

Botball and Girls?



Picture 1:
We should have more
girls like this.

What Is The One Thing Missing?

Botball is truly an excellent program. It has taught me amazing engineering and teamwork skills that I will treasure for the rest of my life. However, all along, something was missing from the experience - Girls. As the only female of the thirty-three males that participated in my school's Botball program, I always felt as if something were absent from the team that only a girl could bring. Females bring a fresh perspective that differs from that of males completely. This brings two sides of an idea, and more to think about to create a better robot, program, project, or anything in the engineering world.

Do Girls Even Want to Build?

Picture 1 shows a sweet, innocent, female. There certainly are more of those in this world. Lot's of them would love to join robotics. They would be overjoyed to learn to build, program, and learn new skills. Former robotics' student on the Discovery Wheel at Palm Desert Charter Middle School, Krystal Dove says, "Robotics made me feel happy, and lucky, especially because I'm a girl. A lot of girls don't get the chance to be in robotics like me." [9]

Krystal ended with a smile. She expects to do robotics again next year, and encourages other girls to do so as well. She was correct, though, she IS a lucky girl. Many females do NOT get a chance to do robotics because sometimes they are simply not invited into the world of technology. This is not right and should be counteracted. Women SHOULD be given a chance to support, build, program, and do what they like to make their mark on the world.

What Have Girls Done?

What do liquid paper, home diabetes tests, non-reflecting glass, and windshield wipers all have in common? They were invented by women. There have been many signs in growth in

engineering when females became involved. Mr. Reggie Clark, Robotics teacher and Botball team coach of Palm Desert Charter Middle School, explained one of these situations. He told me to think about pioneers. Men didn't want women to become doctors. Women were defiant though, and insisted that they would. Men knew that symptoms of a heart attack were pain of the arm along with the chest. Females later revised this study and found out that symptoms of a heart attack for a woman are flu-like feelings and pain of the chest. So, it's a good thing that women became interested in medicine and saved so many lives. [7]

How Many Female Engineers Are There?

In Chart 1 below, it shows the status of the number of people enrolling in UC DAVIS: The College of Engineering, by gender. As expected, the number of women to men is a horribly low ratio. It was shown that when men have successfully enrolled by the thousands, women had a mere 250 people in enrollment. UC DAVIS is known for their preference to females, their accommodations, and excellent staff. Even though our numbers are constantly rising, we know that women will always be lower in comparison than that of men.

The question, now pronounced is, if we have been offered so much and it is available by many, why do women not take these offers and use them? I believe this might be because of peers and maybe, mentors. Kathleen Holder, associate editor of the UC Davis Magazine says this in one of her articles entitled SeXX Shift, [5] "In surveys, men and women also tend to list different motivations in their job choices, with men giving high priority to pay and prestige and women saying they most want to help people or improve the world, Shauman said. [6] Women also often choose careers that have an option to work part time, even if they work full time themselves. Differences have been shrinking between boys' and girls' results on standardized tests for math and science. But those scores fail to predict what fields of study and careers students will pursue."

Are There People Who DO NOT Want Us to Achieve This Goal?

School of Engineering Enrollment By Gender			
Year	Female	Male	Total
2003	250	1161	1411
2004	269	1178	1474
2005	267	1150	1417
2006	279	1180	1459
2007	313	1278	1591
2008	349	1361	1710

Chart 1:
Number of
people enrolling
into US DAVIS
by gender

Girls have always had what it takes to beat the odds; it has been shown in history, with amazing female engineers such as Kate Gleason, as well as Ada Lovelace a founder of computing. These two and many more have shown that they have what it takes. But is it possible to believe that females have not always been ALLOWED to prove themselves and show their talents?

“I’m so glad that girls have a chance to learn and grow here because when I was in university in an engineering class, I was the only girl. My professor said that if I dropped out and left the class with all men, he would pass me. I didn’t, of course, and passed the class even though he was always looking for a reason for me to leave. I was never liked by him or anyone in that class,” Andrea Varela comments to me proudly. She is a family friend. [10]

Is this why girls do not want to join robotics? Because of disrespecting mentors and classmates? This is wrong and sexist, and should not be tolerated at all for any reason. Even through all the difficulties, Mrs. Varela went on to become a college graduate with a beautiful family. Girls of this time and age should NOT be forced to go through this if they wish to do what they like. It is wrong for ANYONE to get in the way of a women trying to put her mark on the world by being an engineer.

Who Are Known Female Engineers?



