



Using Team Roles to Enhance Student Engagement

“We Learn . . .
10% of what we read
20% of what we hear
30% of what we see
50% of what we see and hear
70% of what we discuss
80% of what we experience
95% of what we teach others.” William Glasser,

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Study Team and Teaching Strategies (STTS)

<p>SPARC</p> <ul style="list-style-type: none"> Start promptly. Peer support expected within each team. Assignments due each day. Respond to group rather than individuals. Circulate. Circulate. Circulate. 	<p>TEAMS</p> <ul style="list-style-type: none"> Together, work to answer questions. Explain and give reasons. Ask questions and share ideas. Members of your team are your first resource. Smarter together than apart.
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**Carousel:
Around the
World**

- Write a different problem/topic/question on large poster sheets hung on the walls or on each table.
- Each team is given a different colored marker.
- Each team goes to a different poster, discusses the topic and decides what to write.
- Teams rotate to all of the posters, adding to what was written by previous teams (have a time limit).
- When done, each team does a “gallery walk.”
- A large group discussion/debrief can then be held.

**Carousel:
Index Card**

- Put the problem on regular paper or cardstock.
- The card gets passed around. It can be written on or post-its could be added to the back.

**Carousel:
Station
Rotation**

- Have 1-2 more stations than the number of student groups.
- Place a sheet of review problems (4-6) at each station.
- Have a blank answer sheet at each station for each group.
- The students work the problems as a group when they finish they turn in the station paper to the teacher and move to the next available station.

Dyad

- Each person is given equal time to talk.
- The listener does not talk; it isn't a conversation.
- Confidentiality is maintained.
- Maintain eye contact and good body language.

Elevator Talk

- Each person/team is given a topic.
- They summarize the topic into a quick presentation.

Fishbowl

- Used to model to whole class expected behaviors/norms.
- One or two teams sit in the middle of the class and works on the math problem.
- Rest of class stands near the team and observes or takes notes of how the team works, questions that are asked.....
- After 5-10 minutes, the teams return to their own tables and work on the math problem.

**Fortune
Cookie**

- Choose 5-6 questions and put in an envelope.
- Each team receives an envelope.
- One person draws a question, and makes one statement about the topic, then passes it on.
- The next person adds his or her own statement or responds to the previous statement.
- When everyone has responded to the first statement, another person draws from the envelope and repeats the process.

**Gallery or
Museum Walk**

- Students post their presentations around the room.
- Students, individually or in teams, walk around and look at the presentations.
- Students give feedback.

**Give One
Get One**

- Record three ideas to share related to a certain topic.
- Circulate and share ideas; for every idea given they receive one in return and record these on a piece of paper – including the name of the author.
- Begin team sharing by inviting a volunteer to share one idea received citing the author. The named person then continues the sharing process.

**Hot Potato~
(Round Table)**

- Every team has one sheet of paper and each student has a different colored pencil.
- A problem is given to the group and placed in the middle of the table.
- Student 1 writes the first step of the solution process, explaining aloud, and passes the paper on to Student 2.
- Student 2 makes any corrections and adds the next step, explaining aloud, and passes the paper on.
- Process continues until the problem is completed.

Hot Seat

- One chair/desk per team is set up in the front of the room.
- Using Numbered Heads, Student #1 from each team comes to the front of the room and sits.
- Teacher gives everyone a problem to work on in a specified amount of time.
- Teams can talk, but not the individuals in front.
- Check individual and team answers; two points for correct individual answers and 1 point for correct team answers.
- Student #2 from each team is up next and repeat.

Huddle

- One person from each team (teacher's choice) is called to the front of the room.
- Teacher gives a piece of information, checks for understanding...
- Student goes back to team to share.

I Spy

- When the team is stuck, one student (teacher's choice) can go around to another team and listen in.
- No talking.
- Student reports back to the team what was learned.

