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PAYDIRT

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Pride and Joy
March 21st, 2022



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SGA Meeting Rundown: 03/08/2022

- **SGA President Dallin Sobers talked to President Wells about the Driscoll parking shortage. As a result, it is planned to have the construction company working on Brown Hall shorten their blocked off space.**
- **The SGA website will be updated to be more informative. This is to directly address concerns from students. If you don't know where to or who to complain to about anything, email michael.voegerl@nmt.edu, and he will get your complaint where it needs to go, completely anonymously.**
- **Plenty of events are planned for Spring Fling, which is up and coming!**
- **The Rocky Horror Picture Show film will be played in the near future. This will be the beginning of an initiative to bring the cultural phenomenon back as a staple NMT spring event.**
- **Elections for the SGA are March 30th - April 1st. Check your student email for more details. Spring Fling will be March 31st through April 2nd.**
- **Congratulations to the NMT Esports Team, who took second place in Las Cruces over the weekend of March 4th!**
- **April 13th will be the Student Forum with President Wells. Mark the date on your calendar to ask about various campus related subjects.**

enough; for example, from the shockwaves produced by the wing of a jet fighter. Light shining behind the jet is refracted by the density gradients. The dense air ahead of the jet will bend light more than the air trailing behind. With special lenses, this incredibly subtle diffraction can be seen as dark lines trailing from the jet's wingtips. Schlieren photography is really incredible to look at— especially some of the new ground-based background schlieren images taken by NASA. Look 'em up!

Basic Schlieren systems are used to photograph smaller explosions in safe, indoor places. Background oriented Schlieren is used to take pictures of the real big blasts. It's used for situations where both the background and the disturbance are far away; this is usually the case when you have to hide in a concrete bunker from hundreds of pounds of C4. The density changes are visualized because of the movement in the air. So, the individual pixel shifts, when properly processed, will produce density data. Quantifiably cool!

“Because a lot of the work was with large scale explosives, you don't go out every day and blow stuff up. All of my test series have been from an outside sponsor. At the beginning of last semester, my sponsor paid for us to buy C4, for him to come out, and for us to record six different explosive events. That's enough data for me to process and write a paper on. There's like, two days of testing and then the rest of it is writing a code to look at the images.”

The code she writes uses a technique called 'optical flow.' Optical flow is the 'apparent motion of individual pixels on an image plane.' It uses arrows to approximate 3d motion from flat pictures. For example, a man walking to the left would be annotated with many small, left-facing arrows, even though the picture itself is static. For explosions, the arrows go everywhere, because it's exploding. “There's multiple different optical flow equations and so right now I'm writing a different code for each equation, so that I can find out which one is best, and see if that is a method that could be used for explosives. And it can! That's what I found.”

“Because of where we live, and the amount of free space we have on the mountain and in Socorro, we have a very large limit of explosives that we can detonate. Whenever I do run tests I'm the tests engineer, meaning that I write the procedure, I send it to everyone at EMRTC to approve of, and then when we're actually out testing I'm the one in charge. The playout of the day is controlled by me as a student. Which is really cool!”

Other than the fact that explosions are fun to watch, what do we want this research for? Kailene explains: “It's a little weird, because my sponsors don't like to tell me why I'm researching the things I'm researching? So a lot of it is for understanding what we're doing. With large scale explosives, there's not really a good way to understand what is happening behind the shockwave. Being able to know like, 'this is the pressure throughout the duration of that shockwave, this is the density'— it can be very useful for mining, for example. I also found out that this work can be used for forensic analysis? Finding out like, okay, this is the crater that it left behind, it's clearly this material. That's pretty cool.”

“I think the hardest part is just figuring out where to put your camera or data acquisition materials without blowing it up. You don't want to blow up one of your cameras, they're super expensive.”

For her academic future, Kailene says “I think I'd like to work at a national lab, whether that be working on rocket engines, or national defense, helping design payloads for our military to use. I really enjoy going out into the field and setting up cameras and taking that data and analyzing it. I definitely want to design something and then be like, well does this actually work?”

“My past sponsor was Naval Air Weapons Station China Lake. That's just payloads and stuff for the navy. That's really cool, because when I actually went and toured the facilities, they were also testing, like- so if you shoot a bullet at this specific part on a helicopter, will the helicopter survive? They're doing survivability testing. [My work] doesn't have to be designing weapons. It can also be making sure that if our troops are hit with a certain projectile in a specific area, how will they come back home safely? So I think that's a very ideal place, but there's also air force bases where I can work as a civilian engineer.”

