

GIVING STUDENTS A

V.O.I.C.E.



WITH PERSONALIZED LEARNING

BY MATT OBERECKER

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Track 01: Drop the Needle

*“Hold on to the thread/
the currents will shift”*

“Oceans” -Pearl Jam

Instructional practices, like the physical formats of music, have evolved in response to technological developments. Vinyl records made way for 8-tracks as primers became textbooks. Cassette tapes were swapped for CDs, like chalkboards for SMART Boards. The shift to online music mirrors the emergence of today's virtual courses. Paradoxically, the way we consume music has become more impersonal even as its accessibility grows increasingly personalized. As teachers and students are inundated with new software and apps, I can't help but wonder if our classrooms are headed down a similar path.

Recently, I started purchasing some of my all-time favorite albums on vinyl even though I already own them on CD, have them downloaded to my phone, and can easily access them through bookmarked playlists on a few streaming services that I pay for. A mid-life crisis? Too much time on my hands? Maybe. More likely, I am seeking to reconnect to the deeply personal ritual of experiencing music: holding the artifact in my hands, participating in the depth and texture of sound, and even physically passing it on to my children. (For my wallet's sake, I sure hope they end up liking the Beatles.)

Etched on each side of a record is one continuous, spiral groove containing an artist's creative work, encoded in vinyl for future generations to discover. Each one is handmade and personal. (Incidentally, this etching is the very reason that songs are still called "tracks" to this day.) Under an electron microscope, peaks and valleys are revealed, each one unique in shape, breadth, and depth. They require precious little to bring them to life: a needle, turntable, and amplifier. Like individual tracks coming together to make an album, our classrooms are filled with voices that are sometimes...lost in the mix. As teachers, we have the crucial responsibility of dropping the needle, allowing each of our students' voices to be heard.

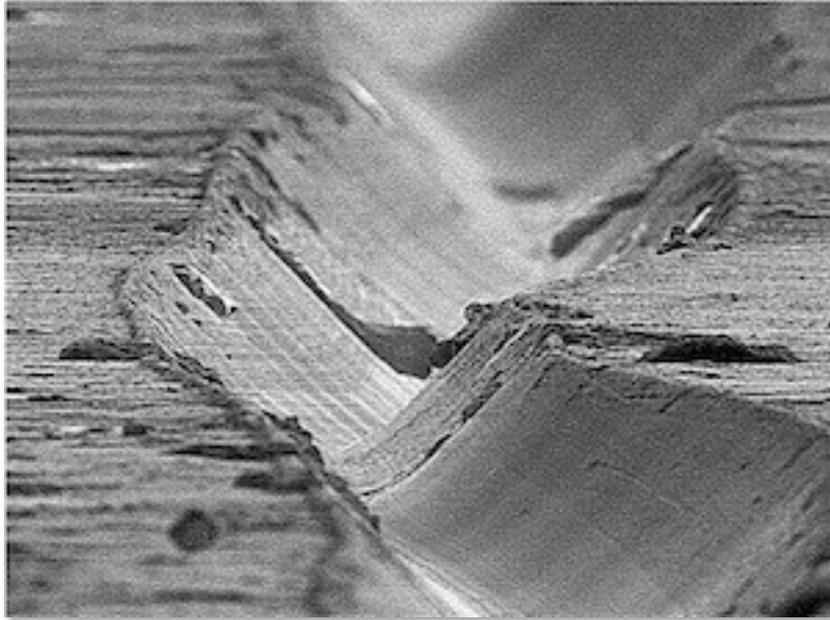


Figure 1- A vinyl record groove under an electron microscope. (Credit: The Vinyl Factory)

Personalized Learning (un)Defined

I begin presentations of my V.O.I.C.E. framework with a video from *EDUCAUSE*, a nonprofit whose mission is to “advance education through the use of information technology”. The video, titled, “How Do You Define Personalized Learning?”, poses the deceptively simple question to a panel of educational experts. Here are the first five responses:

- “The term ‘personalized learning’ doesn’t really make sense, because all learning is personal.”
- “I would define personalized learning as learning that excites the student and puts the student first.”
- “Personalized learning is learning that promotes or encourages both students and faculty to really own and express their agency.”

- “It’s identifying what a student needs- it could be academically or in support services- and then being able to provide those key interventions.”
- “We learn differently, we think differently, and we have different types of intelligences. What you learn and how you learn it needs to be personalized and individualized around the way that you learn.”

Five different experts; five different definitions. Some say that all learning is personalized while others contend that it doesn’t exist. Personalized learning is an idea that is not yet fully-formed—something teachers can still help define.

In this era of industrialization, we have produced educational materials on a massive, impersonal scale. Recent initiatives, like personalized learning, have begun the attempt reconnect with students in a more personal way. Like individual tracks coming together to make an album, our classrooms are filled with voices that are sometimes...lost in the mix.

Personalized learning has the potential to not only reinvigorate teachers, but also pave pathways for each of our students to discover their individual passions, approaches, and voices. We can equip our students with the skills they’ll need to lead fulfilling and productive lives through a symbiotic relationship among pedagogy, technology, and 21st century skills—pairing the analog with the digital.

Recently, our school district took the *Future Ready* pledge, affording us the opportunity to get feedback from the *Future Ready* team- a government initiative from the Office of Education Technology committed to creating “a shared vision for preparing students for success in college, career, and citizenship”. Survey results from students, teachers, parents, community stakeholders, and the *Future Ready* team all agreed that our district was doing a fine job but could be doing better in one glaring area: personalized learning. As a newly-minted elementary

STEM (Science, Technology, Engineering, Math) teacher and educational technology coach, I was hesitant to admit that I had never heard of personalized learning. What made it any different than the dozens of other educational buzzwords I've encountered over the course of my 18-year career?

