Macomb Science Olympiad

ELEMENTARY

Head Coach Handbook

3rd Edition

2nd Edition

MacombSO.org

Cover photo by Nick Kutskill
8th Grade - Wyandot Middle School

Introduction

In this document, you will find advice on how to effectively coach a Science Olympiad team. It is organized to serve several needs. Most of the handbook is written with the first-time coach in mind, covering the major responsibilities and choices that they will face. Returning coaches may find that the section on "Building a Strong Team" gives them a new perspective on their role as head coach, and challenges them to lead their team to the next level. Finally, the chapter "Season Schedule and Milestones" puts the major tasks in order, and suggests when those tasks should occur. We intend that section to be helpful to any coach throughout the season to see if you missed a major task, and to check if you're on schedule.

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Tip! If you are reading this document electronically, note the hyperlinks that will connect you directly to a chapter, or to external content with just a click.

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It's About the Kids

No one ever takes the job of Head Coach because they believe that Science Olympiad is about adult competition. But occasionally, we can behave as if we forgot this, or discover that one of our event coaches didn't get the memo. Sometimes you have to remind yourself to take your hands off, step back, and let the kids show what they can do. Coaching is a balancing act between educating, assisting, advising, motivating and watching.

This activity is about encouraging and developing kids who love science. It can also be an important venue for learning teamwork, sportsmanship, respect and responsibility. Winning, a satisfying and just reward for invested time, should be further down on the list of priorities. Winning is a tangible thing to measure and a worthy goal to be pursued, but is not to be traded for good behavior. Experienced coaches will tell you that their proudest moment was not when the team brought home a trophy but when their team faced a challenging situation and made a good but difficult choice.

Congratulations! Because you are reading this handbook, it is likely that you are seriously considering accepting the role of Head Coach of a Science Olympiad team, or you already have made the leap and are interested in improving your team's performance. Coaching a Science Olympiad team can be a very rewarding experience. As with all such experiences, it does require work. We hope that you will find the information in this handbook helpful.

There are many reasons why students, their parents and teachers get involved in Science Olympiad, and just as many ways to judge success. Although this handbook is written primarily based on the experience of a few veteran coaches, it attempts to support a range of viewpoints on how a team may be run.

As head coach, you carry the primary responsibility for setting the tone and attitude of your team. In this handbook you will occasionally find advice which speaks directly to this issue. In many ways, the Science Olympiad organization is the sum total of each team, and you can help make it be the best experience for some great kids.

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Macomb Science Olympiad

Science Olympiad is a national organization consisting of Division A (elementary) and Divisions B (middle school) and C (high school). Division B and C teams compete at a joint regional tournament hosted by Macomb Science Olympiad. The teams that have the best overall scores are invited to Michigan's state tournament, held at MSU. The top two teams from each division of the state tournament are invited to the national tournament. This tournament is held at various colleges across the country.

Elementary Division

The elementary division (Division A) has no state or national tournament. Our big tournament is the regional tournament which serves Macomb County and St. Clair County and is held at Macomb County Community College South Campus in Warren. Many schools also participate in a practice tournament. To find out if your school district holds a practice tournament, talk to other head coaches in your district or contact the elementary tournament director of Macomb Science Olympiad at esodirector@macombso.org. They should be able to guide you to the right person.

Our Macomb Elementary tournament is divided into two divisions: K-5 and K-6. This prevents having schools with 6th graders competing with schools that don't, and gives both types of schools a level playing field. At the tournament all schools will be performing the same task or taking the same test in the same room. However, the scores for each division are tallied separately. At the awards ceremony medals are given to the top teams in each division for each event.

Events

There are 17 events in the elementary Science Olympiad tournament each year. The events cover four areas of science: Science Processes, Earth Science, Physical Science, and Life Science (consistent with the Michigan Department of Education Science Content Expectations). Although your students may be in elementary school, don't be surprised if they are asked questions that are more of a middle or even high school level. This is because the students on Science Olympiad teams are typically very capable students and because the objective of the tournament is to see who knows the most in each area.

Team Profile

You may have as many students as you want on your team but only 17 at most may represent your school at the tournament. The students may be in the 3rd- 6th grade. There are no limits on how many are from any particular grade level or how many girls vs. boys are on your team (although some events require a minimum number of students). Most students will be assigned 2 events. Your more capable students may have a 3rd or even a 4th event.

Some schools choose to have alternates on their team. This allows more students to be involved in Science Olympiad. This also ensures that you'll have a back up person in case one of the team members cannot attend the tournament for some reason (such as illness). The practice tournaments in our area typically allow participation of Alternate team members. And recently we have allowed "Alternate" teams to register for the Regional tournament in slots that remain after Primary teams have had a chance to register. They scored are in a separate division.

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Roles and Responsibilities of the Head Coach

Organizing the Team

Every team needs a leader, and you are it. There are some very simple things that you can do to better serve your team and make your job easier. For instance, publishing a roster of team members' contact information, a calendar with important dates, and actively keeping track of team resources. Other parents and teachers will be more likely to follow your lead if you demonstrate that you can keep things organized.

Communicating Information

You are the primary contact point between your team and the Science Olympiad organization. Many important pieces of information will only get to your team if you pass them on. Regular communication can also help your students and coaches feel like they're really part of a team. Email is a great tool for staying in regular contact with your team.

Setting Appropriate Goals

The satisfaction that students (and coaches) will experience will in part be a function of what they are expected to achieve. A rookie team, or one that has struggled for a few years, should not expect to bring home a team trophy. If this is your first year, think of it as an opportunity to take Science Olympiad for a test drive. If you don't have enough team members to cover all events, measure your success on the events in which you do participate. Doing better than last year is generally a reasonable goal.

Tip! A great way to encourage your team to work harder is to tell the whole team about the accomplishments and dedication of one event team when you hear a good report.

