Leader Guide for The Essentials course in ST Math Academy

- This guide is designed to be used in Professional Learning Communities or by any group of teachers who want to learn about ST Math together.
- The model assumed in this guide is a group working through the modules together. You can, of course, use the online content in whatever way you wish and refer to this guide for extra information or ideas for topics to discuss or things to think about.
- The Essentials Course is divided into four units, each designed to cover content that is important before day 1, in the first few weeks of use, after several months of use, and general topics of interest that can be completed at any time.
- Within each unit are modules that consist of expandable sections that contain the content.
- If students

Layout of this Guide

- **Overview** - a brief look at what is covered in the unit.
- **Preparation** - anything that needs to be done before starting the unit or reminders about technical requirements. Generally, teachers will need to have internet access and, if possible, the leader will need a way to share videos and some activities with the group.
- **Note on Conditioning** - the Academy is conditioned so that signed-in users see just the content that is applicable to their position, grade level, and sign-in type. Conditioned content is shown with a light orange background. Skip the sections that don’t apply to you.

Questions? Answers to technical questions and access to resources can be found at ST Math Help (help.stmath.com).

Links within this guide: You may need to allow this document to open files or websites (Mac) or, on a PC, go to Edit (not File) > Preferences > Security (Enhanced) > Add File (select this file from File Explorer).

Unit 1 - Before Day 1

**Overview:**

- After playing some ST Math games, teachers learn the basics of ST Math.
- JiJi, the penguin, and mascot of ST Math is introduced.
- Finally, teachers are provided the information and tools they need to be ready to get their students started on ST Math.

**Preparation:**

- Plan to share the videos with the whole group. Alternatively, teachers can view the videos on their personal devices.
- Teachers should have a computer or tablet with internet to access to the games and activities presented in the The Essentials course.
- If possible, find the statistics about the math proficiency of students graduating from your high schools or students in your school or district.
Module 1 - First, Get Playing

<table>
<thead>
<tr>
<th>Time (15 min)</th>
<th>Section</th>
<th>What to Do:</th>
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<tbody>
<tr>
<td>15 minutes</td>
<td>Sample games</td>
<td>• Explain that ST Math is a game-based program built on neuroscience which builds a strong conceptual understanding of mathematics through problem solving and perseverance.</td>
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<td>• To understand what the games are like, spend at least 10 minutes playing.</td>
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<td>• Before playing, point out the questions that are below each of the games.</td>
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<td>• Remind teachers that these are selected games from different areas of the curriculum. Students will experience careful sequencing of games that provides a low entry point and step-by-step progressions.</td>
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<td>• After everyone has played, discuss what teachers noticed about the games.</td>
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<td>▪ Were instructions necessary? How did they figure out what to do?</td>
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<td>▪ What happened if they got something wrong?</td>
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<td></td>
<td>▪ Did JiJi ever give up on them and let them pass a level without getting it right?</td>
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<td>▪ What other things did they notice?</td>
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Module 2 - The Basics of ST Math

<table>
<thead>
<tr>
<th>Time (36 min)</th>
<th>Section</th>
<th>What to Do:</th>
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<tbody>
<tr>
<td>5 minutes</td>
<td>Video</td>
<td>• Watch the video that features Matthew Peterson, the co-founder of MIND Research Institute and creator of ST Math.</td>
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<tr>
<td>3 minutes</td>
<td>What is ST Math?</td>
<td>• Point out MIND’s mission statement.</td>
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<td>• Share the following points from the text:</td>
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<td>▪ The ST in ST Math stands for spatial-temporal reasoning -- more on that in a later module.</td>
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<td>▪ Currently 70% of students exiting K-12 education are not proficient in math.</td>
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<td>▪ If possible, share the statistics on math proficiency in your schools or districts.</td>
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<td></td>
<td>▪ Have a short discussion about the importance of math to the students’ future as well as that of the world.</td>
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<tr>
<td>10 minutes</td>
<td>Games, Levels, and Puzzles</td>
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<tr>
<td><strong>Explain the organization of ST Math:</strong></td>
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<tr>
<td>- Each grade level curriculum, called a Journey, is broken up into Objectives that deal with a mathematical concept. Within Objectives are Levels that contain a collection of related Puzzles.</td>
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<tr>
<td>- Have teachers go to their ST Math Educator Experience by signing in at play.stmath.com or entering from their single-sign-on (SSO) portal. They will be following the same steps shown in the animation in this section of the module.</td>
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<td>- Have teachers:</td>
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<tr>
<td>- Click the Curriculum dropdown.</td>
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<tr>
<td>- Select All Learning Objectives.</td>
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<tr>
<td>- Select a grade level.</td>
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<tr>
<td>- Click on an Objective to see the number of puzzles in the Objective and a brief description.</td>
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<tr>
<td>- Click the Games tab to see different games in that objective and the number of Levels in each game.</td>
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<tr>
<td>- Click one of the Play Levels blocks to play that game. Remember that the gameplay is introduced in the first level so playing higher levels at first can be challenging.</td>
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<tr>
<td>- Click the progress bar in the upper right of the toolbar and click Puzzles to see icons for each of the puzzles in the level and easily move among them.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>8 minutes</th>
<th>The Perception-Action Cycle in Practice</th>
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<tbody>
<tr>
<td><strong>ST Math is based on the perception-action cycle which is the way we all learn.</strong></td>
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<tr>
<td><strong>Use the slideshow to discuss the perception-action cycle.</strong> Relate it to learning anything else. For example,</td>
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<td>- Perceive a word -- what letters do I know?</td>
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<td>- Predict what the word is -- perhaps sound it out.</td>
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<td>- Say the word.</td>
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<td>- Does it make sense?</td>
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<td><strong>The Learning Cycle makes the p-a cycle an instructional tool.</strong></td>
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<tr>
<td><strong>Review each of the steps -- Notice, Predict, Analyze, and Connect in the context of the game presented OR use the questions while displaying another game.</strong></td>
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</tbody>
</table>
5 minutes  Your Role as Teacher