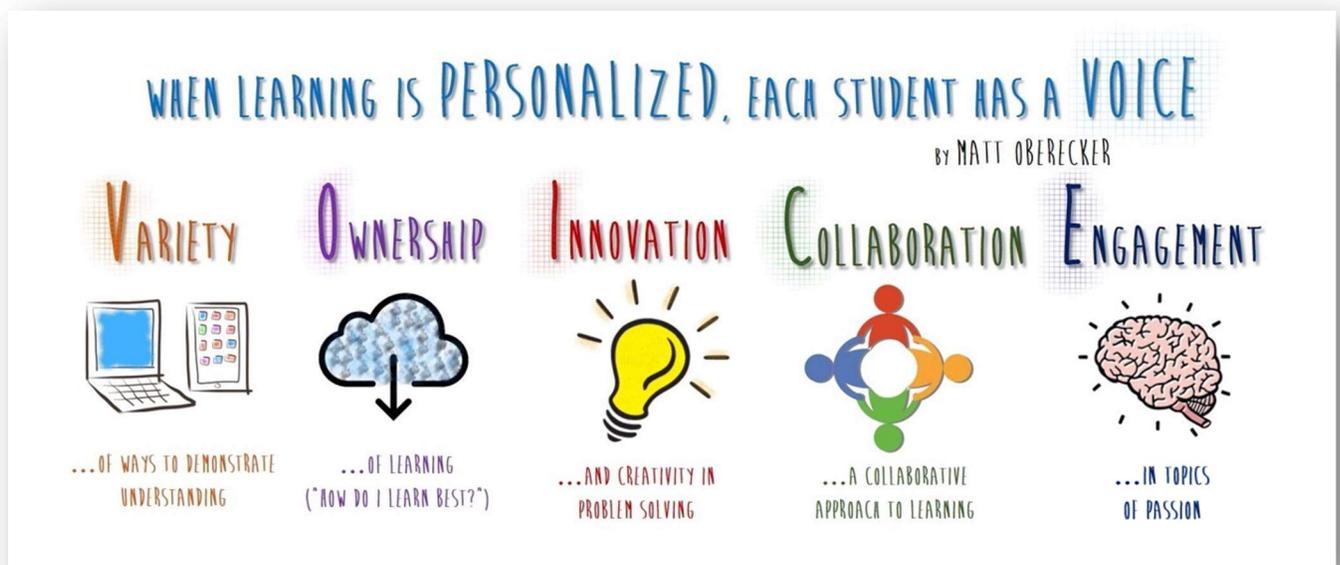
When asked for my feedback, I shared what I envisioned personalized learning to be: a student sitting in a computer lab, headphones plugged in, his right hand clicking away at a mouse. At the time, my definition of personalized learning centered around computer programs that could identify students' current academic levels, then guide them through activities tailored to their degree of need. I then listened intently to my colleagues' definitions: "There is no such thing as personalized learning. It's just another buzzword." "All learning is 'personal' by nature, so everything is personalized learning." "I'm picturing a Montessori school where kids choose what they'll work on each day." I quickly discovered that there are many different working definitions for personalized learning, each one as unique as the definer.

Some argue that personalized learning "involves students in the design and development of the tasks they engage in" (Kallick & Zmuda, 2017). Others contend that "the personalized learning concept has become an empty vessel into which one may pour any number of competing theories or policies" (Riley 2015). A recently published article in *Education Week* highlights just how burgeoning the personalized learning approach is. It highlights the "limited" findings of a RAND study that was unable to "draw clear conclusions about personalized learning's effectiveness" (Herold 2017). The reason? "It's still hard to say what personalized learning is (and isn't). What's happening in the field right now is a lot of innovation and a lot of schools building their models, building their curriculum, and inventing new systems." The

article goes on to address practical classroom concerns, but ultimately concludes “that the success of personalized learning will hinge largely on teachers.”

Amidst gathering the latest research and reviewing the scant data, I attended several educational technology conferences. Presenters lauded the benefits of personalized learning, often with the use of their software. Many acronyms, like *H.E.A.T.* and *S.A.M.R.*, were touted as solutions to the personalized learning question. It was at one of these conferences that a thought crystallized in my mind: what would my students say about all of this? I could almost hear their voices in my head: “We want to be engaged!” “How about some more group projects?” “Give me a chance to show off my creativity!” It is my contention that when learning is truly personalized, each student has a voice in the learning process. As the authors of *Make It Stick* put it, “Learning is stronger when it matters, when the abstract is made concrete and personal.” (Brown, McDaniel, & Roediger III, 2014)

Through research and reflection, I have distilled my vision for personalized learning into an infographic that I have shared with groups of teachers in various modes: summer staff



development workshops, grade-level PLC's, faculty meetings, and at a few statewide conferences. The fact that it has been so well-received speaks to the fact that teachers and administrators alike are looking for ways to leverage their technological and human resources in hopes of personalizing learning for their students.

Technology cannot accomplish this single-handedly; furnishing each classroom with a cart of laptops or a vault of tablets does not produce an effective teacher. To be sure, anxiety builds among teachers—who are already stretched thin—when they are expected to get on board and learn new software on their own time without a well-communicated vision about how it will improve teaching and learning. Conversely, we're doing a disservice to successful teachers when we limit their access to robust technology, thereby making differentiation and feedback less efficient. Within my V.O.I.C.E. framework lies my core vision for 21st century teaching and learning: a symbiotic relationship between pedagogy, technology, and 21st century skills. The chapters that follow zoom in on each of the elements of V.O.I.C.E.:

- **Variety:** In a 21st century classroom, there are a variety of ways that students can demonstrate their understanding. Allowing for choice promotes student agency, leverages technology resources, and cultivates the personalities within our classrooms.
- **Ownership:** By the time they leave our classrooms, students ought to be able to answer the question, “How do I learn best?”. Most school and district vision statements aim to produce lifelong learners, so it stands to reason that learning how to learn should be overtly taught.
- **Innovation:** In a society where all of humankind's information is available at our fingertips, creativity is the currency of the future. When we give our students the chance to think and work creatively, we create the conditions for innovation to spring forth.

- **Collaboration:** Teachers can cultivate trust and empathy among their students by providing opportunities to collaborate. Fortunately, technology makes communication and collaboration easier than ever.
- **Engagement:** Whether it's project-based learning, passion projects, genius hour, or 20 percent time, students benefit from dedicated time to identify and explore their interests and passions.

The original goal of presenting my vision as an infographic was to make it easily digestible, to cut through the countless trends in education and present something practical that teachers could more easily identify with. Creating pathways to enact 21st century teaching and learning isn't enough; those pathways need to be paved. Fortunately, many of the elements of V.O.I.C.E. are already happening in today's classrooms and schools.



