A Clueless Coach's Companion to the *FIRST* Tech Challenge (FTC)

Note: *FIRST*'s mid-level robotics program was originally called the *FIRST* Vex™ Challenge (FVC) and was renamed FTC in Summer 2007. This document is primarily intended for teams using the Vex™ Robotics System since, as of this writing, it is the system that has been used exclusively.

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Clueless vs. Confident

There are confident coaches who clearly know where they're going with their team – what a robot needs to perform well, how to build and program it, and how to motivate the kids to do the work. Both of them are former FRC coaches (more on FRC later). The rest of us muddle along inefficiently, overwhelmed by the enormity of the task, wondering why everyone else seems to have their act together. In particular, if you are a non-engineer taking on the role of technical mentor, you may wonder, "Do I belong here?" The reality is that there is a wide variety of abilities among coaches, students, and robots, and there is plenty of room for those with less experience and expertise, particularly in the *FIRST* Tech Challenge. Veteran teams coached by professional engineers can be intimidating, but they also can inspire less advanced teams to heights they would not have imagined possible. On the other hand, there are many teams coached by teachers and parents for whom FTC is a first-time robotics experience. They can take comfort in the fact that there are other teams competing at the same level, especially at regional events.

If you are a first-time coach, realize that the job will be challenging but manageable if realistic goals are set. Aiming to produce a functioning robot that accomplishes one or 2 simple tasks is probably within your grasp, and you may be pleasantly surprised at what the team can accomplish. Most of all, you (and the students) should aim to enjoy the experience enough to come back the next year.

Another document available for rookie coaches is *Vex™ for the Technically Challenged* (see http://www.chiefdelphi.com/forums/showthread.php?t=48415), which is referenced in this document. A building guide with step-by-step instructions for several projects, entitled *Robot Recipes,* is in process and should be available by Fall 2007 along with the latest version of *Vex™ for the Technically Challenged;* both will be posted at the link above.

An Overview of *FIRST* Programs

Competitions run by *FIRST* are some of the most exciting, high-energy science/technology events you'll every experience, and the *FIRST* Tech Challenge (FTC), a team competition for students ages 18 and under, is no exception. You can find out more official details of the competition on the *FIRST* website, www.usfirst.org.

To truly understand the value of FTC, it's helpful to see where it falls in relation to *FIRST*'s other robotics programs. On the upper end is the *FIRST* Robotics Competition (FRC), *FIRST*'s oldest program for high school students, which uses huge robots that weigh up to 130 lb. Cost for registration, tournament fees, and robot parts begins at \$6000, and some teams spend upwards of \$50,000 for robot parts, competition, and travel. At the other end is *FIRST* LEGO™ League (FLL), a program designed for students aged 9 – 14 using LEGO™ Mindstorms robots, with the cost of the robot kit, registration, and tournament fees beginning at \$700. FTC, *FIRST*'s newest program for high school students, is a lower cost alternative to FRC; the total cost for robot kit, registration, and tournament fees can run as low as \$1000. FTC is classified as a "mid-level" robotics competition, which is an apt description in a number of ways, and will be discussed later.

One element of FTC (and FRC) that takes robotics to a higher level is that of alliance partners. In the early matches, each team is paired with another, and their 2 robots are pitted against 2 opposing robots, with alliance pairings varying randomly from match to match. This gives teams the opportunity to view other teams in a truly cooperative, rather than competitive way. A good deal of the fun is strategizing and coordinating with the other team to maximize the alliance's score. Along with this comes the opportunity to become acquainted with another team's strategy and mechanisms, and to learn for future years. In fact, there is great motivation to observe and evaluate the performance of other teams – the highest-ranking teams will need to select partners for that will lead to the greatest chance of success in the elimination rounds.

