



# Birchwood Clipboard

## The Lion's Roar

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### Special Program Highlights

#### **Fine Arts Night**

The Art, Music, Drama, and Reading classes gave a spectacular show for the Fine Arts Night on November 9. Based on the theme "Playful Journeys of the Imagination" each of the 5th-8th grade classes brought poetry to life through dramatic choral speaking and choreography. The string and wind ensemble impressed the audience by the high quality of their performance. The choir displayed a new level of skill with a beautiful three-part harmony; the music class selections were delightful. Dazzling props for the performance were created by the art classes under the direction of Mrs. Nilsen and unique pieces crafted by each class were on display. We will be offering DVDs of the show — stay posted for more details.

#### **Visitors and Speakers**

In honor of Veterans' Day, Specialist **Jesse McNaughton** ('87) came to speak to the students regarding his service in the U.S. Army. He was a member of the 3rd Infantry Division out of Fort Stewart, Georgia. and served two tours in Iraq for a total of 20 months.

Retired U.S. Army Major and Vietnam veteran **Andre Le Blanc** visited Señora Rodriguez and the kindergarten class November 13 to speak about Veterans Day. He explained, "he was most proud of being awarded with the Purple Heart medal and earning his Master Parachutist Badge. He demonstrated and explained the jump commands called out by the jump master prior to paratroopers leaving the aircraft. The children enjoyed, pretending for the moment, that they were U.S. Army paratroopers.

#### **A Word from our Director of Advancement ...**

November and the early part of December have been very busy! We spent several days learning a new database system that allows us to dramatically improve our communication and fundraising functions. Birchwood's Board Development Committee also met and is pleased to announce that in honor of Birchwood School's 30th anniversary in 2013, the Board will host a celebration gala in spring 2014. We are already looking for committee members to help with the event. Please contact me if you, or someone you know, is interested.

On December 1, Birchwood hosted the 8th annual International Festival & Auction (IFA). Thank you to all who attended! As our single-largest fundraiser of the year, the IFA is a school tradition that provides vital support for scholarships, academic teams and professional development for teachers. Numbers are still very early, but it looks like the IFA was a great success, grossing more than \$25,000.

Once again, I want to remind you that the calendar year is almost over, and, if you want to support Birchwood, do so before December 31 to enjoy the tax benefits this year. As always, feel free to contact Director of Advancement, Michelle Ehlert at 216-251-2321 or [mehlert@birchwoodschool.org](mailto:mehlert@birchwoodschool.org) with any questions or for more information.

#### **Awards Preview**

On November 2, the 2nd through 4th graders participated in the national Noetic Learning Math Contest. This contest for students in grades 2 through 6, is held twice a year. This year, over 7,000 2nd through 4th grade students from across the country participated. Two levels of achievement are recognized: National Honor Roll (75% of questions answered correctly) and National Honorable Mention (50% of questions answered correctly). Birchwood School's second through fourth grade math students all took part in the contest with outstanding results. **Arman B** received a perfect score, **Praveen K**, **Peter P**, and **Josh S** all scored a 19 out of 20. Fourth grade student, **Zuha J**, was one of only 41 students nationwide to score 90% or better. Overall 32% Birchwood students ranked among those receiving the National Honor Roll Award and 78% received the Honorable Mention Award.

#### **Thanksgiving Food Drive**

In the spirit of giving thanks and sharing what we have with others, the school participated in a community service project with the Bountiful Basement, a food pantry located on the Blessed Trinity Church campus. The first and second graders coordinated a schoolwide Thanksgiving food drive in November. They decorated collections boxes, counted the donations and delivered the food to the pantry. They are excited to announce that 623 items were donated. The volunteers at the Bountiful Basement were very thankful for the donations and the children learned a little more about caring for those in need in our community.



# **Class News**

## **Preschool**

Over the past few weeks we have explored the delights of the fall season. Some of our experiences included collecting different color leaves in our playground, raking leaves into piles to jump in, and discovering what the inside of a pumpkin looks, smells and feels like. We have also spent a morning making apple crisp. The preschool children had the chance to measure cinnamon, oats, sugar, and butter onto the apples. The final result was a delicious afternoon snack enjoyed by all.