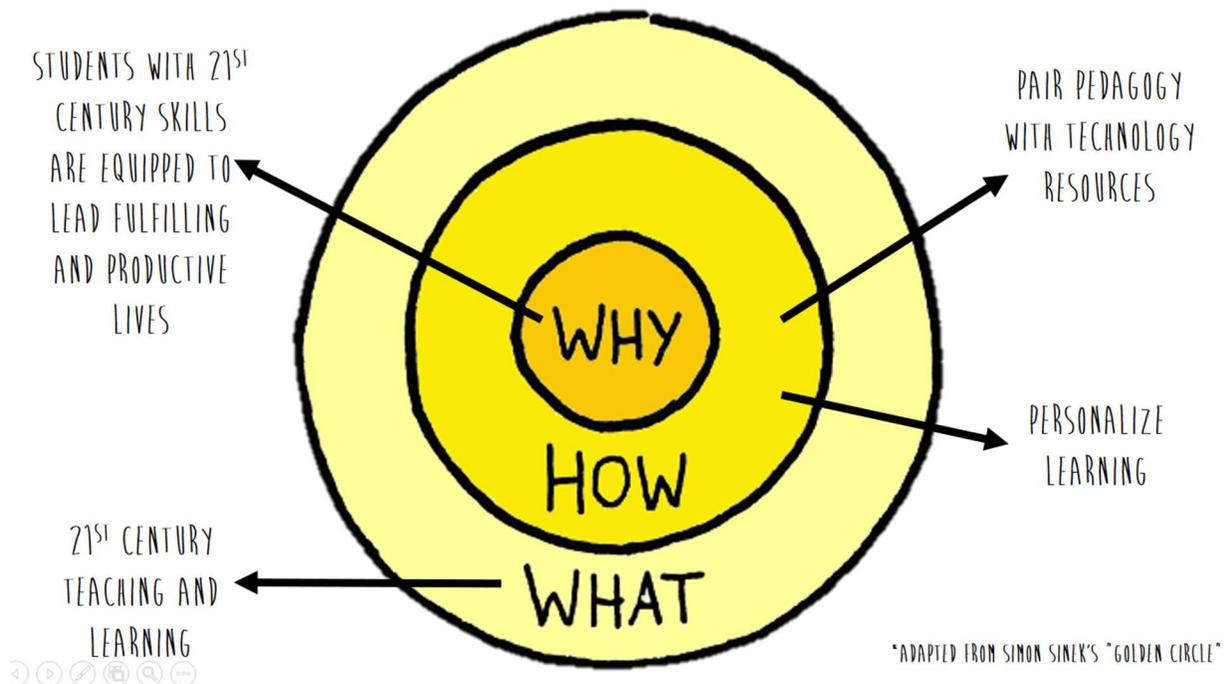
Amplifying V.O.I.C.E.: Differentiation, Individualization, or Personalization?

Much of the confusion surrounding the definition of personalized learning stems from its perceived interchangeability with other educational approaches, namely differentiation and individualized instruction. While all three approaches are key to effective instruction, their definitions diverge slightly:



What, How, and Why?

Simon Sinek, the leadership guru who challenges leaders to build relationships rooted in trust above all else, clarifies his vision using what he calls the “Golden Circle”. He suggests that when we “start with ‘Why?’” -by connecting with our true passion- we are better able to communicate our ideas and, ultimately, effect change.



As educators, we are all in the business of preparing our students for the future by endowing them with the skills they'll need to be successful. A unique challenge for preparing this generation of students is that we can't even be sure what that future will look like. Most of the jobs they will compete for- I have seen estimates as high as 70%- don't even exist yet. What we do know is that they will prominently feature technology, and that the so-called 21st century skills of creativity, collaboration, communication, and critical thinking will be in demand. Drs. Arthur Costa and Bena Kallick, educational researchers and consultants, refer to these skills as “habits of mind”. In their words, “A ‘habit of mind’ is a composite of many skills, attitudes,

cues, past experiences, and proclivities...[and] are characteristic of peak performers in all places: homes, schools, athletic fields, organizations, the military, governments, churches, or corporations.” In the brave new world of today’s classrooms, technology will never replace an effective teacher because of the relationships we forge and the habits of mind that we nurture.

Amplifying V.O.I.C.E.- Danielson and ISTE

Much of the technology staff development I’ve participated in over the years has focused on “technology integration”. Instructional best practices seemingly take a back seat to blindly incorporating new software and devices. When the Danielson Group’s “Framework for Teaching” is paired with the technology standards authored by the International Society for Technology in Education (ISTE), it reveals that instructional best practices and technology can - and ought to- live in a mutually beneficial relationship:

DANIELSON FRAMEWORK	ISTE STANDARDS
Domain 1: Planning and Preparation	
1a Demonstrating Knowledge of Content and Pedagogy	3a. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations.
1b Demonstrating Knowledge of Students	2c. Customize and personalize learning activities to address students’ diverse learning styles, working strategies, and abilities using digital tools and resources. 4b. Address the diverse needs of all learners by using learner-centered strategies providing equitable access to appropriate digital tools and resources.
1c Setting Instructional Outcomes	2b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress.