FIRST events are typically well-planned and coordinated. The rules, which may seem tedious, are carefully crafted to provide a fair and challenging game. If a rule is ambiguous, questions can be asked on the official forum, and clarification will be given. The trade-off is that *FIRST* events tend to be somewhat costly, not only in terms of money, but also in time. There is so much to learn, especially during the rookie season, that teams are often tempted to give up. While being part of a team can be incredibly hard work, teams that resist the temptation to quit are seldom disappointed. *GO TO A TOURNAMENT IF YOU CAN, EVEN IF YOU PLACE DEAD LAST.*

Budgeting – An Exercise in Frugality

Quite frankly, FTC is not the cheapest robot competition around (for lower cost alternatives, check out Robofest at robofest.net or the Science Olympiad's Robot Ramble), but the truism "You get what you pay for" applies here, and FTC gives a lot of bang for your buck. While teams with generous resources have more flexibility and the potential to produce a better robot, even a modest budget can produce a reasonable robot. A rookie season budget, based on last year's costs, might look something like the following:

FTC Bundle Kit:	$ 375
Extra Starter Kit:	$ 300
FTC registration:	$ 275
Misc. (partial field, extra robot parts)	$ 100
Event/Tournament fees:	$ 200
	$1250

While investing in an extra starter kit is optional, it has a number of advantages:

1. During the early stages, having 2 "brains" allows twice as many students to work on building and programming, which greatly accelerates the learning process, especially for a rookie team.
2. When work on the competition robot begins in earnest, the Starter Kit can be cannibalized for extra gears, motors, wheels, and hardware, all of which will be useful.

Purchasing a complete field can easily cost over $1000, and those teams with the resources to do so have an advantage over those that don't. However, field pieces can often be constructed from lower cost materials, like wood, corrugated cardboard, and PVC pipes. If there are scrimmages, workshops, or other pre-competition events available nearby, these are excellent opportunities to test out the robot on a real field if you are unable to purchase one.

Deciding how many and which extra parts to invest in depends to a large extent on the ability of the team members. If the team members are advanced and/or highly motivated, they are more likely to make good use of more complex parts like the Chain and Sprocket kit or Advanced Gear Kit. While lack of sufficient parts can create a vicious cycle (you don't buy the parts because you don't use them, and you never learn to use them because you don't have them), a team that masters the use of basic parts and creates reliable designs with them is better off than one with a huge inventory of parts that can't be used properly. There are teams that perform respectably with just a bundle kit and a few add-ons, like the Gear Kit and an extra motor or two.

Tinkering vs. Planning -- A Philosophical Continuum

In addition to cost, FTC falls between FLL and FRC in other important ways. LEGO™ robots are built from standard-sized, pre-formed parts that are easily put together and taken apart. This lends itself to learning by tinkering and trial & error and is ideal for young students with short attention spans. While knowledge of mechanical design is beneficial, it's not mandatory for building working models. If something doesn't work, it can be disassembled and reassembled within minutes. In contrast, FRC robots are built from "real parts" that are expensive to replace. Robots are usually planned on paper or using computer-aided design, and parts must be cut or fabricated to precise specifications. Construction of an FTC robot using the Vex™ kit typically falls somewhere between these 2 extremes. Because some parts must be cut, it is helpful to have some idea of a basic design in advance, or material may be wasted. On the other hand, the parts can be replaced at a lower cost than FRC robot parts, and cut pieces can often be reused in another project. Some parts have notches that encourage cutting to "standard sizes."

Where your team falls on the continuum between these 2 extremes will depend to a large extent on the experience of the coach and students. The beauty of FTC is that significant learning can occur at either end of the spectrum, or anywhere in between.

For a non-engineering coach and inexperienced students, cutting pieces to standard sizes (see *Vex™ for the Technically Challenged,* Appendix A) and allowing students to learn by tinkering and experimenting can be quite effective. Inexperienced teams that may be afraid of ruining pieces are often hesitant to try new designs. Having pre-cut pieces in a variety of sizes provides material for testing without fear. However, one caution is offered to teams that "moving up" from LEGO™ Mindstorms robots. Tinkering with Vex™ takes significantly longer than with LEGO™, as Vex™ pieces cannot be simply popped into place. A gear train modification that might take 15 minutes using LEGO™ pieces can easily consume 1-2 hours with Vex™ parts, or even longer if pieces need to be cut. The trade-off for increased build time is in robustness: a Vex™ robot can drive off the table and hardly be worse for the wear, while a LEGO™ robot will shatter into a gajillion pieces. Another huge advantage of Vex™ is the number of ports: 8 motor ports and up to 16 input ports allow for significantly greater complexity. Keeping these advantages in sight will hopefully encourage a team to press on when things seem to be moving slowly.

For a coach and team with more formal training and experience, this is an opportunity to engage in planning which more closely approximates real engineering design. Teams that have a solid foundation in basic engineering principles can formulate a clear plan for the robot, which saves time and materials. However, even the most experienced teams will do some tweaking and modification along the way.