Jigsaw

- Each study team member is assigned a different part of a task/topic.
- Each member researches/learns about the task/topic (possibly with others with same topic).
- Each member then presents the information to the others in his/her study team.

Listening Post

- Students #1 and #2 work on a math problem aloud in their team.
- Student #3 listens to the discussion and can ask clarifying math questions.
- Student #4 only records what is discussed and verbalized (looks for attitudes) and may not talk.
- After 15 minutes, work stops and student #4 shares notes and observations.
- A variation is Students #1, #2, and #3 work and #4 observes and then shares.

Math Chat

- Have posters, with a topic on each one.
- Each person has a writing utensil.
- No talking.
- People write something about the topic.
- When it's done, it's done.

Numbered Heads

- Students number off in study team.
- The team is given a problem to do.
- When the team finishes, use random numbers (1-4) to ask questions or have team members share the solution process.
- The numbers can also be used to assign roles.

**Pairs Check~
(Rally Coach)**

- Each pair has one paper and pencil.
- Student #1 writes what Student #2 explains.
- Then roles are reversed for the second problem.
- Then each pair checks their work with the other study team pair.
- Continue on to the next pair of problems.

**Participation
Quiz**

- Pick a group worthy task.
- Tell students which norm you are focusing on.
- Show teams how you are keeping track (overhead, posters, chalkboard).
- Record comments while students are working.
- Debrief (Do not need to record everything).

**Proximity
Partner:**

- Students stand up and move to find a partner.
- They share information with their partner.
- They return to their team.

Peer Edit

- Students write.
- Peers read aloud or switch papers.
- Peers edit the paper (orally or in writing).
- Return to the writer for rewrite.

**Reciprocal
Teaching**

- In pairs, Student A pretends that Student B was absent and explains a concept.
- Switch roles and continue.

**Red Light,
Green Light**

- The team works together on a problem or set of problems.
- When they finish the problem, then they must *Stop*.
- The teacher verifies the work/answer with questions.
- The team is then given permission to *Go* to the next problem or set of problems.

Silent Debate

- Student pairs: One is “pro,” the other “con.”
- Each pair has one pencil and one sheet of paper.
- A topic is given and the pro goes first.
- The pro makes a supportive statement in writing.
- The con reads the statement and then writes a comment against the topic.
- The process repeats 3-4 times.

Swapmeet

- When a group task is partially finished, one pair from each team rotates to the next team.
- Pairs from the two teams share ideas, solutions, thinking...
- Pairs return to their original teams and share what they learned.

**Teammates Consult
(Pencils in the Middle)**

- All pencils and calculators are set aside.
- Students read the problem or question.
- Give students individual think/work time.
- Teams discuss the problem for clarity.
- Possible strategies are shared.
- Teacher gives okay for pencils to be picked up and written work to begin.

**Think-Ink-Pair-Share~
(Think-Pair-Share)**

- Teacher poses a question/problem.
- Without pencils, students think for 1-2 minutes.
- Students may then use pencil to begin working...without talking to partner.
- Students then share their thinking and answer(s) with their partner.
- Pairs then may share with larger group.

Traveling Salesman

- Teacher assigns a topic/problem to each team.
- Students solve the problem then plan a presentation.
- One team member presents the mathematics to another team.
- Repeat.

Tuning Protocol

- One person presents problem to team.
- Teammates ask clarifying questions.
- Presenter turns around.
- Teammates discuss problem, coming to a better understanding.
- Presenter takes notes and reflects on what is said.

Walk and Talk

- Topic is presented.
- Pairs walk around classroom (or meet with a partner) discussing the topic.

Whiparound

- Topic or question is presented.
- Participants randomly have an opportunity to say something briefly about it.
- Everyone does not have to comment but are encouraged to do so. Each student has one card with problem and an answer to a different problem.

**Whiparound
(I Have...., Who Has....)**

- Student 1 asks “Who has...” and states the problem.
- The person with the solution says “I have” and states the answer.
- The responding student then poses his problem and the student with the answer on his card responds.
- The process continues until all the questions and responses are given.

