



Citizens For Education



Spring Issue

May 2015

The objectives of Citizens For Education are to ensure a quality education for all students of the Council Rock School District, to better inform the Council Rock community of educational issues, and to increase the involvement of the community in the decision making processes affecting the quality of education in Council Rock.

A Farewell to Mark Klein

1,872 weeks. 13,104 days. 314,496 hours. That's how long Mark Klein has been a part of the CR School District. 36 years! Eleven of those years he has served as Superintendent.

Mark began his career at CR in 1979. A quick glance back at 1979 has the debut of the Sony Walkman, Kramer vs. Kramer won the Oscar for Best Film and The Bee Gees, Rod Stewart, Gloria Gaynor and Donna Summer dominated the Billboard charts. Mark taught 4th, 5th and 6th grade at Churchville Elementary and Richboro Elementary schools. After 4 years of attending classes 3-4 nights a week, while teaching, he received his law degree from Rutgers University. Also while teaching, he spent two summers as a Conflict Counselor for juveniles. He left teaching for a year and worked as a clerk for Judge Isaac Garb. But the pull of the classroom was too strong and Mark returned to teaching in CR. After ten years in front of students, he moved into the Principal's office at Newtown Elementary in 1995.

(Continued on next page)

Tech Corner

Fred Bauer

Council Rock High School South

Fred Bauer is an exceptional Council Rock teacher who gives an extraordinary amount of expertise, time, and dedication to students both in and out of the classroom. To describe Fred Bauer as a Technology Education Teacher does not do him justice.

Under Mr. Bauer's mentorship, CR Students are given many opportunities to explore and grow. One rare and coveted example comes via the Zero Robotics project that partners with Massachusetts Institute of Technology (MIT) and the National Aeronautics and Space Administration (NASA). In this project, students program simulations in "C" language to control satellites aboard the International Space Station (ISS) to perform a task assigned by MIT. This is a competition against teams from all over the world, and in the finals the codes are uploaded to ISS to perform in zero gravity. In 2013, Council Rock Placed 2nd, and this year placed 23rd out of ~173 teams (<http://zerorobotics.mit.edu/>).

Mr. Bauer arrives at South five days a week two hours before school starts and stays until 9:00 or 10:00 p.m. He is often in the classrooms on weekends and spends most of his summer at South working on projects, maintaining and repairing equipment, and planning out the next school year.

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(A Farewell to Mark Klein—continued from page 1)

In 1999 Mark went to Holland Elementary as Principal. And in 2004, he was chosen to lead CR as Superintendent.

What one notices right away about Mark is that he seems to know everyone. This is no easy feat in a district as large as CR. From teachers to students to parents to community members, he greets most by name. Forging these relationships for the past 36 years has been important to him. He has spent many hours walking hallways and meeting people throughout the district. You could find Mark playing in a March Madness basketball game or reading to young students at one of the elementary schools or running in Tyler State Park or walking down State Street at lunch time. Some of his happiest and most memorable moments have occurred when he was simply interacting with the school community.

According to Mark, 90% of his time as Superintendent has been positive. His days as Superintendent have been filled attending many meetings and some of these meetings involved conflict – which he doesn't mind.

Change has probably been the most difficult aspect of his position as it is often met with resistance, even when the change is for the betterment of all stakeholders in the district. But Mark knew that instituting change takes time. Patience and communication are two extremely important factors with any alteration to curriculum, budget, staffing... Mark believes that when handled correctly there is a smooth transition.

After he retires from CR, Mark is looking forward to spending more time with his family. His two daughters have gone on to become teachers and his son is in his first year of residency at the University of Pittsburgh Medical Center. But Mark is not ready to sit at home and drive his wife, Diane, crazy. He intends to continue in the

classroom as an adjunct professor at Lehigh University. He will also make sure he has time to run and play tennis. And Diane has a "To Do" list for him that stretches back 25 years!

As for the future of CR, Mark would like the district to keep going strong and not to rest on its laurels. CR should always be striving to become better. The district does many things right, so according to Mark, "you don't have to abandon what's tried and true." He'd also like to see innovators have a voice as CR forges ahead in the areas of technology and virtual education. The biggest problem currently facing not only CR but all school districts is the uncertainty of financing for public education. Hopefully some of this can be resolved with the State Legislature implementing a better state funding formula.

When asked what advice he would like to pass on to his successor, Mark had six simple words, "Be visible and be out there!" Building relationships is probably the most important thing his successor could do. Being surrounded by strong, capable and dedicated individuals will help ease the transition

for the new Superintendent. Having a good alarm clock and reliable car will also help his successor on those cold winter mornings when roads have to be assessed to determine a delay or closing!