Team Management

<u>Time Commitment</u>

Teams vary greatly in the amount of time spent, with stellar teams spending 20+ hours/week over a period of months, and unprepared teams throwing something together a day or two before (or during) an event. Though some may disagree, I believe that reasonable progress can be made in a season of 40 hours of total build time. While it may not be enough time to master every aspect of the challenge, it should be enough time to build a robot that does one or 2 things well. The 40 hours could be a once a week meeting for 2 – 3 hours over 4 months, or more frequent or longer meetings over fewer weeks. The ideal length for a meeting is usually 15 minutes longer ☺, but I would recommend an absolute minimum of 1½ hours (and 2-3 hours/meeting is better), as significant time is spent in set-up and clean-up.

If you have the opportunity to attend a scrimmage before competition, this is well worth your time, especially if you don't have easy access to a formal practice field. Teams that come to a scrimmage without a built robot can still participate and receive assistance from other teams & organizers. Procrastination being what it is, a long Saturday meeting shortly before a tournament is also often helpful, as the most productive work usually happens at the last minute. If your team seems to be "far behind" a week before a big event, consider yourself in good company.

<u>Kit to Student Ratio</u>

One kit for every 3 students (or less) is ideal. While teams of 5 or more do manage with one kit, it's difficult in this situation for each member to participate in the building and the learning that comes with it. Unlike FLL, FTC has no research project, and while FTC includes a programming component, the use of remote control in the robot game means that there will be proportionally less programming than in a purely autonomous competition. As a result, it is desirable for all members to be involved with building to some extent.

Having a second (or more) kit is extremely useful for situations where some of the students are significantly more advanced than others. This often occurs with mixed veteran/rookie teams, or teams where mass numbers of students join and depart mid-season with the flux of the sports calendar. Or, you may have a situation where certain students are faster and/or more aggressive than others. A second kit allows the less advanced students to work and learn at their own pace while the advanced group attempts a more sophisticated design. Finally, I would recommend a second kit for a mixed gender team, as learning and building styles sometimes differ. If you have 2 subgroups, you can either register them as 2 separate teams (if you have the money) or merge the 2 into one when the work on the challenge goes into high gear. Students in the slower group have a habit of catching up to speed when they have to.

<u>Team Roles</u>

While every student should have some concept of building, not all will participate to the same extent. In addition to building and programming, other team roles include documentation, marketing, driving the robot (a favorite job of fast-fingers joystick aficionados), and scouting (meeting and observing other teams for optimal alliance selection).

Documentation (recording the team's process in the engineering notebook) tends to be one of the less popular jobs, but it contributes greatly to the learning process, and if possible, everyone should participate. Often students who are not eager to write or sketch in the notebook are willing to act as photographers and can be coaxed into providing captions and/or commentary for the pictures they've taken. At the end of the season, the journal can be scanned or photocopied and distributed as treasured memorabilia. Having it makes disassembling the robot less painful, and if the notebook was done properly, the robot can be reconstructed at a later time. One suggestion which brings some closure to the season is to have each of the students write a summary of what they've learned thoughout the season. The 2 sensible times to prepare these reflections are immediately before a tournament and immediately after the final event, and each has its own advantages. Writing the summaries before a tournament helps the students to reflect on the season and is good preparation for the team interview; it also gives the judges a fuller picture of your team's "journey." However, writing reflections after the tournament provides a true reflection of the season in its entirety.

Marketing your team includes fundraising and awareness-raising, both to the community and with other teams. Making T-shirts, brochures, and items for distribution to other teams on tournament day (like buttons or fliers) contributes to the fun and promotes interaction between teams.

Driving and scouting take place primarily on tournament day, but advance preparation can set the stage for and facilitate the work on the day of. Optimally, drivers should have a (somewhat) completed robot and access to a field or partial field one or more sessions before the tournament to give them the opportunity to get used to the controls. Major changes like introducing new motors or reversing the direction of the controls should be avoided on tournament day. Remember that even the best-designed robot will not score any points in operator-controlled mode unless driven properly.

Scouting generally has 2 purposes. If your team is a good one and expects to rank in the top 8 - 15 (or ~ top 1/3 of teams), a representative of your team may become an alliance captain and will need to select 2 teams to be your alliance partners. If your team does not rank high enough for you to captain an alliance, you will want to market the assets of your team to the higher ranking teams so that alliance captains will realize what a great pick you are! If you placed low in the rankings, but your robot has certain unique capabilities, you will especially want to target those teams that would benefit most from these abilities. More on alliances will be discussed in the Tournament section.

