

The Annual SPS Pumpkin Drop  
California State University, Chico

Chapter Number: 0804

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Total Amount Received from SPS: \$423.00

Total Amount Expended from SPS: \$423.00

## **Summary of Award Activities**

The Annual SPS Pumpkin drop is a reenactment of Galileo Galilee's legendary Tower of Pisa Experiment. On Halloween, CSU Chico SPS members dressed as Galileo, Aristotle, Einstein and Newton explains the Law of Falling Bodies as other SPS members demonstrate the law by dropping pumpkins from the fifth floor of Butte Hall. With the most pumpkins dropped so far, the comedic and scientific infused event brought laughs and awe as the pumpkins smashed in the name of science. The historical progression of science was ultimately capped with a synchronization of dropping pumpkins to Tchaikovsky's 1812 Overture.

### **Statement of Activity**

The event takes place on the side of the CSU Chico's Butte Hall staircase. At the open end of the staircase on the fifth floor, there are about two dozen hallowed out pumpkins either empty, filled with water, feather, fire, and liquid nitrogen, all ready to be dropped by SPS members. At the bottom, there are other SPS members dressed as Galileo Galilee, Aristotle, Isaac Newton, and Albert Einstein prepare for the event by giving out and signing Scientist Trading Cards to the elementary school students in the front row. As the time of the event draws closer, floods of students, news reporters, and interested passer-byers begin to fill the lawns in front of Butte Hall. By the time of the event, there is well over 200 kids and adults awaiting the show to begin.

Some outcomes and effects were seen immediately by the flooding of questions about the theory by many kids. This project got the children to listen, think, and ask questions about science at their early ages. This was not only a signal of accomplishing our goal of community outreach to seed an interest in science, but was also a great feeling for all SPS members and collaborators. This project got kids, and adults to talk about science and see how the progression of a theory can happen over time, being adjusted as new evidence comes to light.

The target audience is anybody who is passing by, in order to have a spark of interest in physics. The main targets however are elementary school children in order to keep the flame of curiosity in science alive. Each year we have large crowds from schools and passer-byers and this was no exception, with over 200 people observing the event and roughly three quarters school children, the main audience impacted were the children.

Most of the activities we do at the CSU Chico SPS chapter is community outreach, with an emphasis on spreading interest in elementary and middle school children. This fit in because it mixes educational (theory development and progression) as well as what kids love in skits, things exploding or crashing.

As the event begins, so does the theory. Aristotle explains his thoughts on falling bodies, providing his supporting observations. As he does this, he "proves" his theory by claiming since pumpkins are of the earth layer, it shall always fall toward earth, and thus the pumpkin drops from above by his assistant, Igor. As other scientists such as Newton and Galileo take turn modifying the theory with scientific thought process and comedic relief, each having Igor drop pumpkins as experiments to help support their own theories. An example is a pumpkin of "fire

layer” should fall slower than a pumpkin filled of the earth layer, but does not, thus disproving Aristotle’s theory.

Each pumpkin is accompanied with the “scientist” counting down from ten with the help of the crowd to help build up the suspense. Each sound of the splattering pumpkin is preceded by the screech of the crowd, followed by cheering. The progression of the theory using falling pumpkins is eventually capped with the Law of Falling Bodies by Galileo Galilee, showing that all objects fall at the same rate (as shown with a large and small pumpkin), no matter the weight. This was entertainingly done by comparing the dropping of a pumpkin filled with feathers against a pumpkin which has not been hollowed out.

Einstein comes in to explain (very briefly) his theory of Special Relativity. Him and Igor demonstrate this by having a water filled pumpkin with a hole on its side drop from the top, which another water filled pumpkin with a hole on its side stays stationary on the ground.

At the end, to further show an example of special relativity, a synchronization of Tchaikovsky’s 1812 Overture is used for the final act of dropping pumpkins. When the song begins at the top of the stairs the first pumpkin is dropped, and when the pumpkin smashes at the bottom the song begins at the bottom for the crowd to hear. This way, every time the group at the top hears a cannon blast, the pumpkins crashing with the ground will coincide with the crowd hearing the cannon blast, displaying relativity at work for all to see.