Creating Accountability

There are many other distractions and priorities that students and their families manage every day. To get the most from your team, you will need to set responsibilities, and then regularly and respectfully stay in touch with your event coaches and students to monitor if they are staying on track.

Managing Team Finances

You need to help your team make good spending choices with the resources you have available. Considering what the team needs now, and what resources you are building over the long term are important perspectives. Don't be afraid to ask others for help if funds need to be raised.

Making Choices (sometimes hard ones)

The buck will stop with you maybe more often than you would like. There will be times when you have to make a difficult choice, where there will be tradeoffs, or one student seems to benefit over another. In these moments, talk with the affected people, consider alternatives, and remind yourself what is best for the team.

Setting the Example

Your team will eventually take on the personality that you exhibit. If you are organized, disciplined and hardworking, then you will attract those types of kids and coaches to your team. If you look for opportunities to praise your team members, they will be motivated to rise to meet those compliments. Unfortunately, the opposite also can be true. If things aren't going well, a little self-inspection is a good place to start.

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Types of Teams & Selection Processes

Each school has the flexibility to implement the day-to-day operations of their team in a way that fits the priorities and personalities of the school leadership. The Principal's opinion is an important one in this regard. If you hadn't noticed, you are now part of the school leadership! You should also be considering your own strengths and attitudes as you make these choices.

Here are a couple basic types of team structures:

Top 17

This is a team structure which attempts to identify upfront the top 17 students in the school for Science Olympiad. What is meant by "top" is open to interpretation. It would probably be a mistake to assume that it is synonymous with "Gifted and Talented" or whatever label your school has put on the top performers. However, it would be very surprising to select a team that does not include many of these strong students.

Tip! Using a selection process that judges the interest and dedication of both students and their parents can be important because a team's success depends greatly on both.

Determining the "top" 17 can be done in a variety of ways. You can set criteria and ask teachers to provide evaluations of the kids on those criteria. Another method is to create tryout tests and give the kids a few weeks to prepare, based on an abstract of what could be on the tests (not unlike the real tournament!). This requires advance preparation on your part to have created the tryout tests and the instructions for studying.

Pros & Cons of a "Top 17" Team

Pros:
- It gets the selection pain over with earlier
- You can narrow the focus of your attention to 17 kids and their parents
- The kids find out whether they will represent the school before they (and their parents) invest substantial time

Cons:
- It is not inclusive of other students. More than 17 students at any school are likely to be interested in science.

Club

This is a team structure which tries to include all the students who have an interest in being actively involved in a science "club". The reality is that only 17 students will be able to participate in the regional tournament, however, activities can be structured so that all interested students may continue to participate. Some teams create a feeder system of "alternates" who can step in when the unforeseen happens. Alternates also may be given preferred standing for making the team in a future season.

At the beginning of the season, interested students participate in practices for

Pros & Cons of a "Club" Team

Pros:
- More students participate
- Alternates may be good future team members

Cons:
- Additional work is required to support the larger group and to prepare for the event reviews
- You have to "cut" kids before the tournament

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selected events for which materials and activities have been prepared (not all the events). If you can recruit more adults to be involved at this point you'll be able to expose the kids to more events. During this period you should be making notes about the students' dedication, and ability to work well with others. After a specified period (maybe a month or so), you may need to administer a series of tryout tests as the final criterion. Some of these science tests should be specific to the subjects you've covered, but some may be of a more general nature. The top 17 students should be selected on the basis of these criteria. If your team includes alternates you'll want to be clear about their role on the team.

Qualities to Look For in Students

Students who make strong Science Olympiad team members have these characteristics:

Bright and Inquisitive These students enjoy learning new things, and are not intimidated by challenging subjects.

Every event team has at least two kids. If the kids on an event team can't cooperate, they won't do well. *Guaranteed*. **Team Player**

Responsible Their preparation for the tournament will be in addition to normal school work and likely many other activities. No one wants to nag a student to prepare.

These are not listed in order of importance. In fact, the qualities of *Responsible* and *Team Player* can be more important than raw brain power. Whatever process you choose for selecting a team, it should not be based solely on the knowledge they walk in the door with.

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Sources of Support

As head coach, you have the responsibility of watching over the whole team – making sure it is running smoothly and troubleshooting any areas that need attention. You will need to rely on many others to do their part to make this happen. This list of potential supporters is a good place to start. As you become more experienced, more avenues of support may become apparent.

Principal – The principal of your school may have money budgeted for your team – to use for supplies, t-shirts, food for team meetings, etc. They can also make sure that your team gets the recognition that it deserves – through whole school announcements, assemblies, newsletter articles, marquee, etc. Some principals volunteer to coach an event. Some principals come to the tournament to show support for the school's team.

Teachers – The teachers in your school can be a big help in choosing which kids to be on your team. Teachers can also provide materials to help study for the events. Many of them have posters, books, and other materials that will help to make studying for the event more fun. Many teachers volunteer to coach an event. You may also need the teacher's cooperation when scheduling meetings during lunch time – which may affect a student or two in their class.

Parents - Getting your team members' parents' support is vital. They can serve as event coaches, help to raise money for the team, find companies that will sponsor your team, make sure their child is at practice on time and studying for their event, and bring food to meetings. If the parents see the value in Science Olympiad, the students will take their role more seriously.

Macomb Science Olympiad – The Macomb Science Olympiad website is very important in keeping you and your event coaches up to date on information, workshops, rules clarifications, and much more. Book mark the www.macombso.org website and check it often! MSO provides other support like new event workshops, new coach workshops, and other support materials like this handbook.

Tip! Event rules may have clarifications added as the season progresses and teams ask questions. Check the MSO website every week or two for updates.