The Role of a Mentor

Regarding adult involvement, FLL and FRC again provide models at opposite ends of the spectrum, with FTC falling between. FLL robots are meant to be built and programmed exclusively by students, and teams which demonstrate excessive adult involvement are penalized. In contrast, FRC permits building and programming of the robot by adult coaches and mentors, and many successful teams utilize adults in this way without apology. FTC leans a bit closer to the FLL model, encouraging students to do most of the work, with the possible exception of metal-cutting. This stresses the training of students and puts a premium on the educational process.

The task of training students is a messy business, and there's a balancing act between allowing them to struggle too much and become discouraged or letting them struggle too little, short-circuiting the learning process. It's also important to avoid following the path of least resistance, allowing the most capable students to completely take charge. Asking, "How deep is the bench?" is one important way to evaluate a team's progress. When students who had never previously succeeded in robotics become confident, capable members, I feel that I have done my job. It sometimes requires making a concerted effort to assign specific jobs to a less confident member, but the effort is worth it.

While I am happy to invest in clueless kids, I make no apology for giving the boot to students who are disruptive, destructive, or disinterested. At our after-school club, we sometimes get students who drift into the room just to play with the equipment. Once when 2 students attempted to crash a robot into the chair, I informed them, "You don't have enough torque to climb that chair – have a seat, and let's work on modifying the gear ratio to accomplish the task," -- famous last lines leading to a successful vanishing act! On the other hand, some goofing around is bound to happen, and not all "work" done by the students is entirely productive or goal-directed, and yet, it can contribute to the learning process (or just make life more fun). When you find a balance that's right for your team, you need not be intimidated by other teams that seem to operate more efficiently.

Scrimmages and Tournaments

Scrimmages are informal practice events and are extremely conducive to learning. At their best, they can be low-pressure events that don't require much preparation. Depending on the structure of the event, a team might be able to show up without a pre-built robot, build on site, and participate that day. This was true of the scrimmages we attended, where nearly half the teams showed up without robots – just disassembled Vex™ kits in tackle boxes.

Championship events are more structured and require that you download the competition template so that your remote control is disabled during the autonomous period and at the end of the match. You will need to come with a pre-built robot, as the timing between practice rounds, qualifying rounds, and elimination rounds is tight, but there is a wide range scoring abilities among the robots. If you are unable to download the competition template ahead of time, I would urge you attend the event anyway. While there's no guarantee, there is a possibility that the tournament coordinator and/or another team may be able to assist you in getting equipped with the regulation template.

Minimal Requirements for an Enjoyable Experience

Most teams begin with grand visions of how their robot will perform, but some end up buried under piles of twisted metal. Other teams suffer from the "take apart the robot every day" syndrome. Lacking a functional robot the day before an event, they decide not to attend and miss out on an exceptional experience. While your team will hopefully aspire to go beyond the Squarebot, if building a Squarebot plus some doodads for the challenge is all that your team can manage on tournament day, I believe that you can still have a worthwhile experience participating in an FTC event. While it won't win any originality awards, it is a surprisingly versatile robot, and can perform respectably on the field. Some teams build and compete with original robots that perform worse than the Squarebot (my team has built one of those ☹). The excitement of being there and participating (rather than just watching from the stands) is almost sure to inspire your team to bigger and better things next time.

Tournament Day

Tourney Day Checklist
Robot with team # and other requirements (be sure to work through the robot checklist in advance)
Transmitter
Fully charged batteries (and spares, if you have them)
Laptop with your programs
Extension cord and power strip
Robot kit with spare parts
Tools
Safety goggles/glasses
Engineering notebook/journal
Supplies like tape, Sharpie markers, pens, scissors for emergencies
Give-away items, like buttons or handouts
Snacks (if allowed)
A desire to have a great time!

Arrival

When you first arrive, you will need to check-in and have your robot inspected. Robot inspection is a thorough process and may take up to ½ hour, depending on how diligent you were in complying with the regulations. In addition to meeting size and materials specifications, you must have the correct version of the software and competition template loaded onto your microprocessor. Once this business is taken care of, you are free to participate in practice matches, which might be held either before or after the opening ceremonies.