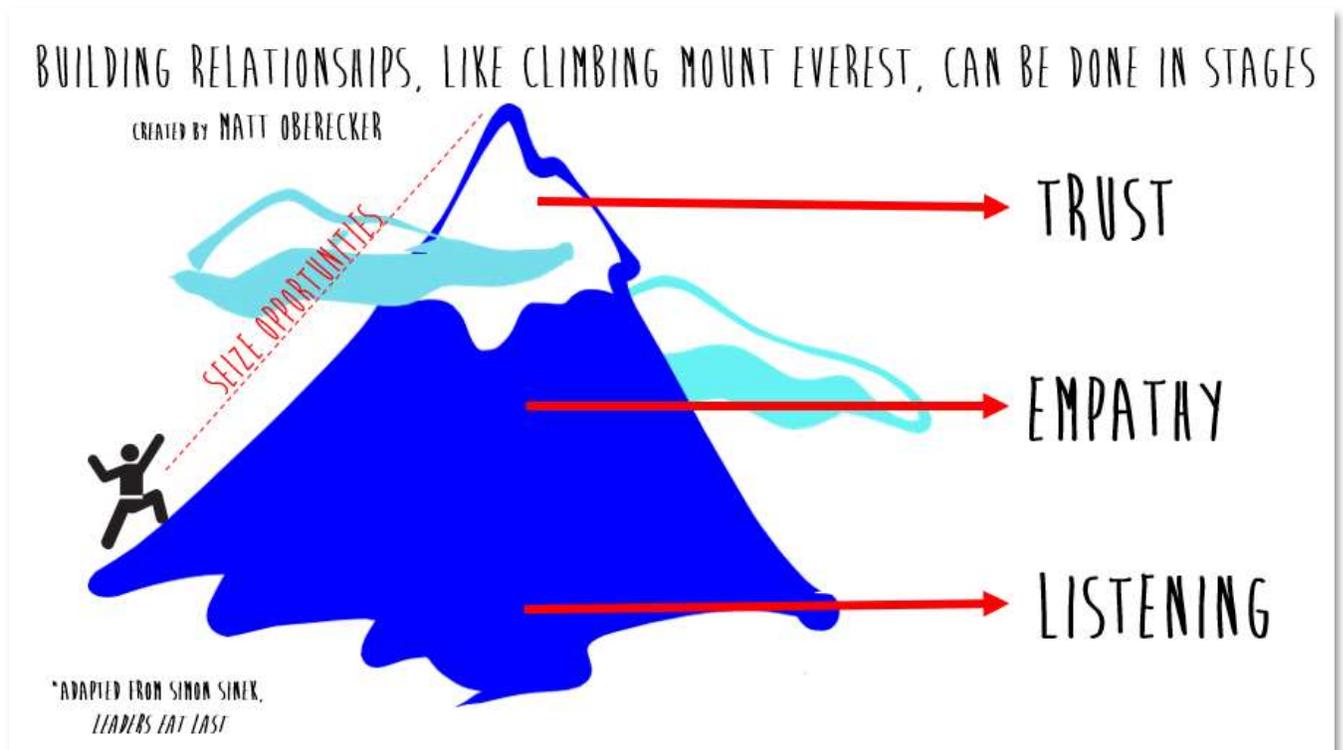
1d Demonstrating Knowledge of Resources	3d. Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning.
	5b. Exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others.
1e Designing Coherent Instruction	2a. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity.
1f Designing Student Assessments	2d. Provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching.
Domain 2: Classroom Environment	
2a Creating an Environment of Respect and Rapport	3b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation.
	4a. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources.
	4c. Promote and model digital etiquette and responsible social interactions related to the use of technology and information.
	4d. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools.
2b Establishing a Culture for Learning	1d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments.
	4d. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools.
2c Managing Classroom Procedures	4a. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources.
2d Managing Student Behavior	4a. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for

	copyright, intellectual property, and the appropriate documentation of sources.
	4c. Promote and model digital etiquette and responsible social interactions related to the use of technology and information.
2e Organizing Physical Space	2b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress.
Domain 3: Instruction	
3a Communicating with Students	3c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital age media and formats.
3b Using Questioning and Discussion Techniques	3d. Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning.
3c Engaging Students in Learning	1a. Promote, support, and model creative and innovative thinking and inventiveness.
	1b. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources.
	4d. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools.
3d Using Assessment in Instruction	1c. Promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes.
	2b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress.
	2d. Provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching.
3e Demonstrating Flexibility and Responsiveness	2c. Customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources.
	2d. Provide students with multiple and varied formative and summative assessments aligned with content and technology

	standards and use resulting data to inform learning and teaching.
	4b. Address the diverse needs of all learners by using learner-centered strategies providing equitable access to appropriate digital tools and resources.
Domain 4: Professional Responsibilities	
4a Reflecting on Teaching	5c. Evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning.
4b Maintaining Accurate Records	3c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital age media and formats.
	3d. Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning.
4c Communicating with Families	3b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation.
	3c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital age media and formats.
4d Participating in the Professional Community	3b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation.
	5a. Participate in local and global learning communities to explore creative applications of technology to improve student learning.
4e Growing and Developing Professionally	3a. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations.
	5a. Participate in local and global learning communities to explore creative applications of technology to improve student learning.
4f Showing Professionalism	5b. Exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others.
	5d. Contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community.

The Importance of Relationships

Simon Sinek's take on relationships is that any leader (i.e.- teacher, administrator, etc.) should strive for relationships built on a foundation of trust. In *Leaders Eat Last*, he likens employment in a workplace with a lack of trust to climbing Mount Everest: as climbers ascend and the atmosphere thins- they begin to grow accustomed to surviving on less and less oxygen. It is the same working, or indeed learning, in an environment where relationships built on trust are not valued or attained. Teachers begin to insulate and isolate themselves as they become accustomed to constantly looking over their shoulder. The fostering of strong relationships is the beating heart of a personalized classroom. None of the elements of the V.O.I.C.E. framework can be achieved without building trusting relationships among teachers and students.



By simply seizing opportunities to listen to our students and peers, we lay a strong foundation for building trusting relationships. Those that listen to us are more likely to understand and share our feelings-- to empathize with us. With time, patience, and understanding, we can establish trust among the students and colleagues in our classrooms and schools, while at the same time cultivating collaborative connections. Implicit in the V.O.I.C.E. framework is a recognition of the value of relationships, the willingness and skill to pair technology resources with instructional best practices in the classroom, and the development of 21st century skills. After all, there are many ways that our students can demonstrate their understanding, but if they don't have a trusting relationship with their teacher...why would they want to?

Track 02: Variety and Ownership

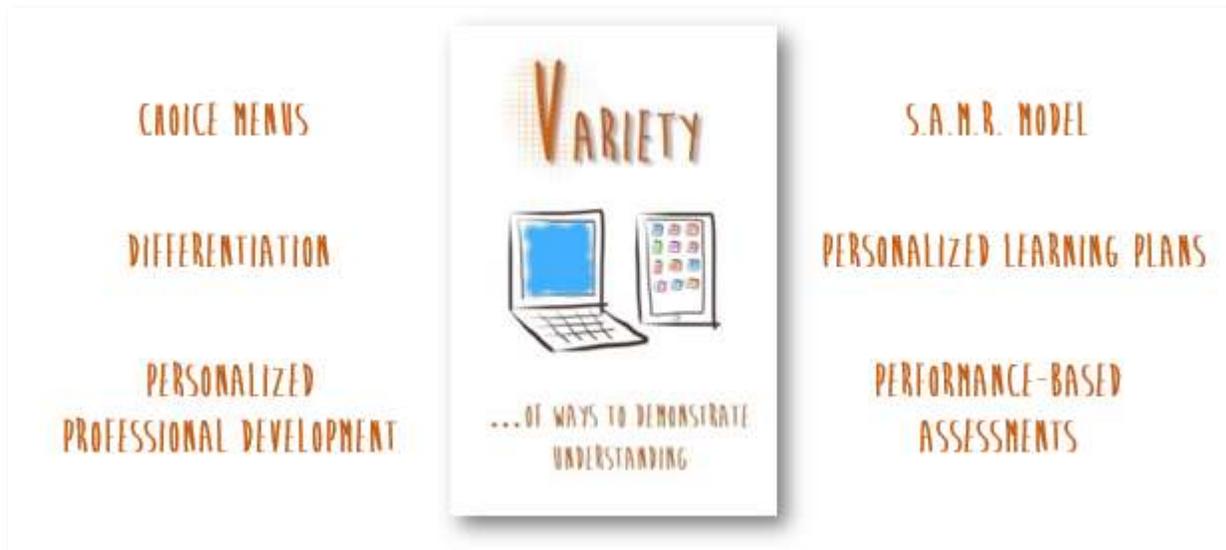
*“It felt so good/
like anything was possible”*