- ST Math is a powerful program but the basics are easy: the more students play, the more their math scores go up. Even a short time on the program will benefit students so the most important thing a teacher can do is get students playing.
- The recommended times are what research has shown gets great results (the details are coming in the next module).
- Discuss the role of the teacher in ST Math. Remind teachers that it is not their role to tell students how to solve puzzles. Their role is to help them develop persistence, problem solving skills, and confidence in mathematics. The Learning Cycle will help teachers help students and students help themselves.

5 minutes  The Research That Backs it Up

- Depending on the interest of your teachers, this section can go into the research in depth or can be something teachers can explore on their own.
- The important takeaway is that there are multiple large-scale independent studies that show that spending time on ST Math is directly related to increased math test scores.

Resources:
- MIND Research Institute web site: mindresearch.com
- These posters are available in the course or by clicking the thumbnails.
- You may want to provide the syllabi for your teachers (or let them know where they are) so they understand the Journey for their grade level. They are available at ST Math Help in Manage Classes & Curriculum > Curriculum > ST Math Syllabi.

<table>
<thead>
<tr>
<th>Time (6-9 min)</th>
<th>Section</th>
<th>What to Do</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 minutes</td>
<td>JiJi FAQs</td>
<td>Explain that JiJi is the mascot of ST Math and, especially for young children, becomes a trusted friend and guide. Review the FAQs especially the suggestion that teachers leave the gender and age of JiJi to the students.</td>
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<tr>
<td>3 minutes</td>
<td>JiJi, Mastery, and Perseverance</td>
<td>Share that students often personalize JiJi and credit JiJi with helping them persevere. Because students have to get every puzzle correct before going on, they understand that JiJi is patient and believes they can do it. Ensure that teachers know that there are JiJi resources in Resources and Printables at ST Math Help (help.stmath.com).</td>
</tr>
</tbody>
</table>
Teachers of older students may wonder how JiJi will go over with them. Explain that it all depends on how they introduce the character. Acknowledging that it’s a funny thing to have in a game is a start.

One way to help students understand that it’s all about the math, and not the penguin, is to go to one of more difficult games (for example, Graphing Linear Functions in 8th grade).

Resources

- Find more at help.stmath.com including:
  - JiJi Posters
  - JiJi Coloring Sheets

