#LEARNING FORWARD

ALSO IN THIS ISSUE

- Where are you in the Wave of Change?
- Something’s in the Air: Drones in the Classroom
- Leadership Mindshare
- A Workable Structure for Integration
PD for TEACHERS
ONLINE AND BLENDED LEARNING PD FOR TEACHERS

*Michigan Virtual University*®’s Professional Learning Services (mivu.org/services) provides online professional development solutions for teachers through the Professional Learning Portal:

- Learn and earn SCECHs in a variety of courses
- Complete required compliance courses
- Explore teaching online or in a blended classroom

*MVU*® is dedicated to supporting the PD needs of Michigan teachers!
MACUL Journal
A publication of the Michigan Association for Computer Users in Learning
Fall 2016 | Volume 37, Issue 1

CONTENTS

Calendar.................................................................................................................. 4
MACUL Officers and Board of Directors .............................................................. 5
Special Interest Group Directors ........................................................................ 5
From the President’s Desk..................................................................................... 6
From the Executive Director.................................................................................. 6
MACUL Journal is Moving Forward .................................................................... 7
Where are you in the Wave of Change? ............................................................... 8
Transforming Schools into 1-to-1 Learning Environments .................................... 10
Change and Leadership ....................................................................................... 12
MeL Teachers Debut ............................................................................................ 13
Something’s in the Air: Drones in the Classroom ............................................... 14
Leadership Mindshare .......................................................................................... 17
Technology Crossroads: What Still Needs to be Done ........................................ 18
Redesigning Design: Streamlining K-12 Online Course Creation ....................... 20
A Workable Structure for Integration .................................................................. 22
Let’s Collaborate! Apps and Websites that Foster Co-Engagement ..................... 24
Exciting Things are Happening with the 21things Project! ................................. 25
The Michigan DataHub can Save Schools Time, Money and Resources! .......... 26
2016-2017 MACUL Grants Awarded .................................................................... 27
Igniting Learning Through Meaningful Collaboration And Innovation

Founded 1975

An organizational member of
The International Society
for Technology in Education

MACUL is a 501 (c) (3) non-profit organization that exists to:

■ provide a state association for educators involved with, or seeking knowledge of, computer-related technology in learning
■ provide for the sharing and exchanging of ideas, techniques, materials, and procedures for the use of computer-related technology through conferences, publications and support services
■ promote and encourage effective, ethical and equitable use of computer-related technology in learning
■ encourage and support research relating to the use of computer-related technology in learning.

E-mail address:
macul@macul.org

Website:
www.macul.org

NOVEMBER 2016
NOVEMBER 15... MACUL Board meeting, MACUL Building, Lansing

DECEMBER 2016
DECEMBER 7 .... AT&T/MACUL/MVU Student Technology Showcase,
Capitol Bldg, Lansing
DECEMBER 20... MACUL Board meeting, Conference Call

JANUARY 2017
JANUARY 17 .... MACUL Board & SIG meeting, MACUL Office

FEBRUARY 2017
FEBRUARY 21 .... MACUL Board meeting, MACUL Building, Lansing

MARCH 2017
MARCH 15-17 .... MACUL Conference, Detroit, MI: #Learningforward

APRIL 2017
APRIL 18......... MACUL Board meeting, MACUL Building, Lansing

MAY 2017
MAY 5............ UP MACUL Conference, Kingsford HS, Kingsford, MI
MAY 21-23 ....... MACUL Leadership Retreat

JUNE 2017
JUNE 25-28....... ISTE 2017, San Antonio
MACUL OFFICERS

Gina Loveless, President
Berrien RESA
gina.loveless@macul.org

David Prindle,
President Elect
Byron Center Public Schools
david.prindle@macul.org

Ron Madison, Treasurer
Genesee ISD
ron.madison@macul.org

Steve Dickie, Secretary
Dearborn Divine Child HS
steve.dickie@macul.org

Kevin Clark,
Past President
Berrien RESA
kevin.clark@macul.org

MACUL BOARD OF DIRECTORS

Craig Allen
Breitung Township Schools
craig.allen@macul.org

Tammy Maginity
Pennfield Public Schools
tammy.maginity@macul.org

Andy Mann
Muskegon ISD
andy.mann@macul.org

Joe Rommel
Berrien RESA
joe.rommel@macul.org

Stacey Schuh
Michigan Virtual University
stacey.schuh@macul.org

Pam Shoemaker
Walled Lake consolidated Schools
pam.shoemaker@macul.org

Mary Wever
Michigan State University
mary.wever@macul.org

LIAISONS

Sue Schwartz
REMC Liaison
sueschwartz@remc.org

Michelle Ribant
MDE Liaison
ribantm@michigan.gov

Melinda Waffle
SIG Liaison
REMC 12 East
melinda.waffle@macul.org

Theresa Stager
SIG Administrators (ADMIN)
Saline High School
Theresa.stager@macul.org

Pamela Moore
SIG Computer Science (CS)
Eastern Michigan University
pamela.moore@macul.org

John Phillips
SIG Elementary Education (EE)
Berrien RESA
jphillips@macul.org

Gayle Underwood
SIG Inclusive Learning (INC)
Allegan AESA
gayle.underwood@macul.org

Erica Trowbridge
SIG Library Media Specialists (LIB)
Oakland Public Schools
erica.trowbridge@macul.org

Eric Strommer
SIG Multimedia (MM)
Flint Community Schools
eric.strommer@macul.org

Jamie DeWitt
SIG Online & Blended Learning (OBL)
Michigan Virtual University
jamie.dewitt@macul.org

Mitch Fowler
SIG Professional Learning (PL)
Calhoun ISD
mitch.fowler@macul.org

Daryl Tilley
SIG Computer Technicians (TECH)
Ingham ISD
daryl.tilley@macul.org

Go to www.macul.org > Special Interest Groups for complete listing of SIG Officers and SIG information.
BY GINA LOVELESS

FROM THE PRESIDENT

Welcome back to another exciting school year. I hope that everyone had some time to enjoy and do some relaxing in the heat of the summer. As usual, MACUL has been busy planning and even hosting events. We’ve got some BIG things on our plate this year so I hope you have a few minutes to see what we are up to.

First off all, we have added a new Special Interest Group for Administrators (SIG-ADMIN). They got to a great start by hosting a Leadership Mindshare event, which was a great day of conversations for district administrators in attendance. Our SIGs are an important part of our organization and offer more local events throughout the year. Please be sure to visit http://macul.org/events/ to keep up with all the opportunities.

Second, we have heard from our membership that we have some fantastic presenters that inspire us to be great educators. With that in mind, we have Sir Ken Robinson and a host of other great names coming to speak at the March conference. If you’ve never heard Sir Ken speak, please be sure to check out one of his several TED talks, www.ted.com/. Many of these talks have been used as springboards to bigger conversations in districts.

I’m looking forward to crispness in the air and the leaves turning as we transition out of the first routines to the robust learning opportunities with our students. I hope you all have an enjoyable year and that MACUL can support and provide chances to learn something new or invigorate an old lesson.

Gina is the Technology Director at Berrien RESA for Benton Harbor Area Schools. She taught at the elementary level for 6½ years before moving into an Instructional Technology position and eventually her current position. Gina is also a proud graduate of the MAET (Masters in Ed Tech) program through Michigan State University. She’s been an active part of MACUL Leadership since 2006.

FROM THE EXECUTIVE DIRECTOR • BY MARK SMITH

#LearningForward as a theme of this MACUL Journal has a direct correlation to the MACUL 2017 Conference, but what it has come to reflect over the course of the last few months is so much more!

Many of you experienced #learningforward already this year with a new start date and new devices and even a new framework (ESSA) for learning in the conversation…. Hopefully, MACUL is part of your 2016-17 plan for a successful school year!!

#Learningforward is the conference theme, but it is also reflective of the work our Board of Directors is doing. We have new events (Leadership Mindshare), old events revamped (UP MACUL, GoogleFEST) and a new approach to MACUL 2017 with our amazing keynote lineup.

As an organization, we continue to be committed to supporting all types of educators throughout the year. It is this commitment that brings forward even more exciting news for MACUL this year!!