Picture 2 :
Kate Gleason, Historic Women Engineer



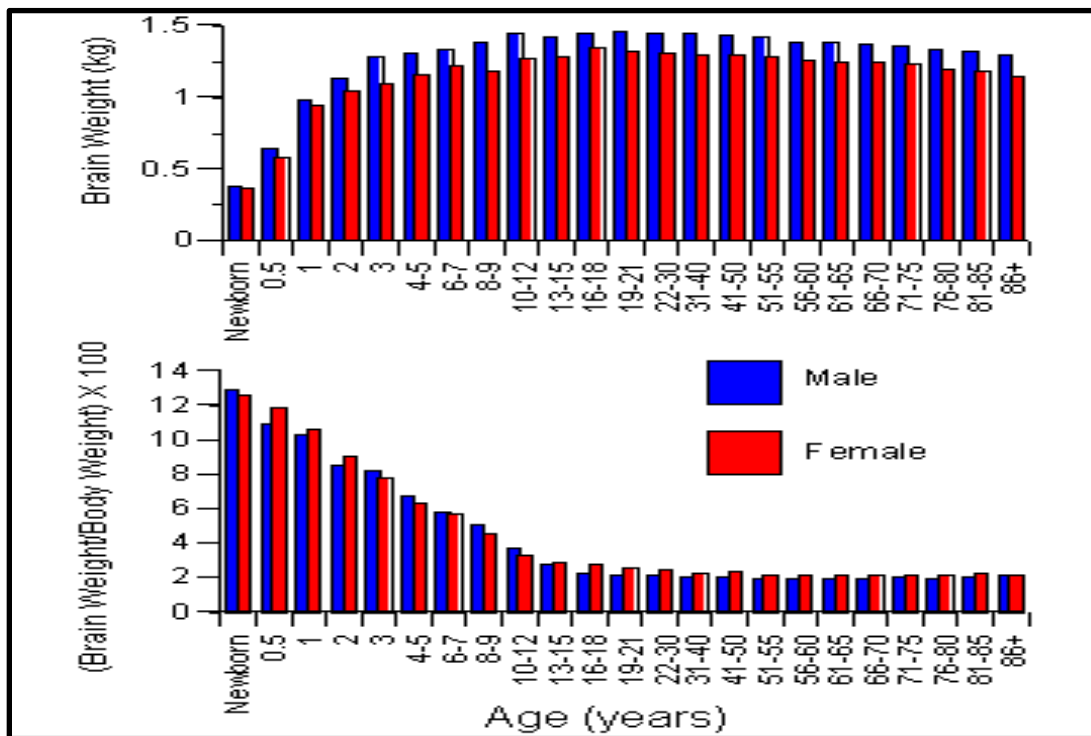
Picture 3:
Ada Lovelace
Founder of Scientific
Computing

Picture 2 and Picture 3 are the two amazing engineers mentioned before that paved the way for me and many others. Kate Gleason was the first woman in the American Society of Mechanical Engineers and the American Concrete Institute. [1] Picture 3 shows Ada Lovelace who wrote a paper (like myself) predicting future developments in computers including computer generated music – even before computers were even invented. [2] These women both made history with their ingenious inventions and extraordinary will power against those who believed they couldn’t accomplish what they did. In a time period where separation by gender was even fiercer than today, these females made it through. If they can do it, why can’t we?

What Is One Reason Girls Don't Want To Be In Robotics?

I believe some women do not WANT to join robotics because of taunting and teasing of men. For this I am glad to have well-behaved peers. Whether intellectually or in other ways, girls are, in a sense, bullied for their gender in a way that is unfair and wrong on many levels. But actually, it has been proven that both brains of that of a normal female or male have the same capacity of intelligence, though different numbers. For example, the weight of the male brain at birth is 12-20% heavier than that of a woman, but when measured in with body mass index, or BMI, they measure out to about the same. Even so, though highly rumored, the weight of one's brain does not at all effect how, "Smart" someone is. It has to do with the cerebral cortex, which differs in each individual by the amount of information they take in. Current scientific data suggests that cognitive behavior is determined by individual differences and not by sex.

Graph 2 below shows the brain weight alone gives boys the advantage because of a larger head, but with body weight included is about equal. For these reasons it is completely unscientific and unjust that men should tease women for something out of their hands.



Graph 2:
The comparison of the brain weights between females and males

What's The Difference Between Us?