As he prepares to leave CR, which has been such a huge part of his life, Mark can hold his head high knowing that, in his words, "I'm leaving the district a little bit better than I found it." His impact on CR students and teachers, as well as parents and the community, will have long lasting effects. Indeed, we are all better off having had the opportunity to learn from and work with Mark (Olaf) Klein!

Citizens would like to thank Mark for taking the time to sit down and talk with us.



Citizens extends a heartfelt "THANK YOU" to all the administrators and teachers who will be retiring at the end of this school year. Your dedication to the students and CR community is very much appreciated. We wish you well as you begin life "after CR!"

(Fred Bauer—continued from page 1)

Although many students believe Mr. Bauer “lives at South,” he resides in the Hatboro area with his wife. They have two young adult sons. He is a 1982 graduate of Penn State University with a degree in Industrial Arts Education. Throughout his teaching career, Mr. Bauer has completed many graduate classes from several universities. As a lifelong student, the advanced courses that he takes focus more on practical content that he believes will “directly add value to teaching students.”

Mr. Bauer teaches six different classes this year: Engineering and Robotics, Honors Engineering and Robotics, Independent Study in Engineering and Robotics, Graphic Arts, Advanced Graphic Arts, and Independent Study in Graphic Arts.

In addition to being a classroom teacher, Mr. Bauer is the Department Coordinator for Technology Education at South, the faculty advisor of the Technology and the Graphic Arts Clubs, the class advisor for the Class of 2017, advisor for the NASA HUNCH (High school students United with NASA to Create Hardware) team, NASA/MIT Zero Robotics team, NASA/CELERE team and the Technical Director for South’s Golden Wings Theatre Company.

The Technology Club’s goal is to increase students’ understanding of modern technology through discussion, demonstration and experience. Members of the Technology Club are divided into three teams according to their skills and interest: a research and design team, a web design team, and a marketing team. The Technology Club is the corporate umbrella for CR Rock Rovers, HUNCH, and various projects that give back to the community, such as designing and printing t-shirts for charity events, providing signs for Special Olympics, and giving time to the CR Science Night and presentations about NASA for elementary schools.

In 2012, CR Rock Rovers designed a ROV (Remotely Operated Vehicle) to be used in a zero gravity environment that would inspect the outside of the space vehicle while the astronauts remain inside. The following year, students designed ROV 2 for use on the International Space Station (ISS) or on the flight to the ISS, and NASA invited Fred Bauer and a team of four other teachers, Jerry Fetter, Jeff Warmkessel, Joe Warwick and Tom

Hegedus, to the Johnson Space Center in Houston to test the ROV on a zero gravity flight that is also known as “the Vomit Comet.” Teachers communicated with the students via webcast. Also in 2012-13, the CR South team was accepted to the NASA/HUNCH Microgravity Program. The approval allowed students to prepare for their own zero gravity flight.

HUNCH gives students and educators the opportunity to design, fabricate, fly and evaluate reduced gravity technology over a course of four to six months (<https://www.nasahunch.com/>). The selected teams work with NASA mentors to carry out scientific research, hands-on investigational design and test operations.

In 2013-14, South students designed a self-contained, compact experiment that analyzed the effects of microgravity on the capillary action of fluids. South’s team, led by Mr. Bauer, was one of only 16 schools selected from applicants across the country to design and test their HUNCH experiment aboard NASA’s reduced gravity aircraft. Based on their resume and work ethic, four South students (two to fly and two as ground crew) were chosen to go to Houston. Their test and flight were fantastic, and the students had an experience they will never forget. More people have been to the top of Mount Everest than have experienced zero gravity free float; these students in Mr. Bauer’s program have earned that honor.

During this school year, South students are building an incubator designed to survive in the zero gravity environment of the space station and test the development of life in that environment. In past years, sponsorships and donations, including a grant from the Council Rock Education Foundation (CREF), funded students involved in the HUNCH project that represented Council Rock South in Houston. Mr. Bauer does not believe that students should have to pay their own way. As of this writing, the HUNCH team, which lost Lockheed Martin as a major sponsor, is short of the financial goal needed to send six students to Houston, so they are still looking for sponsors. To find out more about the project and sponsorship, the marketing team can be contacted at <http://www.crzerog.org>.

