

Bits and Bytes

Volume 7, Number 4
July 2015

From the President's Keyboard

Gerald Logan

It is with a bit of regret that I sit to write my last message, but with every setting sun comes the promise of a sunrise. During the night there is a chance to reflect on the events of the day. So please indulge me while I reflect on the last five years. The last five years have been interesting, as the landscape of educational technology has changed, but in many ways stayed the same.

When I was first elected, members were asking for professional development that fit their needs. That is one requirement that has not gone away. It is better recognized today, as the imposed agreement called for the flexibility teachers needed to pursue PD to improve their craft. The subject of this PD has stayed the same, with Smart Board PD being one of the highest attended sessions offered at conventions and PD days.

A lot of new topics have emerged as well. Gamification has been interesting to watch as teachers make their lessons more engaging. The makerspace movement has been fun to participate in and has been one of the highest-attended sessions. The emerging trend in blogs and news feeds is coding. We have come full circle as we introduce a new generation to computer programming. When I first became involved in educational technology, coding was the norm, and it fell off the radar as we moved more to the use of tools developed by other people. The current trend to teach coding is to help students understand the problem-solving process.

Another change I have seen is the PD funding from Alberta Education decrease and the sponsored projects drop off. This means teachers are now the sole innovators, which allows for the freedom to do action research in the areas of their interest rather than doing research for a third party. This freedom comes with the responsibility to find the funding as well. Do keep in mind our Innovative Technology grants.

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TECHNOLOGY
COUNCIL**

of the Alberta Teachers' Association

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Decreased funding restricts the regional PD consortiums in their offerings to support educational technology sessions. This leaves an opening for the Educational Technology Council (ETC) to expand its PD offerings. Although we no longer offer the major conference, this past year we held two makerspace days in Edmonton with over 200 people in attendance. We also offered two “Google Apps for Education” sessions: one in Calgary and one in Grande Prairie. All in all we offered PD for about 250 people, this while we have a membership of 370—a pretty good percentage. This does not count the support we have given to the Edcamp movement.

Although this shows that we are in good stead, our future is not without a few perils. Educational technology is sexy and developed to the point that it can be very seductive. In my current position I see many teachers, overworked as they have always been, seeking help from a branch of educational technology that I would call

dangerous and alarming. That would be the algorithmic teaching machines of the Internet. We have seen many of these systems emerge that “instruct” students. We all know that good computer-mediated instruction is expensive to develop and in many cases not very good. This is the state of the art. In a recent CBC call-in show, students reported that they found the math instruction in their schools boring and uninteresting. One student claimed that the instruction was so simplistic he found it insulting.

I say to trust a computer algorithm to interpret the results of your students’ “test” and plan a path of learning is dangerous. This is just a high-tech version of those reading instruction boxes found in classrooms 50 years ago. I found those boring, too. I know we can find a better use of our students’ valuable learning time.

So it is within this context that I become the past president, leaving ETC in the hands of some very capable and passionate educators. 📌

Call for Articles

ETC would love to publish articles by its members. If you attend a wonderful technology conference, have a great review of an application (software, Web 2.0, tablet and so on) or would like to recommend an article, contact either John Korassa (john.korassa@ecsd.net) or Gail Reid (greid@esl-almadina.com). 📌

Message from the President-Elect

Ryan Layton

Of my many interests and hobbies, being immersed in films has always been near the top. I love being transported to another time and place and experiencing things that would not be accessible to me otherwise. I particularly enjoy films that depict the ancient samurai. My favourite components are the sword play, costumes and the code of honour that permeates the story.

Yaskawa, an industrial robotics company, released a [video](#) of a master swordsman, Isao Machii, who is motion-captured, then copied by a Motoman MH-24 robot. They go through a series of challenges, pitting swordmaster against robot, to see who has the greatest strength and accuracy when performing four different cuts. Needless to say, the swordsman is sweating by the end of the event while the machine has outperformed him in every way.

As interesting as this was, and as much as I was geeking out over this competition, I couldn't help but think of the future with regard to machines like this. There have been many articles released lately about how one-third to one-half of all jobs will be replaced by robots (or machine algorithms) in the next 15 to 20 years. In fact we can already see evidence of this when we use self-checkout stands, ATMs or online banking or when robots are entering the surgery room.

The question remains, if Isao Machii can be copied so easily, can the same happen to teachers? The answer: even now companies are trying to replace the teacher with machine analytics, big data and some forms of blended learning on a screen. These businesses have millions of pieces of information that have allowed them to pinpoint how students learn subjects, and they then create an algorithm to serve it to the classroom with the promise of personalized education.