The ideal for most of us scholarly types is to be paid to do what we love. It doesn't happen for everyone. But for Kailene, it's happening right now. “I just have so much appreciation for my lab and for my advisor. Everything I have, my success, it's mostly due to them.”

“I haven't regretted a single moment of it. It truly is a paradise here in Socorro.”

Student Spotlight

It's A Blast: Pun Intended

Written By: Ella Eleven



When a biologist like me blows something up, it is almost always a bad thing. When a MechE blows something up, it's the goal! Ergo: when Kailene Strebe blows things up, it's quantifiably cool. 'Quantifiably' being the key word here. (You'll see later.)

Kailene is a grad student here at Tech, and although it's only her second semester, she's already starting off with a bang. She currently works for Dr. Michael Hargather in the Shock and Gas Dynamics Laboratory. Kailene finished her undergrad in Mechanical Engineering last April: "After taking all of my classes in the Mechanical Engineering department for undergrad, I learned that I [did] not like the mechatronics or the electronics side of mechanical engineering, but I really liked fluids. Dr. Hargather had a class for compressible fluid flow. I signed up for that and I absolutely loved it. It was all about shockwaves coming out of jets, or going over projectiles in the air, and I was like, that's really cool. And if I was gonna do anything with this degree, I wanna do that. It felt like I was contributing to science with this specialization." Mechatronics, for the uninitiated, is essentially a cool word for robotics. Compressible fluids are harder to explain, but they involve shockwaves, and that's the most important part.

"At first I was like 'I'm not gonna do grad school because there's no scholarships'", Kailene tells me. Then Dr. Hargather took a day of class to explain to everyone what grad school is like, how you apply, and best of all: how you can get paid for it. "So when he approached me and was like, 'I haven't seen your application for grad school, why haven't you applied yet' I was like, 'I didn't know I could still apply. Funny you ask that, because I would like to work with you!'"

After sliding elegantly into graduate school, Kailene started research on explosions. Big ones. She'd go out on M Mountain, blow up some C4, and process the video with programs. "I was using background oriented Schlieren to do it- and this is not a new technique, but it's not well advanced. Basically you're looking at the individual pixel shifts in an image to find what the density is radiating from a shockwave. It's kinda weird but it's super cool because I'm just like, using images to find data. It feels like making something out of nothing."

There's a lot to explain here. Background oriented Schlieren is a specific method under the broader process of Schlieren photography. Schlieren photography involves taking pictures of fluid flow with the idea of capturing density differences. Air is considered a 'compressible fluid' when the pressure is high

From the SGA President

Written By: Dallin Sobers

Hi reader! My name is Dallin Sobers, your SGA President. This is the first of several letters to you through Paydirt! At the time of writing, I have received a lot of feedback ranging from the new dorm assignments to the SGA website. All of these concerns will be addressed in ways that you will be able to see very soon. Tomorrow I will meet the Secretary of the Higher Education Department for the state of New Mexico regarding the Opportunity Scholarship and other matters facing students. While these will definitely be points of bragging to my family during Spring Break, I want to take this moment to thank you for both placing your confidence in me and allowing me to advocate on your behalf as SGA President.

It is a very special and rare thing to have the bettering and furthering of others also be the bettering and furthering of myself. I know the past few years both inside and outside of Tech haven't been easy. The loss of interaction and hands-on learning in classrooms and labs was a very difficult thing. As a chemistry major myself, being able to actually perform an experiment and see a result is beyond valuable. So when elected President, I did my best to make sure that we doubled our events to try and reignite the flame that keeps so many of us sane. I hope you've enjoyed the bonfires and hot chocolate mornings, there will be more!

Looking to the future, Spring Fling is right around the corner! It will take place March 31- April 2. We have planned a lot for that time, with activities ranging from a burger cook-off to laser tag. We're also looking into having NMT band Technical Differences perform on top of M Mountain and livestreaming that soon after. I hope to provide another weekend sometime in mid to late April with fun things to participate in as well. In terms of new traditions, I will be working with the class of 2022 to build a standing monument that will be on Tech campus as a marker of their time here. I hope this will carry on beyond myself and become part of the process of attending and graduating.

I am also excited to start a podcast where I will be alternating between having students discuss current events and having faculty/staff on to better understand their fields of study and them as people. At the time of writing, I will be recording the first one tomorrow in the SAC. Speaking of—a LOT of new equipment is being brought into the SAC to make it a very nice space to use. It has been a long process to turn that sinking ship around, but I have a whole new crew in there who are just as passionate as me – if not more so – who want to make it a landmark on campus.

This year has been amazing in seeing how Tech and its people have changed. I have one year left and I hope to serve as your President one last time. I believe at the time of publication, elections will be in a week or so. I'll wrap this up by saying that the future both near and far is exciting, and I cannot wait to see what we are capable of!