Graphic Arts Club is another organization supervised by Mr. Bauer. Citizens interviewed Mr. Bauer in his graphic arts room, where students design and transfer their creations onto a number of

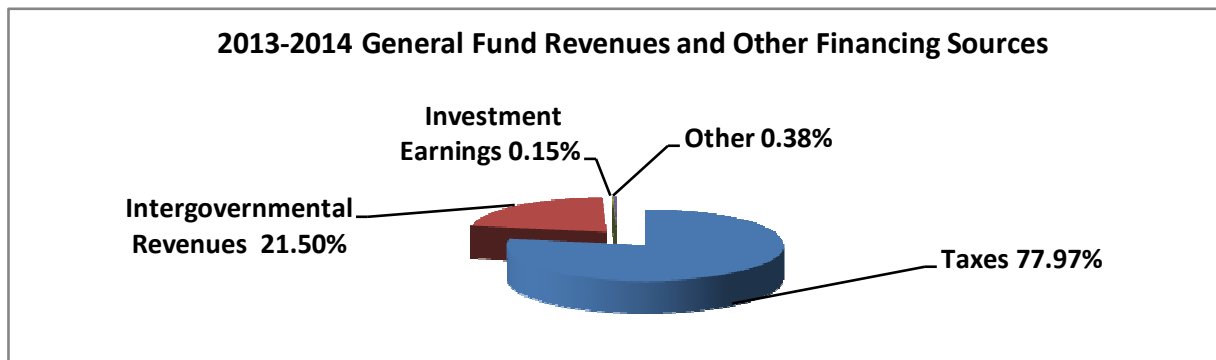
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Where Does CR get its Funds and How does CR Spend the Money?

The complete answer to these questions, and more, can be found in the financial audit completed by BDD, Certified Public Accountants. Council Rock has published the audit from the 2013-14 school year online at the following link: http://www.crsd.org/cms/lib5/PA01000188/Centricity/Domain/4/2014_06_30_BA_Financial_Statements.pdf. All text and data below is copied or sourced from this link, and reflects actual revenues and expenses as opposed to budgeted data. Citizens For Education wants to highlight some of the more specific findings of the report.

Where does CR get its funds?

The source of Council Rock funding is found in the GENERAL FUND – In the words of the audit, “The General Fund is the District's primary operating fund. At the conclusion of the 2013-2014 fiscal year, the General Fund balance was \$29,046,993 representing an increase of \$944,573 in relation to the prior year. The increase in the District's General Fund balance is due to many factors. The following analysis has been provided to assist the reader in understanding the financial activities of the General Fund during the 2013-2014 fiscal year. The District's reliance upon tax revenues is demonstrated by the graph below that indicates 77.97% of General Fund revenues are derived from local taxes.”



(Continued on next page)

(Fred Bauer—continued from page 3)

different mediums. They include printed publications, tickets for events, stationery, vinyl signage, and various apparel. Mr. Bauer's students not only hone their design skills and learn how to screen-print clothing; they also grasp valuable lessons regarding business management. The students make shirts for many school events, such as the senior trip, Blue, White and Gold Night, and Golden Wing's productions, to name a few. They also design shirts for the benefit of community charity events such as Breast Cancer Awareness and Juvenile Diabetes.

As the Golden Wings Technical Director, Mr. Bauer and his students have provided many special effects for theatrical productions. For example, he and his crew engineered real rain in *Singing in the Rain*, they fabricated a flying car for *Chitty Chitty Bang Bang*, and they had a real chandelier come crashing down for *Phantom of the Opera*. Also, astute and observant theatre goers may spot Mr. Bauer incognito as he often appears in cameo roles.

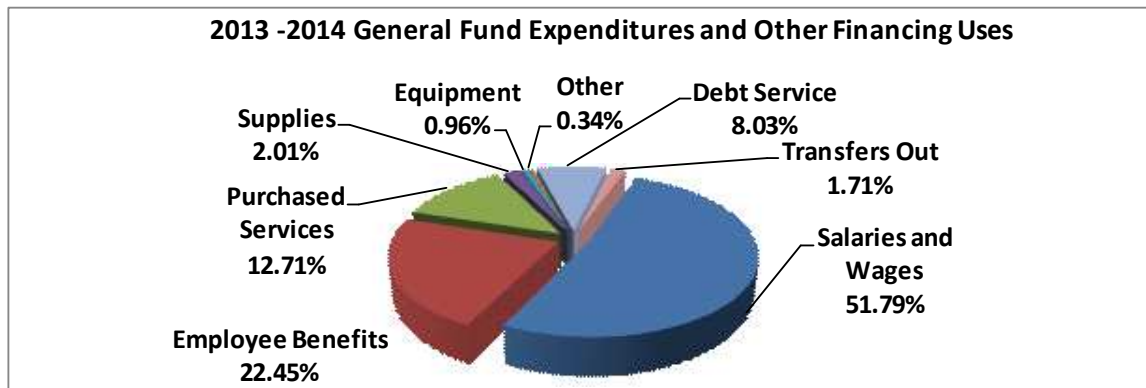
Mr. Bauer is making a difference in student's lives in many ways. Many of his former students focus their college studies in math, science or aeronautical engineering, leading them on to successful careers. Former students and club members often stay in touch. Some Technology Club alumni have proverbially paid it forward by giving donations to benefit current students. One former CR South HUNCH team member (Kat Johnston) is currently mentoring students on an Indian reservation in Washington State to help them develop their own HUNCH team, and will be flying with CR in Houston this year.