The good news is that it is not working. Programs that rely on this mechanical model are failing and losing students in the classroom. The one thing that these programs lack, and will never be able to replicate, is the ability to forge relationships. This is what sets us teachers apart and guarantees future employment. Students learn through their relationships with other students, teachers and parents.

As we finish this school year, I would encourage you all to look at your position in your school and classroom and reflect on the many relationships that you have developed. This is what sets our profession apart from any of these positions threatened by machines. Foster these relationships as they are the greatest forms of influence you will ever have in your classroom. 🙏

Technology Sampling in the Elementary Classroom

Luigi Pollio

I love using computers in the classroom. Trying new things and ways to stimulate the kids enough to unlock their potential is a passion. I even finagled a way to get a laptop cart stored in my room for easier access. I'm pretty in tune with what Grade 6 kids will find interesting and engaging. What I struggled with in the past was when to move on before things got stale.

Easier said than done. The past few years I'd start off by introducing them to Edmodo. They think it's the cat's meow. It empowers them to feel like they're all grown up. Avatars are painstakingly made, and conversations are plenty and occur at all times of the week. I even manage to get them to submit an assignment or two on it. Then after less than a month it is as if a switch has been flipped. They're done with it. The mere mention of it results in audible groaning. I became keenly aware that kids native to technology see it more as a toy than a learning tool. I kid with them that it almost seems like when there's more learning than playing going on, look out.

So it would go throughout the year. I'd introduce them to something I thought they'd like and we'd go at it until the groaning started. Then we would move on to something new. Then it hit me. Turn the tables and leave them wanting more.

To quote Seinfeld: "When you hit that high note, you say goodnight and walk off."

I should have been doing this all along. To be sure, I have been doing a bit more research and adjusted my attitude. Is the technology a means to an end, or a brief introduction to something new? To me, achieving mastery in using the program is not the goal. Exposing them to as many things as possible and in many cases, learning right alongside them has proven to be a very effective use of our time. Whether or not a child wishes to continue using the program on his or her own time is up to them. So far this year, they have been introduced to social media, YouTube publishing, coding, completing circuits, creating comics, city simulation, with more to come.

I also don't spend my classroom budget on any of the programs. If it isn't free or available for trial, forget it. As a parent of two elementary students, I see firsthand at home how they utilize licensed programs our division buys such as Mathletics and Raz-Kids. They do the exact same thing as my sixes. Play it for a bit, then it falls by the wayside.

If you have the time, I highly recommend sampling as many programs as you can. Some will hit and some will miss, but you'll never get stale. ■

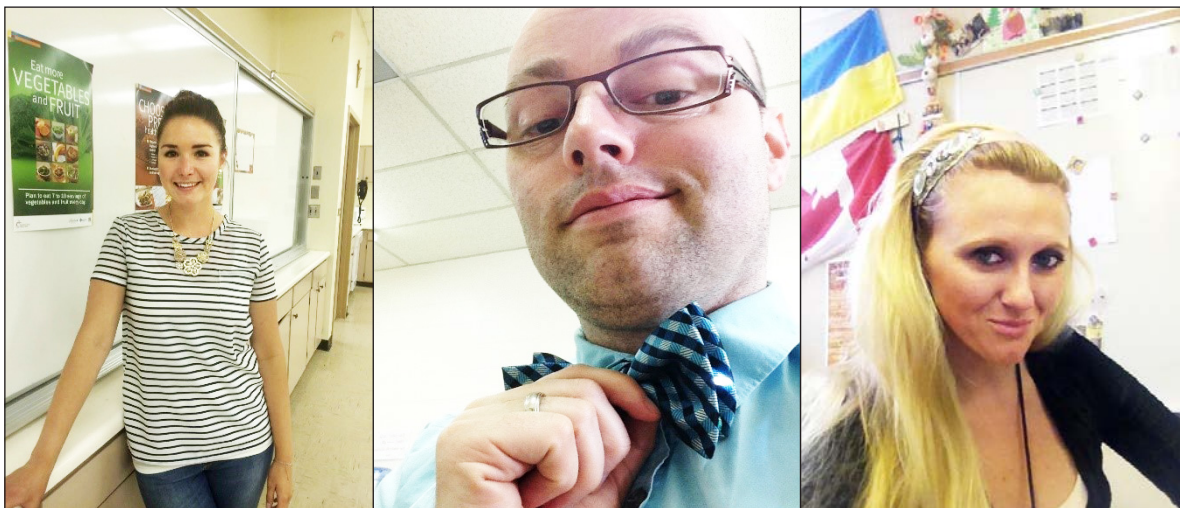
Innovative Technologies Grant 2015—E-Textiles Collaboration

As we leap ahead through all the latest technological shifts and trends, it is important to look back to hold tightly onto the great technology and traditions we all know. In this e-Textile project we are combining fashion, culture and design with circuits and programming. In three separate schools, students will create different clothing and art objects. Some of these will be functional, and some will be artistic. Students will design their clothing solutions by sewing, soldering and programming their personal e-Textile projects.

