



STEM

## Challenge

### FAQs

#### Quick Words

**MME - The Mentor Matching Engine**

**ISTC - The Illinois Science and Technology Coalition**

**Post - Students' MME communication through the discussion tab**

#### STEM Challenge Questions:

##### 1. How should I structure this in my class?

ISTC Education recommends working with your Coach, if applicable, or with ISTC Education staff to use the period of time between professional development and Challenge kick off to plan how you will implement the Challenge into your curriculum. In your teacher version of the STEM Challenge document, you will see that the Challenge problem statement is divided into **phases**. We recommend planning out the duration of time for each phase. If Phase 1 is to research the problem statement, for example, you may want to allow two weeks for that process. You can also work backward by determining when you'd like the students' presentation and solution to be completed for mentor review, and then plan accordingly. Once determined, students should share this information with their mentors, so everyone is on the same page in terms of the timeline.

Whether you have chosen to work on the project once a week or everyday for a period of time, students need to share the expectations with the mentor team.

ISTC Education asks that student teams communicate with their mentors at a minimum of **once a week** through the Mentor Matching Engine (MME) for the duration of the project (approximately 10-14 weeks). We encourage you to select one day of the week (Mentor Mondays, STEM Fridays, etc.) on which your students will post to MME and work on the project. Alerting the mentor team to which day the students have chosen for regular MME communication will further ensure that the students receive a mentor response by that day each week.

##### 2. What should the students be communicating with their mentors about through MME?

The short answer is: everything. The mentors take over for you as the context and content expert and you become the project facilitator. The students should be starting from the beginning with their mentors. Their first post should be getting to know the mentor, asking initial questions (about the project or about the mentor's company or bio), and letting the mentor know



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where they are in the project. It is okay if they are starting with no knowledge of the project topic. If the students are tackling artificial intelligence as their project topic, for example, it is completely fine if the students start with a post such as “We aren’t sure what artificial intelligence is, do you have any suggestions on where to start?” If the students are stuck, they should communicate that, or if they’d like a mentor to look over their deliverable for that phase of the project, they can share that as well. We recognize the students are starting from different levels of understanding the challenge and communicating their thoughts. Communication growth will occur through the back and forth between students and mentors, so there is no need to review every post. Instead, try to support students in writing their own substantive post by utilizing the MME activity, sentence starters, or scaffolding as needed and, ensure students are responding each week.

### 3. What if my students are unable to post on their assigned day?

ISTC Education asks that students post every week on a designated day (ie. Mentor Mondays, STEM Fridays), which is communicated to their mentor team. ISTC Education and the mentors assume there will be a post each week unless otherwise noted. We understand that things come up such as finals, end of semester exams, Spring Break, etc. Mentors, likewise, will have things come up in their schedules as well. ISTC Education asks that students notify their mentors prior to the period of time that they’ll be unable to post, letting them know the duration of time that they won’t be posting. For example, “Next week we have finals, and then the new semester begins so our next post will be on [date]”. ISTC Education asks mentors to provide the same courtesy to students by updating each student team when things are coming up that may delay a response. If your students are unable to or forget to notify their mentors of their inability to post that week, then we ask you as the teacher to do so.

### 4. How do I know if my students’ post to their mentors is effective?

It is very important that communication is consistent and substantial - containing more than just a quick update. When your students are posting to their mentors they should be asking themselves, am I giving the mentors something to respond to? The **mentors are their teammates** on this project, so mentors should not be seeing posts from students that say “We’re still researching, we’ll let you know when we have questions.” This is not collaboration or successful communication. Rather it is a quick update, and there is nothing for the mentors to respond to. Furthermore, mentors should be helping students to locate resources, conduct initial research, and start to dig into defining the problem. A more effective post would be “We’re in the research phase, can you recommend some resources for us to start with”, or “Here is what we’ve found so far, are we going in the right direction?”



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There should not be a phase in the project where the mentors aren't on the same page as the students, working alongside them, and providing feedback on each step.

### **5. What is the end goal? How do I know if the mentoring relationship and/or the project is a success?**

The main things that ISTC Education wants students to get out of the STEM Challenge experience are: 1. Exposure to STEM careers; 2. The ability to communicate their ideas externally (to their mentors) and thereby learn how to communicate more effectively; 3. To learn how to solve a real world problem that does not have a prescribed solution; 4. To receive feedback and iterate; and 5. To learn how to collaborate in and manage a project. Through these main tenets, we hope students build a relationship with their mentors which will help to build student confidence. The solution is the cherry on top. For ISTC Education it is about process over product. If students get to the end of the project and realize their solution isn't feasible that is okay! As long as they went through the full process to get there, and can talk about that journey, they've achieved the end goal.

### **6. Is there a right way to evaluate my students?**

Trying to evaluate all the skills mentioned above, is not as objective as a traditional grading process. If you are eager to evaluate students, utilize the rubrics shared on the teacher toolkit. Rubrics allow you and the mentors to gauge student growth through observed behaviors rather than a right or wrong answer.

### **7. Should the students have a working prototype by the end of the Challenge process?**

This is dependent on the problem statement, mentor feedback, and the solution that the process leads the students to. There is no requirement by ISTC Education to have a prototype at the end. We've had students present non-working prototypes, wireframes of apps, functioning apps, models, working prototypes, and verbal presentations without a physical aspect to their solution. All of those outputs are great! ISTC Education wants to ensure there is an authentic design thinking, research process that the students went through to get to their final idea. As long as students and mentors connected on a regular basis, iteration and feedback implementation occurred, and students built their teamwork, communication, and problem solving skills, they have reached the desired outcome. It is more important to ISTC Education that students can talk through the why rather than focusing on the what.



