The idea for “Get Bent” came from us working together in the past, where we combined art and calculus in a project called “Calculicous—making calculus delicious.” This year, students used three-dimensional geometry, calculus, physics, art, and wood working skills to design, explain, and construct chairs and lamps people would actually want in their homes. Students meticulously documented the process—from inspiration to design to construction—and wrote books about the experience. Our idea was that on exhibition night, people could sit in the chairs and read students’ books by the light of their lamps.

Teachers’ Reflection
Making bent wood furniture seemed cool. It still does. To get started, we looked on the internet to find ways people had steamed and bent solid wood, and we started experimenting. It was fun and exciting and very expensive. We found several barriers to steaming wood in a reasonable way. In particular, we never really found the perfect length of time to leave the wood in the steamer. The wood would often peel apart, split or simply not bend at all. We eventually came up with a good proof model using laminates. Doing the project ourselves first was an important step. We needed to know that the project was possible and how difficult it would be for students to complete. For example we learned that we would need to use laminates and that books made with one web-based publisher looked better than those with another. If we had not tried these steps first, we would have been left flat-footed with 50 students. In the end we were pleased with how everything came together in time for exhibition night.

Student Reflection
Get Bent was a unique project that got me into the senior mood. The other three years I have gone here I have always seen seniors working hard in Jeff’s class, making outstanding works of art and powerful projects. The resources we had in class allowed us to create a professional final product. Our final chair/lamp demonstrated high-level skills that we acquired over the course of the semester.

—Zac Wendroff

To learn more about this project visit jeffrobin.com or http://dp.hightechhigh.org/~ajgloag/
In a semester-long collaboration between two Humanities classes, students researched social movements in U.S. History and worked to create a single production drawing on the talents of the team. The movements ranged from the Black Arts movement of the Civil Rights era, to the Second-Wave Feminism inspired by Betty Friedan, to the work of Cesar Chavez and the United Farmworkers. Each student wrote an original play embodying the ideals/impacts of their chosen movement, as well a personal narrative exploring their own relationship with the issues (e.g., class, race, gender, state-authority) that inspired these moments of social and political engagement. The exhibition was a mixed-media performance of three student-authored plays, with audio recordings of students’ personal narratives embedded throughout the performance.

Teachers’ Reflection
A great moment, for both Paul and me, was seeing our team choose and produce the plays of students with such diverse voices and experiences. We loved how our kids came together and combined their talents to create a great production.

Student Reflections
I believe the importance behind this project was for us students to really go in depth about a social change that we wouldn’t normally study about and learn about how an inspired group of people can change the world we live in.

—Robert Bannasch

[It] was one of those projects that made me think. In order to be successful, you had to become a mini-expert on your topic. It was a creative way to get us to learn about history and why our society is the way it is today.

—Pauline Velas

I learned so much from this project. Not just about the anti-World War I Movement, or the institution I wrote about. I learned about my peers’ movements and all of the work that goes into the production of a play. For this project we had many students at our disposal, and something that could have taken months was accomplished in weeks because of the way we were able to work together to get the job done.

—Lindsay Felice

To learn more visit Patrick’s and Paul’s digital portfolios at http://dp.hightechhigh.org/~pholder/ & http://dp.hightechhigh.org/~plopez/
Our students explored how historical events such as immigration and war affected their families and the evolution of cultural traditions. Students read historical novels related to their families’ unique histories, presented on corresponding historical topics, and wrote creative pieces related to their families’ stories, significant moments and traditions. Each piece went through extensive critique and revision so that students could not only learn about each other, but also help each other with their writing. The final pieces were compiled and published as a book, Cultural Encounters, available at http://www.blurb.com/bookstore/detail/1934355, with each article accompanied by a family photo.

Teacher Reflection
When I first came to the United States from El Salvador in 1989 I had the opportunity to work with the homeless children of immigrants in Los Angeles. I spent a great deal of time listening to those kids’ stories. They helped me realize that everyone has an incredible story to tell and that their stories are part of a larger story: the story of people who have come to this country at different times and from different places. Our book continues that story, written with the ink and sweat of our students.

—Julio Delgado

Student Reflections
During this project, we all had the chance to interview our family members and write a story based on one moment from their lives. This project didn’t just turn out to be a school project. It became a project for us, a way to discover a part of ourselves and get connected to our families. Nothing says more about your family than to actually write a fascinating story and know that you were somehow part of it!

—Karina Davalos, 10th grade

I found out tons of little anecdotes about family members that I had never had the chance to know. Taking those stories and embellishing them was fun and interesting. I also got to refine my skills on Microsoft Publisher, a program that I realized could be used for a plethora of different jobs.

—Carly Flowers, 10th grade

To learn more visit Julio’s and Dan’s digital portfolios at http://dp.hightechhigh.org/~jdelgado/ & http://dp.hightechhigh.org/~dwise/
During the Resilience Café Project, 8th graders learned about resilient heroes from the past and present, and explored together what it means to be resilient. Students identified specific attributes to celebrate and communicate through their work. They connected a resilient historical figure, a resilient community member and their own personal story of resilience through writing and by creating an art piece full of symbolism. They honored their resilient community members by inviting them to a night of celebration through music, spoken word, poetry and artwork.

