



Birchwood Clipboard

The Lion's Roar

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Special Program Highlights

Monitoring Screen Time

In January 2010 the Kaiser Foundation reported that the average daily screen time (i.e., recreational media time) had jumped from 6 hours to 7.4 hours for teens. The stats are difficult to believe. But even if we halved these numbers and attributed some of the time to multi-tasking – listening to music or watching TV while doing homework – the data remains stunning. In addition, The Sanford School of Public Policy at Duke University examined computer use among a half-million fifth through eighth graders in North Carolina. Their finding: the spread of home computers and high-speed internet access was associated with significant declines in math and reading scores. This data was collected before the advent of Twitter and Facebook.

More so, the effects are alarming. There is an inverse proportion between screen time and a student's intellectual stamina. Inordinate amounts of screen time sap a student's ability to focus on academics. They have trouble thinking deeply and give up quickly when faced with challenging intellectual work.

Parents would be wise to monitor screen time throughout childhood and adolescence. Although it may require your time and money, it is wise to create an academic and extracurricular environment that excludes the "screen." It is a worthwhile investment.

Awards Preview

Birchwood School was named Northeast Ohio MATHCOUNTS Champion for the 4th consecutive year! **Vinayak** placed 1st overall, while **Anika**, **William**, and **Prathna** all tied for 6th individually. Congratulations to **Neige**, **Alex M**, and **Jane** for entering the Zaner-Bloser National Handwriting contest. **Stella**, **Zuha**, **Shruthi**, **Chris**, **Kevin**, **Farah**, **Vinayak**, **Dhweeja**, **Prathna**, **Ammar**, **Anthony**, **William**, and **Anika** all had perfect scores (6/6) on the latest Continental Math League (CML) contest. For complete results of the CML and Math Olympiads contests see inside. The 1st-8th grade students had an opportunity to demonstrate and explain their science projects at Birchwood's Science Night. The 5th-8th grade students have spent the past few months testing their hypothesis and analyzing their results. Their projects will be entered into local science fairs this month.

Visitors and Speakers

Nathaniel Neider from the Urban Studies program at Cleveland State University spoke to the Future Problem Solving classes on the topic of "Megacities." **Mark Bouman**, Director of Environment, Culture and Conservation at The Field Museum of Chicago, held a Skype conversation with the teams as well. Our teams are awaiting results for the state-bowl qualifying problem at the end of the month.

Drs. Susan Rakow and **Patty Clary** from the Cleveland State University College of Education and Human Services Gifted Education Program visited Birchwood School on February 20. Impressed by the caliber of both the school and its students, Drs. Rakow and Clary came to investigate collaboration opportunities.

A Word from the Director of Advancement ...

February has been a busy but exciting month! To date, the Annual Fund Drive has raised over \$14,000! The hope is to attain 100% participation by school families; remember that every gift matters no matter the size! Join your peers in supporting Birchwood School. Donate online, via mail or even in the office. In addition to Annual Fund success, Birchwood received a \$5,000 grant from the Third Federal Foundation. Special thanks goes to parents **Gail Glamm** and **Tina Stefanski** for supporting the successful effort. The school also received accolades from Battelle-NASA for its "Birchwood School: Future Mars Astronauts" program. Battelle was very impressed with the breadth and quality of the work undertaken. Many congratulations to **Miss Tagliarina**, **Miss Brown**, and **Mrs. McNaughton** for excellent work. Finally, a reminder: there are just a few more months in which to do your five volunteer hours. Many families have already met the goal and exceeded it. Please remember that if you cannot do five hours, you can donate \$200 instead. As always, contact Michelle Ehlert, Director of Advancement, anytime with questions or for more information.



Class News

Preschool

Over the past few weeks we have been talking about animals in winter. The children have enjoyed listening to the books *The Mitten* by Jan Brett and *The Mitten* by Alvin Tresselt. They compared the similarities and differences in both of the versions of this folk story. Some of the preschoolers worked hard making charts to display which animals were similar in both versions of this classic winter story. Migration and hibernation were topics of interest as they listened and acted out the story of *Bear Snored On* by Karma Wilson.

The preschoolers have also been exploring some “mitten math” activities. They used different colored paper mitten shapes to estimate/guess how many mittens were in a pile. They also made patterns, sorted them by color, and created visual addition and subtraction problems.