The preschoolers were each asked how they would bake a turkey. Each of the 17 responses were delightful. Here is an example of one of the recipes collected:

### **K.G. 's Turkey Recipe**

#### **Ingredients:**

turkey	salt	grapes
ginger bread	garlic	leaves
lemonade		

#### **Method:**

- 1) Put salt on the turkey.
- 2) Put fruits on the turkey – grapes
- 3) Put ginger bread inside.
- 4) Put garlic inside.
- 5) Put leaves on it,
- 6) Put lemonade on top.
- 7) Bake it on the rack.
- 8) Bake at 1 degree for 2 hours.

Many of the preschoolers are so excited to learn how to read. The older preschoolers are in the process of becoming familiar with Dolch's pre-primer sight word list. They are becoming familiar with these sight words by playing literacy games.

Geometric shapes have been a source of fascination for the Birchwood Preschool class. The children have been pointing out various geometric shapes while working with blocks, collecting pretend food in our house center such as cookies, sushi, burritos, bananas, apples, etc. Outside the children have self initiated an activity by using the huge birch sticks to make squares, rectangles, and hexagons. The preschool children are developing a desire to learn and explore their environment with the creative freedom to perhaps someday become the future masters of problem solving at Birchwood School.

## **Kindergarten**

This month the kindergartners finished their study of Native Americans by going on their first field trip to the Cleveland Museum of Natural History. The students learned about the houses, tools, clothes and more of different Native American tribes. They also learned about the importance of the three sisters (corn, squash and beans). After the program, the class was able to explore the museum in small groups. Everyone had a wonderful time. Special thanks to Mrs. Day, Ms. Haydar, Mrs. Lutz, Dr. Raina, Dr. Vaziri, and Mrs. Yang for chaperoning.

In math, the students have been working hard in their Singapore math books at school and Wood Math books at home. They have also been improving their mental math skills by using flashcards and playing math bingo. The concept of time was introduced and the students will be learning more about this in December.

Everyone continues to work hard in reading. The students add new sight words to their vocabulary each week. They complete activities that go along with a humorous sight word book and get to take home their own mini-books at the end of the week. The advanced reading group just finished a Magic Tree House book and made a passport to go along with the story. The students in the other reading groups read a short story each day. We have a class of enthusiastic readers.

In science, the students are studying animals. They began the unit by discussing living vs. nonliving things. Students then learned about different animal habitats and some adaptations animals have to survive in different environments. In our study of animal camouflage, students created a polar bear and frog puppet and practiced camouflaging each somewhere in the room. Everyone is enjoying learning all about animals!

November was a busy month for the kindergarten artists. Students created owls made out of shapes for a bulletin board display. They also made totem poles to go along with their study of Native Americans and turkeys for Thanksgiving. The class really enjoyed using chalk to draw pictures on black paper.

## **1st Math**

After learning how to tell time on a clock to the nearest five minutes, the first graders learned how to use a calendar. They learned the important features of calendars, how they are organized, and how they are used to plan events. They practiced naming and sequencing the days of the week and months of the year. They also learned to find elapsed time on a calendar.



### **1st Language Arts**

The first graders learned to write poetry this month. They listened to samples of different kinds of poetry and wrote rhyming poems, acrostic poems and descriptive poems. They wrote poems at school, poems at home, assigned and unassigned. They just kept writing and writing. It was exciting to watch their creative enthusiasm blossom. The students chose their favorite poem to enter in Spider magazine's November poetry contest. The contest theme was holiday traditions.

### **1st Spanish**

The first graders are very good singers. They continue learning songs and the most popular is Colores Colores where they sing about colors and professions. I am very proud of first grade for all their achievements in Spanish class.

### **1st-2nd Reading**

The first and second graders are currently engaged in a literature unit on animal fiction. During our study of this genre, we are reading classic animal fiction picture books such as Cecily G. and the Nine Monkeys (the precursor to *Curious George*) and *Corduroy*. They are learning interesting facts about the creations of these books and enjoying doing special projects related to them. For example, after reading *Corduroy* we created pictures with real buttons depicting where Corduroy's missing button might be.

### **1st-2nd Computer**

The first and second graders have been working on creating books in Microworlds Jr. They have started with multiple pages and then added in a few sentences and characters that give action to the page. They are very proud of their books and have had time to share them with each other.