Other coaches – Talking to other head coaches (former head coaches from your school or head coaches from other schools) can provide essential information based on their past experiences. Likewise, your event coaches can gain precious knowledge from the person who coached their event in past years. Keeping a list of these contacts can be very valuable.

Local organizations - Local businesses, special interest clubs, nature centers (such as Stoney Creek or St. Clair Metro Parks, Burgess-Shadbush Nature Center, science centers (such as Cranbrook and Michigan Science Center), and local colleges and universities can provide valuable study materials and many offer workshops targeted to individual events.

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School District - Your school district may provide money for registration fees and/or supplies. They may have an educational foundation in which you can apply for money to finance your team's needs. Arranging for your team to be recognized at a Board meeting following the tournament can also be a great way to boost your students' morale as well as make the Board of Education aware of your teams' efforts and accomplishments.

Internet - You can find a wealth of knowledge and ideas on the internet. But be careful! Make sure that the ideas that you get off of the internet are in agreement with the rules for your event.

Fundraising – It is inevitable that you will need money – for registration fees, team t-shirts, and supplies. Your school, PTO or district might supply funds. Perhaps you will ask each member of the team to pay a participation fee. You could decide to raise the funds. Being the head coach, you already have a pretty full plate. Is there a parent of one of your students who would be willing to do some fundraising? There are many ways to raise funds including:

Fundraising Ideas

- Car washes
- Bake sales
- Penny collections
- Bottle and can recycling
- Dances
- Concessions at school events
- Scholastic Book Fair

- Magazine sales
- Candy sales
- Garage sales
- Skate night (split admissions)
- Donations (from friends, families, or business sponsorships)

See also: *Starting a New Team*, on the Michigan Science Olympiad website.

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Recruiting and Managing Event Coaches

Responsibilities of Event Coaches

The event coach is the person who has volunteered to lead the students through the information or activity that they will be competing in at the tournament. It is vital for the event coach to have read the rules for their event and make sure that they understand them completely. If they have questions about the event, they will have the opportunity to ask the event supervisor directly at the Event Coach training in January. Otherwise, they can submit a question on the MSO website FAQ. As they work with the students, it is important to re-read the rules periodically to make sure that they haven't forgotten something or misinterpreted something.

The event coach does NOT need to be an expert in that area of study. Many times event coaches are learning the topic right along with the students. The event coach may need to get information and materials for their topic, prepare for each meeting, meet regularly with the kids, and network with past coaches for additional advice. They create structure and accountability.

It is important to keep the kids' meeting fun – providing them with challenges and mini rewards for accomplishing a task in a certain amount of time or getting a certain number of questions correct. Food always works with kids!

Recruiting Event Coaches

There are a few places that you might find someone to coach an event for you:

Parents – Many parents welcome the chance to work with their son or daughter on a school event. Working parents that can't volunteer at school during the day appreciate the chance to take part as an event coach. Some schools require parents to coach an event if they want their child to be on the team.

Teachers – There may be some teachers at your school that have the time and energy to coach an event for you. Check with your school's principal to see if there is an incentive for teachers who work on Science Olympiad – such as additional pay. This may help to persuade a teacher to donate those valuable after-school hours.

Student Teachers – Student teachers are usually anxious to prove their dedication to the school, and may have fewer outside obligations that would prevent their participation. But they might not be around when it's tournament time. Also, you'll want to make doubly sure that they keep good notes to pass on to the next person in that role. Having a new event coach every year can prevent an event team from learning from year to year.

Volunteers – There may be other people in the community that would be willing to volunteer a couple of hours a week to coach an event. Senior citizens, special interest clubs, and people with related hobbies may be willing (and even anxious) to share their expertise with the kids.

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Older students – Middle and high school students who have been on a Science Olympiad team in past years, National Honor Society students, students hoping to satisfy community service requirements, and older brothers and sisters of team members all can make great event coaches. You may need to watch out for behavior issues because elementary students will often behave differently for other students than they would for adults. You will need to provide a little extra support for these event coaches. Sometimes the kids relate better to these younger coaches.

Supporting and Managing Your Event Coaches

As head coach, you may need to occasionally assist your event coaches. The easy questions are about where to find information or what resources are available. The more difficult issues will be about behavior.

When a problem does arise, you need to listen to their concerns, and discuss possible actions. You can offer to be part of the solution, but often the best resolution does not directly involve you. In general, you should prefer to not get between an event coach and their students.

Tip! When a problem does arise, be clear about your expectations for change and actively monitor the situation. Do not be patient with inaction.

Event coaches are responsible for scheduling practice times with the students for their event. Sometimes this is not an easy task because Science Olympiad kids also tend to be involved with many other things (such as sports, dance, and music lessons). If the event coach cannot work out scheduling practice times on their own, this is a sign that you likely have a family (either the event coach or the other family) who is not committed to the team. Ideally, a good tryout process will prevent this situation from ever happening. You may need to discuss the issue of commitment with the parents of a team member. As a last resort, replacing a student on your team may be the necessary but unfortunate action.

Event coaches may also have difficulties with their students' behavior. For instance, students not showing up for practices, not coming prepared with assigned materials, not having studied their information, bringing a friend to practice, or allowing other things to be distractions. As Head Coach, you can begin by setting expectations at the team level by discussing proper behavior during full team meetings. In the group setting, critical statements should not be directed at individuals, but praise for good behavior may be. These issues can be revisited periodically as the season progresses to reinforce the expectations. If a behavior issue arises with a specific team or student, you may agree with the event coach to intervene by speaking with the offending student. Remember that you are trying to build your students up, and that because you are the Head Coach you are automatically carrying a "big stick". Be judicious in what you say.