Judging

Each team is interviewed by a panel of judges. These interviews, along with the Engineering Notebook are used to judge additional awards: the Inspire, Amaze, Innovate, Connect, and Think Awards. It's not a bad idea to prepare a few interview questions and conduct a "mock" interview with the students in advance. Rubrics on these awards are available in the Coaches' manual. The judging interviews may be held before or during the Qualifying Matches.

Qualifying Matches

Once the opening ceremonies are complete, formal matches which "count" will begin. You should have received a schedule showing when your team will compete. You should be scheduled for several matches, so be sure that you don't miss any of them. Next to your team number is the number of your alliance partner for each match. It’s advisable to make contact with your partner a few minutes before the match begins, so that you can exchange information about each others' capabilities and strategize for maximum points. Each match, your alliance will arbitrarily be assigned the color blue or red. Your robot should have a support that allows you to easily slip on flags of either color. The winners of each match will be tallied, and once all the qualifying matches have been held, the teams will be assigned points for each win/loss/tie and will be ranked in order.

Alliance Selection

Alliance selection is a fascinating process but can be a bit overwhelming the first time around and deserves some fleshing out. Precise detail on the rules governing the process are given in the FTC Manual.

One representative from each of the first 8 teams (or fewer for small tournaments) will have the opportunity to become an alliance captain. At least one representative from your team should attend the Alliance Selection, even if you do not think that you are likely to be selected by an alliance – surprises do happen, and you may unexpectedly find yourself in the position of becoming an alliance captain. If your team is invited to be on an alliance, you will want to have someone there to accept the invitation.

The process begins when the #1 ranked team invites a team to be its partner. It may select any team with a lower rank, including other teams that are ranked in the top 8. Suppose that #1 invites #2, and #2 accepts. Then, the #2 team's representative is no longer an alliance captain, the #3 representative becomes the captain of the second alliance, and all the teams move up a slot, with the #9 team's representative becoming a captain to fill the spot vacated by #8. This process continues until 8 captains have chosen 8 partners. In this way, it is possible that a team ranked as low as #15 could become an alliance captain. Once each alliance has 2 teams, each of the alliances select a third team, in order of ranking.

In general, most teams accept an invitation, because once an invitation is declined, the team cannot be invited by another team. The 2 main reasons why a team would decline are 1) their robot is malfunctioning and as gracious professionals, the team does not want to jeopardize the alliance's performance or 2) they hope to captain their own alliance, which is allowable if they rank high enough.

If you do captain an alliance, realize that another alliance may select your desired choices before you, so it's helpful to have some idea of the abilities of many of the teams. While some captains simply select the highest-ranking available team, a more strategic approach is to choose teams that will best complement your robot's abilities. In addition, some very capable robots have a mediocre or low rank because they were paired with low-scoring partners during the qualifying matches. The best way to judge a team is to have scouts carefully watching and evaluating the performance of every robot during qualifying matches. Scouts often prepare a summary sheet with a checklist of abilities for each team’s robot.

Elimination Matches

In order to move up the ladder, an alliance must win 2 of 3 matches. The game is still played 2 teams vs. 2 teams, with one team from each alliance sitting out each match. It is mandatory that all 3 teams in an alliance play at least once in the first 2 matches, so that if the alliance is eliminated by losing 2 in a row, each team will have had the chance to be on the field at least once. Through elimination, 8 alliances are winnowed to 4, then 2. The undefeated alliance then earns the Winning Alliance Award.

Closing Ceremonies

Once the final matches have been held, the Winning Alliance and judged awards will be handed out in an awards ceremony. Remember to thank the volunteers and tournament organizers when the event is finished – they worked their tails off for you!

Hurdles and Speed Bumps

After the initial excitement of starting a team, there are a number of factors that can quickly sap momentum and enthusiasm from your team. Having realistic expectations can lessen the effect of these drawbacks. Remember that most other rookie teams are probably struggling with these same issues.