We have already unveiled a new look for macul.org and maculconference.org and in January we are excited to bring you the new maculcommunity.org, which will be home to our journal and themed content, blog content, archived content, SIG communities, forums, Social Media feeds and much, much more!!!

We are excited to be #learningforward with all of you this year!!!

Mark Smith is currently the Executive Director of MACUL and is a 2001 Graduate of the University of Dayton School of Law and 1998 Graduate of James Madison University where he focused on Integrated Science and Technology. He has worked in K-12 Education for 10 years, but most recently as Dean of STEM for the L&N STEM Academy in Knoxville, TN. Follow him on Twitter @SmithStem or contact him at msmith@macul.org.
LOOK FOR THE NEW MACUL JOURNAL DEBUT

JANUARY 2017!

We are going green! This issue is the last printed edition. We are excited to welcome you into the new MACUL Community, which will be your digital home for MACUL resources, member highlights, trending topics, SIG information and much more!

www.maculcommunity.org
Change can be a relief or it can be challenging. It can be an adjustment – taking a different way to work, as I did this morning – or a transformation in the way you do something – going from a print journal to a totally online publication as MACUL is doing. Large or small, change is usually characterized by anxiety about not knowing what you will find or uncertainty about how new ways will work; but eventually questions are answered, wrinkles are ironed out, and we feel relief because we know more and we have a plan.

As with any system or institution, internal and external factors cause changes in educational programs. The policy passed in 2006 to require an online experience of Michigan high school students as a condition of graduation began as an idea. “Online experience” was defined and implemented in different ways; but whether it was a stand-alone module students completed on their own or a class delivered by a teacher in a computer lab, administrators and teachers had to prepare systems for a different approach, one that would help students develop another dimension of college and career ready skills. This Public Act was the beginning of even bigger and more transformative changes.

Another policy adopted in 2009 granted permission to form online charter schools. That decision was followed in 2012 with an increase in the number of cyber charters allowed so the field of options grew. In 2013, yet another idea became law with the course choice legislation that allowed students to enroll in up to two online courses per semester.

Prompted by legislation, these large decisions may have been more of a philosophical shift than a behavioral one for educators, but they signaled that the wave of online learning advancements was altering the educational landscape.

In the last couple of years, these changes have made their way into the schools. With the implementation of Michigan’s Online Course Catalog in 2013 [https://micourses.org/], students and parents/guardians can view all the possibilities for virtual courses from multiple school providers. In the 2010-11 school year, Michigan had just under 90,000 virtual enrollments. According to 2014-15 data, that number has grown to almost 446,000.
New techniques, materials and technology that are inherent to virtual learning have upset the status quo and challenged people to learn new ways of doing things. Administrators have had to find resources for new equipment, tech directors have had to figure out how to integrate the technology and teachers have had to learn how to use the technology. Behavior change, attitude change and cognitive change are all required to move ahead with new ideas, and the stress can be overwhelming for some.

Professional development and professional learning communities or users groups can help people manage the challenges by providing the place and opportunity to problem-solve together and share best practices. After people begin to change what they do in the classroom, when the inevitable implementation dip comes, people must gather together to support each other so they can rise – with the wave – to an improved level of practice.

Students on the receiving end of educational transformations must make changes, too. They experience the same emotional responses adults do – uncertainty, fear, anxiety, excitement, relief – as they become accustomed to virtual learning. Online instructors and mentors play a huge role in addressing those issues with the students who may be less proactive in expressing their challenges, but they require the same kind of reassurance. Consistent support, frequent communication and clear expectations will help the students move forward.

Change is like a wave; it starts as a ripple and grows to a cresting surge of energy felt by anything in its path and on the periphery. In an organization, an individual sharing an idea among colleagues can be the beginning of a wave of change. Managing that change and sustaining the energy required to actualize a different approach takes effort in all the groups within the organization. In an educational setting, trying something new involves and affects administration, board, teachers, staff and students. It’s a cultural shift.

What began as an idea in 2006, developed into a wave of change – virtual learning options and strategies – and has not crested. Where are you in the wave? Are you in the ripple, trying some strategies in the classroom? Or are you gathering energy as colleagues put their spin on the practices you’ve been sharing? Maybe you’re part of a group of teachers using blended learning and it’s catching on in your school, picking up momentum fueled by your enthusiasm and your students’ path of discovery. Eventually, the wave of change crests and all the disruption of incorporating new ideas and new routines settles in. That calm will be followed by another rush. What will it be and where will you find yourself in the wave learning forward?

About the author
Jamey Fitzpatrick, President & CEO of MVU®, has served as a champion of innovation in public education. Fitzpatrick serves on the Board of Trustees for Olivet College.
“The secret of change is to focus all of your energy, not on fighting the old, but on building the new.”  ~Socrates

The goal of the Technology Readiness Infrastructure Grant (TRIG) Targeted Site Transformation (TST) activity is to help transform schools into 1-to-1 learning environments where best practices of 21st century instruction and learning can occur. For additional information about TST, please visit: http://22itrig.org/activities/targeted-site-transformation. Through TRIG grant funding, the past two years, Genesee ISD & TST have partnered with over 20 schools. TST has discovered when a school is ready for this change the process for starting to adopt 1-to-1 devices follows certain strategies, which can help ensure success. These key strategies include: (1) robust wireless network, (2) classroom technology, (3) mobile devices and (4) professional development.

Strategy 1: Robust Wireless Network
Schools/districts complete a review of the network infrastructure to ensure both coverage and density with a wireless network. Items to review are: bandwidth, network switches and access points. Schools that have adequate bandwidth might only need to upgrade or replace network switches and access points. TST has found that one (1) access point per every two (2) classrooms using a zig-zag pattern can help minimize cost as well as provide the coverage and density needed. Districts and schools should talk with neighboring schools, ISD’s, and vendors to get an idea of industry standards, equipment standardization, local solutions and best practices.

TST AP Map

Strategy 2: Classroom Technology
A 1-to-1 learning environment creates an opportunity to efficiently utilize student-centered instructional practices. With this device rich environment, each student has the ability to individually interact with the curriculum on a mobile device. Therefore, it is important that the school/district reviews current classroom technology, such as teacher workstations, document cameras, and interactive whiteboards, to determine what needs to be upgraded. TST initially focused on upgrading teacher work stations and projectors, and but recommends that schools wait to upgrade any additional classroom technologies until well after teachers and students have had adequate time to begin to transform the learning environment with equitable access to mobile devices. This waiting period will allow the school district to determine which technologies will need upgrading and which technologies have been supplanted by the adopted instructional practices and mobile devices.

A key impactful solution TST identified was wireless mirroring of a mobile device (iPad, Chromebook) which allows the teacher (or student) to project from anywhere in the classroom. Using hardware such as an Apple TV or Chromecast or software like Mirroring360 or Reflector makes this possible. Recently, Google...
announced that Google Cast for Education (www.google.com/edu/cast-for-edu) will allow FREE wireless mirroring in a Chrome environment.

**Strategy 3: Mobile Devices**

Schools/districts should review current mobile device trends, previous network purchases and most importantly the learning objectives. In some environments, an iPad works best and others, a Chromebook is a better fit - ultimately the type of mobile device is not as important as the goal of the learning objectives. Each mobile device has its benefits and drawbacks, but can be adopted and can positively impact the learning environment.

A key impactful solution TST identified was teacher goal planning: using a guide to help everyone involved understand the expectations. Many schools have adopted a three-goal plan to help teachers get started with technology integration. These three goals might be for the entire year or just the fall. Some sites elect to have one district goal, one building goal and one personal goal - it all depends on the environment. Casey Schaub, from Genesee ISD, developed a PD guide (http://goo.gl/gG4gVw).

**Next Steps**

If you’re thinking, “How do I begin?” The following are a few helpful steps to begin your journey:

- Data - collect data on any and all stakeholder groups (parents, students, teachers) to help guide professional development, measure growth and identify success — A recent article in the August 17, 2016 TRIG Weekly update, TST highlighted how data was used to measure impact (http://goo.gl/lwXVjU)
- Start small - pilot devices with teachers and students and/or start with small groups or classroom sets and slowly build up capacity over time
- Network - connect with anyone and everyone to help answer questions, collaborate, and share ideas

Ultimately as an educational community we need to do what is best for students. When decision makers put what is best for students above all else, the challenge becomes less stressful.