Sometimes life itself may interfere – such as family situations (like divorce, sickness, or death) for either the students or the event coach. As the head coach, you need to be aware of these things and step in if necessary. Reassigning the event coach responsibility may be necessary in rare circumstances. Although the parent may not wish to be replaced, they may actually be relieved if they can still help the event team but not have the leadership responsibility. If you monitor the progress of your event teams early in the season, and know that they are off to a good start, you will be less likely to find yourself late in the practice season with an event team that is not functioning well.

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Building a Strong Team

Building a strong team requires systematic thought and effort on your part. How can you attract more committed students (and parents)? What can you do to build the capabilities of your team? What can you do to make it the best experience possible for your team?

Continuity

The teams that you see accepting a trophy at the tournament are ones which don't relearn the same lessons over and over each year. This requires effort because the students and parents involved from year-to-year keeps changing. Continuity is in part a byproduct of writing things down and being organized.

Continuity begins with the Head Coach, but is important at all levels. A team that has a head coach who will serve for a least several years has made a good first step.

Some students like to "surf" the events, never returning to the same one twice. Some turnover is expected, and to some degree you want the kids to have an opportunity to explore subjects in which they might be interested. However, asking them to stick with a subject to develop a higher level of mastery is also an important experience, and will give them an opportunity to contribute to the team standing and improve their chance of winning an event medal.

Event coaches will often be happier to stay on the same event multiple years because it gets easier as you go. At the end of the season, ask your event coaches to record what they learned in case they're not the coach next year. It may be appropriate to create a notebook that goes with each event that becomes the team's asset base. Every new event coach should be given contact information for the previous event coach, and encouraged strongly to make that contact.

Frequent Communication

Communicating with your team seems like a no-brainer, but doing it well does take work. Remember that you are trying to penetrate the craziness of family schedules just like your own. You might choose to send important information both in a written, take-home form, as well as electronically. Email is a great convenience, but you might have to train some families to actively check for email notes.

The investment that you make in writing clear, organized emails or letters, and being clear about what you need from your team will help everyone. Pay attention to formatting and how a reader will find the most important information in what you send.

By nature, Science Olympiad has a decentralized structure with the many event teams. Regular communication will help members feel more like they are part of the team. Ask your event coaches how things are going. Make them feel like you're engaged.

Tip! Email is a big time saver and allows you to communicate frequently with your team. Create an email distribution list for your team as soon as possible.

Organization

There are opportunities to let good organizing skills help you build a strong team at every turn. Build rosters with contact information and make sure everyone has a copy. Keep track of who attends every meeting, and follow up with those who miss. Write things down! If you call a meeting, write an agenda beforehand. Better yet, send the agenda to the meeting participants in advance.

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Choose methods that will help keep you organized, like a filing system or notebooks. Clean things out occasionally so that the truly valuable materials don't get lost in a large pile of irrelevant material. Technology solutions, such as cloud-based storage, are great tools at your disposal.

If all of this seems obvious, then you're probably all set. For others, this may be difficult and will require a dose of discipline.

Accountability

Creating a culture of accountability is a key responsibility of the head coach. This doesn't imply that you need to be an overbearing, demanding person. The "happiness" of your team will in part depend on all members feeling like their contribution is valued and that the other members are doing their part. Occasionally it may feel like nagging, probably because it is. It's part of the job.

Tell your event coaches and students what you expect of them, and be willing to occasionally follow up. Use the touch points that you have with your team to politely inquire how things are going. You don't need a detailed report to know if they are engaged, or are procrastinating. If you have lunchtime or after school full-team meetings with the kids, go down the roster of events and ask each event team to say a few words about their activities.

When you hear a particularly good report about one event team, share it with the rest of the team. It's a great pat on the back for the source, and a reminder to others that you care. It could be simple things about meeting regularly or how quickly they are learning the material. Showcasing good behavior will breed it with the rest of your team.

Team Identity and Recognition

There are a number of easy ways to build your team identity. Virtually anything you do as a group qualifies. The most traditional is ordering team shirts. Team identity is important to invest in because it is possible for your team to have almost no group identity with the decentralized nature of event teams. Having a design competition for what to put on the shirts can be a bonding activity.

Consider other convenient opportunities for the team to do something together, like lunchtime meetings. After the competition, have a post competition celebration that same evening, or maybe a pizza party at school during lunchtime soon after. Or do both. If you can manage it financially, giving each student some type of remembrance is a nice touch.

> **Tip!** Kids like to have their pictures and accomplishments showcased on a bulletin board at school where their classmates will see, even if for just a month.

Let the school know what's going on. Before the tournament announce that you're competing and representing them. On the Monday after the tournament announce the competition results, and make a big deal of it. When the school has an awards assembly, make sure the team gets recognition. It's ok to mention the results of individuals, but make sure that it is obvious that the team results are the most important. Teams that do well in their total score are the result of consistency of the whole team, regardless of who received a medal.

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Know the Event Rules

Of course you'll know the event rules. Doesn't everyone? This is one of those things that can sneak up on you when you least expect it. No Event Supervisor wants to tell a student (and coach) that they've been disqualified because they didn't follow a published rule. But it happens.

The rules on any given event may change from year to year, and effort is made to highlight the changes. Rule changes generally occur to fix a problem that was observed in the past tournament, or to maintain the competitiveness of the event.

Think of this as another way that you can ask your students to take responsibility for their event. Event coaches should know the rules also. They both should read through the event rules several times during the course of the season. Something which had little meaning to them early in the season may become important after having more experience.

Also follow the online rule updates & clarifications on the MSO website. Ideally, event coaches should check on these updates every few weeks. As Head Coach, you can help them by scanning for important updates and forwarding a link to important information.

Team Character

How a team behaves is as important as what it learns. How the kids treat each other, other teams, and the adults who deliver the tournament will speak volumes about the character of your team.