“Runnin’ Down a Dream” -Tom Petty

Long before the term was applied to education, my fifth-grade teacher was an innovator. I vividly remember the day he issued a challenge: improve an invention. It could be anything, real or imaginary. One friend added soda to the water fountains; another, a TV screen to his Walkman (this was the '80s after all). After an annual check-up in the doctor's office, I settled on the idea of creating flavored tongue depressors. With a few flavor extracts, I made wooden sticks coated in cherry, vanilla, and root beer. I felt like Thomas Edison himself as I distributed them to my classmates and teachers, receiving accolades in return.

Imagine my surprise 15 years later when my mother, a nurse, presented me with a sample of a new product they'd purchased for her pediatrician's office: a red, plastic, cherry-flavored...tongue depressor! The point of this story isn't the money that I left on the table way back in fifth grade (after all, I had never heard of a "patent" back then), but rather that I can't remember ever being so engaged in anything at school—a chance to create something that I was truly passionate about.

As science fairs, school plays, field days, and talent shows so often demonstrate, each of our students is unique. They are venues where different strengths are showcased, nurtured, and affirmed. How often is that achieved in our classrooms? When we give students the freedom to exhibit their understanding in a variety of different ways, we tap into their inherent strengths, hone them, and engage students on a whole different level. Allowing for student choice is also a key factor in promoting student agency, a tenant of many personalized learning frameworks. By allowing for latitude, teachers recognize the individual voices in their classrooms by equipping each student with volition: the power to make a choice for themselves.



Recently, a colleague sought to modify the way that his students could publish the personal narratives they had written. Looking to shake up the traditional “Author’s Tea”, he challenged his students to tell their stories in creative ways. One student filmed herself in front of a green screen as three different characters, recreating a field trip to a volcano as a TV news story. Another created a comic book to tell the story of learning to ride a bike. As students proudly showed off their creations —and creative approaches— it was evident to parents and teachers that the children had approached their projects with passion and motivation.

In another colleague’s classroom, a sixth-grade teacher advocated for voice and choice in a science unit about Earth’s changing surface. He began with a whole-class brainstorming session to create a bank of possible project ideas: film an experiment, write a song, facilitate a debate, create an online game. The students were still responsible for learning the content, but he allowed for flexibility in the way they could demonstrate their understanding. Upon visiting his classroom, I saw one group creating a geology-themed amusement park, “Rock World”, where each section of the park was dedicated to different types of rocks. Another group

presented a TV courtroom parody of *Judge Judy* about the dangers of sinkholes. Still other students worked enthusiastically in Minecraft to create a simulation of plate tectonics. In order to assess his students' understanding, the teacher had met with each group during their planning phase to devise a co-created rubric.

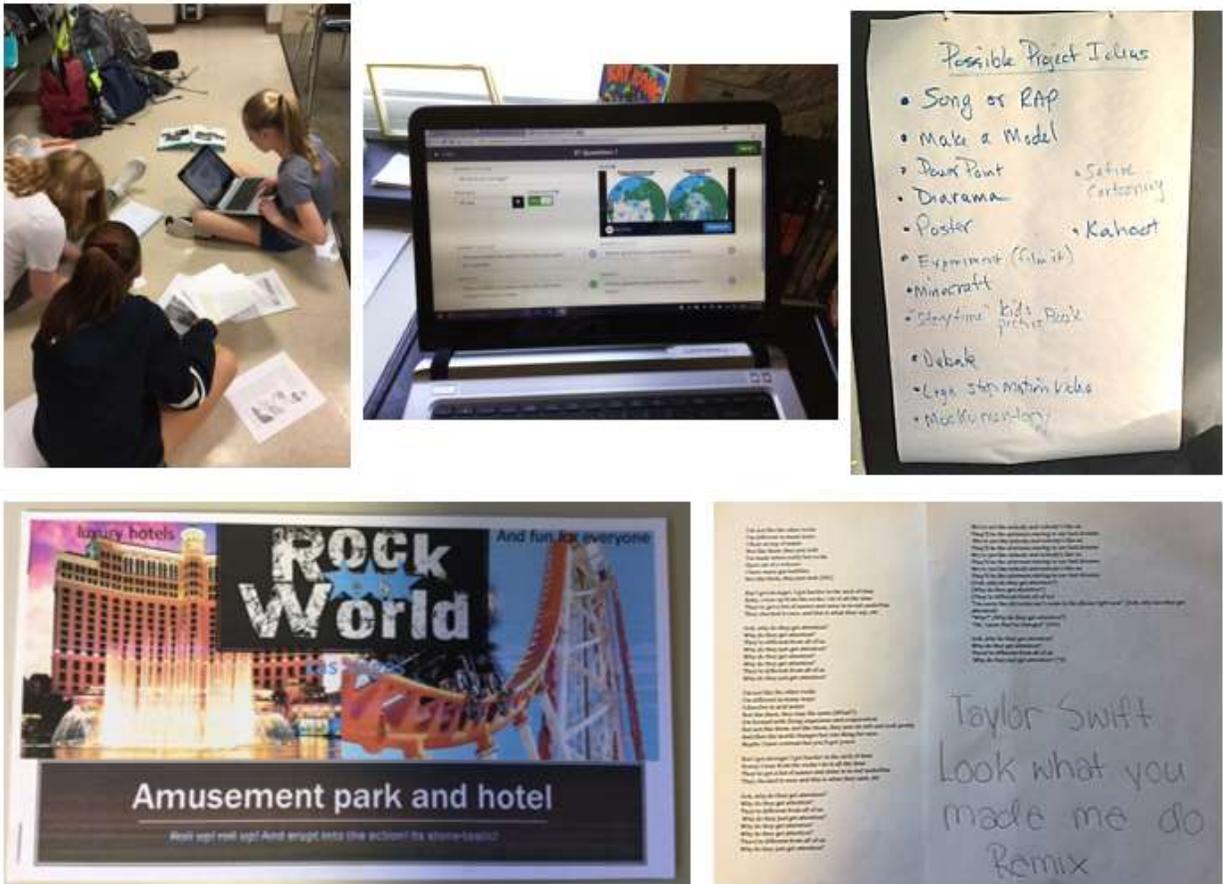


Figure 2- Sixth graders demonstrate their understanding of geology in a variety of ways.