**Strategy 4: Professional Development**

Schools/districts should spend considerable time working on a professional development (PD) plan that includes not only how to use devices but specific teacher supports to integrate and transform teaching using devices. Districts, buildings and teachers must understand that adopting 1-to-1 devices is a multi-year journey. Staff readiness to integrate 1-to-1 devices and to upgrade the learning environment is a key success factor. It is great if teachers find success, but if they fail, they should fail FORWARD. You can only move forward by trying new things and not being afraid to make mistakes! #failforward (Cheryl-Marie Manson, Allegan Public Schools). Building and district administrators must also adopt mobile devices and implement strategies when working with teachers. By modeling the use of technology, administrators get an idea of what it is like to facilitate devices and teachers get to be on the receiving end of instruction using a mobile device. One strategy is to transform a staff meeting by using a collaborative document to increase active participation. PD should also be differentiated from the traditional sit-and-get to something that fits individual staff needs. This can be accomplished in a blended format - send resources to staff ahead of time, then during the allocated PD work in groups based on need.

A recent article in the August 17, 2016 TRIG Weekly update, TST highlighted the importance of student-centered learning. A key impactful solution TST identified was teacher goal planning: using a guide to help everyone involved understand the expectations. Many schools have adopted a three-goal plan to help teachers get started with technology integration. These three goals might be for the entire year or just the fall. Some sites elect to have one district goal, one building goal and one personal goal - it all depends on the environment. Casey Schaub, from Genesee ISD, developed a PD guide (http://goo.gl/gG4gVw).

**Next Steps**

If you’re thinking, “How do I begin?” The following are a few helpful steps to begin your journey:

- Data - collect data on any and all stakeholder groups (parents, students, teachers) to help guide professional development, measure growth and identify success — A recent article in the August 17, 2016 TRIG Weekly update, TST highlighted how data was used to measure impact (http://goo.gl/lwXVjU)
- Start small - pilot devices with teachers and students and/or start with small groups or classroom sets and slowly build up capacity over time
- Network - connect with anyone and everyone to help answer questions, collaborate, and share ideas

Ultimately as an educational community we need to do what is best for students. When decision makers put what is best for students above all else, the challenge becomes less stressful.

**Anthony is an energetic educator who spent five years as a high school teacher and currently is a project facilitator and instructional technologist in Genesee County. Anthony shares a passion for comprehensive integration of technology to promote excellence and support transformational change throughout the instructional environment. He can be contacted at abuza@geneseeisd.org.**
Change is good...sometimes. Situations change, software changes, apps change and we can easily slip into the mantra, “CAN’T THINGS STAY THE SAME FOR JUST A LITTLE WHILE?” You become comfortable with using a Google app in a certain way and then it changes. You integrate a website into your curriculum and then it’s no longer free or announces it is shutting down. In this last printed edition of the MACUL Journal - it is an ideal time to consider how we prepare and embrace change.

HAVE OPTIONS
When you begin using an app, you should also know about alternative apps that provide similar functions. While there is never an exact duplicate of the same functions, there are often similar apps. For example, http://zaption.com recently announced the platform was shutting down. If you were a Zaption user, what do you do? Start with a simple search, such as “Zaption alternatives”. Or use a website which specializes in finding alternative apps such as http://alternativeto.net. In a Google search add “related:” before the address to find websites similar or related to that site.

Note: two Zaption-like alternatives our teachers like using are http://edpuzzle.com and http://ed.ted.com

INACTION IS AN ACTION
“Are you going to do anything about this change?” you may be asked and you decide you will not…you’ll just go with the flow. While that may be the best choice – be aware that your choice of doing nothing is a choice. If you want your voice to be a part of the conversation, you must speak up - whether it is a new student information system your district is adopting or a change from laptops to Chromebooks. When you go along with a decision – your inaction is quietly saying you support with that decision. If you are not in support of a decision – then step out of the shadows and be brave; take a stand. Let your voice be heard.

USE DATA TO SUPPORT YOUR MESSAGE
Stepping forward to share an opinion is good – but like a belly button, everyone has one. Make your opinion become a message with the support of data. For example, you are confident that if your classroom was 1:1 with Chromebooks, engagement and learning would improve. Consider how you can support this vision with data. What does research say? Better than using generic research, use action research with students from your classroom. (I try to also include photos.) Action research personalizes the data – helping others better understand and support your vision.

IS IT GETTING BETTER OR WORSE?
On a roller coaster there are few places where the track is flat. You are either going up or you’re going down. The same can be said about the work you are doing with technology integration in your classroom. Are you getting better or are you coasting? How can you keep from just coasting? …Continue to learn. This could be from a blog you follow or your own PLN from Twitter. Keep learning what’s new by attending conferences such as the MACUL Conference, Michigan GoogleFEST, and the ISTE Conference.

A RISING SHIP BENEFITS ALL
Consider the cartoon where the back of a boat is sinking and the crew is bailing like crazy but at the other end the crew says, “I’m sure glad the hole is not at our end.” The “hole” in a school may be a few teachers (or a principal) reluctant to use technology. Take on the challenge to help the entire ship to rise by helping the most reluctant technology using educators to improve and embrace the use of technology resources to improve teaching and learning. Step forward to be coach and model. Ask if you can teach their class for an hour/day and coach the educator as they struggle to step out of their comfort zone. Remember, everyone was a beginner at one time. The shining stars are important for modeling success – however, move beyond a few shining stars to create a galaxy of shining stars throughout your school.

Andy Mann is the Director, REMC 4, Instructional Technology Consultant for Muskegon Area ISD, a certified Google Education Trainer and also a member of the MACUL Board of Directors.
The Michigan eLibrary, a program of the Library of Michigan, part of the Michigan Department of Education, is pleased to announce the debut of the newly designed MeL Teachers (http://teachers.mel.org), the destination for help with integrating MeL into Michigan classrooms and curriculum. Just in time for the 2016-17 school year, MeL Teachers, a completely revamped and resource-driven teacher portal, was launched in mid-August. It is focused on providing assistance to teachers, media specialists, administrators, and anyone involved in K-12 with help navigating MeL and integrating the resources into Michigan classrooms.

“MeL Teachers is strategically designed to help educators understand how MeL resources can be integrated into classrooms and curriculum,” said State Librarian Randy Riley.

Here is a quick overview of each center:

1. **Elementary Resources** is especially for PreK-5th grade and focuses on MeL Kids, http://mel.org/kids. There are handouts, slide decks and videos that can be used in the classroom to introduce students to MeL resources and supplemental classroom materials.

2. **Secondary Resources** is designed for grades 6 through the first two years of college and focuses on MeL Teens, http://mel.org/teens. There are handouts, slide decks, videos and even supplemental material like graphic organizers and more.

3. **Staff Resources** is for administrators, media specialists, teacher coaches and any teachers who want to present MeL resources at their schools.

4. **MeL K-12 Spotlight** recognizes the great work teachers, media specialists, schools, and districts do on integrating MeL resources into classrooms. Check out the first three MeL Spotlights highlighting Berkshire Middle School Staff, Lisa Kelley from Rochester Community Schools, and Ashlie O’Connor from Alpena-Montmorency-Alcona educational Service District!

5. **Michigan Educator Links** provides access to state education-related associations. Be sure to check out EduPaths, a professional development portal for all Michigan educators.

6. **Tips & Tricks** provides MeL shortcuts or hidden features that can benefit teachers and students.

7. **Test Preparation** shows how MeL resources can help prepare students for standardized tests starting in the 4th grade.

8. **Technology Resources** have the latest MeL resources, MeL Apps, linking directly to geo-authenticated resources, special webinars, and trainings. Make sure you check out the Apps section in this center - MeL has just released several new Chrome Apps! Here are the Apps that are currently available for MeL:

Do you have any ideas, videos, or classroom material related to MeL/K-12 that you think would be beneficial to other Michigan educators? We want to add these to MeL Teachers. You may email your ideas, questions, or professional development requests to MeL’s K-12 Education Specialist at CSchneider.Mel@gmail.com.

