

The Success of the Buchholz Math Team

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North Florida School Days

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It's the end of another school day at Buchholz High School as Will Frazer wipes his board of the math problems he has just finished solving. Glancing around his classroom, you see several 1st place math competition trophies, articles from his days as the Buchholz golf team coach (he was also a member of the golf team while in high school at Buchholz) and little reminders of his former career working on Wall Street. The common denominator between all of these stories: Success.



It was 10 years ago that Mr. Frazer decided to leave his post as a very successful golf team coach to become the Buchholz Math Team coach. It was after his first competition that he got hooked on math team: We went to our first competition and the students performed horribly. On the bus ride home, they began to ask me how to do certain questions and I was not too sure about how to solve them myself. That is when I decided to get serious about not only training the students to become better competitors, but training myself to become a better coach. He would proceed by working through all of the old competition tests, learning the tricks to solve the problems, and then teaching his students during after school practice. The next competition was looming and having gotten his students interested after the first one, he decided to add a little extra incentive: I told them that if they won a trophy, we could have a party. His team placed fifth and not only did they have a party, but they began to lay the foundation for the future of the Buchholz math team.

After winning the first trophy, Mr. Frazer began to analyze the statewide data and establish his program, with the goal of eventually winning the state championship. He first decided that he needed to create team classes. In every honors math course there are 3 to 4 students who are not being challenged because the information is too easy for them. I went to my principal, Dr. Joan Longstreth, and asked if we could take these top math students, put them into one class, and teach on a much deeper level, challenge them, and train them to

compete. She was very supportive of the idea and in 2002 we began our first team classes.

Selecting the right type of student was the next priority on his list. Gainesville has the most talented kids in the state because of the University of Florida. If I could get the best math students at Buchholz, then it would only be a matter of time before we were the best team in the state. So he began studying the data of the middle school competitors and then began to recruit them to come to Buchholz.

Eastside High School's IB program and Gainesville High School's Cambridge program also try to recruit the same students. The families in Alachua County are very lucky to have so many good choices. I had to sell them on the fact that coming to Buchholz would not only make them a better competitor, but it would also present them with practical applications of math, like finance, and help them get into the elite universities across America. Once the word about Buchholz's math program got out, more and more students began to enroll at Buchholz.



The formation of the team classes began to pay immediate dividends on the state level. Buchholz finished 15th in 2000, 9th in 2001, 10th in 2002, 6th in 2003, and 4th in 2004. As their success grew, so did the team classes and the number of gifted math students who came to Buchholz. At this point, Mr. Frazer knew that it was only a matter of time before they would win the state championship.

In 2005, after a complete cycle of team classes had been established, Buchholz took down perennial math powerhouse Stoneman Douglass and won its first state Mu Alpha Theta championship. I have been a part of many successes before, but winning the state math championship in 2005 was by far the most satisfying accomplishment because we won in the field of academia.

And thus the Buchholz dynasty began.

After winning state and taking down Stoneman Douglass, Buchholz focused their attention on national powerhouse Vestavia Hills High School in Birmingham, Alabama. I knew that Stoneman was very competitive with Vestavia and had even beat them on multiple occasions. Since we had just beaten Stoneman, I thought that we had the talent to compete with and beat Vestavia Hills. Buchholz would get their first real chance at Vestavia at the National Convention in 2006, which was held in Ft. Collins, Colorado. After a week of competition, Vestavia edged out Buchholz by 24 points, which left a bad memory for the Buchholz team and Mr. Frazer. I felt we had the better team and should have won. Unfortunately we did not work hard enough and ended up losing to a good Vestavia team. I vowed never again to lose to a team due to lack of work ethic. If they were going to beat us, it would be because they had a better team.



Buchholz would get a chance at redemption at the 2007 National Convention held in Tampa, Florida. After an intense 6 week summer program in which the students trained over 20 hours a week for the national competition, Buchholz showed up and dominated Vestavia Hills en route to their first national championship. I had a goal of winning all three major divisions (Calculus, Precalculus, and Algebra 2/Geometry) and that is why we trained so hard during the summer. Seeing all the hard work pay off with a national championship made the students and I realize how valuable our work ethic was during the summer.