Our science experiments included playing with snow in the water table inside the classroom. The children used eye droppers, dixie cups, water, and food coloring to see how the snow changed colors due to the various colored water we added to the snow.

One of the class art projects was to use paper cut-out shapes such as squares, triangles, circles, octagons, hexagons, trapezoids, rectangles, parallelograms, stars, ovals, pentagons, and diamonds to create abstract or realistic pictures. Some of the children created the houses you would see on their street and other children made a shape collage. It is wonderful to see each child reflect themselves through creative art experiences.

Arts

The art room was busy preparing for the Fine Arts Night with some beautiful pieces. The first graders created portraits with creative hats based on the book, *Do you Have a Hat?* The second graders worked hard on their ink and watercolor piece based on a favorite hobby or sport. Banners representing the four seasons were created by the third and fourth graders. Leaf mandalas, Van Gogh’s sunflowers, spring kites and snowflake “quilts” all came alive on the banners that are now displayed in the hallway near the art room. February’s focus was on Faith Ringgold, Jacob Lawrence and William Johnson for Black History Month.

Kindergarten

February was an exciting month for the kindergarteners. The kindergarten students worked hard to prepare for Fine Arts Night and did an excellent job performing their poems and songs. Memorizing poems for Fine Arts Night motivated the students to write their own poems in class. In addition to the excitement of Fine Arts Night, the kindergarten class also celebrated the 100th day of school. Students read books about the 100th day, made edible necklaces, and practiced their math skills by shopping at a special 100th day store. Thanks to **Mrs. Chen, Mrs. Lutz, Dr. Vaziri, Mrs. Day, Mrs. Neider, Ms. Haydar, and Mr. Paponetti** for organizing and leading this special event.

All the Kindergarten students continue to improve in reading, writing and math. Students have improved their handwriting skills and can now write on lines with normal sized letters. In math, most students can now do mental math and solve word problems.

Do you know how many windows are in the White House? The kindergarteners do, thanks to their study of the White House in Social Studies. (The answer is 147!) They also learned about important African Americans as part of Black History Month. In science, the students learned about weather. They made weather wheels, learned about snowflakes, and made pinwheels. They also learned about the states of matter and how water can be turned into a solid or gas.

1st Math

The first graders are finishing up a geometry unit in which they learned a variety of new vocabulary words and math concepts. The unit began with an introduction to the word perimeter. Using the examples of a fence and a picture frame, the children learned that perimeter is the measure of the distance *around* an object. Next, they learned the meaning of area, with the example of an area rug, which covers a space on the floor. They learned that area is measured in square units. To practice finding the perimeter and area of shapes, the children used geoboards, which are small peg boards that use rubber bands to form different shapes. After getting a firm grasp on these concepts, the children moved on to a more difficult concept--volume. They learned that volume is the amount of space that is inside an object, such as a shoe box or aquarium. The concept of square units was illustrated using small wooden blocks that filled up a small cardboard box completely.

1st Language Arts

The first graders recognized the 100th day of school by reading and modeling a story based on *Wolf’s Chicken Stew* by Keiko Kasza. After reading the story the children were able to identify the pattern of three and the special number (100!). They then wrote their own creative stories that highlighted a special number.



1st Spanish

The first graders were working on the theme: family. The children answered questions about their family members, their names, hair or eye color, and physical traits. They learned “¿Qué tiempo hace?” What is the weather like? The class was doing a weather report for a local television station. They reported how they felt in each kind of weather.

1st-2nd Reading

After spending a significant amount of time during the first two weeks of February perfecting their poetry performance for the Fine Arts Night, each class was videotaped during dress rehearsal and the students complimented and critiqued their own performance. This exercise enabled them to make adjustments during subsequent practices and to perform at their highest level on show night. Great job students!

The students also transitioned from reading general animal fiction stories to starting an author study on Dick King-Smith, prolific writer of “farmyard fantasy.” King-Smith is best known for his book-turned-movie, *Babe, the Gallant Pig*. Both classes are reading some of his picture books, learning facts about farm animals, and exploring how King-Smith got his ideas for his books.

1st-2nd Computer

The first and second graders have been working on creating animated poems in Microworlds. They have written out one of the poems they did for Fine Arts Night and made it animated, by adding in backgrounds and characters that move.