Thank You,



CLASS

Written By: Emma Nourse



‘Science and the humanities are incompatible as interests.’ It is a fairly well-known rhetoric, however flawed and untrue it is. In reality, the two disciplines run complementary to one another, offering a more complete understanding of the world around us when used and studied in tandem.

The humanities here at Tech can be found within the CLASS (communication, liberal arts, social sciences) department. While the rest of New Mexico Tech offers classes on how to approach the world logically through the scientific method, the CLASS department teaches students how to look at the world via an analytical and critical lens.

So what are ‘the humanities?’? In an academic setting, they are the study of Eenglish, history, philosophy, languages, literature, the arts, media, and cultures. Much of the focus of these disciplines is the understanding and interpretation of the world from different perspectives. Humanities programs also tend to focus more on a student’s ability to communicate effectively via writing and speaking than most science-based curricula in higher education.

While we do not have all of the disciplines of the humanities that may be offered at other schools, within our CLASS department we have education, philosophy, history, music, english, psychology, and foreign languages and studies. This may

not be a comprehensive list as it seems the variety of classes the department intends to offer is growing.

But why, at a Technical Institute, would a humanities department be on the rise? What value could humanities classes have in an engineering degree? According to the professors within the department as well as a fewas few online sources, quite a bit.

The Humanities in Action website says: “Humanities education encourages students to think creatively and critically, to reason, and ask questions. And, as the humanities offer insight into nearly every aspect of life, they have been considered a core element of a well-rounded education since ancient times.”

Asking questions about the world around us is a critical part of the scientific process, as is creative problem-solving. Beyond that, there are also other aspects of the humanities that science depends on, as Assistant Professor of Ethics Dr. ChoGlueck said “Science is so heavily influenced by society,” and as seen earlier society is studied by the humanities.

It was also mentioned by Dr. Matt Johnson, Assistant Professor of Spanish and Hispanic Studies, that “one of the most important things employers look for is critical thinking skills,” and that is one of the things humanities teaches. This sentiment is echoed by the website The Nth Degree, where they list critical thinking skills

In an interview with Heather, the school registrar, she said: “The problem is it’s not just changing one thing in one system, we have to go through and change that student’s name in every system. It leads to problems with the cashier and other departments that deal with legal names. So that’s why we decided to limit it to one. Every student can come in and request that their preferred name be changed one time. There are a lot of different systems and plugins that are used by [various] departments and if students were constantly changing their name it would take a lot of time. However, this does not apply to legal names, students can change their legal names.”

This is an appreciated system; however, many professionals in gender studies, advocacy groups, and online resources, such as the website TransHub for example, recommend that gender non-conforming folk try several names, and when the majority of the time you’re using your name is on Canvas and email, it’s hard to feel like your preferred name is a name you’re actually using. While there is not a current solution to this problem, the registrar is aware of it and looking into solutions. For now, it is encouraged that students put their preferred name in their email and/or discuss it with their professors.

Another problem facing gender non-conforming people is the lack of gender-neutral bathrooms on campus. At the time of writing, the only public building with more than one gender-neutral bathroom is Fidel. While the population of nonbinary students on campus is small, asking them to either walk to Fidel or their dorm in order to be comfortable using the restroom may be unreasonable.

How can a student here at Tech get involved, and become a part of the Queer community on campus? The clubs discussed in this article are a great place to start: they are always looking for new members. Additionally, at the beginning of every semester, students are able to file the paperwork to found new clubs, so if there is a specific part of the community that a student feels needs better representation on campus, they could start their own club. As far as issues that affect queer students on campus petitions, have conversations with members of the administration, interact with the SGA, and be vocal about injustices. However, many queer scholars, politicians, and activists have said that just living your best life is enough to support and help the LGBT community.

DECS Discord:

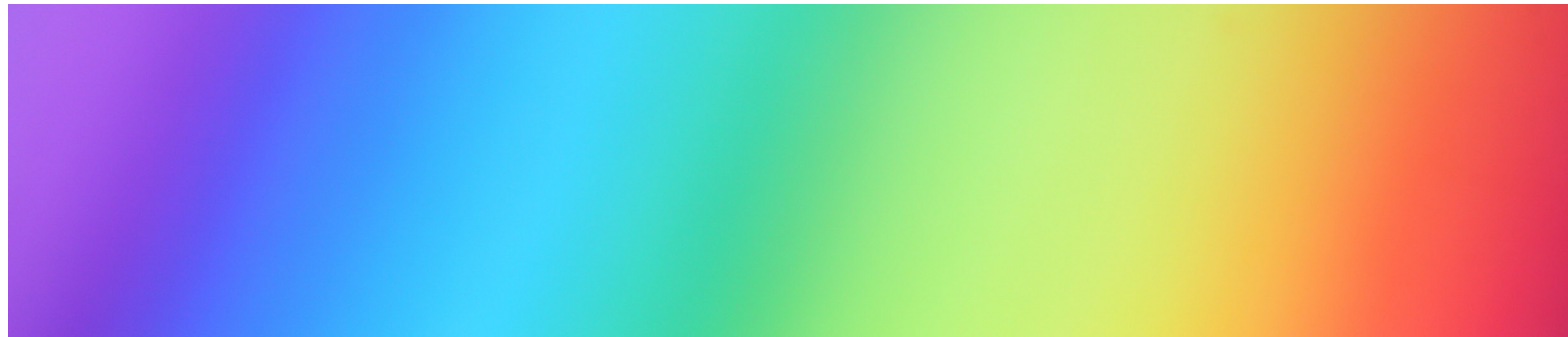


QuASAR Discord:



Show Your Pride

Written By: Nyx Dixon



Disclaimer: This article uses Queer in a reclaimed way to refer to the gay community

The past decade has seen many examples of members of the LGBT community coming forth and demanding equality. From the legalization of Gay marriage to the exponential increase in trans acceptance, the visibility of the Queer community has continued to grow. The generation that is currently enrolled in Tech, people born between 1997 and 2012 often called Gen Z or Zoomers, is the first in the US to have come of age in an environment where there is less pressure to conform to heteronormative values. Just over 1 in 6 Zoomers (%17) identify as part of the community according to a poll by Gallup, an American analytics and advisory company - this is nearly double that of any other generation. With all this being said, let's take a look at the Queer community on campus, some of the problems they face, and how students can get involved.

Starting with on-campus clubs, there are several, but the two most popular are QuASAR and Diversity and Equity in Computer Science, better known as DECS.

QuASAR is a branch of oSTEM, an organization that seeks to empower and support Queer people in STEM fields. It is the largest organization on campus dedicated to LGBT issues and support, hosting many events and facilitating a variety of ways for members to get involved. This includes positivity meetings, hosting Karaoke nights, hosting community outreach, and collaboration with other clubs. As a whole, the club works to give members of the LGBT community a place on campus to freely express themselves and seek out a group of like-minded people to congregate with. QuASAR is also accepting of all members, including non-queer allies, and welcomes as many people as possible to attend. Additionally, the club has acted in an advocacy role in the sense that the club's opinion

and thoughts on various issues have been taken into account regarding university policy. The club meets on alternating Wednesdays and Thursdays; Discord information will be available at the end of the article.

As opposed to QuASAR, DECS is a club made entirely by students at Tech and is not a branch of a larger organization. The club takes inspiration from Tech's branch of WiCS, Women in Computer Science, but with a focus on the Queer community. With Computer Science being one of the largest departments at Tech, there's a large population of students involved, including many Queer students. Computer Science has long been a field dominated by white, cisgender, and heterosexual men; DECS is against this long-standing status quo, helping to give members of the LGBT community support in the world of Computer Science. DECS also welcomes members of the Queer community from every department, not just CS.. They host weekly meetings on Wednesdays with a weekly theme based around LGBT issues. They also host occasional events such as PositiviTEA, an LG-BBQ-TQ, and more. Links to their Discord will be at the end of the article.

Many trans and non-binary folk on campus can explore their gender expression and identity in a more freeing environment than they may have in the past. Many students are discovering that they may be part of the gender non-conforming community and are exploring this for the first time. Part of this experience is changing and trying new names as a part of changing their new gender expression. Many Professors do an excellent job respecting this and many students have taken to putting their preferred name in their emails or papers. In addition to this, in the Fall, the school put in a system to change students' preferred names in the school database, but there have been some issues with the system.

at the top of the list for strengths employers want, and the website goes on to say critical thinking is important because "employees need to be able to analyze evidence, question assumptions, test hypotheses, observe and draw conclusions from any form of data."

Dr. Johnson also went on to say that "the humanities are important because they give students the capacity to see the world that transcendstrcends the gaze of science." He elaborated saying that science tends to see the world as a problem to be solved whereas the humanities asks people to question whether or not that is the best or only way of approaching the world around us. Essentially the humanities allow people to "relativize science's way of looking at the world."

However, just because the humanities are a necessary part of a well-rounded education doesn't mean they are a valued part of education. Stephanie Pick, a former history professor at Tech that left in 2021, said that "I have had some students say 'it's worthless, it's a humanities course, who cares.'"