Christine Schneider is the Michigan eLibrary K-12 Education Specialist. She joined the MeL team at the Library of Michigan in December 2015. Since then, she has hit the ground running, providing PD opportunities both in person and virtually to educators across Michigan, focusing on incorporating MeL’s vetted, reliable resources into the classroom and curriculum. She holds a Masters in Teaching from the University of Michigan Dearborn and a BBA in General Management from Davenport University. Prior to joining MeL, she was a high school Math and English teacher for 10 years in the metro Detroit area.
Drones in the Classroom

It began with a low-cost drone I received as a gift. Also known as a quadcopter for its four propellers, it was actually just a starter drone for me and drew me into the world of unmanned aviation.

After charging the battery, inserting a memory card borrowed from my phone, adjusting the mini-camera, and reading most of the instructions I was ready. The sight of it gently ascending into the December sky was – and I freely admit it – thrilling. However, like so many gift drones that year, within 20 seconds it was hanging high up in the branches of a maple tree. That was when my fantasy of flight ended and I replaced it with the challenge of finding an engineering solution to a problem.

I tried tying kite string to a tennis ball in an attempt to jiggle the branch but the line was not strong enough. I tried PVC pipe pieced together to knock it out of the tree but the drone quivered just out of reach. I tried other solutions, but what brought it to earth was the piece of kindling I finally lobbed at it.
Of course, I made the decision to upgrade to a 500-dollar drone with a gimbal-controlled camera, excellent built-in software to enhance stability, and a battery to allow for longer flights. I experienced the thrill of flying around the neighborhood and weaving between branches that would have easily snagged my first drone. What was I to do now that I knew I was free of the trees? The view from a few hundred feet in the air was reward enough, but as a lifelong teacher, my training got the better of me and I began to look for ways of bringing the drone into the curriculum of a school.

**Documentation:** The district is extending my daughter’s school, the city is repaving the main street, and the local council is upgrading a field to include new baseball diamonds and lights. These are all things that any class with a drone could record visually over time. To get things started, I took aerial photos and made brief flyover videos, then shared them on social media. The Mayor Pro Tem saw them and asked if I could take a few good pictures of the upgraded field to show off to the taxpayers where their money had gone (and to track visually where they had recently trenched the ground for lights.

**Arts:** Students could fly a school drone over their school and neighborhood then take the raw images and modify them using various filters. I have one image from overhead of two school buses passing each other on an otherwise bland morning. By modifying the color saturation and adjusting contrast, both easily done with free software, the buses became a vibrant statement of hope and optimism against a world of white.

**Planning:** Most schools have parking areas or outdoor festivals that sometimes pose logistical issues for moving cars about or setting up booths. From an overhead perspective, a few good minutes of video could easily illustrate traffic patterns and movements of people. In conjunction with a PowerPoint slide of the field superimposed with cars and booths, students could identify how we might direct traffic or where we could best position festival activities.

**Sports:** There are strict regulations prohibiting flying over people without permission, but a well-situated drone high over one end of a football field or baseball diamond would provide a great opportunity for students to review their performance. In fact, with the right software, teachers could stream the video feed right to YouTube so students could look at the activity remotely. For extended periods aloft, one would need a spare battery.

**Mathematics:** Even the youngest grades could use images they have captured of their school yard to determine area, perimeter, angles, and more. Using features of the drone to record details of flights with great precision, students could find the solutions for many mathematical questions, some of them quite fun. Using a long piece of fine kite string at first (and later a servo), I dropped...
small objects beginning with a troll doll from heights. From simple (and fun) activities like that, students learn to take into account aerodynamics, structural integrity, and more.

Photography: Some have called the drone really more of a flying camera than an aircraft. With some ingenuity and creativity, a class portrait taken from overhead has great potential for engaging students. A photo of the lower elementary students linked together to form numbers, letters, or shapes could turn an afternoon on the grass into fun for the whole class. Group photographs from new angles could lend a refreshing change to tired poses.

Science: From the ground, a forest looks like a wall of green. From above, there is a geometric spacing between the trees and it is easier to see how waterways affect the kinds of vegetation that grow nearby. Wide wetlands and swampy areas, unsuitable for much direct observation except from the shores, become more visually accessible. Students can analyze images in class to make out nests, dams, animal pathways, and more from this vantage point and then record their observations. As the seasons change the forests allow students to make new discoveries – a deer trail, for example, is plainly visible in newly fallen snow.

Engineering: The worlds of mechanics and physics are at play with drones in the mix. How much weight could one safely lift? How much do temperatures drop the higher one goes? Is there a way of gauging the wind speed by creating a device to hang onto the landing gear? Does a warm battery run down faster than a cold one? Worldwide there are scores of companies that manufacture these flying craft and a sampling of their websites show an enormous range of activities that drones have in the real world from inspections of wind turbines to monitoring of powerlines.

Policy: Drones make the news when they interfere with small aircraft. The University of Michigan banned them as they might interfere with emergency helicopters near the hospital. However, what policies would make sense for a small community? Students could participate in discussions about the value of drones flying over their towns and develop reports for their local town councils, host debates, and develop a sense of civic awareness that could evolve into even larger issues of national or global importance.

Scientific Method: Students could experiment with propellers. A set of four costs about twelve dollars. I know this because I have a collection of a dozen or more that look like a row of broken teeth when lined up. Let us just say I have hit a few trees. The possibility for experimentation is full. What happens when you pit the propellers like the surface of a golf ball? What happens when you add a little flare to them with duct tape?

Digital archiving: With access to more professional drones, perhaps on loan from local universities, students could use freely available software to build topographic maps of local terrain before and after construction. One project that might be of interest to local historians could be detailed scans of old barns or local landmarks. Teachers could print these scans on 3D printers and successive classes of students could make detailed comparisons over time to determine areas in need of repair.

Programming: The next stage in the evolution of drones in the classroom is coming with the ability to code using minidrones. Using software such as Tickle, even very young students can build a simple set of movements for a mini-drone to fly autonomously in set patterns or around obstacles. For the older students who are ready to try their hand at more complex coding and flying adventures, www.Pixhawk.org has a number of links to supporting software and all manner of activities designed to challenge students such as autonomous volumetric measuring, failsafe parachute deployment, cargo carrying projects, and more.

Communities: Teachers looking to reach out to a larger community to show off their images and programming could look into 3DU, an educational group affiliated with 3D Robotics (www.3dr.com). Makers of drones such as DJI (www.dji.com) have showcase web pages for users to share images and video they have captured. AMA, The Academy of Model Aeronautics (www.modelaircraft.org), ran two build competitions last year for students. Michigan teacher Chris Meyer of Davis Aerospace High School in Detroit was one of the teachers who tried to get his students involved in building their own drone. In addition to the competition, he purchased a few $50 toy drones to practice checklists, safety, maneuvering and indoor drone racing around two pylons. The students liked this and had fun competing against each other.

ISTE recently published a book called Drones in Education by Chris Carnahan, Laura Zieger, and Kimberly Crowley that has more ideas like these, lesson plans, and even hints for purchasing drones for your classroom.

Teachers must also be aware of restrictions on flying drones for fun. The Federal Aviation Authority recently released guidelines that are common sense and designed to keep the experience safe for everyone. The rules include no night flying, keeping the drone in sight at all times, no flying over strangers, and height limit of 400 feet.

Michael McVey is an associate professor in the Educational Media and Technology (EDMT) program at Eastern Michigan University. He can be reached by email at mmcvey@emich.edu and tweets @mcveym.
Have you ever taken a chance on something and wondered, what will happen?

Last winter Mark Smith, Executive Director of MACUL, reached out to a few administrators and educational leaders in Michigan. Mark had a vision and needed others to help bring the idea to life.

Mark’s vision centered around on-going communication and support, along with continuous learning. From this broad idea came two new creations. The first, SIG Admin, is designed to be the bridge between MACUL and You. SIG Admin will have monthly communication and learning opportunities designed to assist leaders across the state. Second, the Leadership Mindshare! This flagship event took place on August 4-5, 2016 in Grand Rapids, Michigan. The Leadership Mindshare is unlike any learning and leadership conference you’ve ever participated in.

The retreat was set into 4 “pillars” or educational supports that are critical in education. These pillars were Critical Conversations, Strategy, Innovation and Support. Dr. Mark Wilson, Assistant Professor of Educational Leadership at Kennesaw State University, presented a keynote address on the first two pillars. He also came in 2 days early to work with the SIG-Admin Leadership to help create direction and focus for the group. After each keynote, the participants divided into groups of 8 with a facilitator and had 60-80 minutes to discuss what they had just heard as well as bring up topics, ideas and thoughts that came from the keynote.