### **1st-2nd Science**

After a great kick-off to space exploration during the NASA field trip at Lake Ridge Academy in October, the young astronomers at Birchwood have enjoyed learning more about the universe. They are able to list the following in order from biggest to smallest: universe, galaxy, solar system, star, and planet. They've discovered that not all stars are created equal — stars come in different sizes and colors, and their colors tell us how hot they are. Students have heard stories about various constellations and can connect the dots to form a few of them. They've learned how to find Polaris, the North Star, once they've located the Big Dipper in the sky. Plus, they've learned plenty of amazing facts about the star most dear to us all — the sun. Finally, November wrapped up with a mission to the moon.

Recently, the weekly second grade class, science applications and explorations, has led us to the computer lab where students have had the chance to try out some of the numerous websites dedicated to the topic of space.

### **1st-2nd Social Studies**

Throughout the year the students are using an hour of the early dismissal days to complete service projects that benefit our school, city, country, and world. In November, the students learned about Veteran's Day and wrote thank you letters to veterans. The letters were sent to a nearby Veterans of Foreign Wars (VFW) post in Cleveland.

### **2nd, 3rd and 4th Math**

On November 2, the second through fourth graders participated in the national Noetic Learning Math Contest. This contest, designed for students in grades 2 through 6, is held twice a year. This year over 7,000 second through fourth graders from across the country participated. Two levels of achievement are recognized: National Honor Roll and National Honorable Mention. Overall, students from Birchwood did very well. The grade level standards for recognition as well as class results are listed below.

#### **Second Grade: Total 1,647 participants nationwide**

Qualifying Scores: National Honor Roll — 75% or more of questions correct (15/20)

Honorable Mention — 50% correct (10/20)

Results

Honor Roll: (nationally) 12.2% of participants —

**Birchwood: 42.8% of the class**

Honorable Mention: (nationally) 52.2% of participants —

**Birchwood: 78.6% of the class**

Only .3% of all of the second graders, nationally, who took the contest achieved a perfect score. That's five students, nationwide. At Birchwood, **Arman B** proved himself to be among the best of the best, scoring a perfect 20 out of 20. A full list of students who were recognized for their achievement can be found at [www.noetic-learning.com](http://www.noetic-learning.com).

#### **Third Grade: Total 3,055 participants nationwide**

Qualifying Scores: National Honor Roll — 85% or better (17/20)

Honorable Mention — 60% or better (12/20)

Results:

Honor Roll: (Nationally) 13.1% of participants —

**Birchwood: 38.4% of the class**

Honorable Mention: (Nationally) 54.2% of participants —

**Birchwood: 92.3% of the class**

Only 3.8% of the participants nationwide earned 95% or better on the contest. Nationwide, that's 92 out of over 3,000 students. At Birchwood, three of the third graders tied for the title of team winner. Congratulations to **Praveen K**, **Peter P**, and **Josh S** who all scored 19 out of 20 (95%) on the contest. A full list of students who were recognized for their achievement can be found at [www.noetic-learning.com](http://www.noetic-learning.com).



### **Fourth Grade: Total 2,636 participants nationwide**

Qualifying Scores: National Honor Roll — 80% or better (16/20)  
Honorable Mention — 50% or better (10/20)

Results:

Honor Roll: 9.9% of participants —

**Birchwood: 15.8% of the class**

Honorable Mention: 59.2% of participants —

**Birchwood: 63.1% of the class**

**Zuha J** was one of only 41 students nationwide (of over 2,600 participants) to score 90% or better on the contest. Congratulations to **Zuha** who earned the title of Fourth Grade Team Winner for the fall contest with her score of 18/20. A full list of students who were recognized for their achievement can be found at [www.noetic-learning.com](http://www.noetic-learning.com).

### **2nd Language Arts**

This month the second graders wrote tall tales. Their stories featured larger-than-life characters and lots of exaggeration. Each student also wrote a poem about his/her favorite holiday tradition to enter in a *Spider* magazine contest. Students also had the opportunity to write in groups this month. Story starter sentences were located on papers around the room. Groups rotated to each paper and added to the story based on whatever previous groups wrote. The results were creative and hilarious.

### **2nd Spanish**

The second graders continued working on the subject: The house. They memorized words about appliances and furniture in the house. They had fun matching appliances in the wrong rooms. They were able to explain their selections in Spanish in front of the class. Good Job!

### **3rd Spanish**

The children learned how to tell time in Spanish. In order to have more challenges, we combined the time and the calendar. They worked on their own schedule during and after school and named activities they like or don't like to do. These children are very active in the class participation and make me very proud.

### **3rd-4th Computer**

The third and fourth grade students have been working on programming in Microworlds. They are creating programs to make great designs using multiple shapes. They are learning about nested procedures and loops that work together to give various effects. They have also learned about using variables in their program.