1. <u>Limitations of the Vex™ Starter Kit</u>

   The Vex™ Starter Kit is quite minimal, and it's difficult to build a robot with "wow" beyond the Squarebot using only the parts in the kit. The limited number of parts also breeds a reluctance to cut pieces, further inhibiting creativity. Purchasing the Bundle Pack, as well as additional gears, motors, and extra hardware as needed is a worthwhile investment (see Tiers 1 and 2 in *Vex™ for the Technically Challenged*, Appendix C).
2. <u>Lack of available training materials</u>

   There are some stunning examples of Vexbots on various websites, but many of them require an enormous number of parts. Few provide clear views of all the important mechanisms, and even fewer have step-by-step building guides. A student who sees some of these designs and thinks, "I'd like to build that," may easily run out of parts and abandon the project. Having a clear idea of what parts are needed prior to starting the project is helpful.
3. <u>Time lag due to cutting</u>

   Often students will want to use pieces that need to be cut to size, and if the pieces are not readily available, focus and interest are lost while waiting for the pieces to be cut, especially in a team situation. Having some commonly used pre-cut pieces available reduces this problem (see *Vex™ for the Technically Challenged*, Appendix A).
4. <u>High cost of assembling the field</u>

   To purchase and assemble a regulation-quality field costs nearly $1000 and requires serious assembly skills. The field borders and floor account for more than half the cost, so a second-year field is significantly less expensive. Many teams choose to assemble only a few of the field elements and substitute less expensive materials, like PVC pipes, wood, or cardboard instead of using plexiglass.
5. <u>Software licensing woes</u>

   Participation in an official FTC tournament requires the use of EasyC or MPLAB, as well as a template designed for each year's competition. Software can be purchased on CD or as an internet download, but licensing codes must be registered from the computer via the internet, and certain codes must be written to the computer's hard drive. This is generally not a problem for most home computers. However, school computers frequently have administrator locks that prevent writing to the necessary portions of the hard drive. To properly download and license the software may require logging on as an administrator, enabling cookies and pop-ups, and disabling blockers. Even this is no guarantee that you will be able to write to the needed part of the hard drive. Some school computers have limits on which sites can be accessed, and communication with Intelitek's site is essential for licensing purposes. If your software is not properly licensed, it will stop functioning after 7 days. Lab computers which are wiped clean on a regular basis are extremely problematic. We struggled with installing EasyC on a school computer for 4 weeks, and finally gave up and used a borrowed a non-school laptop instead. The latest versions of EasyC are now advertised as “easier to download.”

If you plan to transfer the software between computers, you must transfer the license as well. The instructions for this can be found in the EasyC Help menu: Help> Installation> Licensing >Transferring your license. In some cases, it requires a phone call to return your license key to Intelitek and retrieve it later.

Epilogue – A Story of Surprises

Our team, a graduated FLL team, began its FTC journey at the FVC Pilot in April 2005. During the 1-month build season, the team had good ideas, but couldn't make any of them work. While the team did not mind a low ranking at the tournament, the members didn't feel they'd learned enough to "make things work" after the event, and more importantly, they didn't see a way that they COULD learn, as there was no engineering mentorship nearby. As a result, the team's enthusiasm for robotics in general was largely doused. If there had been a Vex regional tournament in our area the following year, we would not have participated.

With a year to regroup, it became clear that giving up was not an option. Although only one student remained on the team, 5 rookie members were recruited. With time, more resources became available on the internet, and the team inched forward. A major turning point was finding a Vex hobbyist (a professional engineer) whose lab was about 1 hour away. He showed the team some pre-built some mechanisms (which they copied), and his instruction "primed the pump" for more learning to occur.

The team attended its first Scrimmage in December, and the members were amazed to find that their simple designs led to a robot that was more advanced and reliable than several of the others. While the team entered the Northern California Championship without expectations regarding their performance, it was not a complete shock to find themselves ranked second at the end of the qualifying rounds.

Alas, how the winds of fortune can quickly change! Unexpected mechanical difficulties led to early elimination in the semi-finals, accompanied by short tempers and some less-than gracious interaction, dashing their hopes for some of the judged awards. As they watched a number of their favorite teams being called forward to receive awards, they were able to vicariously enjoy their success to some extent, but with a twinge of regret at what might have been UNTIL – they were called forward to receive the Inspire Award, exceeding all expectations. They thoroughly enjoyed attending the World Championship in Atlanta, finishing anonymously in the respectable middle.

Every team has its own story to tell, and there are many teams that have advanced further than ours in a shorter time. Still, any progress is success, and even a team that finishes last can take pride in the fact that it is ahead of those who never made it out of the starting gate. Remember to look forward for inspiration to greater heights from teams that are ahead of yours, and to reach a hand back to help the teams that are behind.