A popular phrase often spoken is, “The smartest person in the room, is the room.” During one particular breakout this became extremely evident. The focus of the breakout was on Critical Conversations. As the group began sharing you could see the support for one another, but more importantly, it was easy to see this was a building of knowledge and a non-judging zone. Listening to people talk about the challenges of state assessment scores, unsupportive families, critical co-workers and difficult circumstances made it evident that we all need to support each other and avoid the infamous Administrative Island!

One leader shared a particularly tough story. During the course of the year he believed the atmosphere at his school was healthy and strong. People were collaborating and parents were frequently making positive comments to staff members. Then as the school year began to wrap up he was confronted by a disgruntled staff member who made it very easy to doubt all the good that had potentially occurred. The gentleman reflected on his self-doubt, his insecurities and he openly wondered if he was truly doing a good job. As our group sat and listened you could see the genuine care and empathy that we felt. The fact is, in some way we’ve all been there, but more importantly, we all want to lift each other up and help.

The Leadership Mindshare was a rousing success! This was the only learning event that I’ve ever attended where ALL voices were actively engaged. It was impossible to take part in Mindshare and not listen, reflect and share. The 2nd Annual Leadership Mindshare is already in the works. We hope you will save the date for July 25-26, 2017. SIG-Admin will be sharing more details soon as it refers to Leadership Mindshare ’17.

The final piece of the Leadership Mindshare is two-fold. This year we were privileged to have Mark Wilson, Dr. Brad Gustafson and Amber Teamann lead our keynotes. These three not only led the conversations, but they also inspired and motivated the audience.

At the end of the event, SIG Admin aimed to continue the learning. Every participant was provided contact information, twitter handles and pictures of attendees. The power of Mindshare is in the sharing. Our hope is that people continue to reach out and network with others. Remember, the smartest person in the room, is the room!

For some visual insight into Leadership Mindshare check out the following link:

Brad Gustafson’s 30-Second Take live from Leadership Mindshare, https://t.co/7ExjbGaQIA.

Theresa Stager is an Assistant Principal at Saline High School. She is the co-creator of the PrincipalPLN podcast and a co-author of Breaking Out of Isolation: Becoming a Connected School Leader. Theresa is the current Director of MACUL SIGAdmin, Director of the #SAVMP School Administrator Virtual Mentorship Program and is on the Board of Directors for ParentCamp: The Unconference To Build Family, School and Community Partnerships. A cornerstone of her educational philosophy is always putting students first.

Ben Gilpin is the principal at Warner Elementary in the Western School District. He is a student-centered educator focused on collaboration, family partnership, student engagement and personalized learning. Ben is about the Whole Child and always tries to foster caring and impactful relationships. Recently Ben was named one of the Top 100 Influential Voices in Education by Bam Radio. To learn more about Ben’s work, visit: http://colorfulprincipal.blogspot.com, or www.BenGilpin.com or connect with Ben on Twitter at @benjamingilpin.
We are at a crossroads with technology. On one hand, we live in the most wonderful time in education with respect to the number of tools we have at our disposal. We’ve gone from desktops and computer labs to laptop carts to tablets and smartphones, and we’ve advanced from students playing Oregon Trail on a monochrome monitor to students coding on their own devices.

On the other hand, the past 30 years has not shown an equal increase in student achievement. Sure, we can argue the usefulness of standardized test scores, but the fact of the matter is that technology has made little impact on factors such as student learning, as demonstrated by a recent large-scale international study (OECD, 2015). The same could be said for increases in STEM career choices, and closing achievement gaps. In some cases, they have gotten worse, creating a digital divide between the haves and the have-nots.

If this article was posted online, I can imagine the comment counter spinning out of control with vitriol; to which I would simply reply, “Prove it,” not to be smug, but rather as a call to arms. We as educators need to quit relying on schmaltzy quotes and memes from educational gurus or biased anecdotes of how our students are “engaged” with technology and begin to demonstrate that technology is necessary to our educational practices.

Consider this definition of technology: the application of human knowledge to solve problems. Adding the word “educational” implies the solving of educational problems. Do we have problems in education? Of course! However, in our own classroom, do we take the time to identify and clearly articulate problems for which a technology could be a solution? Probably not. Further, how do we know whether the problem is solved, and can we provide solid evidence to support that claim (i.e., just like we ask our students to do)?

I attended a session at MACUL on makerspaces this past spring. It was very interesting hearing how the students really took to...
the concept. The presenter did an excellent job of describing the successes and challenges of having a makerspace in their school. During the question and answer time, I asked the following question, “Not to make this experience all about test scores, but was there any data collected about the success of the program?” It was obviously too early to see whether these elementary students ended up taking more STEM courses in high school or chose to pursue such a career in college. The presenter answered no, but provided an interesting anecdote. She said that the following year a colleague came to her and said, “I know which students had you last year because they ask a lot of questions about how things work and why.” While just one anecdote, these are the types of data that we need to start collecting and sharing to tell our story about the successes of technology, since statements like the one above cannot be captured with a standardized test score.

WHAT GETS IN THE WAY?
The problem starts with the fact that technology isn’t free, so districts go to the community and beg for money through bond issues. As a taxpayer, if I agree to pay hundreds of dollars over several years for technology, I want to see results. If I don’t, the next time the district asks (and they will, because the rate at which technology becomes obsolete is 3–5 years, not to mention wear and tear), guess how I (and any rational voter) should respond? Also, because districts now compete for students through open enrollment, technology is a way to “keep up with the Joneses.” That is, new technology becomes a selling point, and if parents are deciding between schools, saying you’re a 1:1 school with SmartBoards in every room could seal the deal on a few more FTEs for the next decade. Vendors know this, and will do everything in their power to win a district’s RFP, relying on quality customer service and testimonials rather than research showing improvements in student achievement.

Which brings me to my next point. Good teaching improves student achievement, plain and simple. This is what makes deliberate use of technology so important. It has to be grounded in effective teaching practices and evidence is needed to support its continued use. Otherwise, we fall into the trap of “technology for technology’s sake,” and the inherent bias we have when trying something new. That is, it is very easy for teachers to delude themselves when they put in a lot of work adding technology to the curriculum, and the perceived “engagement” of students may be the result of novelty with no significant change in outcomes, if they were even compared in the first place. In addition, it has been said that observing true engagement is more difficult than it seems (Price, 2014).

Finally, the chasm between research and practice seems to be growing for several reasons. Due to changes in certification laws, teachers are no longer encouraged to pursue graduate degrees. With the advent of PLNs (which I encourage), we have access to boundless resources for informal learning. However, more information includes more good AND more bad information, and it’s getting harder to separate the wheat from the chaff. For example, using learning styles inventories has been consistently debunked as an effective way to tailor instruction for almost a decade (Pashler, McDaniel, Rohrer, & Bjork, 2008), yet we still see popular articles about using them to guide instruction. Finally, educators are pressed for time, so they go looking for simple distillations of research, which can be helpful, but often lack details of nuance that can make or break a strategy or technique.

SO, WHAT CAN WE DO?
To start, teachers, school districts, and university faculty should reach out to one another to assist in developing strategies for monitoring effectiveness and to share research. Let’s face it, many of us never read a full academic journal article once we’ve earned our Master’s. Second, take a problem solving approach when using technology. Willingham (2012) has a great boilerplate problem solving template (p. 217) to articulate what the problem is, the intervention being used, and the expected results of the intervention. Finally, these proposed technology solutions should be rooted in effective, research-based, pedagogical strategies. John Hattie’s (2012) book Visible Learning for Teachers could be a great starting point for addressing problems with student outcomes.

On a final note, I’m not dismissing the usefulness of trying things out. I think it’s a good idea to play around with new technologies in the classroom. However, a clear separation between testing ideas and saying that technology makes a difference is needed, and as teachers we need to be able to recognize and articulate that distinction. We also need students to be exposed to technology to prepare them for the future and for the development of soft skills. Regarding the latter, I would refer you to an article I published in this journal earlier this year on assessing collaboration. As for exposing students to technology, a good approach would be a “vertical alignment” of the curriculum, where it is clear when certain skills and competencies are taught, so that students walking into any grade are expected to know how to do certain things with technology. If they don’t, then the teachers need to communicate to see what changes need to be made in order to ensure that students’ technology proficiency progresses continually through the 12th grade.