### **3rd Social Studies**

Throughout the month of November, the third graders worked on their first research project. They learned many different research and study skills throughout the process. After taking a few days to read about some monuments and memorials in Washington D.C., the third graders chose one to study in-depth. Students were allowed to work on the project individually or in groups. They were required to use a book, an encyclopedia article, and a website in their research. The students learned to take notes on several sheets of loose leaf, each with a different question at the top, to help them keep their information organized from the start. The students learned how to write a simplified bibliography to cite books, encyclopedias and websites. The third graders then had to study their model or monument and make a representation of it out of clay, sugar cubes, styrofoam, etc. The final step was to write their oral report on note cards, practice it, and present their report and monument to the class. They all worked hard on these projects and the final products were impressive.

### **3rd-4th Reading**

Both the third and fourth graders are working on poems for a Storyworks magazine contest. The students are asked to write a poem that includes at least three homophones. They have been working hard to perfect these poems (which require a lot of creativity and thoughtfulness) and will send them into the contest in the beginning of December. Meanwhile, the third graders have been traveling to all sorts of interesting places around the world during their World Historical Fiction unit. Each student is required to carry a "passport" where they fill in the places they journey to in their reading. They have also been marking these places on a map. As a class they are reading *The Family Under the Bridge*. The fourth graders have been journeying through their imaginations in their Fantasy unit. They are reading *The Cricket in Times Square* as a class. As they read they are keeping track of interesting and tricky words on post-its to work on comprehension and aid in discussions. There are many exciting things happening in the month of December in reading. The third graders will begin an in-residency dance program while the fourth graders will begin an in-residency drama program (more information to come). Both the third and fourth graders will also have their first Junior Great Books discussion and will begin their preparation for the poetry show.

### **3rd-4th Science**

Second quarter's science classes are all about space. Students began by studying our home planet and our closest neighbor, the moon. They took a test on the information in order to build their study habits; this time they studied from a study guide rather than flash cards as they did earlier this year. Some of the highlights in class thus far: making a model Earth out of clay and using a toothpick to represent the axis, acting out lunar and solar eclipses, the moon phases, and "crater" formation at "moon stations," researching a star, and learning to use a star finder. The young astronomers are excited to explore more of our solar system and beyond in the coming months.



### **3rd-5th Language Arts**

In between learning about different ways to begin stories and modeling the work of published authors, the third and fourth grade students wrote letters of thanks to our veterans, ranging from those currently in the service to several survivors of World War II. They enthusiastically embraced this project, with many students volunteering to write not just one letter to brighten a veteran's day, but as many as eight or nine. I am proud of all of them. Many veterans have commented on how much the children's letters touched their hearts. The fifth graders have begun the arduous process of composing their essays for the Letters About Literature contest. Each one needs to reflect on the way a book has touched his or her life. This is a demanding task, requiring much thought and reflection as students seek to make a connection to their lives and then to go even deeper to explain the answer to the question, "So what?"

### **4th Spanish**

The students worked with the verb Conocer to know. They answer verbal and written questions related to this verb. They like when I read short stories in Spanish. This activity is very important to develop their listening and comprehension. They have demonstrated an interest in learning the language. They like to have conversations with me related to the subject matter of the class.

### **4th Social Studies**

The fourth graders worked on their first research project of the year. They began by writing a letter to a national park of their choice requesting information and pictures. They then took notes on their park that answered questions such as; "What is the terrain and climate of my national park?" and "What are the unique features that every tourist should see when visiting my national park?" The fourth graders were required to use the pamphlets and newspaper articles they received in the mail for their research along with at least one book, an encyclopedia article, and a website. They practiced making a simplified bibliography to cite all of their sources. They then had to choose how they wanted to visually present their park to the class (diorama, poster, pamphlet, etc.) and write a short oral presentation incorporating their visual aid into their talk.

### **5th Science**

As the 5th grade class completed their unit of waves and light it was amazing to see the results. They learned one method of how to attack a textbook by doing brief outlines and then using the outlines to write paragraphs. Although it is a higher thinking skill usually taught to older children, they were able to learn it. The proof was that they were able to show their learning by webbing their information; many used three or four pages to show what they remembered. (Of course we used demonstrations, labs and videos during the time, too.) Currently, they are studying sound and learning how to do the pieces of their science fair inquiry.