As Buchholz continues to win championships (4 consecutive state championship and 2 national championships), the team has grown from 12 members to 70 members. In 2007, Mr. Frazer decided he needed some help in order to continue this success. All of the really great teams have more than one sponsor. Some have 3, like Stoneman Douglass and others have 5, like Vestavia Hills did in 2007. I knew that I needed to recruit some help in order to maintain this level of success because it is too much for one person to do by themselves for an extended period of time. So during the summer of 2008, Mr. Frazer hired two young math coaches to help him. I feel that we hired the two best math coaches in Florida. We hired Jason Wiggins, who was the math team coach at Rickards High School in Tallahassee, Florida. Mr. Wiggins and Rickards were our chief competition in Florida up until the time he left. We also hired Ziwei Lu, a former Buchholz student and math team competitor. Mr. Lu just recently completed his master's degree in engineering at the University of Illinois. Hiring these two young men, who share the same passion and goals as I do, has helped maintain the program's success. With these two new coaches, Buchholz has been able to not only dominate Mu Alpha Theta, but also expand into other math competitions as well, such as the American Mathematics Competition series (AMC), which helps decide the United States Mathematical Olympiad team. These two coaches have helped get Buchholz involved in other math competitions across the United States. We know that there are many great schools that do not compete in Mu Alpha Theta so we want to compete against them in their realm. By doing this, we give our students more exposure to other styles of competition, which helps them learn more and constantly keeps them challenged. This also allows for many people outside of the Mu Alpha Theta realm to know who Buchholz is.

Even though winning has been a staple of the Buchholz math team for the past 4 plus years, Mr. Frazer will be the first to tell you that it is not the singular goal he has: I feel that I have a responsibility to the students and parents to prepare the student not only to win trophies, but to provide them with a resume of accomplishment that will separate them from the other high school students that apply to the same elite universities. The majority of the students applying to these universities all have perfect 4.0 GPAs, 1500 plus SAT scores and have passed many AP exams, so competing in and winning these math competitions is a vehicle to help the



students build resumes that will give them an edge when applying to these elite schools. Throughout his days at Buchholz, Mr. Frazer has sent students to Harvard, Yale, Brown, Cornell, Dartmouth, Penn, Duke, Stanford, MIT and many other elite universities. It is very exciting to see these students get into these elite universities because I feel that all the hard work we have done has paid off. He also feels that it is his obligation to help turn students on to the other aspects of mathematics. Many students are exposed to the science half of mathematics, but I feel that I do a good job of showing students the practical application side of math, such as economics and finance. When working on Wall Street that was my job, looking at the real world aspects of math, and it is a very exhilarating and lucrative career that many people do not know about. Frazer also uses the fact that Buchholz has a nationally recognized finance program to help introduce students to the application side of math. If a student comes to Buchholz and enrolls in the finance program, then they will be exposed to that practical side of math. Between this, and competing on the math team, I feel that this is the best math education, practical and scientific, that they could receive in Alachua County.

Frazer has also created what he calls an 11 month program where his students learn, practice, train and compete while many other schools are on vacation, especially during the summer. The summer program has many benefits: one, we prepare our students for the national championship. While other schools are on vacation, we are here working hard and pounding out tests and this advantage definitely gives us an edge come nationals in late July. Two, the program gives the students a jump start for next year. Finally, it builds the team concept that we want at Buchholz. Spending over 60 hours with each other during the summer, we build a sense of community and togetherness that gives everyone a stake in the team. They have a responsibility not only to their individual success, but to the team's success as well. Mr. Frazer also has established relationships with the middle schools in Gainesville, but his relationship with Lincoln Middle School has been very important. The relationship that Buchholz has with Lincoln Middle and Linda Byrd, the Lincoln math coach, is very important to our math team. The higher end 7th and 8th graders are allowed to come and take the algebra team class and are trained to compete at a very high level in Mu Alpha Theta. Many of our great students have come from Lincoln Middle and we hope, with Mrs. Byrd's help, to continue the collaborative relationship that the two schools have.



Another aspect helping the team's success is the financial support that the school provides. Buchholz's math department helps support the team financially during the competition season with the money that it earns from their students passing AP exams. We are very fortunate to have a math department and an administration that supports our math team financially. Dinah Stone (Math Department Chair) and the rest of the Buchholz math department have been very gracious and are a big part of our success because instead of a team

member spending 10 to 20 hours fundraising, they can spend those same 10 to 20 hours studying and preparing for competition. The money has always been a source of contention within the county and across the state, but Mr. Frazer insists that every school has the same opportunities as they do: many of the schools who compete are AP and IB schools and they have the same opportunity to fund their math team as we do. That's why I believe we have a great situation here at Buchholz, because the entire math department and administration are behind this team and that is greatly appreciated. The success of the team in competition has also been a great way to raise money. At the state championship each year, money is awarded to the schools winning divisions and individual competitions. This year Buchholz won \$5300 at the state championship and the next highest winnings by any school was \$50. Buchholz also won \$1000 at the national championship this past summer. But having this money does not come free to the competitors who put in many hours working for it and have the trophies to show for it. These students put in one and a half hours every Wednesday after school, multiple hours at night and during the weekends and they complete over 100 hours during the summer training for math competition. Having the financial support, along with three very talented coaches, gives our students, a huge advantage versus our competition.

If anyone has further questions, please contact Will Frazer at willfrazer@yahoo.com or Buchholz High School at (352) 955-6702. You can also find out more information on their website www.buchholzmathteam.com.