JANUARY 23, 2012 VOLUME 91, MINI-ISSUE #5

WELCOME BACK

Dear Cooper Community,

Happy New Year and I hope all of you had a restful winter break. Unfortunately, Cooper Union's financial situation did not change much in the past month. The Cooper Pioneer will keep you up to date with this issue along with other related stories. We will also be reporting on school events like art and architecture exhibits and great programs like Engineers as Teachers. We might even host special events and contests as well. Like last semester, we plan on releasing a mini-issue every week or two, along with the occasional big issue.

We could also always use more writers, editors, art designers, photographers, etc. on our staff. If you are interested, please e-mail cooperpioneer@gmail.com for more information. If you do not want to commit to being a staff member, you can always submit individual pieces as guest writers to our e-mail address and it will be considered for publication. We want your voices heard so feel free to send us your thoughts, concerns, and ideas.

Sincerely, Christopher Hong Editor-in-Chief

EasT

CHRISTOPHER HONG (EE '13)

What is EasT? EasT stands for Engineers as Teachers and it is a STEM (science, technology, engineering, and mathematics) program aimed at underpriviledged students in elementary and middle schools around New York City. In EasT, engineering students develop lesson plans that relate to science and/or engineering and each lesson ends with a design experiment. Each lesson was taught in a large room of the school, like a cafeteria, and students attended along with their families. These programs were publicized as "Family Science Nights" and many families attended these sessions. Each lesson started with about twenty to thirty minutes of scientific explanation and demos. Then one hour was spent on the design experiment. The experiment allowed for repeated testing and redesigning. After a brief reflection on the experiment, families were provided with dinner and were allowed to keep their experiments to continue enhancing their designs at home.

The non-profit organization, Iridescent, sponsored by the United States Navy, started this program in California and have been running this program with the University of South California (USC) for several years already in Los

HIRING UN-FREEZE???

CHRISTOPHER HONG (EE '13)

On November 1, 2011, President Jamshed Bharucha sent a memo to the entire Cooper community discussing his reinvention strategy to save Cooper from its financial crisis. One of the things that he wrote was: "I have suspended all hiring, excluding those that are absolutely critical to the reinvention strategy." This month, the Alumni Affairs Department just hired two new people: Joseph McDonald, director of Annual Fund, and Caitlin Tramel, director of Alumni Affairs.

Some faculty members are outraged by the fact that these two people were hired during a hiring freeze. But, are these the exceptions that President Bharucha is referring to? In addition to the hiring by the administration, faculty members claim that these positions are highly paid and during the financial crisis we are in, this move is not well received. Another thing that was brought up was the fact that Cooper hired an external job search company, Cavan Executive Search (in New York) to find these two new employees. How much money did they spend to search for these two new employees? official job posting):

Director of Alumni Affairs: The Director is responsible for the planning and implementation of program initiatives designed to increase alumni engagement. He/ she will provide executive support, and leadership and management of The Cooper Union Alumni Association and will, in collaboration with it, seek to meet the goals of the Executive Committee.

Associate Director, Annual Giving: The Associate Director, Annual Giving will manage and lead the Annual Fund Campaign with key volunteers and develop strategies to increase gifts and participation.

You can view the entire job postings on our website, pioneer.cooper.edu, for more details on the job responsibilities and qualifications of these two "exclusive" positions.

Are these positions really part of the exclusions of the hiring freeze? Are they "absolutely critical to the reinvention strategy"? Will they save Cooper Union from our downward spiral towards the void? What do you think? We would like to hear your responses. E-mail them to cooperpioneer@gmail.com. This is a continuing story and we will cover more in the next mini-issue.



The Pirate Ship Pendulum experiment - Marshmellow Relay - at PS.102 in Harlem, Manhattan.

Angeles. Iridescent expanded in Fall 2010 to New York City through the collaboration between Tara Chklovski, the founder and CEO of Iridescent, and Professor Toby Cumberbatch, an electrical engineering professor at Cooper Union.

In fall 2010, Professor Cumberbatch ran a three-credit independent study course for EasT and nine enthusiastic Cooper students signed up for the course, me included. We were divided into pairs and one group of three. Each group had to develop and teach two rounds, each consisting of four lessons and each round was taught at a different school throughout the city. These schools are in needy neighborhoods like Harlem and Crown Heights (Brooklyn).

As an independent study course, EasT still had lectures by Iridescent staff about teaching. In addition, some lecture time was devoted to practicing lessons. The topics ranged from physics of amusement parks to animal locomotion. I was partnered up with Hwa Young Jin, a current electrical engineering senior, and we developed lessons on the physics of amusement parks. We were under the impression that USC had already developed good lessons for this topic, but unfortunately, they were sub-Cooper standards so we started mostly from scratch.