### **5th Reading**

The class has begun a unit on Betsy Byars; the class book is *A Blossom Promise*. Byars uses a sophisticated plot device to unveil the story through multiple characters and points of view, as the reader works to weave together all the story threads to make a cohesive whole. As we read, students will create a story map to show concretely when and how all the characters are joined together in the main story problem. Individually, students are additionally reading one or more Byars' titles and completing a plot worksheet that investigates cause and effect.

### **5th-8th Math**

**Math Olympiads Contest #1** (Five contests of five problems, administered once per month)

Gold Awards (5/5) **Vinny K, Dhweeja D, Anika R, Avi B, Kevin S, Cameron K, Michael H, Farah S, Maya D, Tejal P, Layla N, Annessa W, Channin M**

Silver Awards (4/5) **Prathna K, Ammar L, William L, Mihir S, Megan S, Chris H**

Bronze Awards (3/5) **Pheby L, Anthony C, Rami M, Jad, Jane N, Steven S, Alia B**

**Continental Math League Contest #1** (Five contests of six problems, administered once per month)

Gold Awards (6/6) **Vinny K, Dhweeja D, Prathna K, Pheby L, Michael T, Ammar L, John H, William L, Kevin S, Cameron K, Mihir S, Farah S, Tejal P**

Silver Awards (5/6) **Anthony C, Anika R, Michael H**

Bronze Awards (4/6) **Grace C, Maryum A, Maya D, Julia F, Jad K, Avi B, Jane N, Channin M**

### **5th-6th Computer**

The fifth and sixth grade classes have been reviewing programming skills in Microworlds. They are learning to program using procedures, loops, and variables. We are learning to make shapes based upon geometry and setting up variables. These skills are more advanced and require thinking and logic skills. The students have had lots of fun making great designs.

### **5th-6th Computer - Logo Programming**

The logo programming class will begin November 28. In this class students will discover and learn about some advanced aspects of programming. They will learn about writing programmings, using variables, loops, and triggers. This class will be once a week on Wednesday afternoons for students in the fifth and sixth grades.

### **6th Language Arts**

After students took stock of the books they read recently, they chose one to reread for Letters about Literature, a competition where students write to the the author explaining how a book impacted them in some way. It is already a challenge to be able to identify specific ways a character or plot gives rise to new perspectives, but to be able to clearly and coherently articulate it all in an essay is what the students will be endeavoring to accomplish.



### **6th Reading**

A recurring theme in 6<sup>th</sup> grade reading is world historical fiction. The class has begun reading Lois Lowry's *A Door in the Wall*, which is from the medieval time period during the reign of the English King Edward III. Students will be enriched through nonfiction reading and online resources to gain a broad knowledge base of both vocabulary and life in that time period. They will learn about the feudal system, the social hierarchy, monastic and castle living, entertainment, and town life. The story also has a meaningful theme of overcoming obstacles in the face of adversity, which the class will discuss and reflect upon.

### **6th Science**

The 6<sup>th</sup> grade students are studying the basics of ecology. They have chosen their own ecosystem, and have produced brochures, making use of the vocabulary from the text. In preparation for science fair they outlined parts of the text and then wrote a paper. Last year most of them learned how to take notes in an outline style for science fair and we will build on that foundation this year. So far the students have chosen a science fair question and begun to read about the topic.

### **7th Science**

The 7<sup>th</sup> graders studied Mars (rovers, rocket principles, settlements, and characteristics of the planet) last month. They created a Mars website to display their information and many of experiments about force and motion followed. Later after their study they will apply the principles to launch bottle rockets.

### **7th Reading**

Each student chose an historical diary written by a real person in history. Examples included *The Diary of Anne Frank*, *The Diary of an Early American Boy*, Fanny Kelly's diary of her Captivity by the Sioux Indians, and *The Diary of an Edwardian Lady*. After preparing a written evaluation of their diary's historical setting, content, value to historians, and impact on us today — students held a panel discussion on the value of this type of nonfiction primary source. This unit in reading class is a support to current work being done in social studies class in preparation for the in-depth History Day research projects.

### **7th and 8th Spanish**

Johann Wolfgang von Goethe said, "He who knows no foreign language knows nothing of his own." We can say that by studying Spanish, you will gain a better understanding of English. Spanish is a "Romance" language, and its base is Latin. Many English words are also of Latin origin, so when you learn vocabulary in Spanish, you will simultaneously be expanding your English vocabulary. Here at Birchwood we motivate our students to take Spanish and Latin so when they go to high school they can skip two years of Spanish. This is our goal and we are ready to achieve it.

