

CLASSROOM MANAGEMENT FOR STEM ACTIVITIES

Learning should be engaging, interesting and stimulating. But in order for these things to happen, the learning environment needs to be organized and boundaries need to be in place. Chaos only leads to frustration, stress and discouragement.

A good classroom management plan is essential for the success of any activity involving group interaction. You need to have this in place before starting. You will also have to practice this with your class by doing smaller group activities such as warm ups prior to the larger ones.

You will need to have in place the following:

1. Boundaries
2. Time limits
3. Roles/Jobs
4. Grouping
5. Supervision

Boundaries:

STEM activities consist of mostly group work of 2-4 students. This follows the principles of cooperative learning. Cooperative learning allows students to communicate with each on a more independent level. **It is not teacher instructed, but more student directed.** This is very important to understand and sometimes hard to achieve, especially if this is an area where you and students have very little practice.

Set between 2-4 boundaries from the start. Keep these boundaries consistent with all group activities. Boundary options can be, but not limited to the following:

- 1. Talking Volume:** Because talking is necessary between group members, volume can get out of hand. Talking to other groups should not be allowed. Give short ques for toning down the volume. Ideas could be:
 - a. Clapping of hands
 - b. A buzzer or short whistle blow
 - c. Teacher says one word like: "Albert" and students finishes by saying: "Einstein"
- 2. Walking around the room or leaving the room:** Allow students to stand or sit around their group. Students may not leave group without permission from group leader (this will be discussed further).
- 3. All group members must have a role/job and participate in activity and discussion.**



Group Set Up:

Groups, no matter the age, function better with a minimum of 2 students and maximum of 4 students. Groups should sit next to each other or the best scenario is in a round robin setting. When you first start out, group your students according to equal strengths and weaknesses. This makes the first few activities run a little more smoothly. When students become familiar with the grouping process, randomly pick groups. You might get a group of all leaders and another group of all followers. [Watch what happens here](#). You might have to intervene the first couple of times this happens, but hopefully this gives strong leaders an opportunity to feel what it is like to follow and the group of followers an opportunity to lead.

Roles/Jobs:

Assigning roles or jobs is not new, but it is **essential** in cooperative group activities. These roles help you manage time and energy. If groups do not have four participants, then left over roles/jobs are doubled up. Teacher can assign these jobs for each group ahead of time or the group picks by nominating, pulling a name from the hat, or “Rock, Paper, Scissors”. Eventually you want to make this a group decision (*Remember: Student directed, not teacher instructed*). Roles/jobs to consider:

- a. **Leader**- This person is responsible for the following:
 1. Talking to teacher if there is a problem
 2. Giving permission for a group member to leave the group (*bathroom, etc.*)
 3. Knowing where group members are when asked
 4. Making sure all group members are engaged
- b. **Supply Gatherer**: This person is responsible for the following:
 1. Getting supplies for and during the activity
- c. **Time Keeper**: This person is responsible for the following:
 1. Keeping time for each designated segment of the activity
- d. **Data Collector**: This person is responsible for the following:
 1. Writes down the data collected from experiment or activity so that group members can copy later.

Time Management:

There are many parts to the STEM process. Keeping in mind that this is an integrated activity, limiting your time to just your science hour is not recommended. You can keep the activity or experimenting going through your math and language arts time lots as well. Using time segments for each part of the STEM activity will help your students focus and prevent idle or unstructured time.



The first thing you need to do is break down the activity into segments and then assign an appropriate time frame for completing. It is important to stick to this time frame to teach students time management skills.

If you find as you are doing an activity for the first time that the time allotted is not attainable because most groups are not up to speed, adjust the time for all groups. **Do not** adjust time for one or two groups. This accountability is how students learn time management.

Example of time slots for a STEM activity: (*Warm ups use less steps and less time slots*)

- Explanation of activity: 10 mins.
- Getting into groups: 5 mins.
- Designating role/jobs: 5 mins.
- Collecting supplies: 5 mins.
- Performing activity: 30-60 mins.
- Discussion: 15 mins.
- Presenting to class: 15 mins.
- Clean up: 10 mins.

Add more time and time slots when incorporating reading, research and writing.

Supervision:

Depending on the age of the class, this is your call. As you and your students get use to this process, you will need less and less walk around time. Students will feel empowered and engaged in the activities, making you, the teacher, an observer only.

1. Walk around the room every 15 minutes. Engage in conversations going on in the group.
2. If a leader comes to you because there is a dispute, don't settle the dispute for them. Engage the group in a small, quick conversation on ways it can be solved and have them decide the best option. Point out time constraints. This helps speed up the process.
3. Enlist parent volunteers to help monitor, set up and/or clean up.

Setup and Cleanup:

These are probably the most two important and under emphasized areas to teaching hands on activities. The key is to insert these two areas into your planning.

Setup:

1. Make sure you have all supplies needed.
2. Make sure you have enough supplies.



3. Plan out how the set up will be executed. Some ways to do this are:
 - a. Students are reading or writing quietly while you set up each group table.
 - b. Designate an area where all needed supplies are set up ahead of time and the Supply Gather retrieves the supplies there.
 - c. Set up the night before or between classes
 - d. Have a volunteer help

Cleanup:

1. Have Supply Gatherer collect left over supplies and return them to designated area.
2. Have all students be responsible for area
3. Give students a time to be cleaned up (*This gives a challenge that turns into an incentive.*)
4. Have a volunteer help

Warm Ups:

These short activities can be used before the actual STEM activity or used to train students in the STEM process of group work. They should consist of the following:

1. 30-45 minutes from start to finish
2. Simple with a few supplies
3. Engaging and fun

Examples: You can also find ideas in any resource or text book.

1. Give each group a small puzzle that needs to be put together by the group without talking.
2. Give a paper bag filled with 4-10 items to each group and have each group create the challenge given to them (ex. *a way to catch a mouse, build a bridge or tower, serve food, etc.*).
3. Place a funny title on a sheet of paper (ex. "Bananas are Falling from the Sky", etc.). Pass this sheet of paper around to each group. Each group member has one minute to add a sentence and then covers it up before passing it to another member. It continues to go around until the designated 10-15 minutes is up. At the end, a group member shares the writing with the class.
4. Each group is given one folder or envelope. The folder/envelope is passed to each member to look over and show or tell how it can be used. One member records ideas. If a member cannot think of something (they have one minute), it is passed on. It keeps going around until time is up. Groups share their lists with the class. Who generated the most ideas?



5. Give an ink blot picture (can be the same or different) to each group. Have them discuss the possible things that they see in that ink blot using each letter of the alphabet.

The first quarter of the year should be spent teaching students how to work in a group setting. Take the time! Train them well! Provide your students with ample training that will allow them to be successful throughout the rest of the year. Group work will run like clockwork!