1st-2nd Science

The short month of February flew by as the budding scientists began specializing in the field of geology. First, they learned about the layers of the Earth. Next, the young geologists carefully observed soil, rocks and minerals under microscopes and found hidden treasures and amazing properties unobservable to the unaided eye. Finally, after reading to learn how fossils form, each student had the chance “fossilize” a toy animal using plaster of paris.

1st-2nd Social Studies

The first and second grade “pioneers” are heading west on the Oregon Trail. To begin their journey, they completed a “take it or leave it” activity in which they had to decide which items to take on the trip west and which ones to leave behind in the east. They then decorated their own covered wagon pictures with trail-related slogans. Westward ho!

2nd Math

Like the first graders, the second graders are also completing a unit on geometry, only their unit is more advanced. One of the most difficult things about elementary geometry is keeping all of the vocabulary straight. As an aid to learning the new ideas in this unit, each child made a “Geometry Book,” a sort of dictionary of geometric terms, which they also illustrated. The books contained all of the vocabulary from the unit and were put together in an attractive way. Some of the chapter titles included, “Polygons,” “Quadrilaterals,” “Triangles,” and “Angles.”

2nd Language Arts

All of the second graders continue to make excellent progress in writing. This month they wrote stories describing a terrible idea modeled after the book *A Pig Parade Is a Terrible Idea*. After reading *The Giant Jam Sandwich*, each student wrote a story describing a problem experienced by a town and a creative solution to the problem.

2nd Spanish

This group reviewed the four seasons and what sport they practiced during each season, and they compared which season has more birthdays. They worked on fruits and answered questions about the colors of the fruits and their favorite one.

3rd Spanish

¡Buena suerte! Good luck! or Lo siento mucho, I am sorry. These are some of the expressions the children learned during this month. They played situations like someone is standing in the way and you need to get by, what do you say? They read a story about a family celebrating a sports competition and they had to use all the expressions.

3rd Social Studies

The third graders have been studying the southwest region of the United States. In small groups they have been enjoying reading a book that talks about each of the four states that make up the southwest. The third graders have also taken a break from their main Social Studies textbook, and as a class, they have begun to read *Cleveland: From Wilderness to City*, a story about how the City of Cleveland came to be. The authors, Amy Milner and Gladys Stevens, do a great job telling the story of Cleveland in a fun and exciting way which leaves the third graders eager to learn more about their hometown.



3rd-4th Math

Each year the third and fourth graders participate in the Continental Math League (CML) contest, a national math contest that consists of non-traditional, logic problems. The fourth graders take part in five contests, given monthly, from November through March. The third graders take part in three contests, from January through March. Each contest has six problems. The children are given 30 minutes to complete the problems. Awards are given for the following levels of achievement: Six/Six correct-Gold Medal, Five/Six correct-Silver Medal, Four/Six correct-Bronze Medal. In February the fourth graders completed the fourth of five CML contests, while the the third graders completed their second. The notable achievements were as follows:

Fourth Grade: Gold Medal: **Stella, Zuha and Shruthi**
Silver Medal: **Isabella I, Alex M, Lilah, Terek, and Rishav**
Bronze Medal: **Erhan and Karim**

Third Grade: Gold Medal: **Paul and Neige**
Silver Medal: **Praveen, Peter and Nathan**
Bronze Medal: **Abeedah**

Congratulations to all of these young mathematicians!

3rd-4th Reading

The third and fourth graders worked hard throughout the beginning of February and, despite the snow days, did an amazing job at the poetry show on February 8th. Those who attended said their enunciation was wonderful, their speaking was loud and clear, and they were able to present each of their poems enthusiastically. This was definitely the best run-through of the show to date. Meanwhile the third graders have been racing through biographies, writing about their favorite biographer in a journal, while the fourth graders have been gobbling up tall tales. The fourth graders have also enjoyed listening to *Just So Stories* by Rudyard Kipling. They have been keeping track of the exaggeration they hear within stories and were able to come up with some exaggerations of their own.

3rd-4th Science

This month the third and fourth graders were re-introduced to the "world" of science as they began geology studies (pun intended). During the rock and mineral unit, students examined a set of 12 rocks and sorted them on the basis of observable properties, such as color, texture and grain size. In addition, they explored a set of 12 minerals and conducted some of the same tests real geologists would. Students recorded observations about each mineral's color, texture, smell, luster, hardness, transparency, shape, and reaction to a magnet. The next step will be to interpret the data they've collected and identify each mineral as they compare the mineral profile sheets they've created to pictureless mineral identification cards. This unit has strengthened students' ability to use their senses, perform and interpret scientific tests, communicate and record observations, make connections to prior knowledge, apply information they've gained through reading, and classify and identify rocks and minerals.