In talking about lack of respect and where she fell in the order of most to least important, Stephanie Pick said "There was one semester where I showed up after Christmas break - and they had changed the locks on my office and had given it to a MeChE Professor and hadn't told me, but he was more important than I was."

Further evidence of the lack of respect and value may also be reflected in the pay of most humanities professors, even here at Tech. "The departments are going to have a standard base pay, but across the departments you have major disparities," said ChoGlueck.

This lack of pay, and for many other colleges, loss of funding, has not gone unnoticed. For example, the Humanities in Action website said: "College and university humanities departments face closures and mergers. More college classes are being taught by contingent faculty members who make too little for teaching too many students."

This sentiment is reflected by Pick when she stated "Because nobody respects the CLASS department, we don't tend to get as much funding and you can only offer positions if there is funding. So I wasn't given a full timefulltime position until 2018." Pick had been working at Tech since around 2007. Dr. ChoGlueck also stated that "we have a higher teaching load, we have higher

teaching expectations than anywhere else as a department. We also make much less money."

It's not always a matter of whether or not students like or appreciate the humanities though, but rather where they fall in the order of importance. Associate Professor Becci Spruill said "I think what happens is sometimes students end up feeling like they have to prioritize one thing over the other." Ms. Spruill said that this was an issue in the last place she taught at as well.

These flaws regarding the humanities aren't just New Mexico Tech flaws, they are nationwide. While there is a general pay gap between STEM and Humanities professors, as stated by Dr. ChoGlueck, "Humanists make on average 10 to 20 to 30 thousand dollars less than their engineering, science, business school colleagues. And it's not because we have less training, it's often because they can make more money outside of academia than we can."

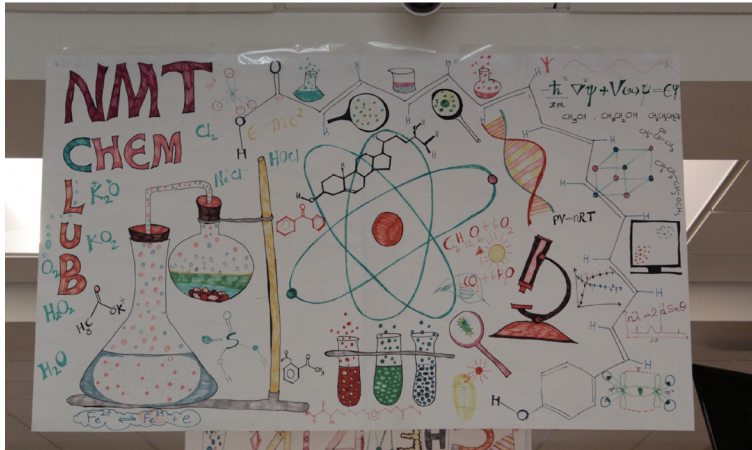
There is also an issue of universities taking advantage of graduates. According to Pick "they know it's really tough to get jobs in academia, so they will dangle 2000 dollars per class in front of you and you take it because getting into a university is so harduniversity so hard."

I think Dr. ChoGlueck summed up the link between science and the humanities best when he said "The two are often so intertwined, and if you're not mindful of that, then you just take for granted that they're separate when really they're not." While there are extensive issues with the current structure of academia as a whole, it also seems that our CLASS department is just as important to our success here and in our daily lives.



Proctorio

Written By: Ella Eleven



In February, General Chemistry 2 courses announced that they would be using Proctorio to monitor exams. Proctorio is one of the many 'remote proctoring' programs that flourished during lockdown. The goal is to prevent cheating in situations where the professor cannot walk about the room and watch for themselves. Remote proctoring programs function by first validating your identity, then by monitoring elements of your behavior; your tabs, keystrokes, webcam, microphone, and even where you're looking in the room. 'Suspicious' activity is flagged to be reviewed by the professor. Proctorio does not determine whether or not somebody has cheated—it only suggests where cheating might have happened.



Automated software like Proctorio utilizes algorithms and trained AI (artificial intelligence). Algorithms are sets of rules a computer program follows to complete a task. In the case of online proctoring, the task is to flag 'anomalies.' To do this, video, audio, and computer inputs are collected into a dataset.

Parts of that dataset are flagged by the programmers as positive results (cheating). An artificial intelligence is then trained on this dataset to learn what makes a result positive. Proctorio does maintain that they do not determine 'normal' behavior, but the existence of a dataset where only some behaviors are deemed acceptable is, in a way, defining normal behavior.