The first thing you can do is model the best behavior yourself. Speak respectively to the kids. Ask their opinion and really listen to them. The kids will rise to the standards that you set and model before them. Adding a little formality occasionally in how you speak to them, even just for fun, can elicit a positive response. Students should listen to other team members' thoughts and raise their hand to speak. This will encourage a culture where the kids want to share their ideas with each other.

Set the expectation that event practices are to be faithfully attended, and that assigned preparation should always be completed. If a student is routinely behaving poorly during event practices or missing them altogether you may be asked to intervene. Treat the student with respect and calmly describe appropriate behavior. If the first intervention does not solve the problem, escalate the issue in tone and who you involve. Try to get a read on the type of support your event coach will appreciate. Don't avoid action because it is unpleasant. Allowing poor behavior by one student will fester and cause bigger problems downstream.

Before you compete, talk with your kids about appropriate behavior at the tournament. They will face additional pressures in a public tournament setting. Respect and appreciation should be the common expectation. Some coaches will make the mistake of letting students leave the awards ceremony early because they don't expect to win the remaining awards. Some will leave with their team. This is disrespectful of all the other teams, and does not show good sportsmanship. Allowing this behavior is destructive to your team's character.

Student enrichment activities

Enrichment activities are those whose purpose are to broaden the team exposure to science topics, and may not be directly related to a Science Olympiad event. This type of activity is clearly optional, but can provide the structure for time that you'd like to spend with the team building camaraderie and identity.

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One type of fun activity is to pick a focused science topic and to explore it for 20-30 minutes. It is more engaging for the kids if it includes some type of physical experiment to demonstrate the topic. It is even better if it can be hands-on for the kids. It will require some preparation on your part to organize the subject into something that fits the available time and focuses on a defined scope of information.

Tip! Doing a trial run at home with the experiments will help avoid surprises and disappointing results when you have an audience to satisfy.

A general outline for how to structure a science experiment activity could be:

1. Have a **general discussion** in which you **ask the kids** to answer specific questions on the topic area.
2. Provide a **short tutorial** on the topic, highlighting a description and explanation of several key points that you want the kids to learn from the session.
3. Conduct one of more **short experiments** which display the properties or processes you've discussed. Continue to ask questions and allow them to look at things up close.
4. State a brief **summary** of the points you want them to remember.
5. Send an **email** to their parents that day which **outlines the topic** you discussed. Provide a short list of questions for them to ask their kids, as well as age-appropriate answers.

There are many sources of information on line to support your activity. Search on things like "simple science experiments". Depending on what you find, you'll need to organize the information to be age appropriate and focus it on a scope that you can accomplish. Here are just a few internet sources to check out:

- Science Made Simple
- STEM Activities for Kids
- PBS kids Zoom

Have fun with it. Some of the interesting subjects that you might discuss are:

- Static electricity
- How do batteries work? (the companion experiment can be making a battery from lemons)
- Surface tension
- How do magnets work?
- Why is the sky blue?

You can also structure a session on a topic being studied by one of the events teams, and let them showcase what they've learned.

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Season Schedule and Milestones

Connect with your Principal

At the beginning of the school year make an appointment to meet with your school's Principal. Discuss the issues of what style of team to run, how the team will be selected, what financial support the school can provide, and the overall schedule for the season. Your Principal may be one of your strongest supporters, and touching base periodically is a smart choice.

Tip! Find out how your school expects to handle payment of the registration fee. Many schools will cover the expense, and some may submit one check for the whole school district. Others may find that the team itself needs to raise funds to pay this expense.

Register the team

Beginning in September you will have the responsibility to register your team. An email letter from the tournament director should arrive to the Principal, and to whoever was the Head Coach from last year. Registration is an online process, and the resulting invoice should help you request a check or provide record of your payment.

By registering the team you will reserve your spot in the tournament. Earlier submissions will typically produce a lower team number, which may affect where your team is seated on tournament day. Eventually (usually in late November) the registration process will open to teams outside Macomb and St. Clair counties and Alternate teams. If you wait too long you might find that all spots have been taken. Once registered, your team will be given a team number. This number is essential when using the **tournament schedule** to see when your team competes in each event.

Generate Interest

The first step in recruiting a team is to generate interest among students who may want to participate. This could consist of a note sent home with all eligible students, and may be combined with an information meeting at school. You'll want to address:

- What is Science Olympiad?
- Who will be on the team? How will they be selected?
- What will be expected of team members?
- When is the competition?
- Who can help?
- How can I find out more information?

The answers to some of these questions will depend on the style of team that you have. Will it be limited to 17 students, or will you be running a club that accepts all comers? Or something in between? You need to start this early enough to allow adequate time for whatever process you choose. October is an appropriate time to be taking care of this. Over the long term, doing a good job of recognizing the team's accomplishments may be one of the best methods for creating interest the following year.

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Open House

Another way to generate interest, or to help already interested students decide their event preferences, is to host an Open House event at your school. Macomb Science Olympiad offers an Open House Kit to support this. The kit contains a tri-fold display board for each of the 17 events, and there are often hands-on materials to support each event display as well. If you are a new Head Coach, don't be shy about asking for an MSO Board member to attend to help you run the event, and to be available to answer questions.

"Tryouts"

If there are formal tryouts, you will need tests, and need to give the students and parents a description of the tryout process, content scope and a chance to prepare. If you are operating more of a science "club" environment, you may wait longer before selecting the team, but will still need to advise students and parents regarding the basis for choosing. With the club approach you will be depending upon the recommendations of those parents who are helping run the club. Accomplishing tryouts and team selection in the November timeframe will help keep you on track for fielding a team of event coaches before the Event Coach training in January.

Selecting the Team & Matching Them to Events

There are many considerations and a few constraints to consider when choosing a team and assigning them to events. The primary constraint is that only 17 students can represent your team at the tournament.