Resources: <http://www.cpm.org/teachers/study.htm>

**Student Roles
in Study
Teams:**

Assigning students particular roles in their teams can support productive teamwork. The purpose of the roles is to give each student a clear way of participating in the team conversation. Roles also allow students to share responsibility for the effective functioning of the team and class.

While specific strategies are outlined here and in teacher notes for key lessons to help the teacher implement defined team roles, the textbook is written so that a teacher may choose whether or not to use these roles. The student text makes no mention of team roles after the first section of the first chapter, so it is up to the teacher to use the team role resource pages (displayed on an overhead or document camera, or distributed to teams) to help each student learn his or her role.

Team roles can be structured in a variety of ways. We suggest assigning students the following roles when working in teams of four: Resource Manager, Facilitator, Recorder/Reporter, and Task Manager. These roles are further described below.

Ideally, students will have the opportunity to serve in each role over the course of the term. Some teachers will want to assign students roles that last for a week or for the entire time the student is with a particular team. Other teachers may wish to change students' roles more frequently. It is recommended that teachers assign roles randomly. Some teachers post roles on class seating charts, while others assign them to specific seats within each team (for instance, by using colored dots on the table corners).

In order for the roles to support learning successfully, students need to see that these roles have value in study team interactions. Teachers must stick to and emphasize the roles over time so that students have ample opportunities to learn how to perform different roles. Many students will benefit from hearing sample statements that illustrate what their role might sound like in action. Teacher notes in the first section provide suggestions for how to assign team roles in the context of each activity. Similar suggestions are offered throughout the course, and we encourage teachers to look for additional opportunities to make the most of team roles.

Teaching “Team Roles” to Your Study Teams Handout

Each role should be on a different colored sheet. Cut apart, collate in groups of four different colored team roles and distribute them to your regular study teams. (Now each person within the team will have a different colored card!)

Jigsaw the initial roles by having all the same-color, same role persons report to one of the four different corners of the classroom. For example, all Recorder/Reporters report to the same corner to discuss how they see themselves handling this role, what questions they will need to ask their team-members, and what behaviors they will encourage within their teams. Take only a short time on this and have them reconvene in their regular study teams to share their roles out with the other roles.

Summarize with a whole-class discussion about these roles so that everyone hears the roles for the first time and specific students begin to learn their roles. For example, *“Raise your hand if your job is to be the Resource Manager for today?”* As teacher, you can easily scan the class and know if the correct students are responding. *“What is one question you will ask your group members today?”* Go through all four “jobs” in this manner.

Launch a group-worthy task from your course that you will use to introduce teach them the team roles. Remember in all connections courses there are specific problems in which the team roles cards have been adapted to give students more appropriate questions to ask for that task.

Cruise the groups, jotting down on your clip board (tablet) examples of the appropriate questions you hear the role members asking as they solve this task. At first they will probably use only the exact questions from the role cards. Process this with them at the end of the session reinforcing the positive questions you have heard and how the team roles help make the groups work more efficiently. For example: *“How does it help your groups to work more efficiently if your members do these specific jobs?”*

During the next three days, have them keep the same roles while continuing to deepen the processing questions as you progress through the classwork problems in chapter one. Say, for example: *“You didn't hear all the groups like I did as I walked around, but students are even starting to ask similar questions within these roles!”* Support this by reading their questions that you heard.

During the next two weeks, rotate the jobs within the team so students really have a chance to learn and practice each role. The processing time shortens but the importance of the roles and how they help the team to function is kept in front of them daily during the first weeks of school! While debriefing during the later part of these two weeks, display the **team roles norms** and discuss each one together in class. Ask them to state the evidence they have observed supporting how these norms help teams to function more smoothly.

Continue throughout the first quarter and the school year to work relentlessly to make the study teams improve in their effectiveness. Developing this smooth teamwork makes using a student-centered classroom work to its full potential while allowing students to gain a deeper conceptual understanding of the mathematics.