Much like the base of this project pulls together different types of media, we are pulling together three schools to work on this grant. Below are the three participating schools and lead teachers:

- Jessica Bates, Ben Calf Robe, Cree bilingual program, regalia
- Aaron Ball, St Augustine Elementary, knitting club
- Yanina Vihovska, St Martin Elementary, Ukrainian bilingual program, traditional arts class

For each group this project will have different goals and will hit on different curricular links. The Cree bilingual program will redesign their Aboriginal regalia used in Cree ceremonies. The meshing of Cree tradition with fashion studies and computer programming will give new life to ribbon shirts and jingle dresses. St Martin's students will work with traditional Ukrainian bracelets, ties and cross-stitching to add a digital edge. Finally, the knitting club at St Augustine is aiming to make items that will assist those in need in covert ways. ■



Jessica Bates

Aaron Ball

Yanina Vihovska

Edna Dach Educator of the Year 2015



William (Bill) Belsey

It is with great pleasure that we announce that the winner of this year's Edna Dach Educator of the Year Award is William (Bill) Belsey of Rocky View School Division. The ETC Edna Dach Educator of the Year Award is presented to a classroom teacher and/or technology leader in an educational setting who works to promote technology in education through

- leadership in educational technology,
- best practices relating to technology integration and
- professional development for teachers for integrating technology into the curriculum.

A pioneer in his field, Belsey has a plethora of accomplishments and awards for his work in technology in education:

- Belsey introduced the first computer into Canadian Arctic schools in 1982 while

teaching his Inuit students at Kreterklerk School in then Eskimo Point. He taught them how to code using the LOGO programming language, developed by Dr Seymour Papert and his team at MIT Media Lab.

- In the early 1990s, he also helped to bring the Internet to the community of Rankin Inlet and established the very first Community Access Centre in the Canadian Arctic called Igalaaq (Inuktitut for window) at the Leo Ussak School. This pioneering work was honoured with the Royal Bank and Conference Board of Canada's National Partners in Education Award.
- In 1996 Belsey was honoured with the Prime Minister's Award for Teaching Excellence.
- In 1997 Belsey was invited to work with Seymour Papert and Nicholas Negroponte at the world-famous MIT Media Lab to work on issues regarding the innovative use of ICTs to support teaching and learning.
- Also in 1993 he created one of the first school websites in Canada for the Leo Ussak School.
- In the 1990s Belsey was instrumental in bringing iEARN, the International Education and Research Network to Canada and was the volunteer executive director for iEARN-Canada, the Canadian chapter of iEARN, see www.iearn.org. iEARN is the world's largest and most experienced K-12 professional learning community with over three million members in over 120 countries who share the vision of "Connecting Youth and Making a Difference" by working on international collaborative projects using information and communications technologies.
- Belsey created the award-winning www.childsoldiers.org, which helped to raise global awareness about the issue of child soldiers with stories, artwork and multimedia exposés from youth who have been affected by war.

He has since donated this website domain to Senator and (retired) Canadian General Romeo Dallaire so that he could continue his work on this important issue.