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### **8. What do I do if the students are stuck or can't figure out how to move forward?**

Each year ~75% of ISTC Education students report that this program is the first time they've worked with a professional. They're used to going to teachers for all questions and input, and now they're learning how to build a relationship with and communicate with an expert outside of the classroom. This practice of learning how to externally communicate their ideas and to implement the feedback of mentors is key to improving their communication skills overall, but sometimes they don't know what they don't know.

What is most important is that students go to their mentors with issues they're facing throughout the problem solving process. It is perfectly acceptable for students to say "We're stuck", "We don't know what to do next", or "Can you help us figure out how to move forward", etc. Mentors are used to long term, messy projects where you may hit a dead end or need to pivot. The problem being provided to your students to solve is one that came directly from their industry and company, so they're the best place to go to get unstuck.

ISTC Education also recommends video conferencing when students are having trouble explaining their ideas through written posts or need a boost. Seeing the mentors face to face helps to build the student-mentor relationship, and it is often easier to talk through ideas or places where students are stuck than it is to write back and forth about it.

### **9. What do I do when the students are losing steam after a few weeks of going through the process?**

This is something that we often hear from teachers. This project is long term, it takes a while to get the recognition and acknowledgement that students are used to receiving at the end of an assignment, and it can be easy to feel deflated when you're 3-4 weeks into a project and the finish line is still 6-8 weeks away. Again, ISTC Education recommends that you go to the mentors for support. Mentors can jump on a video conference, mentors can schedule time to meet with the students in person, and mentors can validate the work done so far in order to further motivate. It's okay for students to let their mentors know that they're losing steam, and to solve that problem along with their STEM Challenge problem. This is a real world experience and in the real world, professionals sometimes feel themselves losing motivation when a project is long term or they're not seeing significant progress in the early stages. Communicating project management struggles is part of what students will face in their careers, and learning how to work through that is part of the overall process.

Coaches are also valuable resources. As educators themselves, they have a plethora of strategies to engage, motivate, and ignite student energy.



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### Mentor Matching Engine Questions:

**Time Saver** - Most MME related questions have been answered in the MME Video Demo Section of the Teacher Toolkit. ISTC Education recommends that you first check out the teacher toolkit for MME instructions. When you're logged into MME, in the upper right hand corner is the tile with your initials where you can log out of the platform. When you click on those initials you'll also see an option to "get help". This brings you to the teacher toolkit. You can also find it through the url [help.mentormatchingengine.org](http://help.mentormatchingengine.org). Once you get to this page, click on 'Teachers' at the top. Among other resources you'll find a folder with short MME demos. These demo videos walk you through each step of getting on MME and getting your students on MME.

#### 1. How do I invite my students?

Invite your students through the invitation tab at the top on your MME dashboard. You click on the red invite button, enter your students' email addresses (you can enter as many as you'd like at once, though NOTE they should only be the students you are personally overseeing as we cannot remove students from your oversight once you have invited them), and select their role as student. Then click invite.

#### 2. How do I know when my students are fully onboarded?

Any students that remain in your invitations list when you click on the invitations tab at the top have been sent an email with the link to set up their profile but they have not yet used that link. Students need to search their email (it comes from [admin@mentormatchingengine.org](mailto:admin@mentormatchingengine.org)), click the individual link in their profile (**NOTE this is unique to each user so cannot be shared**), and create their profile. You will know they've done this when they no longer appear in your invitation list. They will move to your student list under the 'people' tab at the top of your MME dashboard.

#### 3. What criteria should I use to accept or reject their project draft?

Remember that this is a project where students are being connected with professionals. These professionals could end up providing the students with letters of recommendation, internships, or other networking opportunities. Their project details remain visible throughout the entirety of the project, and are something a mentor can continually refer back to. Therefore the research description (which is optional, but we recommend the students filling them out for the reasons



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above) and letter of introduction should include complete sentences, and enough detail that the mentor could reflect on the project when referring back to them. Once you feel the project details are in a place where you're happy for the mentors to use them as a reference, the project is ready to be approved.

### 4. How often should I be overseeing project activity?

For student safety it is essential that you regularly oversee and review your students' projects. Once ISTC Education's programs are in full swing we have upward of 800-1000 projects on the platform. While ISTC Education does our best to check in on your students' projects, we cannot oversee them on a regular basis. As the teacher, your main role in the project is oversight. Mentors take over the communication, the project guidance, the expertise, and the review of student work. Your role becomes 1. Ensuring communication is appropriate and safe, 2. Ensuring your students are communicating each week and communicating in a way that leads to discussion, and 3. Ensuring mentors are responding to your students and notifying ISTC Education if they are not or if other issues come up. Similar to ISTC Education's suggestion that you select a day of the week for your students to post, we recommend that you select a day of the week to review projects.

### 5. What do I do when a student has forgotten their MME password?

On the MME homepage ([app.mentormatchingengine.org](http://app.mentormatchingengine.org)) in the login box, to the right of the red 'sign in' button is a link that says forgot password. Students will enter their email address and then will be sent an email with the link to create their new password. Students should search their Spam for this email if they do not see it in their Inbox within 5 minutes.

### 6. Can students share Google docs through the platform?

Yes. Students can hyperlink their Google docs link in the discussion box on MME. However, PLEASE NOTE that students must have opened their Google docs permissions for mentors to be able to access the document. Since students are not allowed to ask for a mentor's email or share their own email with the mentors, students should create a folder that they open permissions to for all users and in that folder share their MME documents. This is a very regular occurrence so please discuss Google docs permissions with your students BEFORE they begin their project. We don't want your students to lose a week of back and forth to the mentor alerting the students that they cannot access the Google doc and the student working to provide access.