Citizens for Education is proud to honor Mr. Bauer as the first person from either high school to be featured in "Tech Corner." We thank him for his dedication to his South students, and for his time offered to both North and South students who are part of the Technology Club.

(CR Funding—continued from page 4)

How does CR spend the money?

“The largest portion of General Fund expenditures are for salaries and benefits. The District is an educational service entity and as such is labor intensive.”



General Fund Expenditures and Other Financing Uses

	<u>2014</u>	<u>2013</u>	<u>\$ Change</u>	<u>% Change</u>
Salaries and wages	\$107,224,768	\$107,061,410	\$163,358	0.15
Employee benefits	46,483,838	42,605,577	3,878,261	9.1
Purchased services	26,323,483	25,793,447	530,036	2.05
Supplies	4,174,664	4,542,005	-367,341	-8.09
Equipment	1,982,985	1,590,236	392,749	24.7
Other	706,279	515,003	191,276	37.14
Debt service	16,615,958	16,781,656	-165,698	-0.99
Transfers out	<u>3,531,534</u>	<u>4,449,054</u>	<u>-917,520</u>	<u>-20.62</u>
	\$207,043,509	\$203,338,388	\$3,705,121	1.82

Salaries and wages increased by a modest \$163,358 or .15% in 2013-2014 due to the District's collective bargaining agreements. Employee benefits increased from 2012-13 to 2013-14 by \$3,878,261, or 9.1%. This increase can be almost completely attributed to the District's required contribution to PSERS (Pensions). The 2013-2014 required PSERS contribution rate increased from 12.36% in 2012-2013 to 16.93% in 2013-2014, which translates to a 36.97% increase. This expense is a state mandate, and the district has no control over this expenditure. According to the audit, "As a result of the PSERS contribution rate increase, the associated expenditures increased by \$5,054,432." It should be noted that during the same period, healthcare and dental contributions were reduced by \$1,235,945, due to changes in the healthcare plan selection and a higher employee contribution.

Purchased services increased by \$530,036 or 2.05% in 2013-2014 due to the onetime costs associated with mold remediation in some of our buildings and modular classrooms.

Supplies decreased by \$367,341 or 8.09% in 2013-2014. In 2012-13 the District purchased a large elementary reading curriculum. There were no comparable purchases made this year.

In 2013-14, the District increased its technology related spending by \$392,749, which was 24.70% more than in 2012-13.

According to School Board Policy No. 620, the General Fund cannot have more than 5% of the following year's budget for unassigned expenses. In order to comply with this policy, the District made operating transfers totaling \$2,931,534 to the Capital Projects Fund in 2013-14. "In addition, the District transferred \$600,000 to the Capital Projects Fund as an equity contribution related to the current refunding of general obligation bonds, Series of 2014C."

Citizens For Education hopes the reader found this abridged version and explanation of District revenues and expenditures to be helpful.

Talking in Outer Space

At 1:19 pm on Thursday, Feb. 19, 2015, ten Council Rock (CR) High School South science and technology students talked directly with the astronauts on the International Space Station (ISS) as the ISS rounded earth. This CR first put South among an elite group of students worldwide who have talked to a crew on an ISS through ARISS (Amateur Radio on the International Space Station). ARISS is a consortium of ham radio organizations and space agencies in the US, Russia, Canada, Japan and Europe.



The opportunity for CR South students to have a live ISS in-orbit crew chat was the result of the work of CR South science teachers Jerry Fetter, Joe Warwick, Fred Bauer, and Jeff Warmkessel, along with Andy Vavra, Joe Horanzky, Irwin Darack and Karl Harris of the Warminster Amateur Radio Club. They connected with the ISS via a used radio system and antennas donated by Steve LaChesky of Ohio. Teachers made the long drive to Ohio to pick up the equipment.

Dealing with a very narrow window, the ten students had somewhere between 5 and 10 minutes of contact to ask all their questions. At first, only a static signal came through, but it continued to get stronger. When the ISS was at 275 miles above the eastern seaboard, traveling at a speed of 17,100 mph and over the horizon, the signal was strongest. This occurred around 1:19pm and continued until around 1:30pm, when the ISS went below the horizon and the signal was lost.

Ten students lined up to ask as many questions as the short radio signal and time allowed. Questions were answered by Italian astronaut, Samantha Cristoforetti, the first Italian woman in space, who was launched to the ISS on November 23, 2014.