- Belsey and his students developed a learning partnership through iEARN with fellow teacher Tommie Hammaluba and his students in Botswana about the issue of Malaria, <http://net4nets.net>.
- He was asked by CIDA, the Canadian International Development Agency, and the World Bank to present his thoughts and his work at the Global Knowledge '97 conference in Toronto on the topic of "Universal Access to Information and Communication Technologies." At this conference, former World Bank president James Wolfensohn praised the impact of this work. He has also been an advisor to the Inter-American Development Bank (IDB) and the US Peace corps. His pioneering work has been featured at an exhibit at the Canadian Museum of Civilization as one of Canada's Global Heroes.
- Belsey is a recipient of the Royal Bank Fellowship from the Mathematics, Science and Technology Group at Queen's University and the Roy C Hill Fellowship for Innovations in Education.
- He was a recipient of the prestigious CANARIE IWAY Awards (IWAY is short for Information Highway). These awards honour Canadians who have made outstanding contributions to Canada's world-recognized information society—celebrating innovators behind Canada's advanced broadband development and use.
- From 1999 until 2003, he was a senior educational advisor for Canada's SchoolNet and was coordinator for Canada's National Network of Innovative Schools (NIS).
- He was among the first to pilot Smart Board use in the Rocky View School Division and is still working with Smart to pilot some of their newest technologies.
- His Springbank Middle School students were some of the first to be given Google Classroom accounts as beta testers.
- His Springbank Middle School class was one of the first in Canada to have its own Twitter account @Coolclass.
- His Springbank Middle School class was one of the first classes in Canada to have its own podcasting channel on iTunes @Coolclass.
- He has worked with experts from around the world via Skype on LEGO robotics and green screen video TV shows.
- He was asked by the federal government to lead the Timecapsule2000 Project.
- He is the founder and president of Bullying.org, an internationally and nationally recognized educational organization that is dedicated to the prevention of bullying through education and awareness. The website was honoured with the Cable and Wireless ChildNet Award, which goes to projects that make the Internet a better and safer place for children. His www.bullying.org project was also named as a finalist in the Stockholm Challenge Awards, an award that has been called the Nobel Prize of the Information Technology (IT) world. Bullying.org has hosted millions of visitors and contributors and is often listed as one of the top-referenced bullying websites in the world.
- He also created www.cyberbullying.ca, thought by many to be the first website in the world to address the issue of cyberbullying. He is often cited as the first person to use the word and define the behaviour cyberbullying.
- Belsey wrote "Cyberbullying: A Real and Growing Threat" for *The ATA Magazine*.
- Belsey's advice for teachers about cyberbullying was used by the Canadian Teachers' Federation in a professional document that was shared nationally.
- In 2002, Belsey conceived of, and helped to coordinate, Canada's annual National Bullying Awareness Week, which is now formally recognized in every province and territory, as well as by the federal government (see www.bullyingawarenessweek.org).
- He created the world's first professional online courses about bullying and cyberbullying at www.bullyingcourse.com.
- In June 2005, Belsey was also asked to share his work about bullying and cyberbullying with the United Nations International Research Study on Violence and Children in Bangkok.

- In May 2006, Belsey received Canada's National Technology Innovations Award from the Learning Partnership and his presentation "Change the World 101" was given the Conference Award as the most outstanding work presented during the entire gathering.
- In October 2006, Belsey was named as a fellow of the World Technology Network in the education category at a gala event at San Francisco's city hall. At this same ceremony, former US vice-president Al Gore was inducted as a fellow in the environment category and Tim Burners-Lee, one of the cocreators of the Web, was honoured in the Internet category.
- In November 2007, he was nominated for the YMCA Peace Medal.
- In 2010, Belsey was the keynote speaker at conferences on bullying in Medellin, Colombia, and also at Australia's annual National Conference on Bullying.
- In December 2011, he was asked to give testimony about bullying and cyberbullying to the Human Rights Committee of the Canadian Senate. At the end of this testimony, Belsey encouraged the committee to listen to his students; months later they heeded this advice and Belsey's Grade 8 Language Arts class submitted the position papers they had written about the topic of cyberbullying as testimony via video conference, the first young people

ever to do so before a committee of the Canadian government.

- In 2012, Canadian Television (CTV), recognized him as an "Inspiring Albertan."
- Belsey's social studies classes are often chosen to host the Canadian Citizenship Ceremony at Springbank Middle School.
- He often appears in media interviews nationally and internationally.
- In 2012, Belsey was awarded the [Queen Elizabeth II Diamond Jubilee Medal](#), which honours significant contributions and achievements by Canadians.
- Belsey has presented at conferences across Canada and around the world.

Belsey currently lives in Cochrane, Alberta, with his wife, H el ene (also a teacher) and has a daughter and a son. He teaches at Springbank Middle School for the Rocky View School Division. If you would like to see some of his students' innovative work, check out www.coolclass.ca or Google "Canada's coolest class," then click on "I'm Feeling Lucky." If you would like to learn more about Belsey's work, please visit his blog at www.billbelsey.com or follow him on Twitter @Inukshuk.