### **8th Science**

The 8<sup>th</sup> grade students will finish the semester with a study of genetics. They have enjoyed and learned many of the principles of alleles and traits from *Spongebob Genetics*. Many of their activities, creating siblings, looking at the dominant traits in themselves, drama have helped them grasp the principles of genetic inheritance. They have also looked at genetics in human inheritance, epigenetics, and how different mutations occur.

### **7th-8th Latin I**

The 7<sup>th</sup> graders have begun their study of ancient Greek, a language which gave many words to Latin and hence to English. They have learned the alphabet and practiced their reading skills on Greek cognates, words that are so similar to English words that students can easily recognize them. Their Greek vocabulary is starting to grow. The 8<sup>th</sup> graders have concentrated on a number of irregular Latin verbs that are very common, worked on noun-adjective agreement, and revisited their Greek from last year.

### **7th-8th Social Studies**

The 7<sup>th</sup> and 8<sup>th</sup> graders are off and running with a new year of National History Day projects. The broad theme this year is Turning Points in History: People, Ideas, Events. Under this broad theme, students have chosen topics that interested them and have begun the long-term research process. Although a few students haven't quite picked their competition category (paper, website, documentary, exhibit, performance), all have begun searching out primary and secondary sources for their research. This nationwide competition provides a solid framework to teach the students so many different skills, such as how to do in-depth research, how to apply critical thinking skills, effective ways to present research findings, and time management skills.

Each grade level has an interesting array of topics. In the 7<sup>th</sup> grade, **Jack B**, **Amir I**, and **William L** have teamed up to research the Wright brothers. **Maryum A** will do an individual website on the Triangle Shirtwaist Factory fire. Also doing a website is **Anika R** who is researching the Influenza Pandemic of 1918. **Grace C**, looking to write a historical paper, is researching the Challenger explosion. **Caroline V** is researching the Manhattan Project which created the atom bomb. She is hoping to do a documentary.



### **7th-8th Social Studies**

In the 8th grade, a number of the students have chosen military topics focusing on WWII. **John H** and **Ammar L** have teamed up to research the battle of Midway, a key turning point in the Pacific. **Adam I** and **Michael T** are researching the Battle of Britain. Both of these groups will develop a website. **Vinny K** is researching the code breaking by the Allies of Germany's Enigma machine. Two students are planning on doing a documentary: **Anthony C** on the Battle of Stalingrad, the first defeat for Germany on the Eastern Front and **Anna H** on the WAVES (Women Accepted for Volunteer Emergency Service). Three students are currently planning on writing historical papers: **Maya F** on the Underground Railroad in Ohio, **Prathna K** on the Triangle Shirtwaist Factory fire, and **Haley Y** on the polio vaccine. **Dhweeja D** will construct a website on the Camp David Accords, **Pheby L** will develop a documentary on the Pure Food and Drug Act of 1901, and **Megan P** will write a performance on the San Francisco earthquake of 1906.

Each of the respective classes will be traveling in December to the Cleveland Public Library downtown to further their research. Cleveland Public Library is considered the best research library between New York and Chicago and the students will become acquainted with many of the excellent resources there. The students will also be searching out people they might interview who were either participants in their topic or are experts in some way regarding the topic. There's a lot of good history to be discovered ahead.

### **Specials/Awards/Contests:**

Congratulations and good luck to **Farah S** She was one of two students who entered the Cleveland Section of the American Chemical Society's poster competition. She created a poem about nanotechnology and illustrated it. Her poster was chosen to advance to the national round of competition.

Birchwood School participated in the 20th Annual Young Astronaut Day at the NASA John H. Glenn Research Center on Saturday, November 3. The all day competition, divided into two 10 to 12 student teams according to age groups, is designed to stimulate an interest in engineering and aeronautics, as well as hone teamwork skills. The Pilot Team, consisting of **Abigail M, Avi B, Chris H, Farah S, Julia F, Megan S, Nikhita K, Olivia S,** and **Rae R.**

They took took a ribbon in each of the four events: Parachute Challenge, in which students designed a parachute that was able to create the most drag in a wind tunnel test (1st place). In Don't Lose Your Marbles the goal was to keep all the marbles in a small dish. The problem the students solved was how to arrange various materials, such as marshmallows and balloons that would expand to raise the dish to the highest height without causing any marbles to fall — all within a vacuum chamber (1st place). The third challenge simulated what it would be like to work in space. In In-Space Repair students wore bulky gloves and used long tongs to look for a circuit board with a faulty light bulb, remove it, replace the bulb, and return it to its proper position (2nd place). The last event, Small Dangerous Rocket Ships, challenged students to design a "stomp" rocket that would stay in the air for the longest time (3rd place).