The students asked about safety, re-entry, and life in orbit on the ISS. One question related to the astronauts' sighting of a sunrise and sunset, which occurs every 90 minutes during one orbit of the earth. It was, "Does the 90 minute orbit time affect how you work?" Ms. Cristoforetti responded, "Actually not so much, as we work on a regular 24 hour clock. You know as a human being we actually have a tendency to do that. Plus we work with the team on the ground who also works on a 24 hour clock and we go by our watch."



When the signal was lost all those in South's auditorium knew they had witnessed a very special Council Rock event.

Students in the Technology Club will continue with other special space related projects. With their newly donated ham radio equipment and antennas, the science department hopes to offer student classes where they can study to get an Amateur Radio license, and connect with students in schools around the world via ham radio technology.

Did You Know that in 2012, Pennsylvania ranked 45th out of 50 states in the percentage of elementary/secondary public school funding covered by state funds? PA covered 36.1% of school funding on average. The national average is 45.5%. Council Rock receives approx. 20% of it's funding from the state.

In the Numbers

The History of Council Rock's Technology Budget

"In the world of education, technology is a tool – whether it is software or hardware – and as such, should be there when needed and used when appropriate." This is a quote from the Council Rock 2015-16 proposed budget (pg. F-92). The CR technology budget below shows what CR budgeted for technology in the General Fund between 2011 and 2016. The primary expenditures are for salaries and to refresh a portion of the devices within the district (laptops, desk tops, and servers). Both the dollar amounts and percent of the budget spent on technology are relatively stagnant. It is also an indicator that the number of technology devices in Council Rock is relatively stagnant (see technology inventory in Citizen's fall 2014 newsletter at www.citizensforeducation.com).

Long term technology infrastructure improvements are funded through the Capital Budget. Over the summer of 2015, CR plans to spend \$395,200 from the capital budget to add access points at both high schools. This will increase the infrastructure capacity for the implementation of BYOD (Bring Your Own Device; see article on pg. 8).

All three of last year's capital planning committees recommended taking off trailers and upgrading technology. While all trailers for academic use are slated to be gone by the fall of 2015, currently the district is without a 5 year technology plan. Hopefully, the administration will focus on formalizing and implementing Council Rock's 21st century technology plans to greater enhance student access, learning, and outcomes.

Council Rock Technology Budget from 2011 to 2016

Line Items/ Years	2011-12	2012-13	2013-14	2014-15	2015-16 ¹	Yearly Change	
						Increase	Percent
Personnel							
Administration/Director of Info. Tech.	2	2	3	3	3		
Professional ²			1		0.5	0.5	
Technicians	9.02	9	9	9	9		
Clerical	1	1	1	1	1		
Total Employees	12.02	12	14	13	13.5	0.5	
Personnel Cost							
Salaries	\$ 944,560	\$ 1,023,285	\$ 1,094,087	\$ 1,073,619	\$ 1,103,239	\$ 29,620	2.76%
Benefits	\$ 342,610	\$ 402,727	\$ 512,804	\$ 496,674	\$ 601,487	104,813	21.10%
Salaries and Benefits Total	\$ 1,287,170	\$ 1,426,012	\$ 1,606,891	\$ 1,570,293	\$ 1,704,726	\$ 134,433	7.88%
Equipment ³	\$ 1,550,559	\$ 1,035,018	\$ 1,337,061	\$ 1,165,000	\$1,165,000		0.00%
Total Budget	\$ 195,467,592	\$ 201,933,157	\$ 205,146,132	\$ 210,472,730	\$ 222,856,692	\$ 8,225,625	3.83%
Technology Budget	\$ 3,188,831	\$ 3,529,270	\$ 4,002,843	\$ 3,992,192	\$ 4,134,567	\$ 142,375	3.57%
% of Technology to Total	1.63%	1.74%	1.92%	1.89%	1.85%		

¹This is a first draft Budget that will be revised by the Administration and School Directors before passage. Updates can be found at crsd.org under the tab on the left side of the home page "CR Finances"

²In 2013-14, the technology department budgeted for an Information Technology Specialist, but the allocation was taken away before someone was hired. The first draft budget for 2015-16 includes a half time position. Citizens For Education supports filling this position to oversee BYOD and the integration of technology into the curriculum.

³Equipment includes the rotation and renewal of desk top computers, laptops, carts etc. With continual usage, these devices will likely need replacement within the next few years. 2011-12 was the last year CR leased most of its equipment and the allocation is actually in the "Rental Line" of that budget.