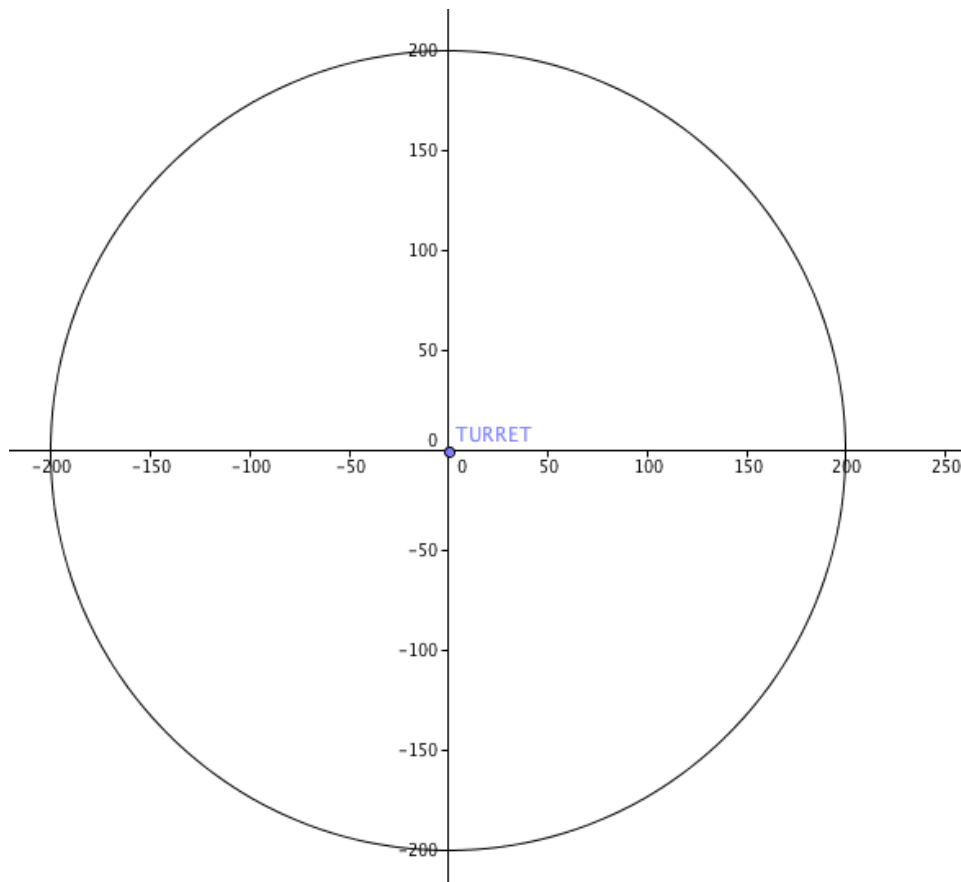
Belsey was nominated by Celia Barrington of  cole Elbow Valley Elementary for this year's Edna Dach Educator of the Year Award. It is our pleasure to congratulate him as the recipient of this year's award! 🎉

Coding and the Equation of a Circle

Dave Martin

While a student was creating a tower defence game in my computer class, he learned what the equation of a circle is. This idea is a Grade 12 math concept, and he did this in Grade 10. Here is what happened.

He was coding a certain tower in his game, and he asked me, “How do I code the tower to only attack units which are within 200 pixels?” I first asked if he could draw me a picture of what he wanted, and below is the computer graphic of what he drew:



I then said, “What do you have?” He showed me that he had created variables:

t_x = x value of the turret

t_y = y value of the turret

u_x = x value of the unit

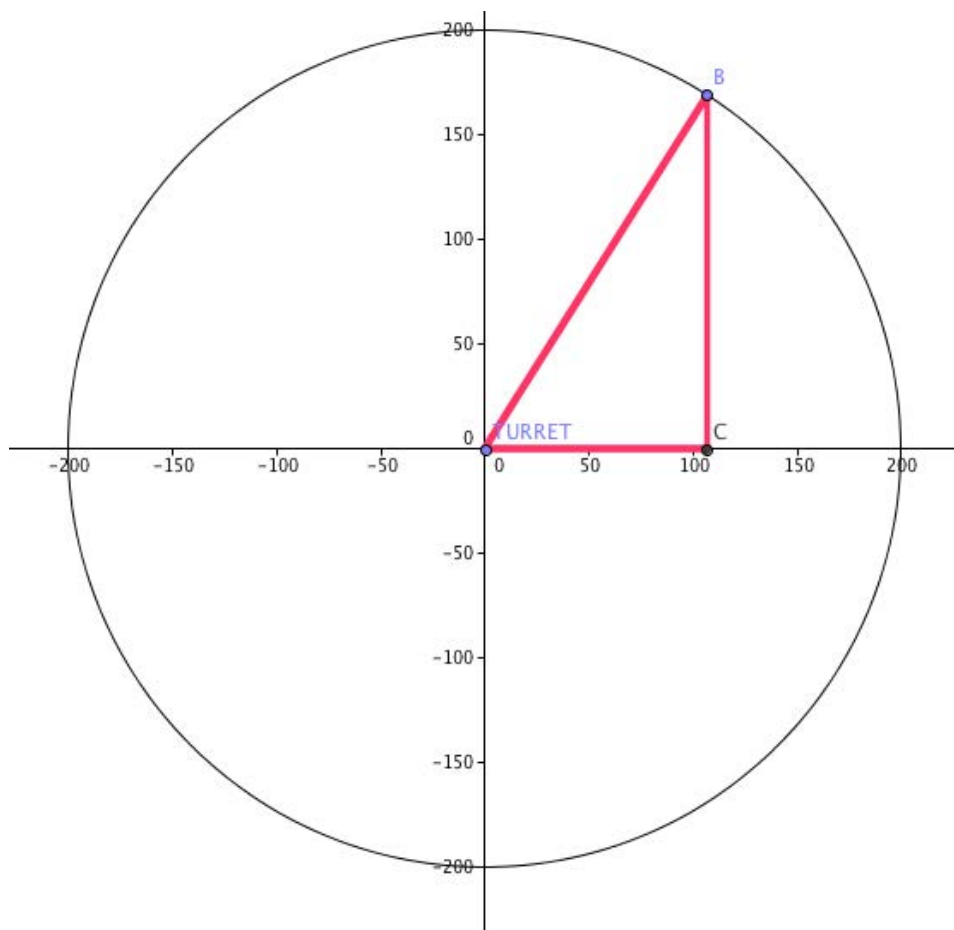
u_y = y value of the unit

He currently coded that if the following two inequalities were true, the tower would attack.

$$\left| t_x - u_x \right| \leq 200$$

$$\left| t_y - u_y \right| \leq 200$$

At a quick glance we realize that this creates a square around the turret not a circle. This he had already realized. He said, "How do I test if the straight line distance is less than 200?" We drew a picture as follows:



He said, "Well I know that once the line from the turret to the unit is less than or equal to 200, the turret will attack, but what inequality do I create?" A student next to him said, "Would Pythagorean theorem work?" The problem we had was to label the other two sides. Minutes passed while I let him think, and finally he asked if this would work:

$$\left(u_x \right)^2 + \left(u_y \right)^2 \leq 40000$$

I said, "Let's try it." Sadly the turret would attack the unit if the unit was within 200 units of the origin not the turret. Once again, I refused to simply give him the answer and I asked him, "What could we do to change from the origin to the turret?" He replied, "Well the turret isn't always the origin, so we would have to test the distance, and so can we do."

$$\left(|u_x - t_x|\right)^2 + \left(|u_y - t_y|\right)^2 \leq 40000$$

I asked, "Why did you use the absolute value before?" To which he responded, "Because the code needs to take the positive value, and if the unit was to the left or below the turret, I need it to become positive. But wait. Squaring is positive, so can I just remove the absolute value?" We tried and here was his final test:

$$(u_x - t_x)^2 + (u_y - t_y)^2 \leq 40000$$

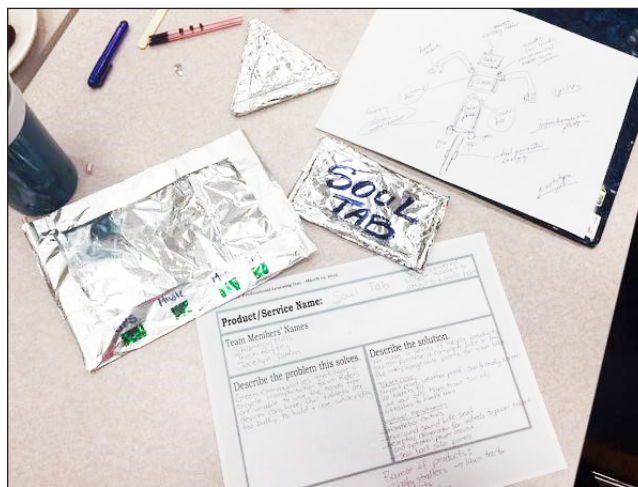
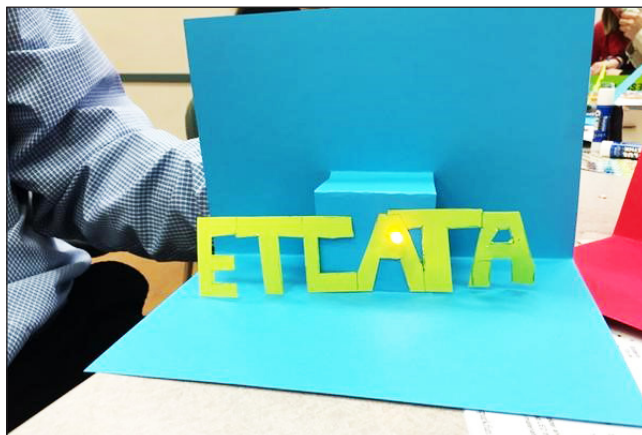
When tested, this worked perfectly. Keep in mind this child is in Grade 10 and completed an outcome from Grade 12 mathematics. ■