I think MACUL has made great strides as an organization in how knowledge is shared through both the conference and journal. In my opinion, there has been a clear shift in content in presentations and articles from simple “Show and tell” to ones that show clear links to pedagogy and instruction. I believe we need to take the next step and become better at providing communities and critics of education with evidence that the costs and the inconveniences of professional development days are not a waste.

References

Dr. Jason Siko is an assistant professor of educational technology at Grand Valley State University. Prior to this appointment, Jason taught high school biology and chemistry for 13 years. He can be reached at sikopp@gmail.com.
Online courses have become a significant part of our educational landscape. K-12 online supplemental course registration has reached all-time highs, up to nearly 4.5 million enrollments (Gemin, Pape, Vashaw, & Watson, 2015). As we move towards this inevitable merging of online and traditional styles, it becomes vital to make sure the standards we hold online education up to are just as strong as what we provide in a face-to-face setting. These standards need to include every aspect of online education, even including how the course itself is designed.

Over the past year and a half, I have worked to create a revised K-12 online course design rubric based off the International Association for K-12 Online Learning (iNACOL) (2011) National Standards for Quality Online Courses. In this article, I will describe why the iNACOL standards were selected, the process for creating a revised rubric, and finally results and recommendations.

THE STATE OF STANDARDS AND A REVISING A RUBRIC
Research with regards to online course design at the K-12 level has been limited (Barbour & Adelstein, 2013). The little information that is out there tends to focus on specific programs or institutions, such as the Center for Distance Learning and Innovation (Barbour, 2005; 2007) or the Florida Virtual Schools (Johnston, 2004). This lack of literature meant that practice standards slowly evolved alongside the dramatic expansion of K-12 online courses. This is not to say that there are not excellent sources for those that design online course content to select from.

A major barrier to entry, however, is that some of the more detailed and researched standards are proprietary (e.g., Quality Matters – see QM, 2016), or linked specifically to their programs (e.g., Virtual High School – see Zucker & Kozma, 2003). For this reason, the publicly available and non-proprietary iNACOL standards are a popular choice. Originally based on standards released by the SREB from 2006, iNACOL, working with a team of experts, created the National Standards for Quality Online Courses in 2006. Taking feedback and reviews into account, an updated version was released (iNACOL, 2011). For a variety of institutions and state programs, including those found in Michigan (Oakland Schools, 2015), the non-proprietary standards were an excellent place to start. The drawback is that there has been no research published on the validity of the iNACOL standards or how they directly relate to online course design.

THREE PHASES TO CREATING A DESIGN RUBRIC
The revised rubric creation process was divided up into three distinct phases. Phase one reviewed the content validity of the iNACOL standards by comparing current K-12 and online learning literature against each of the original 52 elements (see Adelstein & Barbour, 2016), which showed that each element was at least partially supported by literature. Phase two tested the content validity by having eight K-12 online experts from various sectors review the standards along with the phase one results and suggestions. During the three rounds of review, the experts combined, deleted, revised, or kept the elements to form a new revised rubric that focused specifically on K-12 course design. The final phase had four teams of two reviewers testing the inter-rater reliability of the revised rubric against current K-12 online courses. Simply stated, the reviewers were testing whether there was agreement across the revised elements.
WHAT WAS FOUND?
To be clear, the iNACOL National Standards for Quality Online Courses are an excellent place for schools, districts, and state programs to begin. The elements listed are all supported by literature – to some extent, and offer guidance for the entirety of the course. The issue that arose, however, was that the standards were too broad and could even be overwhelming for educators new to online course creation.

To look solely at just online course design, the iNACOL standards required changes. As the expert panel noted, every original element was important, but they did not all fit within the narrow scope of course design. The modifications were made to help educators focus on just the essential design elements and eliminate what was not required for the creation process.

Tested against multiple online courses, the revised rubric was put through the paces. However, while using the rubric against current courses is a proper start, further research is needed. The true test for the revised rubric will happen when educators begin the design process using the new rubric, https://goo.gl/KWCD4Q.

WHAT THE REVISED RUBRIC MEANS FOR ONLINE EDUCATORS
As online courses continue to grow, it will be expected that districts and states incorporate online learning experiences. The burden of design can be a staggering and overwhelming process, which often leads to the more expensive but easier model of simply leasing content. The revised rubric resulting from the above study offers educators the ability to streamline the creation process with directed elements that solely spotlight design.

The rubric was created with both new and experienced designers in mind. The narrow focus will help direct beginners, while the wording and categories will be familiar to those who have worked with the iNACOL standards in the past. While there are no true shortcuts for educators who undertake this endeavor, the hope is that the revised rubric will help give some clarity to the process.

Reference


David Adelstein is a former middle school technology teacher and Instructional Technology Coordinator for the Huron Valley School District. David recently earned his PhD in Instructional Technology through Wayne State University and will start a new phase of his educational career this fall in Beijing, China.

Michael K. Barbour is Associate Professor, Instructional Design for the College of Education and Health Sciences at Touro University California. He has been involved with K-12 online learning in a variety of countries for well over a decade as a researcher, teacher, course designer and administrator. Michael’s research focuses on the effective design, delivery and support of K-12 online learning, particularly for students located in rural jurisdictions.
Here is a story of two teachers. Teacher 1 is young, idealistic, and tech-savvy. She easily integrates technology in innovative ways. Teacher 2 is older, seasoned, and anxious about technology. He reluctantly uses computers for students to type papers and play games. Though these two are quite different, they teach 4th grade in the same building.

This is a common story in our schools. Individual teachers are utilizing technology in vastly different ways, even in the same buildings and districts. Though much good is occurring, it is potentially problematic for a variety of reasons: it results in variation of student skills and opportunities, it can restrict collaboration among colleagues, and it can leave teachers feeling exasperated or overworked.

Part of the reason for the disparities is many technology support models and integration frameworks focus on individuals. There may be training on a platform, an application, or perhaps something like the SAMR model, and then often the call is for people to transfer that into practice on their own. The most savvy can thrive at this, but the less skilled often falter even when sustained support or coaching is provided. And all can get bogged down by the effort required to design and implement technology-based activities by themselves.

This is a notable contrast to typical curriculum-based support structures. Most districts conduct curriculum development with staff collaborating on commonly used resources like assessments and project documents, and time is built into the annual schedule for the work to occur. For some reason, that does not seem to be applied to tech work, despite the massive investments that districts have made in their technology.

THE SOURCES OF STRUCTURE
According to Marzano’s research, one of the most significant factors on student achievement is a guaranteed and viable curriculum, so it makes sense that technology pieces be built into the curriculum for ALL teachers to implement. Not only does student achievement rise when that is in place, but districts can establish a focus to concentrate efforts, provide support, and reflect on effectiveness. You can read more about guaranteed and viable curriculum at this link from Arlington Public Schools: j.mp/gandvcme.

A strong curriculum is also a critical component of a Multi-tiered System of Supports (MTSS), which is another major source of influence in my work - and a current area of focus in Michigan. MTSS has repeatedly been shown to impact students and staff in very positive ways, and a strong system starts with a strong core. In MTSS language, that core is Tier 1 supports. If technology is thoughtfully planned and embedded in the core curriculum for all students, the impact will be optimal.
Another influence on my thinking comes from Mike Schmoker’s work on Focus (http://mikeschmoker.com). He advocates for schools to hone in on the minimum amount of initiatives that have the greatest impact and then stay focused on them. It is far too common for districts and buildings to shift focus every year or even many times within a year. This can lead to below average implementation, confusion, and resentment at various district levels.

THE DESIGN
With all this in mind, I have worked closely with several districts in Kent County and shared thinking with numerous people at Kent ISD and throughout the state. The result of that collaboration is a workable framework that has proven to be effective in integrating technology in a consistent and intentional way while remaining flexible for different districts. Here are the details.