BYOD Implementation in Council Rock

In order to keep pace with rapidly evolving technology, Council Rock is implementing BYOD (Bring Your Own Device). The goal is to enhance student learning and to create a technological environment where anyone (student or teacher) will be able to do anything at anytime from anywhere. This is an alternative to purchasing laptops or tablets for CR students and staff members, which eliminates the expense of increasing the inventory of computers/devices. This does not however, eliminate the expense of expanding the wireless infrastructure to accommodate the devices.

CR faces a lot of challenges before it can fully implement the BYOD program at all levels.

Although implementing BYOD in the 2013-16 time frame of the District's Strategic Plan is a goal on paper, full implementation at every school will not be accomplished anytime soon. At a recent Facilities meeting, Superintendent Mark Klein said it is going to be "a slow crawl." In order for BYOD to increase student access, and integrate technology into instruction, there has to be more teacher implementation and additional money invested into expansion of wireless access. Many other school districts in the area and across the state of PA have years of experience implementing BYOD at their secondary schools, and CR could benefit from their experiences and learning curve.

Status of CR's Technology Infrastructure

At the high school level, the ability to accommodate BYOD in every classroom will be upgraded by September, 2015. To achieve wireless and BYOD capability, the school board approved \$197,600 for added access points for each high school for a total cost of \$395,200.

Although improvements were made at the middle schools this year, they will not be ready to handle a fully operational BYOD for 4 years.

According to Matt Frederickson, Director of Information Technology, "During the summer of 2014, the middle schools received a refresh and expansion of their wireless cloud. Each access point cost \$900 (Bid #14-31, approved by the school Board on 6/18/2014). A total of 61 access points

were installed: 13 at RMS, 28 at NMS and 20 at HMS. While this does not provide one in every other classroom, it does provide enough coverage based on their current needs (where BYOD is not fully implemented). Until the new school and renovations are finished, those teachers wishing to utilize BYOD will encounter some of the same connectivity issues that teachers are currently experiencing at the high school, where it is reported that Wi-Fi and broadband in the building are not always reliable and will cause problems on some devices, but not others. As part of the renovations to HMS, and as part of the new construction for NMS, every classroom will be wired."

At the elementary level, only Churchville, Holland and Goodnoe are fully wired. When the PTOs at these schools donate technology devices, all funds go directly to the hardware. This past fall, Churchville donated 30 iPads and a PowerSync cart for a total of \$14,019.95.

Did You Know that in 2014, 74% of MBIT graduates attended some form of post-secondary training; either a two year or four year college, or a technical institute?

At this writing, there are no current plans to address the technology infrastructure needs of the 7 Elementary Schools that have not been recently renovated. When PTOs in one of these schools donate money for technology devices, they are required by the district to

provide additional access points to access the Wi-Fi needed so the devices are usable. In the fall, Sol Feinstone donated 38 iPads for \$14,252 and 10 access points for \$9,000, for a total donation of \$23,252.

Status of BYOD Realization

As of right now, only the high schools are formally piloting BYOD. Throughout the 2014-2015 school year, three teachers at each high school are officially piloting BYOD. These teachers teach a wide variety of curricular subjects including: A/B Concepts in Math, Accelerated Psychology, AP Calculus, AP Physics (Mech and E&M), Critical Viewing, Academic English 10, 11, and 12, Honors English 11, Honors Physics, and Public Speaking. Working through the high school principals, Citizens For Education asked five questions of the six piloting teachers and received direct responses from five of the six. The sixth teacher chose to give her answers directly to the BYOD committee. The complete responses can be found, in total, on the Citizens website at www.citizensforeducation.com. Below is a summary:

(Continued on next page)

(BYOD—continued from page 8)

Students are bringing a variety of “Bring Your Own Devices” including smartphones, iPads, laptops, tablets, and Chromebooks. The majority of the teachers reported that students are primarily using smartphones in class. A few students use tablets, and there was one report of a student bringing a kindle for class text.

Teachers are using BYOD in a variety of ways, including allowing students to:

- access the teacher’s website
- respond to multiple choice questions or online quizzes
- use Chromebooks/personal devices on the public network to create a blended environment with backchannel chat websites to check for understanding during class
- view video lectures
- participate in Web 2.0 learning activities including learning games to assess and review grammar and vocabulary
- use discussion boards to promote virtual discussions of literature
- access solutions and other classroom material from instructor
- look up information pertinent to class discussion
- do research for class assignments

*It should be noted that other teachers at the high school who are not part of the pilot program also utilize many of the BYOD elements listed above in their classrooms.