3rd-4th Computer

The third and fourth graders have been working on using a poem they performed for Fine Arts Night and make it animated using Microsoft PowerPoint. This was a challenge to make the slides creative but still present the lines of the poem well. They had to consider colors, fonts, timing of the slideshow, and images that they brought in. Next week we will take time to show each other and Ms. West our creative slideshows.

3rd-5th Language Arts

Perhaps the most neglected art among the language arts these days is the development of legible handwriting. To this end, all students entered the Zaner-Bloser National Handwriting contest last month. Congratulations to grade level winners, **Neige, Alex M** and **Jane** whose entries have been submitted to the contest. The third quarter is also the busiest one for writing competitions. Third grade students wrote entries for the Creative Communication contest in which they developed an essay about any subject. Topic choices ranged from family members, friends, and pets to vacations and video games. Meanwhile, the fourth and fifth grade students composed either narrative or fictional works for the February *Cricket* contest. The theme was a Valentine's Day one, which asked for student authors to write a story that included a token of love. Creativity abounded as students chose creative settings such as the Civil War, wrote about family heirlooms that had been passed down to them, or explored the mixed up world of middle school romances.

4th Spanish

The fourth graders have been working on verbs and conjugations. They looked at the pictures and completed the sentences using the right verb. The students were able to conjugate verbs in the first and third person of the singular. This group is highly motivated in learning Spanish and they participate actively during the class.

4th Social Studies

The fourth graders have been studying the southwest region of the United States in their textbook. They took a quiz on the states and capitals of this region as well as a quiz on landforms and bodies of water. They practiced making a bar graph to show the heights of different mountain peaks. The students read through the whole chapter on this region and answered vocabulary and critical thinking questions. Then, they were split up into small groups and had to create a song that teaches their classmates the main ideas and vocabulary from one of the three lessons within the chapter. Each of the students' songs were creative, informative and unique (and of course were really fun to write and to share with the class).



5th-6th Science

First, a tremendous thank you to the parents who spent the morning at the science fair: **Mr. Berard, Ms. Baca DeLancey, Mrs. Foos, Ms. Hendryx, Ms. Mahli, Mrs. Kabbara, Ms. Zwolinski, Mr. Spicer, and Ms. Stainforth.**

5th grade projects included:

Jane: How does using an acronym (a memory device) instead of a list affect how many animal names people can memorize? **Channin:** In a Ruben's tube, how do different tones affect the distance from one flame peak to another? How does volume affect the amplitude of a wave? **Alia B:** Does music affect the growth of plants? **Steven:** Salt, sugar, baking soda Dissolution Test. **Tejal:** What is the effect of gender on hand-eye coordination? **Layla:** How is peripheral vision affected by gender? **Annessa:** Do the other senses affect the sense of smell? If only the sense of smell is used, will it take less time to identify a smell? **Derzan:** Will cold water, warm water or hot water dissolve syrup the fastest? **Chris:** To what extent does material (foil, cotton cloth, woolen sock, and newspaper) affect how well it insulates and holds the water temperature in a cup? **Ali:** How does the surface area affect the amount of surface a raft can hold? **Asim:** How does temperature affect how fast an Alka-Seltzer dissolves? **Aasma** is serving as a photographer and doing such a fine job.

6th grade projects included:

Avi: Which type of parachute will last the longest and be the strongest? **Maya:** Which French fries mold first? **Julia:** Relax to the max. **Michael H:** How many rainbow cubes can a wooden boat carry? **Jad K:** Do white candles burn faster than colored candles? **Cameron:** How many licks does it take to get to the center of a Tootsie Pop? **Nikhita:** Vitamin C degradation. **Abby:** Temperature and mealworm metamorphosis. **Rami:** Which heart rate is faster? **Rae:** Which colored M&M melts the fastest? **Olivia:** Which bridge? **Farah:** Which fluid stays the freshest in the refrigerator? **Mihir:** Wingspan: does it affect a plane's flight? **Kevin:** How is projectile distance affected by launch angle and type of nerf gun? **Megan S:** What is the average time in the air of a paper airplane? **Sean:** Does pH affect tooth decay?

