasks and the development of student capacity to think and reason: An analysis of the relationship between teaching and learning in a reform mathematics project. *Educational Research and Evaluation*, 2(1), 50-80.
- Yackel, E., & Cobb, P. (1996). Sociomathematical norms, argumentation and autonomy in mathematics. *Journal for Research in Mathematics Education*, 27(4), 458-477.





New Jersey STEM Innovation Fellowship 2021

Statement of Assurance

To the Applicant: Please enter your full name and the name of your school below:

Name of Applicant: _____

Name of School: _____

District/Network: _____

Next, provide this form to the appropriate school building leader (e.g. principal) and school district (or network) leader (e.g. superintendent). The form serves as a reference and statement of assurance that you will have the support of your school building and district (network) leadership to complete fellowship activities and requirements.

Once the form has been completed it should be scanned and emailed by either the school building or school district leader to apply@innovateSTEMnj.org by March 31, 2021, with the applicant's full name in the subject line.

I am aware of the rights afforded to me by the Federal Educational Rights and Privacy Act of 1974. I hereby waive my right to examine the contents of this reference. I understand that by waiving my right, I do so under the condition that the reference is used solely for the purpose for which it is requested.

Applicant's Signature: _____ Date: _____

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To the school building and school district (or network) leaders: The applicant named above is applying to the **New Jersey STEM Innovation Fellowship**, an exciting new teacher- leadership program offered in partnership between Math for America (MfA), Montclair State University, Princeton University, and Rowan University. Additional information is provided at: www.innovateSTEMnj.org.

If accepted the applicant will:

- Learn about a ten-minute, research-based math teaching routine called "number strings" shown to boost teachers' ability to facilitate mathematical discussions and improve student-learning outcomes;
- Implement number strings alongside their existing math curricula regularly throughout the year;
- Videotape themselves teaching number strings once-a-month;
NOTE: all district requirements for obtaining classroom video with parental consent will be followed
- Discuss video guided by an expert facilitator in supportive, monthly, after school, professional learning communities hosted at a nearby participating university;
- Receive training from experienced teacher-educators about how to support other educators (non-fellows) interested in trying number strings in their classrooms.

The goal of the fellowship is to give talented educators in different districts an opportunity to lead the statewide implementation and expansion of a proven, innovative, research-based math teaching practice. To participate, applicants need approval and support from their building and system-level administrator to try a new math teaching practice. If you have any questions or concerns do not hesitate to contact the university partner in your region. Contact information can be found at: <http://www.innovatestemnj.org/contact.html>.



New Jersey STEM Innovation Fellowship 2021



Statement of Assurance

Name of Applicant (please print): _____

To the school building leader:

How would you rate this applicant's **overall ability** as a teacher of mathematics?

Very High _____ High _____ Average Low _____

How would you rate this applicant's **overall ability** to collaborate with other educators?

Very High _____ High _____ Average Low _____

If the applicant is accepted to the New Jersey STEM Innovation Fellowship, do you agree to support their efforts to implement number strings regularly during the school year alongside your existing math program and curricula?

Yes _____ No _____

Building Leader's Title: _____

Building Leader's Name (please print): _____

Building Leader's Signature: _____ Date: _____

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To the school district/network leader:

If the applicant is accepted to the New Jersey STEM Innovation Fellowship, do you agree to support their efforts to implement number strings regularly during the school year alongside your existing math program and curricula?

Yes _____ No _____

District/Network Leader's Title: _____

District/Network Leader's Name (please print): _____

District/Network Leader's Signature: _____ Date: _____

Thank you for your time. To submit this form for the applicant, the school building or school district/network leader should scan and email the entire form with the applicant's full name in the subject line to apply@innovateSTEMnj.org by **March 31, 2021**.





New Jersey STEM Innovation Fellowship 2021

Letter of Reference - Colleague

To the Applicant: Please complete all fields above the dotted line.

Name of Applicant: _____

Name of Recommender: _____

I am aware of the rights afforded to me by the Federal Educational Rights and Privacy Act of 1974. I hereby waive my right to examine the contents of this reference. I understand that by waiving my right, I do so under the condition that the reference is used solely for the purpose for which it is requested.

Applicant's Signature: _____ Date: _____



To the Colleague (can be a fellow teacher or coach):

The applicant whose name appears above has applied to the **New Jersey STEM Innovation Fellowship**.

How would you rate this applicant's **overall ability** as a teacher of mathematics?

Very High _____ High _____ Average Low _____

How would you rate this applicant's **overall ability** to collaborate with other educators?

Very High _____ High _____ Average Low _____

Please attach a brief letter **describing a time that the applicant demonstrated successful leadership abilities in a situation that required collaborating with other educators.**

Recommender's Title/Role: _____

Recommender's Name (please print): _____

Phone: _____ Email: _____

Recommender's Signature: _____ Date: _____

Thank you for your time. Please scan and email this form along with your reference letter with the applicant's name in the subject line to apply@innovateSTEMnj.org by **March 31, 2021**.

[Contact info for questions or concerns.](#)