Resource Managers get necessary supplies and materials for the team and make sure that the team has cleaned up its area at the end of the day. They also manage the non-material resources for the team, seeking input from each person and then calling the teacher over to ask a team question. Typically, a teacher could expect to hear a resource manager asking:

"Does anyone have an idea?"
"Who can answer that question?"
Should I call the teacher?"
"What supplies do we need for this activity?"

The **Task Manager** keeps the team focused on the assignment of the day. He or she works to keep the team discussing the math at hand and monitors if anyone is talking outside of her/his team. Additionally, a task manager helps the team focus on articulating the reasons for the math statements they make. Typically, a teacher could expect to hear a task manager saying:

"Ok, let's get back to work!"
"Let's keep working."
"What does the next question say?"
"Explain how you know that."
"Can you prove that?"
"Tell me why!"

Recorder/Reporters share the team's results with the class (as appropriate) and serve as a liaison with the teacher when s/he has additional information to share with the class and calls for a "huddle" with all of the recorder/reporters. In some activities, a recorder/reporter may make sure that each team member understands what information s/he needs to record personally. Recorder/reporters may also take responsibility for organizing their team members' contributions as they prepare presentations. Typically, a teacher could expect to hear a recorder/reporter asking:

"Does everyone understand what to write down?"
"How should we show our answer on this poster?"
"Can we show this in a different way?"
"What does each person want to explain in the presentation?"

Facilitators help their teams get started by having someone in the team read the task aloud. They make sure each person understands the task and that the team helps everyone know how to get started. Before anyone moves on, the facilitator asks to make sure each team member understands the team's answer. Typically, a teacher could expect to hear a facilitator asking:

"Who wants to read?"
"Does anyone know how to get started?"
"What does the first question mean?"
"I'm not sure - What are we supposed to do?"
"Do we all agree?"
"I'm not sure I get it yet - can someone explain?"

**Norms for
Student
Interaction in
Study Teams:**

To maximize their learning opportunities, students are expected to actively participate within their study teams. To create this norm in the class, it is important to begin teaching students your expectations for effective teamwork from the beginning. Activities and lesson structures suggested in the teacher notes, resource pages, and descriptions of team roles begin to communicate expectations to students in Chapter 1 (see description below). So as not to interfere with teachers' setting their own class norms, these guidelines only appear once in the student text in Section 1.1. Nevertheless, we suggest the following guidelines for teams which can be remembered by using the acronym TEAMS:

- **Together, work to answer questions.**
- Requiring students to work within their team helps them to see each other as resources and to find their own way of solving a problem. By making students look to the others in their team rather than friends in other parts of the classroom, it helps ensure that no student is excluded from the conversation. Teams should work and move as a team without leaving anyone behind or having anyone working ahead. Emphasizing the importance of creating space to share ideas and converse openly about the mathematics will help teams be more cohesive.
- **Explain and give reasons.**
- This norm links directly the learning themes of this course and underscores the expectation that there are multiple valid ways of solving a problem.
- **Ask questions and share ideas.**
- This helps to set a tone that the classroom is a community of support. This expectation also challenges students to help a teammate understand and make sense of ideas for him- or herself instead of simply receiving an answer. It also reminds students that their conversations in study teams have an intellectual, rather than a social, purpose.
- **Members of your team are your first resource.**
- This norm can be reinforced by the manner in which the teacher responds to questions from a team. Responding only to the hand of the resource manager and then asking, "*Does everyone in the study team want the question answered?*" helps students to work on answering their own questions. This norm should not imply that the teacher does not answer questions, but instead that the other members of the team are a student's first resource. While this behavior can be as difficult for the teacher as it is for the student, it clearly and concretely teaches students to become self-directed learners.
- **Smarter together than apart.**
- Again, this norm emphasizes that the solving process and thinking mathematically are important parts of every problem, and that understanding others' approaches improves an individual's understanding.