Dr. Sally Pias informed me that "the General Chemistry instructors decided to pilot the use of Proctorio this spring." It was the first time the Chemistry department tried proctoring programs, and "the reason online testing has been used this semester in General Chemistry was to ensure that students who needed to quarantine would be treated equally to those able to take exams in person."

"The faculty members teaching General Chemistry were looking to lock students' internet browsers while taking online exams. Students were given the option to install Proctorio on their devices just before each exam and uninstall it immediately after (requiring just a minute). With online exams, it has been a bit tricky to be sure all students are complying with the rules of the exam and are truly submitting their own work. The goal with using the software was to provide fair testing for all students."

And then, right before the exam, we were told 'no more Proctorio': "The General Chemistry instructors extensively evaluated and piloted Proctorio, to assess potential technical and ethical issues students might encounter. They worked with support personnel for many hours to resolve technical challenges. Because they were unable to resolve a small number of these challenges, they decided not to continue using Proctorio this semester." As an example, Proctorio's page on the Google Add-Ons store has a one star rating with 3000+ reviews.

There was also a petition regarding the software. Kor Shelly, creator of the petition, said "My instructor for General Chemistry 2 sent out an email on Saturday, February 12th informing students of the procedure for taking the exam. Included was the mandatory installation of the proctoring service Proctorio, which would be necessary to install before class on the following Monday, February 14th, for a practice exam."

As Kor works for the Computer Science department, he was hesitant to install programs that can access your computer's files. He noticed that those same concerns were being raised in multiple school chats, and decided to get a petition together,



are making these changes don't believe that students have the background or information to input on this issue. "There is a lack of liberal arts education at Tech. We hope to implement diversity [and systems training] to help students understand some of these changes."

Melvin explained that the changes are based on various theories and concepts that are not necessarily taught at Tech: "[These theories] inform the work that we do in student affairs, and based on [these] theories there is a subsection [on student's experience.] There's a ton of research that shows that black students need to have

a space with other black students to feel a sense of community, and to feel a sense of belonging. There are other forms of research that talk about how queer students need a space with other queer students to have that community and that sense of belonging."

As these changes go into effect it will be interesting to see how the student body reacts and how Res Life chooses to respond. "I'm certain that in a couple of years students will look at this system and think 'wow this makes way more sense' and appreciate it."

Res Life II: Affinity Spaces

Written By: Nyx Dixon

In the last issue of Paydirt, my colleague Emma wrote a general overview of the situation at Res Life, and this article aims to expand upon the changes with housing that were touched on. To get the best information for this article, I interviewed the head of Res Life, Tyler Melvin, and read some of the literature they recommended to me.

Before getting into the theory, here is a quick summary of the plan that Res Life has laid out. At many larger universities, students are separated by major, each department has a dorm, and students are encouraged to live with their academic peers. The idea is that these students all share similar interests and experiences so they can get support from living together. Res Life is looking to take this to the extreme with the introduction of 'Affinity Spaces.'

Affinity Space is an academic term, according to James Paul Gee, a researcher who helped to coin the term: "An affinity space is a place or set of places where people affiliate with others based primarily on shared activities, interests, backgrounds, and goals." For Tech, this means a broad separation between students of different classes. Additionally, other classifications will be separating students by gender, and the creation of a 'Queer Affinity Space.' In the future, there will also be Affinity Spaces for Latine, Hispanic, African American, and students of other ethnicities. Within all of these spaces, there will also be subcategorization in order to account for intersectionality; for example, in the future, there will be a Hispanic Queer Affinity Space for Sophomores.

There has been immediate backlash from the student body regarding these changes. Students created a petition to stop the preliminary changes coming in the fall, calling the separation of students by class 'segregation' and pointing out the lack of freedom this will give students in their choice of living arrangements. The students I've interviewed on the subject, who asked to remain anonymous, cited problems such as: having the only living arrangements for juniors and seniors being apartments ignores the increased living expenses that some students cannot afford, giving students less flexibility in their choice

of a roommate, greater restriction in the style of residency hall, lack of mobility between residency halls in case of disagreements with roommates or neighbors, a smaller number of single dorms for students who require this accommodation, and more.

One of the first questions I asked Melvin was his opinion on the petition, and what the response from Res-Life would be. "We are not Segregating students, we are reframing how we prioritize, as it relates to occupancy management, as a result of data and research into student development theory, learning theory, [and students learning capacity] as well as the time frames in which students encounter certain developmental phases. I disagree with the term segregation, in my mind, it's a reframe, not segregation."