The Commanders, **Amir I, Jack B, Grace C,** and **Maryum A** were joined by two other groups of Young Astronauts to form one team. Their four challenges were more advanced because they competed against 7th to 12th grade students. Although they did not win any events, they should be commended for their positive Birchwood spirit and their exceptional coordination with the students from other schools.



## CREATIVITY

### Entropy, Creativity and Choice

Before examining what we need to do in order to educate our children for creativity, I need to offer an addendum to last month's discussion on entropy and creativity. I cite the work on creative production from Joseph Renzulli and David Yun Dai, pre-eminent scholars and researchers in creativity. If you will recall, entropy, in its subtle form, offers us excuses to avoid those problems, opportunities and challenges that, if addressed, might lead to meaningful growth, development, creativity, and innovation.

According to Renzulli and Dai, any creativity occurs at "the edge of chaos," "a juncture between the known and the unknown, the old and the new, or at a marginal state between two systems of thoughts, cultures or artistic expressions." The authors explain that "most people settle down with a version of reality they have created and gradually lose an innovative edge." It is a dilemma of every great scientist, artist, poet, writer, or statesman; and it is also our dilemma, the "everyman." In other words, when faced with a new problem, an opportunity for advancement, or a challenge that might inspire us to action, it is easy to let entropy kick in. Avoid the psychological tension. Avoid conflict and effort. Cling to the known. Justify yourself, justify what you believe, and dig your heels in against any change. Renzulli and Dai note that the process of creativity teeters on the fence between rigidity and chaos, between maintaining the status quo or moving into unknown territory.

Tony Wagner in *Creative Innovators* writes, "[creativity requires] a willingness to experiment, take risks, tolerate failure." In other words it begins with an attitude, with the realization that there is a choice, and from this position, we can make the decisions that lead to creativity and innovation. Put another way, Daniel Pink in *Drive* suggests that the innovator has a desire and drive to "make a difference." It may imply a difference in our personal life, our profession, the organizations to which we belong, or social groups.

Nancy Andreason in *The Creative Brain* points out that the brain is a self-organizing system. By design it enables us to face and accommodate the problems and challenges of life. In a sense the brain is always creative. But that creativity will either yield excuses for withdrawal from problems and challenges, or reasoning that leads to innovation and change. In other words, this self-organizing system we call the brain also has choices. When faced with problems, opportunities and challenges it can choose to withdraw and protect itself, that is, let entropy kick in, or it can choose to march forward into the unknown, siding with creative impulses. The brain can be very creative in giving us countless excuses for avoiding the creative impulse. It provides clever arguments to avoid change. It, ever so reasonably, explains why we should avoid effort, risk, unease and uncertainty. The arguments are so good that we usually find ourselves siding with them. It comes naturally, but it also kills creativity and innovation.

Not only so, opposition to creativity may stem from the entropy-bound environment we live in. Nearly every creator in history had to not only struggle against their own internal drive toward entropy, but they also had to fight against a culture or society that resisted change. On two fronts – internal and external – entropy said, "No!" Before creativity and innovation occurred, the creator had to deliberate over and then choose an attitude that would win this battle. He or she had to face personal reluctance and societal resistance.

The story scenario spans time, place and domain. The history of creativity and innovation in music, literature, theater, science, technology, or sports, repeats. Creators fight the internal and external battles against entropy. It is no wonder that the challenge of "everyman's creativity" is the same. Creativity, at its origin, requires a choice. Whether we are faced with the great issues of our times, or whether we are faced with everyday challenges.

It is fair to say that the creative "everyman" begins with a keen sense of self-awareness. "Everyman's creativity" begins when we understand ourselves; we understand our internal impulses and reasoning. It begins when we understand the excuses that empower us to withdraw from problems and opportunities. It begins when we recognize our natural tendency to resist change. When we are aware of the human inclination toward entropy versus the human inclination for newness, change and improvement, we have a starting point for creativity. This is the first lesson we can teach our children.

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