Teachers’ Reflection
Students took the basic concept for the project and made it their own. The elements of choice, and the fact that students were working on this project in two out of their three classes, allowed for creativity and personal connections to emerge. Throughout the project, the energy was high, the creativity was buzzing, and the students were empowered to honor the resilience all around them!

Student Reflections
During this project I learned about the Civil War, Brown vs. The Board of Education, The Civil Rights Movement, and the Blues. I also learned that resilience is the ability to endure and be strengthened by the hardships you face. Basically, learning about resilience teaches us to go out of our comfort zone and to know that the struggle will help us become a better person.

—Andrew Sanchez

I loved exhibition because I felt proud of all of my pieces. Everybody liked my art piece and I felt like it represented my community member and historical figure. I was able to have in-depth conversations with other parents about my art.

—Hannah Hoang

I felt so good about this project! I was in my element considering we could do music. People were blown away by our song and that meant a lot to me. We got so many compliments that night. My grandmother said that she felt honored by our performance and was so proud of me.

—Lizzie Mooney

To learn more visit Isla’s and Cady’s digital portfolios at
Students created digital stories about a defining moment, a message, or a lesson learned from their own lives or the life of someone they know. Through writing, storyboarding, and multiple cycles of critique, students developed their stories and hopefully discovered something new about themselves and others in the process. They collected images, recorded voice-overs and used digital movie-making software to produce their final films, which they shared on their digital portfolios and presented on the big screen for peers and parents at a Digital Storytelling Exhibition Night.

Teacher Reflection
Digital Storytelling has opened up doors to understanding my students better. I thought it would be all about them, their learning, their experience, but I see now that with storytelling, it’s a collective experience. Storytelling is a personal journey and it provides a lens through which to examine how we see ourselves, others, and our world.

The students’ stories had an effect on both the viewers and producers. Many perspectives on the same subject can emerge in these personal accounts of defining life moments. We become witness to one interpretation of a very complex shared story. In the end, these stories are gateways into seeing our students, and learning from and about one another. As we share our stories, we built a community where students are heard and where they listen.

Student Reflection
Over the time we have been studying how to make digital stories, I have learned a lot about myself. The purpose was to really learn who you are and what your milestones or defining moments are. I also learned how to write scripts, use pictures, record my voice, edit, and be a good producer/co-producer. I’m now more comfortable using iMovie and other applications like it. I learned to use the power of digital storytelling to get my stories out there. Now I have the ability to show who I am, and express my stories in a whole new way that I never knew existed.

— Rebecca Markowitz, 6th Grade

To learn more visit Zoë’s digital portfolio at [http://dp.hightechhigh.org/~zrandall](http://dp.hightechhigh.org/~zrandall)
Chemistry and Conflict
Peter Jana, Humanities, High Tech High
Daisy Sharrock, Chemistry, High Tech High

The inspiration for this project came from a “thing biography” display at a Los Angeles bookstore, exploring topics ranging from salt to political ideologies, written from various disciplinary perspectives. We asked ourselves, Why not have students create ‘thing biographies’ that integrate chemistry and history, where they study elements and chemical compounds that played a role in historical and contemporary conflicts, and produce a beautiful book?

Working in pairs, students explored connections between a historical and a modern conflict. They explored a variety of topics, from the use of uranium during the Cold War arms race to the exploitation of coltan in the Congo today. They created copper etchings, conducted library research, wrote lengthy history chapters, and developed their own mini-projects related to a contemporary conflict. They also engaged in an extensive critique and editing process and had to satisfy a student-run editorial board before teachers even read their drafts. The book was displayed at exhibition night and is available at: http://www.blurb.com/bookstore/detail/1841770

Teachers’ Reflection
Having an early deadline allowed us to produce physical copies of the book in time for exhibition night, and gave us a couple of weeks to conduct oral exams that served as preparation for their exhibition night presentations.

Student Reflection
My favorite part in the process of creating our final product was the editing phase. While some would find the task tedious and annoying, I found it interesting to read about the topics that the other students were exploring, watching the information in each paper grow and grow after every draft.

The amount of knowledge required to write an informed, detailed book chapter was immense. Absolute mastery of the content was necessary to meet the gold standard and get your work published. The challenge to draw connections and find lessons from a historical conflict and apply them to solve a modern day conflict was difficult, but it was satisfying to know that your solution was valid and rooted in well-researched facts.