"We know based on research that first-year students need to live with other first-year students as it relates to a sense of community and belonging - as it retains a desire to persist and maintain till graduation. We've created spaces for students to give feedback to allow their voices to be heard in these changes, and not many students have engaged in that process. Students need to learn to step up as leaders and advocate for themselves and that goes [into the conversation] of properly navigating university processes. I'm excited to see a petition, I'm excited to see students are fired up, I'm excited students want to give feedback on what's [happening, but] is the petition the correct process to do that?"

To clarify, the spaces Melvin referred to where students could give feedback were the Room Selection Information Session. These were a pair of two-hour-long events hosted by Res Life during the 2nd and 7th of May from 11:30 am to 1:30 pm, and an additional hour-long event on the 8th from 7:30 pm to 8:30 pm.

The stance from Res Life, at the time of writing, is to move forward with these changes despite the backlash from the student body. In addition, Res Life seeks to provide students with education and information on these changes. Members of the Student Affairs staff that

receiving "immediate and overwhelming support." "Before even submitting the petition, our emails and pleas were met with a response at 11:40 AM that Proctorio would not be mandatory for the exam, although students in other chemistry sections aside from my own did not receive such an email." Dr. Pias confirms that "Student concerns reached the instructors after they had already decided not to continue using Proctorio this semester."

Despite the petition arriving a bit too late, it's weight was substantial: "Within a period of 5 hours we were able to amass 126 signatures. The Chemistry Department chair was very much willing to listen to our concerns and although I was not given a proper response on the actions the Chemistry Department would take, I believe they will take more care in researching any future online resources they choose to use." Dr. Pias did state that the department hasn't ruled out using remote proctoring programs if students continue to take exams online.

In schools across the country, a lot of students are raising the same concerns as Kor. And a lot of professors are coming to the same findings as our Chemistry department; remote proctoring ain't all it's cracked up to be. Because computers are not smart. That is to say, they aren't nearly as good at pattern recognition as people are. I can review footage and realize someone's looking at their phone. I'd flag that. What a computer sees when it looks at that video is not a person; it's a collection of pixels. All it knows is that when these pixels move this way, it's a positive result. The computer flags the instance. So in this situation, me and the computer agree.

When we don't agree, it's an issue. Students with tics, stims, screen readers, or even glasses can result in false-positives. Significant movement outside of the expected behaviors, which is mostly sitting still and looking at the computer, gets flagged. Students who must eat or medicate during long exams or students who are anxious commonly get flagged. Not everyone can find a blank, quiet room to take an exam in, either. Many attending online classes do so from homes with loud kids, shuffling roommates, or keyboard-jumping cats. Any of these can flag a test-taker. These programs are simply not advanced enough to differentiate between innocuous and incriminating behaviors.

Many students have reported that remote proctoring programs have trouble with darker skin tones. Despite Proctorio saying that they "have not verified a single instance in which test

monitoring was less accurate for a student based on any religious dress, like headscarves, skintones, gender, hairstyle, or other physical characteristics," students say that they were forced to shine multiple lamps directly into their faces to be recognized.

It should be taken into account that Proctorio only flags suspected incidents. To invalidate an exam, the professor has to review each instance of 'cheating' and agree or disagree with the program's judgements. (Unfortunately, there may be a share of teachers who just accept all flags—and discredit exams en masse.)

The other half of the issue is security. "Data is inaccessible or completely useless [due to encryption] for any individual other than the approved school administrators" Proctorio states. Many sections of Proctorio's Q&A repeat that no, they aren't spyware, nobody's seeing your data, the extension only runs when you're taking an exam. Of course, to ruin all that privacy talk, the CEO of Proctorio once posted a student's chat logs on Reddit to call out the student for lying about their lack of technical support during exams. The student was being misleading, but so is saying 'information is only accessible to school administrators'.

It is not a perfect world. Remote education creates a lot of novel issues for professors and students alike. As we transition away from remote classes, we hope we can leave remote proctoring behind— or improve it, at the very least. I leave you with a message from Kor Shelley; "One voice, a thousand echoes." We are all a single student body, and it's important to remember that. We might not know each other by name, but we are all bonded by our choice in coming to Tech. Together we can move mountains—all it takes is one person to get it started."



#Breakthebias

Written By: Emma Nourse



One of the main jokes here on campus is regarding the lack of women. It takes varying forms, from “Wow there are more than 3 women here?” to “What women?” That joke is a fairly valid one as the last time the statistics were posted, the ratio of men to women was 7:3. While the ratio varies from department to department, the vast majority of the degree paths are male-dominated. This inequality in the male to female ratio is not just a Tech issue; STEM fields are male-dominated, so naturally, a technical school will be male-dominated as well. In fact, the percentage of female students almost perfectly mirrors the percentage of female professionals in industry, 30% at Tech, 28% in the field.