The other primary constraint is the tournament schedule because for your team some events will run at the same time. The schedule is typically published by the end of October on the MSO website. Your team number is the key to reading the schedule. For each event listed down the left side, read across until you find your team number, or a group which includes your number. Most start every 40 minutes, but some events, like Water Rockets, have a specific time for your team. The room numbers for each event will say "TBD" until just before the tournament. If you want to get an idea of where events have been located before, check last year's schedule in the tournament program if you can find one. There is no guarantee that events will not move however.

Considerations for selecting students can include:

- Their performance on tryout tests
- Teacher recommendations regarding their aptitude, ability to work on a team, and their ability to follow-through responsibly.
- Whether their parent is available to coach an event team (some teams require this)
- Their consistency in preparing for and attending practices
- Their past experience on the team
- The number of students from each school grade (distributed is generally better in the long run)
- The gender distribution of the team

If you are following the "Top 17" approach you are likely choosing the top students before assigning them to events. A "club" style team may consider both choosing and matching simultaneously.

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There may also be other factors. Regardless of the approach, experienced coaches will tell you that the first dozen or so team members are the easy choices. Choosing the last few students is more difficult. This is because they are on the margin, where the relative strengths between students may not be as obvious, or where the variety of criteria may be in conflict.

Tip! Occasionally, you find that you need to ask a student to step out of their comfort zone and take an event that they don't want, to get coverage for the team. These kids often become passionate about "owning" the event once they've done it.

Matching students to events should be based in large part on which events the students have an interest. One approach for assigning kids to events is akin to the lottery system of the sports draft. It is done with all students and parents in attendance. Kids pull numbers from a hat to determine the order of selection. The student who picked #1 gets first choice to pick one event, and so on down the line. If a student wants to be on the event coached by their parent then that naturally becomes their first choice. The process is repeated for each student's second event. It is necessary to have the tournament schedule available so that students don't pick conflicting events. The strong points of this approach is that the kids have direct involvement in picking their events, and all have an equal chance of being able to pick first. Parents can be involved in discussing possible choices and giving input on which events they would be willing to coach.

Another approach is having the Head Coach to make the assignments in private, and then announcing the results to the team. You need to ask the kids for their top choices (in order) and you might also want to know which events they really don't want to be on, so that you avoid those matchups. This approach can take longer than the lottery, but allows you the opportunity to optimize selections based on your judgment regarding what is best for the team.

Tip! When your event assignments are complete, double check to ensure that you have not assigned anyone for conflicting events on tournament day.

Factors to consider:

- Student preferences
- The tournament schedule
- Past experience on the events
- Results on tryout tests that are relevant to specific events
- Continuity of building team experience from year to year
- Strengths of students for different types of events (memorization vs. build vs. skill)
- Which events parents are willing to coach

This is a time-consuming process which may take eight hours or more to complete, depending on how driven you are to find what you believe is the best set of assignments.

If you make a mistake and schedule your student for conflicting events, there will be no flexibility offered at the tournament. That is the practical reality of running a tournament. In addition to direct conflicts, you do need to be aware of situations where a student may have a "back-to-back" event schedule. These risky combinations are not always advisable and will require close management on the day of the tournament because there may only 10 be minutes between events. That may not enough time for the student to make the transition. If your student shows up late, they may not be allowed to compete.

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Assign the Event Coaches

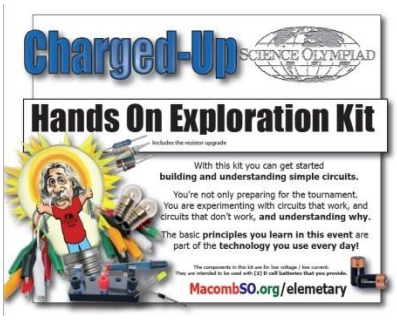
The process of assigning event coaches is intertwined with the process of assigning students to events because you would not want to prevent a student from being on an event that their parent is coaching. You can start collecting information on parent coaching preferences way back when you start collecting information on interested students. Although parents most often fill the role of event coaches, teachers, student teachers as well as older students are all potential resources to tap. If you use middle and high school students as event coaches you will want make some provision for adult supervision. Ideally, all event coaches are assigned by the end of December.

Train Event Coaches

The Event Coach Workshop is the training opportunity for event coaches. It is traditionally scheduled early in January. Event Coaches don't need to attend the entire event, just one of the sessions for their specific event. If someone can't attend, a substitute should attend in their place and take notes. The tournament Event Supervisors are typically the people running the seminars (although not always - - so ask), so it is a good opportunity to get questions answered and learn about resources for your team. Make sure your event coaches have read their event rules before they attend so they know what questions to ask. In recent years we have videotaped these sessions and posted them online for the benefit of those who can't attend. There is also a general session on Tips for Event Coaches which can help any event coach be more effective.

Quick Start Kits

Quick Start Kits are primarily intended to be a convenience to event coaches. They typically contain the materials a coach would have to organize for a practice session with students. They are sold at the Event Coach training event, but your team may have the opportunity to reserve a kit beforehand. That helps the process of predicting demand. You do not have to purchase a quick start kit to be successful. The kits also serve as a fundraiser for the program as a whole. They are not available for all events.



Practice, Practice, Practice

The time period between the Event Coach Workshop in January and the Tournament is your primary practice time. Ask your event coaches to pick a weekly time when they can meet, that works for them and for the kids. If that time slot can be the same every week, it will improve the reliability of student attendance. Event teams that do not meet weekly also run the risk of the calendar slipping away before they know it.

> *"It's not necessarily the amount of time you spend at practice that counts; it's what you put into the practice."*
>
> Eric Lindros,
> Canadian Hockey Player

The amount of time that each event team should meet every week may depend on a number of factors: the size of the event, how much work can be done as "homework", and the experience level of the team members. For 10-12 year-olds the simple answer is 90 minutes. Once you figure in time spent in travel and logistics of starting and stopping and maybe snacks, 1 hour is too short to get much done, and 2 hours is usually beyond the attention span of the kids.