1-7. TEAM CHALLENGE: TOOTHPICKS AND TILES



Today you and your team members will work together to participate in the “Toothpicks and Tiles” challenge. You each will have one card that shows a tile shape and there will be a fifth card to share as a team. Any extra cards should go in the center of your workspace so that everyone can see them.

Your Task: As a team, do the following:

- Each team member should write his or her name on one of the shape cards.
- Place any extra shape cards and all of the fact cards face up in the middle of the table so that everyone can see them.
- Work together to match each tile shape with one fact statement so that each fact has *only one* shape and each shape has *only one* fact.
- If you want to change the shape that matches a fact card, you *must* convince the person whose name is on the card of the shape you want to change. He or she is the only person who can touch that shape card.
- Once everyone in your team is convinced that each fact is paired with one shape, call your teacher over. Be prepared to justify your choices!

Red Light, Green Light

Are ratios only used to compare shapes that have been enlarged or reduced? In this lesson, you will expand your use of ratios to new situations. “*What is being compared?*” is a question that will be useful to keep in mind as you work with your team on this lesson.

4-75. Katura was making berry drink from a bag of powdered mix. The directions said to use 5 scoops of the powder for every 8 cups of water. Her pitcher holds 12 cups of water.

- What is the ratio of powder to water in the directions?
- Work with your team to figure out how much powder Katura needs to mix with 12 cups of water. Try to find more than one way to describe or show how you know your answer makes sense. Be prepared to explain your ideas to the class.
- What is the ratio of powder to water in Katura’s pitcher? How does this compare to the ratio in the directions?



that

4-76. ON THE TRAIL AGAIN

Ms. Hartley’s students were working with their mix of raisins and peanuts from Chapters 1 and 2. The class found that 30% of the mix was raisins. Sophie was working with a sample from the mix and counted 42 peanuts in it.

Sophie had just poured her sample back into the jar, when she realized that she had counted the wrong thing! Her teacher wanted to know how many *raisins* were in the sample, not *peanuts*! Work with your team and use the questions below to help Sophie figure out a reasonable estimate of how many raisins were in her sample.

- Sophie knows that 30% is the same as $\frac{30}{100}$. Can this be thought of as a ratio? Which two quantities are being compared in this case? Can you write another equivalent ratio representing the same comparison?
- Could Sophie write a ratio comparing the number of raisins to peanuts? How could you figure out this ratio without having to count the peanuts? Discuss this with your team and be ready to explain your thinking to the class.
- Find an equivalent ratio that will help Sophie figure out how many raisins should have been in her sample that contained 42 peanuts.

DOT PATTERN

1-16 Copy the dot pattern below onto graph paper.

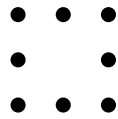


Figure 1

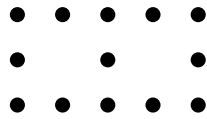


Figure 2

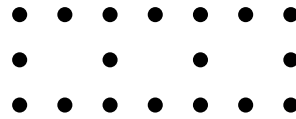


Figure 3

- What should the 4th and 5th figures look like? Draw them on your paper.
- How can you describe the way the pattern is growing? Can you find more than one way?
- How many dots would be in the 10th figure of the pattern? What would it look like? Draw it.
- How many dots would be in the 30th figure? How can you describe the figure *without* drawing the entire thing? Can you describe it with words, numbers, or a simple diagram? Be ready to explain your ideas to the class.

Make sure that each person has a copy of the work and that you have:

- Clear drawings of the 4th and 5th figures of the pattern. Use color to help you show how you see the pattern.
- An explanation of the different ways that you see the pattern you found. Find ways to help your classmates understand how you saw the pattern.
- Your prediction for the 30th figure with a clear explanation.

1-17. Work with your team to find a way to describe *any* figure in the pattern. In other words, if you knew a figure number, how could you decide what the figure looks like even if you cannot draw it? Be ready to share your ideas with the class.