5th Social Studies

In the fifth grade, the students' classroom book is actually a series of books titled *A History of US* by Joy Hakim. It is narrative history and not a traditional textbook format. Hakim brings alive the people that formed our country's history and really engages the reader in the story of our country's history. Students just finished up a unit on the early thirteen colonies and are beginning to look at the steps that led our country to the American Revolution. One favorite section was reading about John Peter Zenger and the beginning of freedom of the press. After doing an engaging group activity looking at actual modern day scenarios regarding the same issue, students began to realize that the matter is more complex than it might seem. They're beginning to absorb the steps that took us from colonies to a new country.

5th Reading

Students are working hard to complete their *Amos Fortune* books, whose main contents are the journal entries. They are learning to go beyond reporting the main facts and to elaborate on Amos's strong feelings about matters in his daily life. Three other significant topics discussed were that freedom has two sides, of "light" and of "shadow," that we all have "personal mountains" to overcome, and finally, the topic of Amos's contributions to his community. As an immediate follow-up, students will continue by reading one or more short biographies of black Americans who stand tall as heroes, even today, people such as Sojourner Truth, Frederick Douglass, Harriet Tubman, William Wells Brown, Ida Wells, Rosa Parks, and Martin Luther King, Jr.

5th-6th Spanish

The students were preparing their field trip to the Mexican restaurant Mi Pueblo. The day came and they were able to speak Spanish and ask for utensils, order drinks, and ask "Where are the facilities?" The most impressive part of the field trip was when they interviewed the waiter and he understood all the questions and the children understood all his answers. Good Job!

5th-6th Computer

The fifth and sixth graders have been working on creating an animated poem. Some even choose to write a poem to animate. Using Microsoft PowerPoint they created slides with lines of the poem. Then they added in designs with photos, colors, fonts, movement, and sounds. It was a challenge to make the poem flow and present well. We have considered how the slide is presented and the colors work together well.

5th-6th Computer - Logo Programming

The Logo programming students have been challenged this quarter. We are working on creating a simulation of a world that has a predator and prey. They are programming how they interact and their movements. We are working on correcting syntax and designing the procedures to work together.

6th Language Arts

To ease into expository writing for this quarter, students wrote several how-to pieces (instruct an ant to find their seat, construct a paper ring from an index card, guide rangers through outlaw territory, etc.). Simple revision involved checking for clarity by having others follow their directions. Currently students argued the merits of living in snow-covered Cleveland and are also writing about challenges facing megacities (FPS topic).



6th Reading

As students finish the unit on *Tom Sawyer*, we are capping it all with written editorials about Tom's exploits, from the triumphs of whitewashing the fence, pirating on Jackson Island, and finding and recovering lost treasure, to Tom's dealings with Aunt Polly and the foibles of wooing Becky Thatcher. Students are writing from the perspective of one of the many characters, and then the articles are being compiled into an issue of the *St. Petersburg Chronicle*. As a final assignment, each student is writing a poem about Tom's madcap adventures, which is titled "A Hymn to Boyhood." The next unit will be Greek mythology, a favorite with the children.

6th Spanish

Students are learning how to order food at a restaurant. As part of this lesson, students went to a Mexican restaurant to order food and interview the waiters. They worked very hard memorizing the names different foods and prepared specific questions to ask the people at the restaurant. They show a very positive attitude.

6th Social Studies

Students are finishing up a long unit on Ancient Greece. After looking at the history and culture from that time, they chose a topic to research further. After gathering resources from the library and taking notes on various research questions, students compiled their findings onto a poster board. Look for the colorful and interesting displays in the hallway on the first floor. Next, the class will have a debate on which city was better to live in, Athens or Sparta. There'll be some lively discussion as the students vigorously support their positions.

7th Reading

Pulitzer Prize winning author Esther Forbes (prize was for her book *Paul Revere and the World He Lived In*) also won the Newbery Medal for her captivating story of a boy caught up in the events leading up to the American War for Independence. *Johnny Tremain* is historical fiction at its finest: sound historical research woven throughout an engaging plot. In this case, students vicariously experience the drama that played out in Boston involving the major players of those times. In order to grasp the ramifications of events and people on the main character as well as catch the spirit and high ideals that operated and motivated citizens at that time involves careful reading, note-taking, and discussion. These seventh graders are engaged in all of it!