Some event teams may choose to meet at family's homes, and other may choose to meet either before, during, or after school, in the school facilities.

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Event Workshops

There are many workshops offered by MSO and local organizations that may be able to support your event team. You should receive information on these in several ways: at the Extravaganza, in an email from the tournament director, and listed on the MSO website. Most workshops occur in February and March, but a few might start before the end of January.

Tip! Publish a weekly practice schedule so that event teams can see that others are working. It's also valuable for providing scheduling information to the school office and latchkey program.

It is common for new events to have a workshop that is sponsored directly by MSO, so you can be confident that the material presented is consistent with how the event will be run at the regional tournament. Usually the event supervisor is trying to improve their understanding of how the new event might run, so there may still be some loose ends, or details that are still being worked out.

Other organizations sponsor great workshops which will often align closely with the event scope and rules, but you need to be careful to discern when they don't. These can be valuable training opportunities, and some will fill up quickly so don't procrastinate registering if you want to participate.

Tournament Volunteers

Each team must contribute two adults to work as volunteers during the tournament. These assignments range from security detail, to assisting event supervisors, to clean up. They are typically a couple hours long. You will receive a email from MSO in February or March to name your volunteers and to request the assignment that they would prefer.

Tip! If you identify your team volunteers before they are requested, you will be more likely to get the assignment they want because you will be ready to submit their names promptly.

Team Photo

In the March-April timeframe you will be asked to submit a team photo. Have a plan for when and where you might get the opportunity to have all the team in attendance to take it. Take the opportunity to be creative with it!

Team Banner

During the awards ceremony at the tournament, all teams are invited to participate in the "parade of banners". Most schools have a banner already with their name and mascot, or something like that. Only banners that are 6 feet wide or less are allowed. Locate your school's banner and make sure that it will be available for your use on tournament day.

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Prepare to Compete

How event coaches organize event practices and what they have the students work on should change as the tournament day gets closer. Early on, the focus should have been on learning the material, learning basic skills, and getting a better sense of the relative strengths of the students on each event team. At some point, probably by mid-April, the focus should shift to thinking about the specifics of how the event *team* will cooperate to maximize their performance at the competition.

For some events the kids will need to be assigned very specific roles. The event coach may feel pressure to not favor one student over another (especially because one is probably their child). At this point the event coach will need to make the hard choice to do what is best for the event team's performance in competition, and to not feel guilty about doing so.

Timed practice tests are a good experience for the events teams at this point because it gives the kids a sense of what will be like to be under the time pressure of the competition, and it will give them a chance to practice the agreed roles for cooperation. An explicit conversation about how to handle various types of disagreements among team members during the event and how they will efficiently be resolved is valuable. A team that argues or fights during the competition will not do well.

Practice Competitions

The Chippewa Valley and L'Anse Creuse school districts organize their own district-wide tournament prior to the Regional tournament. The Utica district runs a non-competitive practice event for all its schools and the few private and public school academies in its geographic area. If your school is not included in one of those groups, the "South Macomb" tournament has been organized to serve your team. Your team is not allowed to attend more than one of these events. A practice tournament is a good checkpoint to see how well your team is preparing, and another opportunity to build team identity. MSO uses these practice competitions to train Event Supervisors, so often these are the same ones you'll see at the main tournament, but not always. These competitions typically happen in March, but check the MSO website for the specific dates.

Final Registration

In April, each Head Coach will receive an email from the tournament director which provides the instructions for registering your team, specifically the students who will compete. This procedure has been revised to take the process online to the extent possible. Here is a general outline of who will do what:

- The Head Coach will receive an email with a registration link.
- They will enter the list of students who will compete, and an email address for a parent of each. They will also select self-schedule competition times.
- The parent of each student will receive an email, triggered by the Head Coach submission, asking parents to confirm and complete additional details. The Head Coach will also receive a hyperlink that allows them to monitor whether families have followed through.
- All information is required, and the parent must read and agree to the liability waiver before completing the registration for their student.
- When all families have completed what the Head Coach started, the team is considered to be registered. MSO will then send an envelope of wristbands to the Head Coach at the school, or other appropriate address.
- There may be some follow up surveys for the Head Coach to complete as well.

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Final Preparation for the Tournament

A week or so before the tournament you will need to organize and communicate a large amount of information to your team. Some of it will be general information from the tournament director, and some of it will be information specifically about your team. Some of the issues to cover with your team should be:

- What time to arrive, when it will be over
- Where to meet
- Where coaches should meet students after the opening ceremonies
- Which student require support for short transitions between events and who has that assignment
- What to wear
- What to bring
- How to behave (students and adults!)
- Rules about food
- A map of the MCC campus
- Open events
- Team celebration

Tip! Write your team name and number on the wristbands in an area that will be visible when worn, so they can't forget it when it needs to be written on an answer sheet.

You may also want to collect and distribute a listing of cell phone numbers so that your team can stay in touch during the tournament.

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Tournament Day

On the day of the tournament, have your team arrive when the "K" building or SEC opens. These building are typically where team tables are located. Your team should assemble there and receive their wristbands. Do not just hand them out – either you or another adult should supervise the process of them being put on the students wrists. A student must have a wristband to compete. We recommend not handing them out before the day of the tournament. Coaches have learned this the hard way. If you for some reason cannot be available to meet each student, find another responsible adult to do it for you.

Other important topics that you may want to cover:

- Schedule for the day
- Who has events in the first time slot – maybe locating the room beforehand
- Managing transitions for back-to-back events
- Events to watch (e.g., Water Rockets, Precision Ping Pong Projectile)
- How to spend free time - Open Events
- Confirm needed supplies (pencils, protractors, etc.)
- Thank team volunteers
- Show some team spirit
- Behavior on campus
- Team celebration
- Have fun!