Allowing for this type of latitude in the demonstration of understanding gives students an active role in assessment. The authors of “Developing ‘Assessment Capable’ Learners” (*Educational Leadership*) pose this scenario: “Imagine getting in your car and driving without knowing where you are headed. Your passenger knows but doesn’t reveal it. She simply gives you turn-by-turn directions. Your ability to navigate is diminished because you are completely

dependent on the passenger. We create a similar condition when we don't share the learning destination and work with our students." Personalized learning creates the conditions for student agency to thrive.

Don Wettrick, author of *Pure Genius: Building a Culture of Innovation and Taking 20% to the Next Level*, posits that teachers need to take a more innovative approach in terms of instructional style if they want their students to think and work creatively. "I don't care if you teach for the next twenty years; just don't teach one year twenty times," he says. However, resistance may come not only from teachers, but from the students themselves. Wettrick adds, "Put simply, it is easier and less stressful to be told what to do, rather than be given freedom to come up with what you want to learn." The shift to a personalized classroom takes patience, risk-taking, and resiliency on the part of both students and teachers.

Being open to such projects is one thing, but how can students (and teachers, for that matter) be made aware of what is possible? In other words, what are some practical ways to add variety, choice, and ownership to classroom instruction? Many approaches exist that can help teachers leverage technology in their classrooms as they enhance and, in some cases, transform their instruction.

The SAMR Model

How can we leverage technology in a meaningful way? The SAMR model, created by Harvard professor Dr. Ruben Puentedura, seeks not only to answer that question, but also create a common language for teachers designing learning activities using technology. The acronym, which stands for *Substitution, Augmentation, Modification, and Redefinition*, can be thought of as an innovative continuum that identifies pathways to enhance and transform instruction. An

easy entry point for teachers is the *Substitution* level: simply replacing traditional materials with technology. Instead of writing an essay with paper and pencil, a student can type it in a word processing program; rather than looking in the card catalog for a book in the library, a computer database can access titles. It is when instruction moves into the *Augmentation* level that more enhancement of instruction takes place.

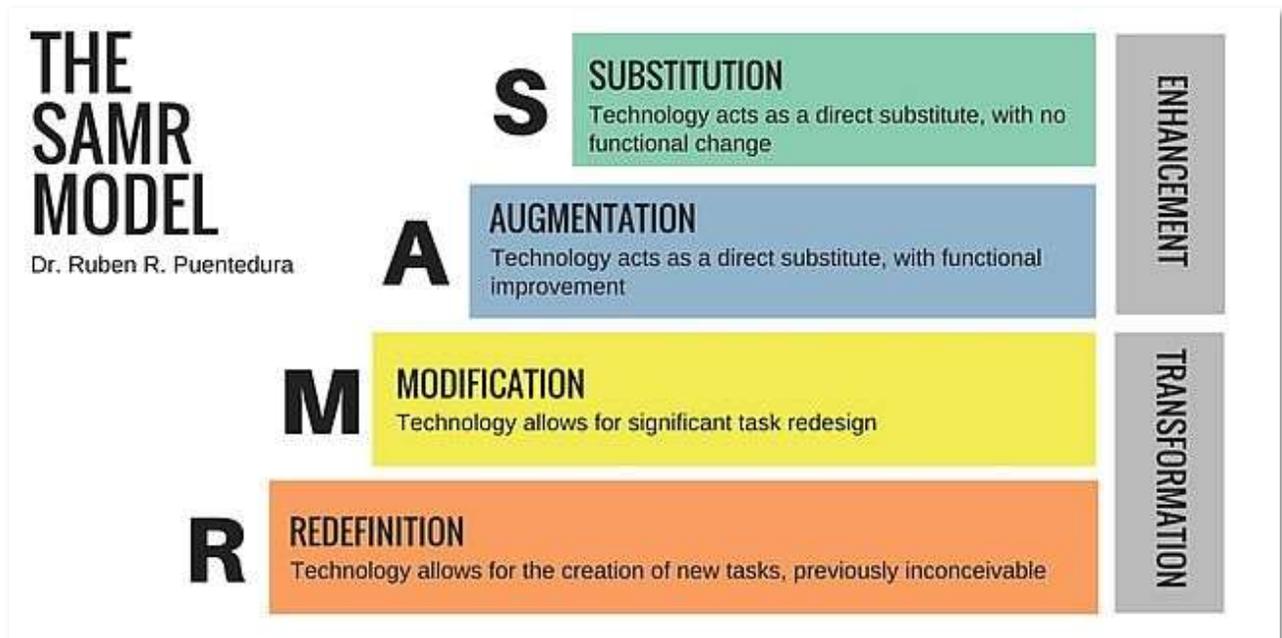


Figure 3- The SAMR model, courtesy of wikiversity.org.

As teachers become more comfortable—and innovative—with technology, truly transformative instruction begins to take place. Utilizing programs like Classkick and Nearpod, whole group, individualized, and differentiated practice can now be assigned to students' various devices and monitored with a few clicks on the teacher's computer. In this way, a teacher is better able to diagnose any misunderstandings and provide differentiated instruction to individual students, small groups, or even the entire class. Differentiation and feedback loops like these would require much more teacher efficiency without technology redefining the instruction.

Instructional technology is not fully leveraged, however, without the instructional best practices employed by the teacher. The goal of the SAMR model is to create new opportunities for showcasing student understanding that were inconceivable only a generation ago.