7th Spanish

The 7th graders worked hard conversing about what did they do "at school" and "after school." They compared school and after school activities in Spanish speaking countries and the United States. They learned the vocabulary of school clothes and school supplies. During grammar class they worked on the present tense of "ar" verbs, verbs "ir" (to go) dar,(to give) estar (to be) and the contractions "al" and "del."

7th Science

Students found that our Earth is quite active, when compared with other planets. They looked at Alfred Wegener and Henry Hess, their theories and evidence that they used. On Earth convection currents drive plate tectonics. As the plates move, tension is built up, producing earthquakes and volcanoes. Mars has evidence of these features. There are volcanoes 10 to 100 times those of Earth, but no movement of the crust.

7th-8th Social Studies

Both classes are working hard to prepare their entries by the deadline for the upcoming History Day competition. There's almost a hum in the air as students grapple with the complexities of their topics as well as their presentation formats. There are six websites being constructed, as well as three documentaries. Five students are working hard at revising papers, two students are developing exhibit plans, and one student is writing a script for an individual performance. Everyone will have a chance to see the great work our 7th and 8th graders do at the Open House in the spring. The date of the district competition is March 23 and we'll have a full report next month in the *Clipboard*.

7th-8th Language Arts

For expository essays students revisited thesis statements, topic sentences, supporting details, and the general structure of an essay. Simultaneously they are understanding how this genre can be very much like speech in its rhythm, aka, the variety in the sentence lengths. Besides writing about topics of general interest, they have also been writing about the challenges of a megacity like Dhaka, comparing and contrasting the transportation systems of Mumbai and London, using information from *National Geographic* and PBS video clips.

7th-8th Latin I

The 7th graders have worked on distinguishing between subjects and objects when case endings are ambiguous, as they sometimes are. Latinists train themselves to consider all the possibilities and use logical reasoning to deduce what role a word plays in a sentence. 7th grade students also focused on prepositional phrases. This month the 8th grade students have been reading, reading, reading! Because we had already learned three chapters' worth of grammar at once, we then read straight through three chapters' worth of stories to practice all the new verb forms from last month. In addition, both grades focused on the most efficient methods – especially online flashcards and self-test generators – for mastering vocabulary lists.



8th Science

Last month students studied viruses, bacteria, protists, and fungi. Besides using the textbook and looking at examples, students used information from Mr. Anderson's videos for AP biology to go beyond what the textbook presented. The Lytic and Lysogenic cycles of viruses was one topic they focused on. They wrote an essay on their tests explaining the cycles and the difference between them.

7th-8th Computer

The seventh and eighth graders have started on designing and laying out the school yearbook. Every year the students design the pages and put in the photos from Mr. Kufahl. The eighth graders also have half a page dedicated to them. They put in photos from competitions and family. The order forms for the school yearbook are going out soon.

6th-8th Future Problem Solving

After two hours of teamwork on the problem of "megacities" the packets have been sent in to state evaluators who will determine if any of our teams or individuals will earn an invitation to the State Bowl in Solon on April 19 and 20. It is nail-biting time. The topic for the State Bowl is "Ocean Soup." After reading the topic overview, if you can speak to our students on the topic please let us know.

In the North Pacific, a large area known as the "Garbage Patch" has become "Ocean Soup" and is so polluted by remnants of plastic that samples show 48 parts plastic for every part of plankton. As the plastics drift further and further into the Garbage Patch, they break down into smaller and smaller pieces like confetti and cannot be tracked from the air. These floating fragments accumulate the manufactured poisons that are not water-soluble. Plastics have entangled birds and turned up in the bellies of fish. One paper cited by the National Oceanic and Atmospheric Administration (NOAA) estimated 100,000 marine mammals die of trash related deaths each year. NOAA has been contacted regarding cleanup of the debris in the Garbage Patch and other areas of the North Pacific; however, cleanup is likely to be difficult. What might happen to the food chain if action is not taken to clean up the ocean soup? What is the future of our oceans if plastics continue to contaminate the waters and wildlife?