It started with mapping student technology use expectations by grade level. We identified what Common Core and ISTE called for in terms of technology use, and we distilled that into categories that are easy for teachers to digest. See this link for details: j.mp/stechue. This provided a foundation for the areas that needed to be addressed, and even if you are not a huge proponent of standards alignment, it is difficult to argue against the logic of fostering these skills in students. I spoke with building administrators and presented to staff about the approach, using this staff intro doc as a guide: j.mp/workframe.

To help provide clarity, we created a tech skills checklist by grade level as a way to help teachers identify the specific skills they may need to model, and that is linked on the staff intro doc mentioned above. With the buy-in established, I facilitated grade level groups in different buildings to identify common tech-based activities in which students would create or participate. Working at the grade level or content area is important as it keeps groups smaller, provides a common area of focus, and makes it easier for teachers to support each other or get support as individuals if needed.

Once the common tasks were identified, we would target one student activity at a time and ensure that everyone was prepared to implement it. For example, one activity involved students publishing their opinion writing as Google Slides. In a one-hour PLC session, I was able to provide resources for the teachers, model the processes involved, and discuss ideas or potential issues the teachers may have. In the course of a year, I met with each grade level 3-4 times around different tasks and was able to explore beyond those tasks as well. It was sustained support that resulted in near 100% implementation across classrooms.

EXPANSION AND CHALLENGE
For the 2016–17 year, one district and I have developed a more comprehensive scope and sequence that incorporates more levels of integration across content areas. See this link to view an example: j.mp/4thsands. I hope to provide this to other districts as well and work with them to customize it for their needs, the goal being to extend and reinforce the curriculum while preparing students to skillfully interact and create with digital tools.

One challenge to this model is that it borders on the prescriptive. Many teachers do not like a lock-step framework that dictates what they have to teach. To address this, we have added options for extension, which can be used by teachers who want to build on or go beyond what is established in the common student activities. These can be found in the sample scope and sequence document listed above.

Another challenge I have encountered is how to use this framework with buildings or districts that are already integrating technology in different ways. It can also be difficult to employ this kind of systems thinking at the secondary level. I plan to use this tech integration review doc with secondary groups this year: j.mp/mapmytech. The purpose of this is to map out what is being done so that areas for improvement can be identified. It is also helpful to have it recorded somewhere. (After all, the difference between messing around and effective integration is writing it down!) Then people can collaborate from a common foundation, and when shifts in personnel occur, there are ready resources to use.

Like all the work I have referenced in this article, it will be a work in progress. This is just a model, and all models are flawed. I will be seeking help, gathering insights from the classroom, and striving to build consistent, workable structures in the sometimes wild west of tech integration.

I’d like to mention the sources of collaboration and influence that have shaped this work:

Sparta Area Schools, Northview Public Schools, Ron Houtman, Andrew Steinman, Kent ISD’s School Improvement Team, Mark Raffler, and many others too numerous to name.

Craig is an Educational Technology Consultant at Kent ISD, where he has worked for the last five years. Prior to that, he was a high school English teacher. He is also the Operations Officer for MACUL’s Online and Blended Learning SIG.
Let's Collaborate! Apps and Websites that Foster Co-Engagement

By Liz Kolb

The research on pedagogical strategies for effective teaching clearly finds that children construct knowledge and grow cognitively through social interactions. In literacy learning educators promote co-reading and co-engagement strategies where students read with peers, read with parents or read with a teacher to help them make sense of what they comprehend. Recent research by the Joan Ganz Cooney Center (2015) has found that co-engagement is also vital when using technology tools and devices in order for students to better construct knowledge and stay on task. Despite the clear research on good pedagogical practices, most technology apps and websites are created with the idea that knowledge is isolated and students should work alone with their device. The good news is that about 20% of applications are developed with co-engagement and collaboration in mind, where students are working with others through the technology tool in order to construct and build knowledge with others. Research has shown that mindful co-use of technology can lead to gains in content learning. Thus, how do teachers select tools that help students collaborate and co-construct knowledge? Below are the key elements to look for:

SYNCHRONOUS INTERACTIVITY
While apps and websites may have a collaborative feature, often it is asynchronous such as a static discussion board. Educators should search for software that allows for live audio, video, text or drawing interactions so that there is an iterative process to the learning as well as potential for dialogue in the moment of knowledge construction.

TIME-ON TASK
The best tools for learning help students focus on the learning goals and not on the reward or game at the end of the program. Students should not easily be able to just swipe or click-through the content. The software should force students to thoughtfully consider and defend their choices and to co-construct new ideas with others.

CREATION OVER CONSUMPTION
While many resources track student work with data analytics, often these tools focus on a “drill and practice” approach with quizzes and multiple-choice questions. Research has been clear that this approach does not usually show any correlation to better learning outcomes, and can sometimes be harmful to student learning. Educators should look for software that allows students to create and construct ideas with others rather than drill and practice in isolation.

DIFFERENTIATION
Every student doing the same activity on one tool will not reach all learners. Thus finding technology resources that has options for differentiation of instruction and choice for the learners to show their process of meaning making is essential.

AUTHENTICITY
Ideally the technology tool should add-value to the learning by connecting student classroom learning with their everyday lives. The students should be able to see how technology can be used to gather information, co-construct ideas and evaluate experiences in the real world.

Most software made for education is isolated with a drill and practice approach, thus that it can be difficult to find these co-engagement gems. However, there are some tools that have been constructed with child development learning strategies in mind to promote creativity, synchronous collaboration, differentiation, time-on-task and authenticity. Below are a few examples of tools that have these features.

K-12 GRADE LEVELS
Popplet, http://popplet.com, is a mind mapping tool that allows students to synchronously work together on a presentation or concept map. This can be used in any content area! There is a “time warp” feature to show how each student pieced the mind map together.

Annotate, http://annotate.net, is an interactive whiteboard on a tablet, allowing students to collaborate on creating images and drawings. In addition, students can synchronously collaborate on building stories (via text or drawing) as well as collaborate on prompts that are scaffolded to different learning levels.

Google Documents, Spreadsheets and Slides, http://docs.google.com, is a popular tool for real time collaboration. Additionally, these tools can allow for differentiation and scaffolds since the teacher can weigh in with real time comments or chat as the students are working on their documents.

Google Tour Builder, https://tourbuilder.withgoogle.com, lets students synchronously collaborate with others to create their...
own maps. In groups they can create routes and use pins to mark points of interest or routes taken. At each pin they can add media and text to describe the purpose of the pin. Students can share their maps and add multiple contributors.

Padlet, http://padlet.com, is an easy to use organizer for constructing and sharing ideas. Some teachers also use it as a student portfolio tool. Padlet permits quick collaboration and brainstorming with a variety of choices of contribution (text, drawing, video, audio, links to resources…etc).

Formative, http://goformative.com, and ClassKick, http://classkick.com, are both created for interactive assessment of individual students. Their co-engagement feature lets teachers synchronously watch, chat and annotate student’s work as they are working in the software. In addition, the software allows teachers to differentiate by synchronously sharing activities that range in reading and writing levels of content. Thus helping students work in their own Zone of Proximal Development (ZPD).

**ELEMENTARY GRADE LEVELS**

Storyjumper, www.storyjumper.com, creates collaboration around the writing process, where students work together to build a storybook. They can co-engage in the writing with authentic published results! The storybook can be digital (free) or created into a published book (cost).

WeCollabrify is an app that creates synchronous collaboration among students. It has a built in mind mapping tool, sketching tool, and KWL charts. While mostly used with science classrooms, this can be used with any subject area.

Sock Puppets is an app where students can work together to create a puppet show. They can select puppets, backgrounds and record their own voice. While popular in Elementary school, this tool works with all levels of learners.

**SECONDARY GRADE LEVELS**

Kaizena, https://kaizena.com, is designed for the iterative process of writing and giving synchronous feedback on student work as students are working on their writing. Kaizena allows for text, video and voice commenting that immediately show up as the students are working on their documents.

Scribe, www.scrible.com, allows students to collaboratively annotate webpages and documents. They are able to creatively share thoughts and co-construct resources for projects and papers.

WriteAbout, http://writeabout.com, is a writing and blogging tool where students collaborate with each other as well as teachers, parents and other experts on their writing. This tool focuses on the iterative process of writing, rather than the finished product.