### **Impact Assessment**

The Pumpkin Drop promotes an interest in physics by providing a live demonstration of The Rule of Falling Bodies in the spirit of Halloween. Throughout the script, the famous “scientists” explain their theories and reasoning as they amend to the previous theories to further improve it. In addition, the trading cards given out before the event has a famous scientist, as well as a description of how they contributed to science, specifically the Law of Falling Bodies. While we can’t give the students a homework assignment right after the event, we encourage their teachers to review with them what they learned or if they have any questions.

The goals were met first by handing out the trading cards. Impromptu style, the scientists also talked with the children about some other contributions to science they did, such as Newton and the Laws of Forces. In addition to this, the demonstration itself proved to be captivating for the audience, even the younger crowds. This was seen afterward when there were questions by the children and even some college students about the law, and some special relativity.

The assessment plan we had was to have some of the teachers, if possible, to review with their respective classes what they learned for the day and if they had any questions. This would have to be on a faith based honor system since we cannot assign the student ourselves. We have received feedback however, many in terms of thank you letters from classes and teachers. For many, such event has stuck with them for years, with some college students remembering their elementary school going to see the pumpkin drop.

### **Key Metrics and Reflection**

Who was the target audience of your project?	The target audience are specifically young school children.
How many attendees/participants were directly impacted by your project? Please describe them (for example “50 third grade students” or “25 families”).	It can be estimated over 100 of the school children attending can have been impacted. In addition, some college students may have been impacted by being introduced to a science.
How many students from your SPS chapter were involved in the activity, and in what capacity?	We had about six students helping to through the pumpkins, four actors, and about eight to set and clean up, with two coordinators.
Was the amount of money you received from SPS sufficient to carry out the activities outlined in your proposal? Could you have used additional funding? If yes, how much would you have liked and how would the additional funding have augmented your activity?	The money was extremely helpful, and helps to keep this annual event running smoothly. At the moment, the amount asked for has been enough to keep it running, and the whole CSU Chico chapter is extremely thankful.
Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.	This was the 28 <sup>th</sup> annual pumpkin drop, and we are planning to continue the SPS chapter tradition for as long as possible.
What new relationships did you build through this project?	The relationship between the school children and science is the best relationship built.
If you were to do your project again, what would you do differently?	One main concern was the acting, after all, some of us have never spoken in a crowd that large. But this is not an immediate concern, just something which may need more practice next tiem around.

### **Press Coverage**

KRCR News - <http://www.krcrtv.com/news/local/annual-pumpkin-drop-to-teach-kids-gravity/36168558>

Action News Now - <http://www.actionnewsnow.com/videos/csuc-pumpkin-drop/>

### Expenditures

Most of the expenses are a yearly necessity to continue the event, such as the water balloons, the pumpkins, and the audio system rental. Others are needed because the products we have are very outdated, such as the dummy (for the falling “*BODY*” joke) and the costumes.

Item	Cost
Renting an Audio System	\$70
Two Dozen Pumpkins	\$132
Pumpkin Carving Kit	\$5
Bag of small feather boa	\$3
Bag of Water Balloons	\$1
Costumes	\$120
Dummy (fake body)	\$30
Lighter Fluid	\$2
Fire Extinguisher	\$25
Pair of Two Way Radios	\$30
Caution Tape Roll	\$5
<b>Total of Expenses</b>	<b>\$423</b>

## Pictures



The crowd trickles in a half hour before the event



Anticipation grows in the adults almost as much as the children, and onlookers can be seen beginning to gather



Dr. Eric Ayars, chapter advisor, talks with children about science before the event





Physics student Adam McKinley, Aristotle, is shown supporting his theory of falling bodies



Two pumpkins splatter as the helper, Igor, tests if a large pumpkin falls faster than a small one



Physics student Christopher Ard, Einstein, talks to the crowd about his theory of special relativity



Elementary student describes what she learned, and why she loves science