Tip! Remind your team that at the tournament, tests are designed to separate the scores between teams, not for everyone to finish.

The tournament schedule is the guide for when your team needs to be in specific locations. For all events, show up at least 5-10 minutes before the scheduled time. Some events are walk-in which means that you can arrive anytime during the period specified. The lines that form for walk-in events tend to be longer earlier in the day. The Water Rocket event expects that your event team will arrive 15 minutes before your scheduled launch time to pass inspection.

The day of the tournament should be fun and a celebration of a long season of dedication. Parents and coaches need to understand that their primary role is to support the kids and to help them manage the stress of the day. It should be a day of congratulations not criticisms.

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Good tournament-day coaching behaviors include:

- Reminders of how event team members should cooperate
- Reminding the team of all the work they've done to get to this point
- Telling them how proud you are of their efforts

Poor tournament-day coaching behaviors include:

- Trying to teach content
- Shouting instructions to the event team from the sideline of a viewable event
- Criticizing students for not getting correct answers

The Head Coach should model proper behavior in all circumstances and to provide support to the event coaches and students. The event coaches will feel that their efforts are being judged on this day also and some of them will have more difficultly managing the stress than the kids! Be generous with compliments and encouragement.

You should expect that things will not always turn out the perfectly, especially for the events where the kids demonstrate a skill, like water rockets, egg drop, and the like. Something you haven't considered is likely to appear on the day of competition. The weather can be a wild card. These events by nature are higher risk events. Be aware of this and don't automatically blame the event supervisor for unexpected moments. When something does happen, take a deep breath and consider the implications of your behavior before you act. You have an audience.

In rare circumstances, there may be justification for you to file an appeal of how an event was run. Only a Head Coach may file a formal appeal on the day of competition, and it requires a form that you receive when you register your team. Review the rules for making an appeal before tournament day so that you know what to do. There is a time deadline that you must meet.

You may find that a few of your team parents will not be satisfied until you file an appeal for a particular situation. It will help the tournament arbitrators if you keep your cool, and set a good example. Unless the issue involves specific teams, the options for resolution can be very limited. At times, the only option may be to cancel the results from the whole event. It is rare to find the person that believes their issue is important enough to disallow the results for all teams for an event. Remember that what the kids learn is more important than what they win.

The awards ceremony is another opportunity for you to demonstrate your leadership of the team. You may find great success and satisfaction, and you should also expect some disappointment. How you react to the final results affects how your parents, coaches and kids will behave. No doubt, this can be a heavy load to carry. Unmet expectations can be frustrating. Hopefully you helped your team set appropriate expectations for the day. You will need to look for the opportunities to give congratulations, encouragement and thanks. Don't be stingy in giving praise and congratulations to other teams. Shake their hand, and share the moment with them also. Be gracious.

Tip! Allowing team members to leave the awards ceremony before all awards have been given is rude and unsportsmanlike conduct.

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Team Recognition

Recognition for your team can start long before the tournament day. Try to include your school in knowing what is going on. Give them an opportunity to encourage you. You are representing their school. Here are some things that you can do:

- When you choose the members of your team, announce it to the school, over the PA system, and in the school newsletter
- Wear your team shirts on a particular day
- If your team participates in a district tournament, announce those results
- Organize some type of sendoff at school before the tournament
- Put an announcement on the school marquee with well wishes before the tournament, and with team-level results after the tournament
- Organize a visit to the school board for their recognition
- List the tournament results in the school newsletter, and on the school website
- Have a post-competition celebration on the evening of the tournament, or at school during lunch, or both
- Give certificates during the school awards assembly
- Give team members a keepsake or a copy of the team photo

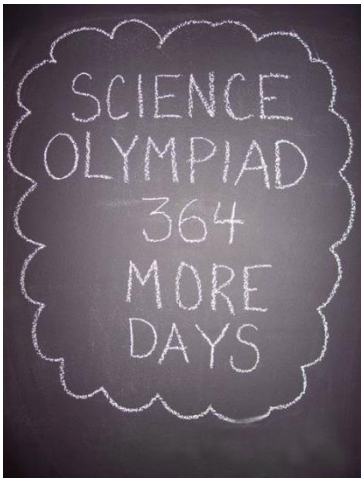
For the most part, you'll be thinking about how to recognize the students, but don't forget to also thank the people who helped make the team's success possible.

Tip! To improve your team performance next year ask your event coaches to organize their materials, and write down what they learned to help out the next coach (even if they expect to coach again).

Closing the Season

Your team may be feeling the relief of "it's over!", but it isn't quite yet. How you close the season has much to do with how well your team learns from year to year. Ask your event coaches to organize their materials and write down what they learned to help out next year's coach, even if they expect to coach again. It may be appropriate to establish and update a notebook that supports each event. If one doesn't exist for a particular event, now may be the time to start. Hopefully, this isn't the first time that your event coaches have heard you mention that this will be required.

For all events, you should be managing the team's resources by collecting equipment and updated notes & notebooks to make sure that things are properly stored for the summer and not lost. If you borrowed equipment from someone else, make sure that it is returned.



Another good discipline for the end of the season is for you and your event coaches to fill out feedback questionnaires regarding the tournament. The feedback that you provide helps MSO decide what changes should be made for the coming year. Your opinion counts!

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Contact Us

Thank you!
Your time and dedication to the role of Head Coach is a very important commitment, and is an investment in developing the next generation of scientists and engineers… men and women of high character.

We hope you find the material in this handbook helpful and we welcome your feedback and suggestions for how to make future editions better. We also wouldn't mind hearing how this handbook helped you improve your team.

You may contact us at www.macombso.org.

John Ogden & Ruth Cummins

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