Women have different points of view from men that can be beneficial on any team. Due to dissimilar brain functions, females have a different intake on ideas and will often come with a more diverse strategy or plan than that of men. These alternatives give a good balance in a team at work, at home, or in Botball. There is really a difference in the two genders. There is a reason to have both. It has been scientifically proven that women and men have different communication skills, strengths, intelligence, and other abilities. When you have a combination of them all, you have a truly successful result. People should learn to LIKE each other instead of trying to AVOID each other. There have been rumors of the, "Cooties" and how, "Gross" it is to be near girls. These are completely false and unscientific. If anything, a female carries nothing with her except a trendy handbag and a sense of pride.

Reggie Clark comments, "Boys and girls have distinct minds and personalities. Most of the boys that come into this class wanting to do robotics have the same idea in mind: Destroy, Shoot, Gun, Hammer, Pound. While girls have a different perspective. They are more interested in how the robot works and in investigation. They don't rush into things either. I'm not saying this is true for everyone, but we know, boys will be boys." [7]

This is another very true statement. I, the only girl in the after school robotics program, asked one of my fellow engineers if they'd show me some of their creations. He walked me to his cabinet where he had several genius robots, but also a wide variety of LEGO crossbows, pistols, and other makeshift weapons.

When Mrs. Reynolds, an excellent Botball mentor, gave a scenario to another student, he gave just the answer we were looking for. Mrs. Reynolds explained, "One year in Botball, they had a large ball on a platform worth some points if you got it down, but a lot more points for putting it in a basket. Now," she turned to the student. "What would you do?" He shrugged and answered casually, "I'd whack it and then look for it". [8]

That's the exact thing most of the boys' teams that Mrs. Reynolds worked with did. They knocked the ball off the pipe and then tried to pick it up using the camera's color module to locate the ball on the playing field.

The one girls team that year had a different approach and method to this problem. They designed a cute little robot with one finger and a basket. They gently knocked off the ball, caught it in the basket, and drove to the scoring position where all they had to do was tilt the basket and in went the ball. I personally think this is more efficient than shooting it and having your robot run around looking for it with a camera sensor.

This is not to say males are not as, “Smart” as females at all! It is only to exemplify the differences in mind of males and females. Picture 4 here shows an amazing LEGO single-shot pistol. It works perfectly with specially designed LEGO bullets to fit inside. [3] It is a boy’s dream from ages 8 on. But what is there for girls of this age level? We are quite interested with LEGO ourselves, but other than Mindstroms™, [4] with the occasional girlish robot, we have nothing to build ourselves. Why is this?



Picture 4, a LEGO gun, one that most boys would love to own

What Was Ever Wrong With Boys?

The purpose of this essay was not at all to speak against men, nor to change the way Botball is. This program is perfect. Men are men and special in their very own ways not mentioned in this report. I only wanted to encourage more women to join our new generation of technology to help make a difference in the world. This essay was made to show the discrimination between genders, and from a women’s point-of-view, why it is. I hope my words will open up a new world of reasons why the things are the way they are and maybe, how to stop it.

BIBLIOGRAPHY:

- [1] <<http://www.distinguishedwomen.com/biographies/gleason.html>>
- [2] <<http://www.sdsc.edu/ScienceWomen/lovelace.html>>
- [3] <<http://ps3maven.com/metal-gear-solid-4-lego-gun/>>
- [4] <<http://mindstorms.lego.com/en-us/Default.aspx>>
- [5] <http://ucdavismagazine.ucdavis.edu/issues/win09/sexx_shift.html>
- [6] Kimberlee Shauman, an associate professor of sociology
<http://ucdavismagazine.ucdavis.edu/issues/win09/sexx_shift.html>
- [7] Interview with Mr. Reggie Clark, Teacher, Palm Desert Charter Middle School
- [8] Interview with Mrs. Linda Reynolds, Educational Technology Consultant, Botball Coach, Palm Desert Charter Middle School
- [9] Interview with Krystal Dove, student, Palm Desert Charter Middle School
- [10] Interview with Andrea Varela

Here are the websites I give credit to for the pictures/graphs used in this essay:

Picture 1: <<http://www.cdn.dailyclipart.net/.../medium/clipart0191.jpg>>

Picture 2: <<http://www.rit.edu/.../inductees-home/KateGleason.png>>

Picture 3: <http://www.ieeeahn.org/wiki/images/8/87/Ada_Lovelace.jpg>

Picture 4: <http://www.room101cigars.com/wp-content/uploads/2009/10/3106_09a5e85c36c821553dd70281cdf42de81-452x358.jpg>

Graph 1: <<http://www.ucdavis.edu>>

Graph2: <<http://faculty.washington.edu/chudler/heshe.html>>