Makerspaces and Design Thinking Professional Learning Day

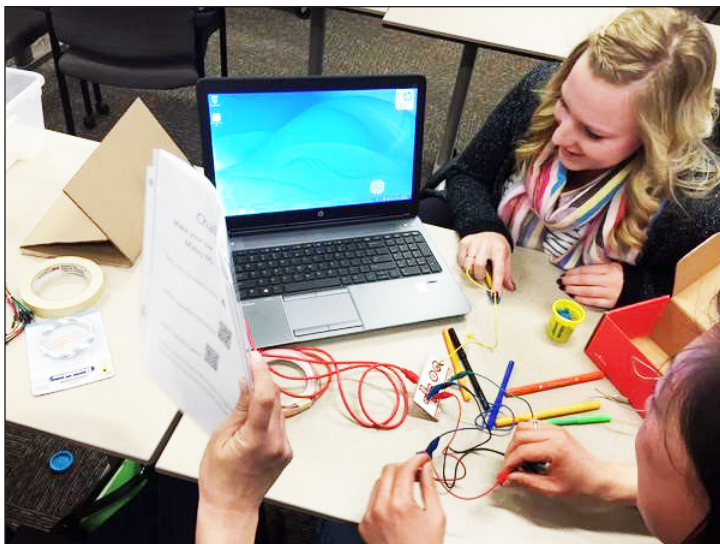
Nicole Lakusta

Over 80 participants attended the recent ETC-hosted event in Edmonton. With Susan Crichton speaking about the evolution of the maker movement, agile innovation and participants digging into a design-thinking team challenge, the morning was filled with learning, dialogue and reflection. In the afternoon, participants headed to one of four interactive sessions. Presenters included David Hay (“Making the Internet of Things: Physical Computing with Raspberry Pi and Arduino”), Danny Maas (“Makerspace

Playground”), Trisha Roffey (“Makers UNITE! Challenges”) and Holly Arnason (“Let’s Play, Let’s Create: Learning at EPL’s Makerspace”). Even the ATA library was able to share their English and French print-based resources available to all teachers in the province. From soft circuits, to Minecraft, to coding/programming, to interactive challenges pulling out authentic curricular connections, to play-based learning, there were a variety of activities, networking and discussions occurring throughout the day. ■







DIGITAL REPORTING & ASSESSMENT TOOLS

Evaluating their impact on classrooms



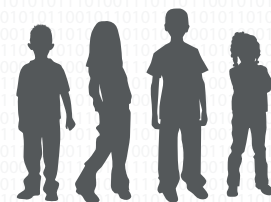
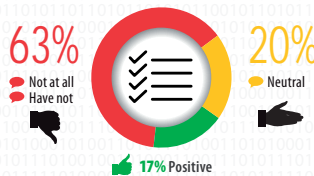
In Alberta, the use of digital reporting tools (eg, PowerSchool, StudentsAchieve and Desire2Learn) and digital assessment tools (eg, Mathletics, SuccessMaker, DreamBox Learning Math and Raz-Kids) has grown dramatically over the past decade. In 2014, the Alberta Teachers' Association and University of Alberta researchers surveyed over 1,100 teachers and principals from across urban and rural Alberta about the perceived value and impact of these digital tools on instruction and assessment practices, teachers' work life and shifting parental expectations.

VALUE

Low Trust in Improving Instruction and Assessment for Students

Have digital reporting tools **improved** the level of instruction and assessment in classrooms?

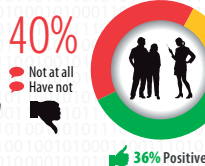
*Note that this trend line is now consistently moving towards the negative with each study on the subject conducted over the past five years.