MATH AWARDS

MATHCOUNTS

Congratulations to the MathCounts team of **Vinayak, Dweeja, Prathna**, and **Anika** for coming in first place in the Chapter Level Mathcounts competition at Cleveland State University. This is the fourth year Birchwood placed first in this county-wide math contest. In addition, **William, Pheby**, and **Ammar** placed among the top ten competitors. The team will compete at the state level on Saturday, March 9. Go Birchwood.

MATH OLYMPIADS #4

Silver Award: **Derzan, Kevin, Cameron, Farah, Vinayak, Prathna, Pheby, Ammar, Megan P, William**
Bronze Award: **Jane, Layla, Avi, Mihir, Michael H., Rami, Maya D., Julia, Dhweeja, Anthony, Haley, John**

CONTINENTAL MATH LEAGUE #4

Gold Award: **Chris, Kevin, Farah, Vinayak, Dhweeja, Prathna, Ammar, Anthony, William, Anika**,
Silver Award: **Tejal, Jane, Derzan, Shruthi, Zuha, Avi, Michael H, Maya D, Jad, Maryum**,
Bronze Award: **Asim, Mihir, Megan S, Julia, Anna H, Caroline, Grace, Abdullah**



CREATIVITY

Building Knowledge and Defining the Challenge

We have established that motivation and ownership are at the core of creativity. These two factors produce drive and purpose. They foster passion, dedication, hard work, persistence, and endurance – each an important component of creativity and innovation.

As I discussed last month, challenge or problem definition also requires knowledge. You cannot think deeply or creatively about anything unless you know and understand your topic. Creativity and innovation do not emerge in a vacuum. Those people who know their field well are the only ones capable of producing something new and innovative in their field. The creative individual is able to “play” with the information in their field of knowledge. They see the connections. They see the possibilities. They see solutions that whisk past the novice.

True creativity brings together two apparently disparate notions. One side of the equation fits our common beliefs about the creative individual. She is smart, a complex thinker, playful, imaginative, a little rebellious, often either an extrovert or an introvert, frequently acting outside stereotypes. She is independent-minded and passionate.

On the other side of the equation is the less-acknowledged notion of the creative individual. Great creators and innovators are also highly disciplined. They are rigorous and exacting toward their work, spending enormous amounts of time mastering all of the knowledge in their field. Although they allow their thinking to be free, they assume deep responsibility for their work and they continually check their work with reality. While they may function outside of stereotypes and norms, and while their attitudes might be rebellious toward conventional wisdom, they understand the connections their work has for their field or society at large. Their work is “real.” Their contributions are meaningful.

Creativity and innovation combine rigor, discipline and responsibility with independence, playfulness and freedom. The story is repeated throughout history across all disciplines. It is just as true in music, art, literature, theater, cinematography, and video-gaming as it is in technology, biology, chemistry, medicine, mathematics, and architecture. True creativity and innovation require that these disparate conditions exist simultaneously within the creator.

Without both sides of this equation, creativity and innovation languish. Imagine the expert who knows her field very well. Yet when she is confronted with challenges or problems within her field, she withdraws into her comfortable world of knowledge, secure that she is the expert, she is smarter than everyone. At the same time, she conveniently ignores the advent of new opportunities which may challenge her beliefs and how her field works. She is self-satisfied, averse to change, probably arrogant, and surely not creative.

Imagine the opposite. There is an individual who claims he is creative and innovative but lacks the discipline and responsibility to know his field well. He boasts that he is a free-thinker, independent, iconoclastic, standing in opposition to accepted norms. You will not find creativity or innovation here. He doesn't know what he is talking about. This kind of “creative” individual might be good at talking, but nothing of significance will come out of him! His words and ideas won't be practical. They are detached from reality.

As we begin to teach children how to think creatively, we must keep in mind that both components are necessary. Whether we are preparing children for their future professions or whether we are teaching them how to get better grades at school, become a better basketball player, learn the violin, develop their writing skills, or improve their artistic skills, they must learn, and even master their fields of interest, as much as time allows. The more they know the more they set the stage for developing significant, creative work. In knowing their field, they will be positioned to face problems, take on challenges, or identify opportunities that will make their life and work creative and innovative.

This is why, when I discuss creativity education for children, I start with their own world. Most children prior to the age of 15 are not going to make creative contributions to the society around them. But they can learn to become a creative person within the context of their current circumstances. As they develop a creative attitude toward life now, they are more likely to carry it forward into the future.

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