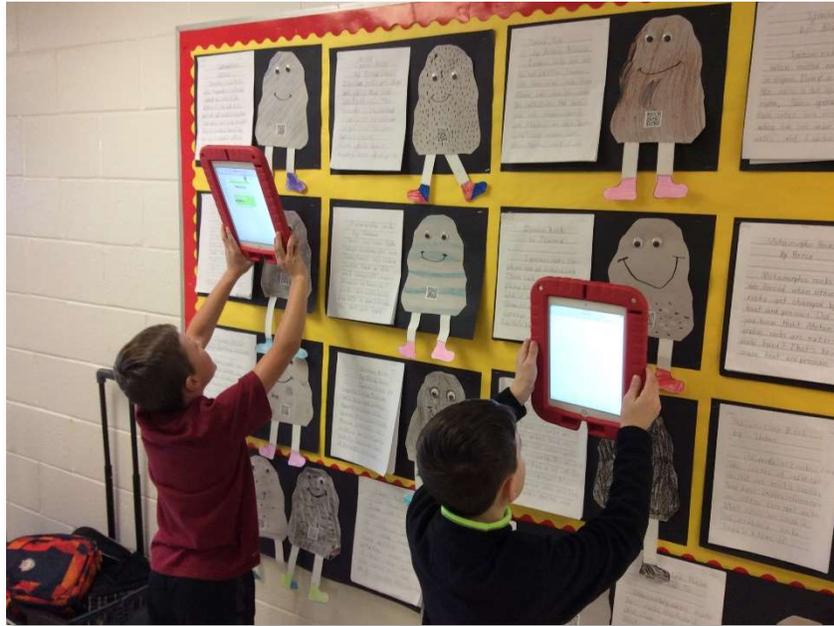


Figure 4- Bulletin boards, redefined with QR (Quick Response) codes.

Amplifying V.O.I.C.E.- Twitter Feeds in Literature

An activity that augments instruction through the use of technology is that of creating a Twitter feed for a shared novel. While the students are not actually using Twitter, they are following the same rules of Twitter use: 180 characters maximum (creativity thrives under constraints), hashtags for key terms and vocabulary words, and multiple user handles (i.e.- character points of view) for each chapter, complete with creative and descriptive names. While reading the classic C.S. Lewis novel The Lion, the Witch, and the Wardrobe, students were highly motivated to “tweet” during each chapter; these tweets not only replaced the classic reading log, but augmented it with creativity, voice, and choice. A teacher need only supply the

students with a PowerPoint slide template that can be copied and modified from chapter to chapter.

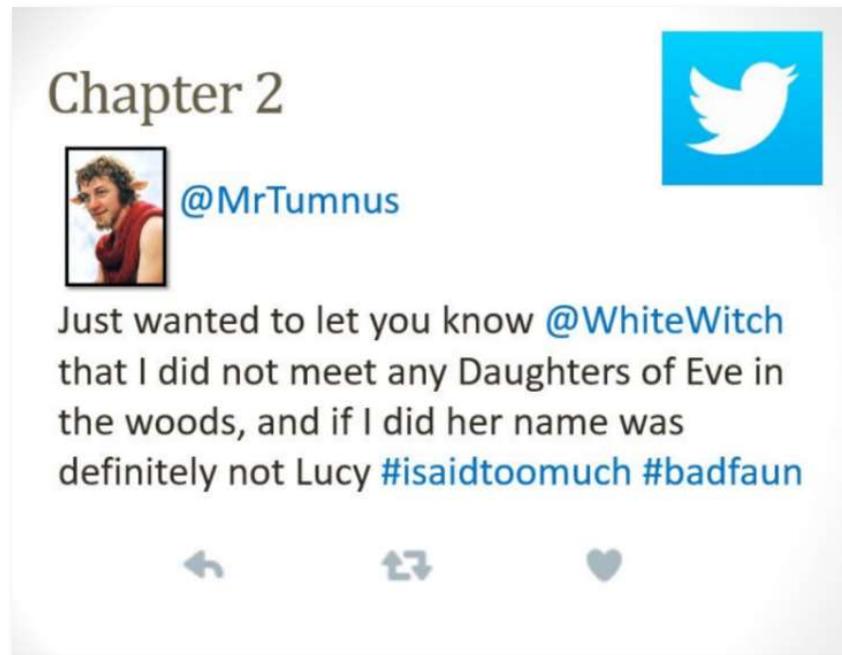


Figure 5- A reading log reimagined as a Twitter feed.

Classrooms of Choice

Many teachers are reluctant to relinquish their traditional role in the classroom. “An important concept for teachers to understand is that by helping to empower students, teachers enjoy more, not less, power.” This observation, from Jonathan Erwin’s *The Classroom of Choice*, is a powerful one for teachers looking to employ personalized learning in their classrooms. Erwin touches on many themes that speak to the power of student agency. “I’m not suggesting that we do away with carefully crafted curricula or let the students ‘take over’ the classroom,” he says. “Coaches, music teachers, and drama teachers don’t let the students tell them how to do their jobs, yet students feel empowered and important in sports, band, chorus, and in school plays, often work harder at these pursuits than they do in academic classes, and

generally achieve higher-quality results.” Erwin suggests that “teachers can employ a number of strategies that help students gain power in school.” He goes on to outline some of the benefits of student voice and choice:

- *Students gain an understanding of themselves.* When given latitude in the ways in which they can demonstrate their understanding, kids discover their interests and passions. This cultivation of identity will allow them to make more informed decisions in their lives, like when it comes time to choose an occupation in the future.
- *Students gain an understanding of others.* In today’s networked society, any chance to establish personal relationships can go a long way in fostering empathy, compassion, and tolerance. Nurturing these relationships can take place in the positive interactions of group projects. In *Habits of Mind*, Costa and Kallick call it “Listening with Understanding and Empathy”: “Pay attention to and do not dismiss another person's thoughts, feelings and ideas. Seek to put [your]self in the other person's shoes. Tell others when [you] can relate to what they are expressing. Hold thoughts at a distance in order to respect another person's point of view and feelings.”
- *Students develop productive habits.* Soft skills, or personal attributes that lead to success, find a natural home in classrooms where creative methods are encouraged: flexibility, communication, problem-solving, and leadership are skills that can be practiced and honed. As Kallick and Zmuda aptly observe in *Students at the Center*, “[Students] use what they learn about themselves as a compass to direct their choices, decisions, and active engagement.”