Not Facilitating Communication

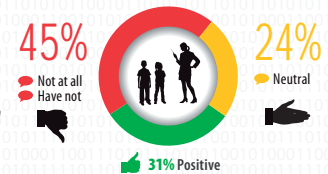
PARENTS

Have digital reporting tools facilitated and improved communication with parents?



STUDENTS

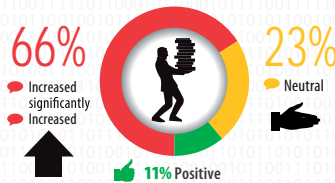
Have digital reporting tools facilitated and improved communication with students?



IMPACT

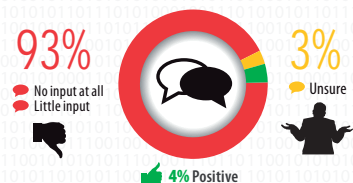
Significant Workload Issues For Teachers

How have digital reporting tools affected your workload?



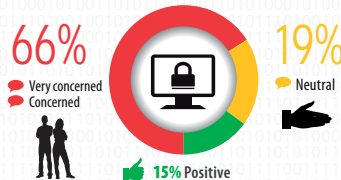
Relatively No Consultation or Input when Selecting or Implementing Digital Tools

How much input did you have in choosing and implementing this reporting tool?



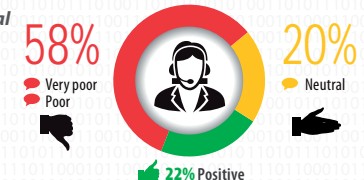
Low Flexibility of the Digital Tools

How do you feel about the flexibility of digital tools?



Poor Technical & Professional Development Supports

What sort of professional development supports did you receive when initially attempting to learn how to use the digital reporting tool?



WHAT IS THE INVESTMENT (human, financial...)?

WHAT IS THE COST (relationships, privacy...)?

WHAT IS THE RETURN (student learning, data...)?

Key Findings

1. Teachers reported that they were generally not confident that digital assessment and reporting tools were improving students' learning.
2. Teachers viewed digital reporting tools as providing no, or very little, improvement to the level of instruction and assessment in the classroom. In addition, several teachers reported that digital reporting tools have not improved communication with parents or students.
3. The majority of respondents indicated that they were mandated to use digital reporting tools within their classrooms and were not able to provide any feedback as to which tool would be used.
4. Teachers indicated that digital reporting tools have increased teacher workload, increased parental expectations regarding the frequency of reporting and increased the amount of time required to report student progress.
5. Participants assigned poor ratings to the professional development and technical support provided for digital reporting tools.
6. Respondents indicated that preparing report cards and individual program plans (IPPs) caused them the greatest amount of stress in the workplace.
7. Most respondents stated that they did not use, or were not planning to use, diagnostic, adaptive and real-time assessment tools in their classrooms or schools.
8. Participants expected to have little to no input in the selection of tools, should their school district implement diagnostic, adaptive and real-time assessment tools.
9. Teachers have a low level of concern with data issues related to digital reporting and assessment.
10. Teachers, through their qualitative comments, demonstrated concern that the implementation of digitally-based resources would put students who had limited access to digital learning tools at a disadvantage compared to students who had families and schools that were well-supported.



VIEW THE
FULL STUDY

Learn more about this study on the ATA website at www.teachers.ab.ca under About the ATA>Education Research>Research Publications.

Further background information about Association research is available from Lindsay Yakimyshyn at the Alberta Teachers' Association; e-mail lindsay.yakimyshyn@ata.ab.ca.

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Technology Roundup

In the last issue, we asked readers to tell us about any incredible apps, software or tools that they use in the classroom. Below are a few. We would like to publish more of these in every future issue. Continue sharing yours through this link: <http://goo.gl/forms/iEsb8BGyEo>.

Name of resource	Grades resource was used in	Description
Xperica HD	Grades 6–9	This app covers the Mechanical Systems in the curriculum. To get all the features, the app can be purchased for \$1.19.
http://happyclassapp.com/	Grade 7	This app is an automatic seating chart maker that makes seating plans based on your students' needs, for example, some students don't work well together and some students prefer the front of the classroom. Once the class list is entered, seating plans can be randomly selected as many times as you wish. The first chart is free. Great for when you just don't have another creative seating plan left in your mind!
https://classroom.booksource.com/default.aspx	Grades 7–8	I've catalogued my entire class library with this classroom organizer. The iPad/iPhone app even reads bar codes on books and enters the information automatically (for example, ISBN, title and author). Each student has an account. To check books in and out of my classroom library, students simply use my iPad or my desktop computer. I love it!