BYOD at the Middle and Elementary Schools

Although the strategic plan states that CR should “Provide focused full-time instructional technology support at all levels; and develop a plan to increase instructional technology access and support at the elementary and secondary levels” by June 20, 2014 (as reported in Citizens Fall 2014 issue found at www.citizensforeducation.com), there need to be upgrades in the technology infrastructure for BYOD to be fully operational. Currently there is an informal BYOD practice at each middle school. Across the three middle schools, there are approximately 20 teachers who periodically develop a BYOD lesson. At the Elementary schools “*other than eReaders, BYOD is not being piloted at the elementary school level.*”

Teacher reported Pros to BYOD, in their own words:

- Easily accessible internet and information.

- Every student has immediate access to their work without going to a library/lab; and it reduces the use of paper and photocopies.
- Because BYOD is a unique teaching tool, teachers are able to engage students in ways that they would otherwise not be able to do. Teachers observe that students have a greater engagement in the subject matter, and that utilization of BYOD drastically and immediately increases enthusiasm and participation in classroom learning.
- Students want to learn through 21st century methods, and reportedly are responding appropriately and maturely to this type of lesson design. Students are learning 21st century skills that will be useful in college and the workforce.
- Students appear to be very comfortable using their own device in the classroom. When students respond to questions on their phones, the teacher can get immediate feedback on their comprehension.
- Students have 24-7 access to the tools and resources that they use in the classroom and the ones that they use at home. So, very few assignments are “left behind” or incomplete because of a snow day or absence. Students also have 24-7 access to their teacher.
- Having MS365 (Microsoft 365 is a free software program provided by Microsoft to any requesting educational institution) helps with the varying word processing software used by students on different devices and is a positive, but there is lack of teacher training (reported as a Con below).

Teacher reported current Cons of BYOD (until the infrastructure is upgraded this summer), **in their own words:**

- Wi-Fi and broadband in the building are not always reliable and will cause problems on some devices, but not others. The filter on public Wi-Fi does not allow access to some of the necessary sites/activities. It takes time to get the programs downloaded onto computers or iPads.
- Another challenge is that students need to charge devices and the lack of charging locations throughout the building is a problem.
- Classroom management is different and requires different strategies of teachers and responsibilities for students. Devices can be a potential for distraction.
- It requires a lot of preparation time and technology prowess on the part of the teacher to prepare for and troubleshoot issues. Students

(Continued on next page)

(BYOD—continued from page 9)

and teachers need to be innovative and flexible and [one teacher reports that] almost none of the lessons work as planned due to technological difficulties.

- It does take time to learn what programs are available and how to use them, and... still learning about all the resources available....
- ...this may become too easy of a path to send material, allowing a teacher to possibly send too much review to eager students.
- One teacher reported that she saw no cons.

Citizens asked the teachers piloting BYOD to offer recommendations. Citizens correlated the teacher recommendations to the District Strategic Plan (the comprehensive plan to be implemented between 2012 and 2016) and, when available, the Administration responses to the recommendations (in italics).

⇒ Would love to see the district offer more teacher training and support for BYOD. This need was identified in the strategic plan (page 87), which states "...by providing better training and resources, allow educators, administrators and students to better utilize existing technology and adapt quicker to new technology."

⇒ More training with MS365. The

Administration responded, "*There is no formal training needed as there are training videos, etc. available through MS365 as well as on our district resources. As all staff currently use the MS Office Suite of software, their needs will be based on how MS365 functions differently and this is easily covered through these training materials and resources.*"

⇒ The district had a position where someone was a full time instructional technology coach. The Administration stated, "*This position was eliminated several years ago and has been requested in almost every budget year. It made the budget in 13-14 but was eliminated because of other priorities before anyone was hired.*"

⇒ Streamlining the process for buying and updating iPad apps because the approval from the department coordinator even for a \$1.99 app takes time. The Administration responded that there is "*a need for the curriculum coordinators to have oversight.*"

⇒ More Wi-Fi, more broadband, and charging stations. The Administration responded: "*there are plans to update the Wi-Fi at both high schools this summer but currently no plans for charging stations.*"

⇒ A tech coach who would provide assistance to students who may have technology questions or need advice on how to trouble shoot a problem, or a technology helpline - someone you can call if you are having a problem for students and staff. The Administration responded, "*Although this is an interesting approach to provide assistance and support, it also opens up some potential difficulties. We have tried to provide our support and help in-house, and have an intranet where teachers can and do share information, as well as a number of online resources, chats, etc. for teachers to gather information, learn.... In addition, we utilize BigWebDesk, which allows teachers to submit questions or requests for support to our technology department. Lastly, we have technology coaches at each school that serve as an additional resource for staff. We will continue to explore various opportunities to support teachers in their use and integration of technology.*"

⇒ Web 2.0 tools for any planned activities.

⇒ Guidelines in what should be permitted in an email.