However, just because Tech doesn't have a large female population does not mean there aren't places for them on campus. For example, there is a sorority on campus (Alpha Sigma Kappa, Women in Technical Studies) that specifically caters to and supports women in STEM fields. I myself am a part of this group. There is also a branch of the Society of Women Engineers, one of the world's largest advocates of change for women in engineering and technology.

While these clubs work to support women here at Tech everyday, once a year for the past five years on International Women's Day, women from various fields are invited to speak on a panel regarding a yearly annual theme. This year, International Women's Day was March 8 and the theme was 'Breaking the Bias.' The theme was chosen to promote equality not just of women, but equality among all types of women as well. The website for this event said:

“Imagine a gender equal world. A world free of bias, stereotypes and discrimination. A world that's diverse, equitable, and inclusive. A world where difference is valued and celebrated. Together we can forge women's equality. Collectively we can all #BreakTheBias. Celebrate women's achievement. Raise awareness against bias. Take action for equality.”

This year, the speakers for the panel were all women that work and live in Socorro. Dr. Amy Kimball works for the NRAO as an associate scientist studying super-massive blackholes in other galaxies. She also is the Head of Operations for the Very Large Array sky survey. Dr. Eileen Comstock is a local Emergency Room Doctor who

also teaches some classes here at Tech. Helen Schledewitz-McGinnis is a safety officer for the NRAO. Diedra Vinson is a local entrepreneur who co-owns Yo Mama's grill, teaches full time, and coaches the Socorro High School swim team.

Each of these women are working to 'Break the Bias' within their lives by working and succeeding in fields that are traditionally considered masculine. For example, Diedra Vinson is an entrepreneur. As of right now, only 6.2% of established businesses (businesses that have been operating for more than three and a half years) are owned by women. However, I would like to note that according to some studies that have been done, the number of female entrepreneurs are on the rise; one source said that there are 114% more female business owners than 20 years ago.

Dr. Eileen Comstock is also in a field that not so long ago was barred from women altogether. The first female doctor in the United States was Elizabeth Blackwell in 1849. It wasn't until the 1970s that there was a noticeable increase in women attending medical school due to the lifting of restrictions for women in the medical field via two laws: Title IX (1972) and the Public Health Service Act (1975). While medicine has come a long way in terms of equality, there are still significant gender gaps: almost half of medical school graduates are women, but they make up only 34.3% of surgeons and doctors.

However, many of the women here at Tech will be going on to become scientists, engineers, and mathematicians. I already discussed the general percentage of women in these fields over all, so instead I would like to talk about the history of a few women that had notable contributions in these areas of expertise.

The structure of DNA, computer programming, calculations for the first Moon landing, the RAE restrictor. All of these discoveries were made by female scientists, mathematicians, and engineers. Each of these women had to 'Break the Bias' in these particular courses of study.

The structure of DNA was originally a mystery. Thanks to the work of English chemist Rosalind Franklin, the double helical structure was discovered. Dr. Franklin used X-Ray

crystallography to examine DNA and assemble a molecular model based on the facts. However, her contributions to this discovery were overshadowed during her life by the discovery that Watson and Crick made based on the sharing of her work without her permission.

Ada Lovelace, while she did not invent the first computer, she is widely regarded as having written the first program for a computer. After reading her friend and colleague's (Charles Babbage) work on his Analytical Machine, she took notes and theorized about the capabilities of the machine as it had no defined parameters, anticipating modern computers by centuries. She also wrote an algorithm for the Analytical Machine via a step by step description for the computation of the Bernoulli numbers. Katherine Johnson started as a NASA computer, a woman who did calculations and doubled checked work for the engineers. Eventually she was the first woman to be pulled from the computing room to other projects after she established herself as someone who asked questions and was an asset to the teams she was a part of. She eventually went on to work on calculating the trajectory of Alan Shephard's mission in 1961. After that, she did the calculations for the moon landing mission.

In 1940, fighter planes (specifically the Spitfire or the Hurricane) that did a nose dive would flood the carburetor and cause the engine to cut out. Beatrice Shilling was instrumental in engineering a fix to this issue. She was one of the first women to study engineering at the University of Manchester, and after graduation she was hired by the Royal Aircraft Establishment. While there, she invented a small metal disk that would help in regulating the flow of fuel so as to not flood the carburetor. It was named the RAE restrictor.

Each of these women fought against gender bias, and in some cases racial bias, to pave the way for the women of today. Their achievements have gone down in history as feats of great ingenuity. It can be said that they objectively 'Broke the Bias,' and now the women of Tech, and Socorro, are going on to do the same.