We didn't really know where to start since this was our first time teaching elementary schools so I suggested aligning each lesson to our interests. I love games so, we decided to make each lesson's design experiment a game, which encouraged group interaction as well as friendly competition and sportsmanship. For our first round, we taught momentum through "Sumo Bumper Cars", centripetal forces through "Pirate Ship Ride - Pendulum Relays", friction through "Target Parachute Drop", and energy through "Roller Coaster Jump". Then for our second round, we decided to continue developing the physics of amusement parks unit and replaced the pirate ship experiment with a tea cup experiment to teach centripetal force and normal force. To make sure we weren't teaching inaccurate concepts to the kids, we consulted with Professor Alan Wolf for some physics (continued on back)

The job overviews for the two jobs are (taken from the

KenKen

MARCUS MICHELEN (CE '14)

KenKen is a Japanese paper puzzle by Tetsuya Miyamoto much like Sudoku, only it involves both math and logic. It roughly translates to "cleverness-cleverness." **Instructions:** Like Sudoku, each row and column must contain the numbers from 1 to 5. The number in the upper-left corner of the bolded shape made up of squares is the number you need to get by using the operation next to the numer. For example, the rectangle in the upper-right corner that has a "6+" in the upper right corner can be filled in with a 2, 3 or 3, 2. The single-box shape in the upper left-corner has no operation and will be filled with a 4.

The solution to holiday issue Ken-Ken is on the back.





Christopher Hong is assisting a student at P.S.12 in Crown Heights, Brooklyn. This was the first lesson - Parachute Drop.

EasT

(continued from front)

analogies and ideas.

On the day of the first lesson, Hwa and I dragged huge bags of supplies from Cooper to Harlem in upper Manhattan. It took a lot of effort to design the lessons and then we had to suffer through physical labor in buying the supplies and dragging them uptown. But, after teaching my first lesson, I felt the joy and pleasure of being a teacher for the first time and all of the hard work that I suffered through to develop the lesson plans was well worth it. The families all had smiles on their faces and they all had fun. I wanted to share with everyone the joys of engineering and science and the message seemed to have gotten through. The families continued to return throughout the unit.

We taught in Crown Heights, Brooklyn, for the second round and this time we had to drag supplies on the subway across boroughs. Imagine all of the odd looks Hwa and I got from people carrying huge bags of supplies and boxes of pipe insulators (for roller coasters). Despite all of the pain we went through, families appreciated our efforts and to me, that's all that matters.

I enjoyed EasT so much that semester that I decided to take it a second time in the spring. The requirements for the class changed a bit and I was an "odd one out" since I was the only student who decided to take this course again so I taught the lessons on my own this time. I had to teach four lessons at the New York Hall of Science to first graders, as part of a research initiative to see how effective EasT is. These first graders were from schools all over the city.



Hwa Young Jin assisting P.S.12 student with the Parachute Drop experiment.

This time, I decided to teach renewable energy. I taught energy transfer, wind energy, water energy, and solar energy. Like the previous semester, my lessons were mainly motivated and inspired by games. I had demos that were very Minute to Win It flavored like blowing a ping pong ball into a cup to demonstrate wind energy. The experiments for this unit were: building a Rube Goldberg machine, a sail car that can travel the furthest and fastest, a water wheel that can spin the fastest, and a solar oven that heats up the most.

One of the most memorable lessons was the solar energy lesson. Due to my fantastic luck, Mother Nature decided to make it rain so I had to do my lesson indoors. I had to go out and buy a bunch of heat lamps from Home Depot and dragged them to the museum. I also had to set them all up before the class. Since the class was at noon, families ate lunch first. When they started arriving, I was still scrambling, setting up all of the heat lamps to hang



from chairs. Then, there was a moment when I turned my back and one of the heat lamps slipped off the chair. It landed on a piece of black painted poster board for a heat absorption demo that is on top of a dry and highly flammable carpet. Smoke started to rise to the ceiling and the room started to smell. Luckily, one of the New York Hall of Science directors, David Wells, quickly picked up the lamp and it burned a hole through a black painted poster board and the museum carpet. Some children were excited about the "fire", but we just covered it up by saying that it was the pizza. I wonder if the hole is still there....

Anyway, I enjoyed this second semester of EasT as much as I did the first and I learned considerably from that course. Teaching is not as easy as it seems and it takes a lot of time to develop and prepare for lessons. It definitely made me appreciate all of my teachers and professors. In addition, teaching helped my presentation skills immensely and I am now able to comfortably speak in front of an audience. It took a lot of effort and time, but it was well worth it. It taught me a lot about myself and the community. Lastly, teaching is like engineering. We have to

Teaching is like engineering. We have to continuously test and redesign our lessons.

77

continuously test and redesign our lessons.

EasT is running again this semester (spring 2012). If you are interested, please contact Professor Toby Cumberbatch (toby@cooper.edu). This time around, there will be involvement from additional Cooper Union professors - including Professors Alan Wolf, Robert Uglesich, Ben Davis, and Melody Baglione. Along with Paige of Iridescent, all of the professors will assist in lesson development, demos, and experiments. If you don't want to take the course, there are still plenty of opportunities to help with the lessons. EasT has changed considerably over the last 15 months and this program is still evolving. There will be a meeting on Tuesday during club hours (12PM-2PM) in room 504.



A student demonstrating the water wheel that she built at the New York Hall of Science in Queens.

Holiday Issue KenKen Solution



| 3 | 4 | 6 | 2 | 1 | 5 | 7 |
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| 1 | 3 | 5 | 6 | 2 | 7 | 4 |
| 7 | 2 | 3 | 1 | 5 | 4 | 6 |
| 4 | 1 | 7 | 5 | 6 | 2 | 3 |

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