**Liz Kolb, PhD** is a clinical assistant professor at the University of Michigan in Education Technology. She teaches preservice teacher education courses on educational technology. Liz is a former secondary social studies teacher and technology coordinator. She is the author of Toys to Tools: Connecting Student Cell Phones to Learning (2008) and Cell Phones in the Classroom (2011). Liz also serves on the MACUL Board of Directors, Liz.Kolb@macul.org.

**This past summer International Society for Technology in Education (ISTE) Conference brought Seals of Alignment (SOA) recognition for both the 21things4students and 21things4teachers sites. The Association and the 21Things Project team were overwhelmed by the accolades both the Student and Teacher sites are receiving at the national level. The SOA earned the team a place at networking events, panel discussions, workshops, and poster sessions to promote the 21things Project with educators around the globe.**

Staying ahead of the curve, the Student site recently underwent a standards re-alignment to address the new 2016 ISTE-Student Standards. In addition, several of the “Things” were updated and revised for fall with new tools, activities, videos, and resources.

The Teacher site has a new look and feel – complete with six new professional development modules that bundle multiple “Things” into 10-hour learning pathways. Visit the site to check out Assessment for Teaching & Learning, Enhancing Instruction, Extending Your Classroom to the Cloud, Personalized Learning in the Classroom, Searching Safely and Strategically, and Transforming Education – Maker Movement and more!

After three years of planning, the REMC Association is pleased to announce it will fund the development of elementary connections to the Students site. Tentatively named “21things4kids” and based on the new ISTE Standards for Students, the site will focus on the 7 standards and have multiple levels of activities (K-1, 2-3, and 4-5). The group will continue with development during the 2016-17 year, with plans for piloting in Fall 2017.

**Sue Schwartz is the Executive Director for the REMC Association of Michigan.**
Statewide, Michigan school districts have the potential to save $56 million and also have improved use of their data, according to a recent study commissioned by The Technology Readiness Infrastructure Grant (TRIG) Data Integration Activity. These savings are just beginning to be realized as districts understand the potential of the Michigan Data Hubs.

Comparatively, the same study finds that as a state, school districts are paying more than $160 million per year to manage data. These costs include the price of communicating between 7 or 8 different data systems typically used within each school district, in order to ensure data quality for district decision making as well as reporting data to state and federal entities.

“The Michigan Data Hub: A Strategic Alignment and ROI Study” notes that even with this amount of money being spent, school districts and other Michigan educational entities continue to struggle to manage and efficiently use data. But the study also explains that the Michigan Department of Education proposed that part of the TRIG funding provided by the Michigan Legislature, be used to develop a solution.

The result was the launch of The Data Integration Activity and a “data hub” solution designed to efficiently exchange information between systems using the data standard created by the Ed-Fi Alliance. This data exchange (also known as integration) eliminates duplicate data entry, dramatically reduces costs for data management, improves data quality, and makes actionable data available to educators in a timely, convenient manner. As referenced above, the study shows that when fully implemented, this secure system can save districts more than $56 million per year.

There are now 5 data hub hosting locations in Michigan—one in each of the TRIG regions—that house data and manage integration for the districts in its region. As a group, these data hubs are known as The Michigan Data Hub.

Now operational, school districts are beginning to use the system, which is free of charge and completely voluntary. The first step for districts requesting to make use of the Michigan Data Hub, is to integrate their student information system (SIS), into the hub. Currently, districts using Edupoint Synergy, MISTAR, PowerSchool, Skyward and SunGard eSchoolPlus for their SIS are eligible to participate.

Enterprise systems, like the Michigan Data Hub, represent a tremendous culture shift and can take some time to be fully adopted. As such, the $56 million in savings and the improved use of their data will begin to be made real as districts choose to entrust their data to the data hubs and use them for standardized reports as well as unique inquiries, while vendors adopt and implement the standards and as the various benefits in the system mature.

The savings come from eliminating duplicate and manual integration efforts; promoting shared tools; validating data early and often; inspiring best practices while standardizing and partially automating reporting submission processes. In addition to the dramatic cost savings, districts will also have access to dashboards and reports that provide information compiled from all of the systems used. Finally, the Michigan Data Hub will continue to improve and expand; serving as a platform that can be leveraged for statewide initiatives.

For more information about the ROI study or the Michigan Data Hub and the Data Integration Activity, visit:
- Sign-up steps: http://22itrig.org/activities/data-integration/districtapplication/
- Electronic version of the ROI Study: http://22itrig.org/activities/data-integration/roi-study/

Don Dailey has worked at Kalamazoo RESA for over 24 years as programmer, technology director and from 2007-2015 as executive director for the MiCase Consortium. Those roles gave him an extensive background in school data systems and data systems integration. Don has served as part-time project manager for the TRIG Data Integration Project from July 2013 until June 2015, when he moved to that position full-time. Email: don.dailey@kresa.org
2016-2017 MACUL Grants Awarded

MACUL awards over $30,000 to Michigan Educators!

Congratulations to the following MACUL Grant Recipients! These grant winners will share their project results by presenting at one of the MACUL Conferences, deliver a Lightning or Poster Session at the March MACUL Conference, write a MACUL Journal article, or post a resource on Michigan’s MI Learning site on iTunes U in the MACUL Grant Winners collection. Watch for a new MACUL Grant cycle in Spring 2017 at www.macul.org!

Robert Barrett ................................................ $1,400.00
Drones and Programmable Robotics: Using Technology to Train the Next Generation of Environmental Scientists & Engineers.
West Michigan Academy of Environmental Science

Leo Blundell ................................................... $1,499.94
Building a MakerTeam: Answering the What, Why, and How of Making in Schools
Elmwood Elementary, Waverly Community Schools

Brian Brehmer .............................................. $1,379.87
DASH into Coding, Programming, and Robotics
Lincoln Park Middle School

Andrea Brown ............................................... $1,499.00
Interactive Learning with iBooks
Wayland High School

Katrina Brown ............................................... $1,500.00
Exciting eBooks for Kindergarten and First Grade: The Power of Reading, Technology, and Choice
Baker Elementary, Wayland Union Schools

Wendy Burke ............................................... $1,395.84
Increasing Student Independence
Warren Woods Public Schools

Kenneth Damerow ......................................... $1,415.94
Student-run Literary Journal of Student Writing
Kreeger Elementary, Fowlerville Community Schools

Donna-Kelley DeBoer .................................... $1,374.99
MakerSpace to Go
Anchor Point Christian School and Diocese of Grand Rapids

Jodi Decuf .................................................... $1,500.00
Makerspace in the STEAM Classroom
MacGregor School, Bay City Public Schools

Amber Fante .................................................. $1,500.00
Capturing Student Voice: A Classroom Video Production Company
West Utica Elementary School

Nataly Fedewa ............................................... $1,500.00
21st Century Book Report
Natalie Kreeger Elementary, Fowlerville School District

Kerri Himm ................................................... $1,500.00
6/7 Math Department Wireless Projectors
Corunna Middle School

Andrew Hopkins ............................................ $1,469.56
Skype Cart for Virtual Field Trips
Tyrone Elementary, Harper Woods District Schools

Lori Karam .................................................... $1,500.00
Kindergarten Students and Parents
Kenwood Elementary, Clawson Public Schools

Ericka Lambert ............................................ $1,471.70
iPads with MobyMax in the Elementary Resource Room
Beck Centennial Elementary, Utica Community Schools

Amanda Makarewicz ..................................... $1,500.00
21st Century Skills with Lego Mindstorm Robots
St. Stephen Catholic School, Diocese of Grand Rapids

Lindsey McDowell ......................................... $1,367.75
Fostering Design Thinking Within a STEAM Framework
Southeast Elementary School, Howell Public Schools

Christine Mitchell ......................................... $1,200.00
Engaging Students in STEM with Ozobots
Sutton Elementary, Tecumseh Public Schools

Ben Rimes ..................................................... $1,216.00
Global Mentorship Initiative
Mattawan Consolidated School District

Betty Tramper ............................................... $1,496.95
Go, Bots, Go! Robotics & Coding in the Elementary Classroom
Morley Stanwood Elementary

Meghan Van Lente ........................................ $1,483.00
Empowering Students through Energy and Empathy
Kalamazoo Christian Middle School
Save the Date

March 15-17, 2017
Cobo Center • Detroit, Michigan