⇒ An electronic etiquette course offered to students at the elementary level. Per the

Administration, "*This currently takes place at the middle level in the Computer class. In addition, informally, teachers and administrators regularly share with all students appropriate and inappropriate use of technology and etiquette when appropriate to the classroom activities and discussion.*"

Did You Know that Pennsylvania is one of only three states that do not have a transparent and equitable way to distribute state dollars to school districts?

The BYOD committee is comprised of 25 members including teachers, administrators, and the technology department staff. Barry Desko, Director of Secondary Education, heads the committee. They will be meeting in April to discuss the feedback and insights from teachers who are piloting and who already use BYOD. This will help to further guide the implementation of BYOD in Council Rock, and Citizens For Education will continue to report on this and all technology issues.

District Expanding STEM Education Programming to Elementary Schools

Experts agree that our nation's innovation and competitiveness are driven in large part by the new ideas created by people involved in STEM industries (Science, Technology, Engineering and Mathematics). In order to increase the number of students pursuing these careers, schools need to engage children at younger and younger ages.

This year, Council Rock has launched a pilot program to expand STEM programming to its elementary school students. STEM specialist Tim Duke has been working with teachers and students since September. "My goal is to inspire young students to be inquiring learners," said Mr. Duke. "By providing them with fascinating and challenging STEM activities we want to light a spark that encourages them to take higher level science and math courses at the middle and high school levels."

This integrated, interdisciplinary program is the result of collaboration between The Dow Chemical Company, the Council Rock Education Foundation (CREF), and a Ready-to-Learn Block Grant from the Pennsylvania Department of Education. The Dow grant was written by Suzanne Wray (CREF Executive Director) and Renee Devlin (Science Curriculum Coordinator). "We've been developing this idea for many years now," said Renee Devlin, "and when we received the Dow grant, the rest of the funding fell into place."

The STEM specialist position was initially slated to be part time, but a portion of the district's Ready-to-Learn Block Grant was allocated by the district to expand the position to full time. According to the PA Dept. of Education web portal, the Ready to Learn Block Grant "provides schools with financial assistance to implement effective educational strategies, practices and initiatives to improve student achievement." One area listed as an accepted expenditure of these funds is efforts to improve student outcomes in STEM education, which also includes STEM training and professional development for educators. The challenge for the district is to find a way to fund Mr. Duke's position in future budget years.

While Mr. Duke's home base is at Holland Elementary, he travels between all ten elementary schools, working with classes of students. "We are excited about the opportunity for our elementary

school students", said Joy McClendon, Director of Elementary Education for Council Rock. "In just a few months, Mr. Duke has raised awareness and garnered excitement for integrating more technology in our science classes." While secondary level teachers tend to be specialists in their fields, elementary teachers often do not have a background in science. Mr. Duke has been working with elementary teachers to develop strategies to incorporate STEM education across multiple disciplines.

The Council Rock Education Foundation recently invited Dow to Holland Elementary School to see the impact of the grant during a 5th grade science class, focusing on the formation and results of acid rain. Students used the new Vernier Labquest devices to measure and record data. One student explained the experiment: "Rainwater is usually a pH of 6.0. We are using the Vernier pH sensors to measure the changing pH levels of water when we blow carbon dioxide in it." Students made observations, predictions and graphed the results of their data using data points recorded during the experiment. Afterward, one student summed up the real-world results explaining that "acid rain is dangerous for the environment because it can cause fish to get sick and lead to a collapsing ecosystem."

"The possibilities that this collaboration creates is exciting," said Justin Land, Northeast public affairs manager at Dow. "By growing the capacity of teachers in STEM and invigorating the curiosity of students, we have a real possibility in building the workforce of tomorrow and transforming STEM education into a driver for innovation, manufacturing, and economic prosperity."

On the way out of the class, students shared what they love best about Mr. Duke's STEM classes and comments ranged from "I love doing the experiments!" to "I liked using the Labquest devices to test and measure things" and "I like that we are always learning new stuff!" "It is thrilling to have students constantly ask, 'Mr. Duke! When are you coming back? When are we going to do STEM again?'" Tim commented. "Just last week, I went to a science fair planning meeting and had two students tell me that they had been so intrigued by the recent demonstration on polymers that they decided to make a science fair project to determine which brand of diapers was most absorbent. That's the spark we want to encourage!"

The STEM specialist position is already transforming elementary school classrooms. Citizens For Education hopes this will be a permanent addition to elementary school education. The challenge for the district is to find a way to fund Mr. Duke's position in future budget years.



CFE Membership Form

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Citizens For Education is a non-partisan, non-political Pennsylvania non-profit whose objectives are to ensure a quality education for all students of the Council Rock School District, to better inform the Council Rock community of educational issues, and to increase the involvement of the community in the decision making processes affecting the quality of education in Council Rock.