—Wade Bruffey, 10th grade

To learn more visit Peter’s and Daisy’s digital portfolios at http://dp.hightechhigh.org/~pjana/ & http://dp.hightechhigh.org/~dsharrock/
In this collaboration between the San Diego Unified School District’s Indian Education Program, American Indian members of the High Tech High community, and our Humanities and Multimedia classes, students explored the culture, history and current issues facing American Indian communities through literature, guest and teacher lectures, documentaries, and their own independent research. Through interviews and filming for our documentary, we bore witness to the San Diego inter-tribal community’s efforts to pass their traditional cultures and identities on to their youth. The documentary won an award at the San Diego Indie fest.

Teacher Reflections
Aware of the tendency of non-Natives to appropriate, skew, or erase the lives and cultures of indigenous people, we challenged ourselves to center the voices and narratives of the Soaring Eagles members, a Native American cultural youth group active in San Diego. One of the highlights of this project was the warm appreciation that we received from many of the Native American people that attended and participated in the exhibition. One community member and HTHMA grandmother wrote “thank you for ‘seeing’ us, and helping others hear our voices.”

—Sarah Rodriguez

To enable 50 students to contribute meaningfully to a single film, we broke students into crews, each with a specific assignment (e.g., an individual to interview, a performance to film, or taping B-roll at a Soaring Eagles meeting). A member from each crew then edited their footage into a master timeline, which the class watched and critiqued, until it was revised to its final finished state.

—Chris Rosskopf

Students’ Reflection
There’s an enormous difference between learning from books, documentaries, and the internet, and actually going in and being able to ask questions to a genuine Native-American. At Soaring Eagles, we met and interviewed many diverse Natives, all with their unique stories.

—Ahsaki Hawkins and Taylor Cook, 11th grade

To learn more visit Sarah’s and Chris’ digital portfolios at http://dp.hightechhigh.org/~srodriguez/ & http://dp.hightechhigh.org/~crosskopf/
Life: The Book
Brandon Davidson, Biology, High Tech High Media Arts
Randy Scherer, Humanities, High Tech High Media Arts

In this project a humanities class and a biology class collaborated to explore the growing role of genetic engineering in American life. From conception through birth, childhood through adulthood, students examined the social, economic, political and historical implications genetic engineering has had and may have on American life. They also explored how these ideas connected to broader issues relating to healthcare in American society.

In Biology, students studied genetics, DNA, and biotechnology, using the same methods to produce and isolate proteins as those used by biotechnology companies to develop protein-based biopharmaceutical drugs. In Humanities, each student wrote an article about the impact of genetic science on a specific stage of human life. Articles ranged from the science and economics of cord-blood banking to personally relevant cases of genetically inherited diseases. In their exhibition of learning, students demonstrated the genetic engineering techniques used to create biopharmaceutical drugs, discussed their articles with the public, and sold the first copies of Life: The Book.

Teacher Reflection
The lab series was possible through a collaborative program with Miramar College and Amgen. They helped to transform the classroom into a biotechnology lab. As a teacher, I value daily, rigorous lab work. The process makes abstract concepts crystallize for students, and helps our exploration of complex scientific ideas feel authentic.

—Brandon Davidson

Student Reflection
My article was about HPV vaccines and why they are an issue in society today. I presented the perspectives of senators, doctors, parents, and even young women who had the vaccination. I interviewed associates from Planned Parenthood and got their opinion on the controversy. This project taught me more about something that is affecting young girls like myself, so the article was not only informative and helpful for the readers, but also for myself.

—Siarah Loyd, 11th grade

To learn more visit Randy’s and Brandon’s digital portfolios at http://dp.hightechhigh.org/~rscherer/ & http://dp.hightechhigh.org/~bdavidson/
What would second graders invent to make the world a better place? A trash machine that converts all the garbage on the planet into marshmallows. A flying car powered entirely by solar panels. A gizmo that translates animal speech to human talk, so that animals can tell us when they are sick. The “nice” machine, where people can stick one of their fingers in a hole and the machine will count how many times the person has been nice. For this project, students approached the engineering process through a creative lens. In science, they studied and created simple machines. In literature studies, they read Cloudy with a Chance of Meatballs and The BFG, which both involve creative inventions like machines that rain meatballs or that catch dreams. Inspired by these ideas and their own imaginations, they dreamt up their own machines to help our society. They then investigated different materials and collaborated with 9th grade students from High Tech High International to design and build models of their inventions.

Student Reflections
This project was kind of frustrating because you had to design it and build it. The teenagers were cool. They helped me find the materials and use the hot glue gun.
—Donnie, 2nd grade

Making our invention was fun. It was hard to design it and make it. The big kids were nice and they helped us a lot.
—Gigi, 2nd grade

The experience was really enlightening for me, I loved working with the students to help them bring their imaginations into reality.
—Heather, 9th grade

My partner wanted to make a bed that automatically woke you up by springing you from a horizontal sleeping position to an upright nearly standing position. She told me she didn't want her parents waking her up anymore so she invented this bed. I helped her put together the bed with cotton balls, bottle caps, popsicle sticks and other supplies. I liked her idea. Hopefully she will officially invent something like this when she gets older.
—Keana, 9th Grade

For more information, visit http://www.explorerelementary.org/