### Module 4 - Getting Ready for Day 1

<table>
<thead>
<tr>
<th>Time (varied)</th>
<th>Section</th>
<th>What to Do:</th>
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</thead>
</table>
| 5 minutes     | Intro   | - The Intro section provides an overview of what teachers should do before starting to use ST Math.  
- Since family support is so important, have teachers review the Family Introduction activity.  
- True story: A parent walked into the school office with flowers and treats for the new teacher who was making such a difference in her daughter’s attitude toward school and math. The teacher’s name? Miss JiJi. |
| varied        | How Will You Be Using ST Math? | - NOTE: There are planning sheets and checklists available in this Academy module ([Getting Ready for Day 1](#)). That page is conditioned to show only the correct versions for your sign-in type. You can decide if they would be a helpful addition to your planning.  
- Use the information in the sections to inform your discussion of how ST Math will be used in your situation.  
  - Computer Lab  
  - Small Group Intervention  
  - Rotation  
  - Whole Class  
  - Remote Learning (Refer interested teachers to the Focus On: Teaching Remotely with ST Math link on the Academy home page.) |
| 9 minutes | How Much and How Often Should Students Play | • There are two important things to consider when planning how you will implement ST Math:  
    ▪ How students will access the program  
    ▪ How often and for how long will students play  
• The first depends on your school’s specific situation and it’s important that teachers have a plan. Suggested ideas and best practices are provided in the module *Getting Ready for Day 1*.  
• The second will impact the results you get with ST Math. The research shows that the more students play, the more scores increase. Even if teachers can’t fit in the recommended time per week, they should get students playing as much as they can.  
• You shouldn’t continue until each teacher has a plan (or has a list of questions they need answered) for how students will access the program and when. |
|---|---|---|
| Picture Password Only 10+ minutes | Here’s What You’ll Need to do on Day 1 | • Teachers using Picture Passwords will first need to create a class.  
• If students already have an ST Math account and are at the same school, teachers will be able to search for their students by name and add them.  
• Otherwise, when they’re ready to add students, they will create an Invitation Code, give that code to students, and the students will add themselves to the teacher’s class and begin Password Training.  
• Because it’s easy to create Invitation Codes and add and delete students, you might want to actually walk through the process with your teachers:  
    ▪ Follow the steps in the slideshow in this module to create a class, create an Invitation Code, have teachers use the Invitation Code to sign in and begin to learn their picture password.  
    ▪ When the activity is done, you can click on the name of each teacher who joined your class and go to Settings. Click the trash can next to their name in the Classes section to remove them from that class.  
• NOTE: Be sure to stress that students need enough time to learn their Picture Password on that first day. |
| Text to Picture Password Only 3 minutes | Here’s What You’ll Need to do on Day 1 | • On Day 1, teachers will provide each student with their text username and password which has been provided by the school/district.  
• Students will click on Text Sign In and then enter their credentials.  
• They will automatically begin Password Training which should be completed during their initial session. |
Here's What You'll Need to do on Day 1

Text Only
2 minutes

• On Day 1, teachers will provide each student with their text username and password which has been provided by the school/district.
• Students will click on Text Sign In and then enter their credentials.
• They’ll start their Journey (with a quiz for grades 2+).

SSO Only
2 minutes

• On Day 1, students will log into their SSO account and click on the ST Math icon (an image of JiJi).

Resources:
• Refer to the ST Math Academy module for planning sheets and checklists that are appropriate for your sign-in type. Getting Ready for Day 1

Module 5 - Introducing ST Math

Module 5 - Introducing ST Math and the Picture Password

<table>
<thead>
<tr>
<th>Time (varied)</th>
<th>Section</th>
<th>What to Do:</th>
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</table>
| 6 minutes     | Introducing ST Math | • Be sure your teachers know that introducing ST Math to their students is very important. The combination of a computer game for math with no words and having to get every single puzzle correct is something brand new for their students.  
  • Three suggestions are provided. Share a quick overview of each one and then allow teachers time to explore their choice.  
  • Using Our Guided Intro -- Teachers can just project/share the web page that provides a fun gamer-style video, information about the games, and the opportunity to play some games together.  
  • By Playing a Game Together -- Give teachers time to go through their curriculum to find a game that they can project/share and solve as a group. Some points to include in the discussion are provided.  
  • Using a Video -- If teachers prefer to introduce it in their own way, they may still enjoy sharing the fun videos in the Guided Intro to get students excited about playing. |

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Unit 1 - 7
<table>
<thead>
<tr>
<th>10 minutes</th>
<th>Your Students Will Be Using a Picture Password. What’s That?</th>
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<tbody>
<tr>
<td>• Picture Passwords are a unique way for students to sign in to ST Math. Students of all ages, even those who can’t read yet, are able to sign in all by themselves once they learn to recognize the images in their special picture password.</td>
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<tr>
<td>• If your teachers are new to picture passwords, they may have a lot of questions. Share the Five Awesome Facts about Picture Passwords in the Academy Module <em>Introducing ST Math and the Picture Password</em>.</td>
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<tr>
<td>• Explain that the most important key to success is the teacher’s confidence that their students can learn their password. Although it may seem daunting at first, many kindergarten and first grade teachers prefer the picture password because it enables students to sign in all by themselves.</td>
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<tr>
<td>• So they understand how the Picture Password training works, go through the <em>Picture Password Training Experience</em> individually or as a group. Caution teachers that they should not use that activity with students because students will be confused as to which Password they should learn.</td>
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<td>• There is also a short video that can be used to introduce students to the Picture Password. Share that video so teachers can decide whether they would like to use it.</td>
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<td>• Finally, if necessary, teachers can go to the student’s page and, under the Actions menu, View Picture Password, and then print it for students.</td>
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</table>

**Resources:**