A practical way to accomplish differentiation and choice is by integrating choice boards (or choice menus) into instructional toolkits. Omnipresent in primary classrooms, choice boards stimulate student motivation and engagement by giving choices of how concepts will be learned. Essentially a tic-tac-toe board, the grid is filled with instructional options that allow students to showcase mastered skills, practice new content, and even extend their learning. By tapping into their interests and abilities, students begin to explore how they learn best while teachers glean valuable information for future instruction. Teachers create the boards, but students exercise

Interpersonal Task	Kinesthetic Task	Naturalist Task
Logical Task	Student Choice	Intrapersonal Task
Interpersonal Verbal Task	Musical Task	Verbal Task

Figure 6- Choice Board courtesy of <https://www.smores.com/z12ay-tic-tac-toe-choice-boards-menus>

their agency by selecting the options that appeal to them and best suit their learning styles. This empowerment promotes accountability, responsibility, and independence. Applied to weekly tasks, homework, projects, or even assessments, students begin to take more ownership of their learning.

Similarly, performance-based assessments create opportunities for students to apply their learning in a non-traditional way. Grant Wiggins, author of *Educative Assessment: Designing Assessments to Inform and Improve Student Performance*, contends, “Assessment should be deliberately designed to improve and educate student performance, not merely to audit it as most

current assessments do.” As students work through meaningful, engaging tasks, they demonstrate not only their understanding, but also the process skills and work habits requisite for life-long learning: time management, cooperation, grit, and resiliency. Co-created student/teacher rubrics ensure that everyone has a voice in the assessment process.

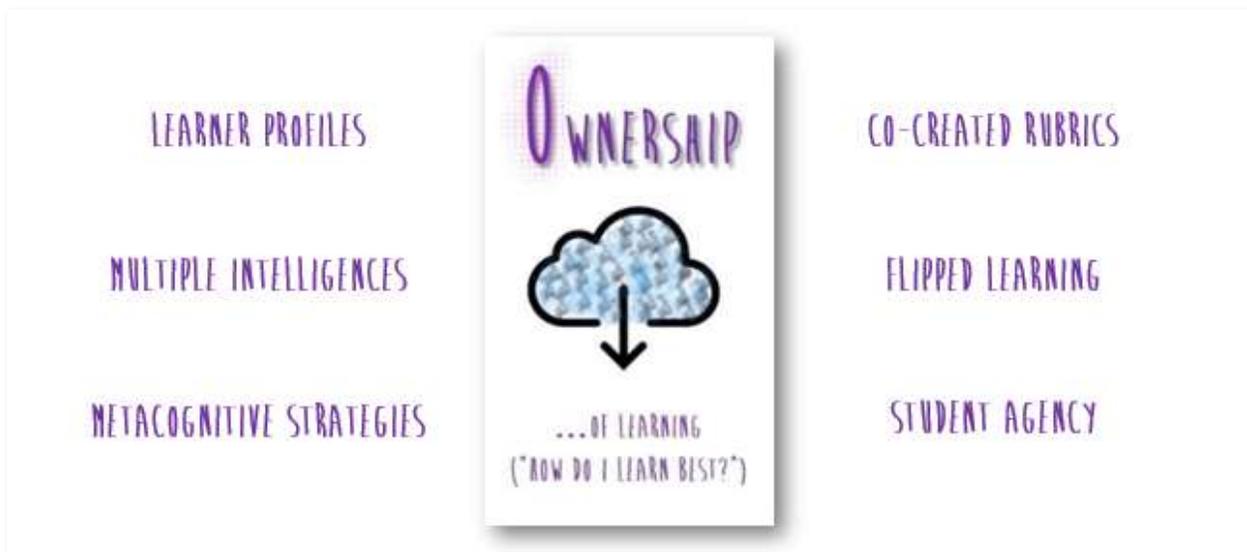
Agency need not only apply to students; personalized professional development is an innovative trend in the world of teacher training. This very book started as a hybrid staff development workshop. Teachers combed through a digital database of personalized learning articles, excerpts, videos, and infographics during an in-person summer session. Time was then dedicated during the school year for teachers to apply their learning in their individual classrooms. Our group reconvened later in the year to share our successes and struggles.

A “choose your own adventure” format could also be applied to professional development. During faculty meetings, several teachers create presentations on something innovative happening in their classroom—high tech or low tech—and non-presenting teachers choose two of the four sessions to attend. If the goal is for teachers to promote student agency in their classrooms, the same personalized approach should be applied to staff development. After all, experience is the greatest teacher.

Ownership of Learning

As arcades and computers made entertainment more interactive in the early 1980’s, one author found an innovative way to ensure that children’s fiction would stay relevant: he made books resemble games. Originally called *The Adventures of You*, Edward Packer’s wildly popular *Choose Your Own Adventure* series began as a series of bedtime stories for his

daughters. While telling these stories, he would ask them, “What happens next?” Guided by their responses, he turned their twisting narrative into his first story, *Sugarcane Island*. Sensing his discovery, he spent the next decade writing stories that required readers to make choices after every few pages (“If you choose to investigate the spooky house, turn to page 36.”) Packer’s books, with titles like *The Cave of Time* and *The House of Danger*, were quickly picked up by Bantam publishing. Why were the books so successful? According to Packer, “The reading happened because kids were put in the driver’s seat. They were the mountain climber, they were the doctor, they were the deep-sea explorer. They made choices, and so they read.”



How do I learn best? By this point in adulthood, you have probably answered that question for yourself. But how often do we ask this question of our students? Learner profile surveys, many of which can be downloaded online for free, empower our students with knowledge about themselves: strengths and challenges, interests and goals. This knowledge, coupled with instructional best practices and technology, can facilitate instruction that honors the multiple approaches present in today’s classrooms. Reflecting on personal learning styles is not

only a powerful motivator, but a first step to becoming a self-directed, independent, and lifelong learner.

Learner Profiles

At the beginning of each school year, teachers spend countless hours poring over cumulative folders, report cards, and test results in hopes of gleaning some information about their incoming learners. However, a more personalized approach values other factors such as interests, passions, and 21st century skills. Learner profile surveys are a practical way to not only honor the individuality among students, but also to serve as easily digestible data about them. Education consultant Amanda Avallone observes, "If we really believe that teaching is about the student, then it sure would help to actually get to know the students in deeper ways." By creating a personalized pathway, she argues, teachers are empowered to learn more about who their students really are. She envisions a learner profile as "a verb, not a noun", an open line of communication between students, parents, and teachers. It could take the form of a "personal best portfolio", showcasing student work that speaks to their character and allowing them to "express who they are and to work in their sweet spots from the start".

Countless learner style assessments, like the VARK (Visual, Aural, Read/Write, Kinesthetic) Questionnaire (www.vark-learn.com) and Don Lowry's "True Colors" personality profile test, are useful in identifying strengths and goals among individual learners. I was reminded of their value recently when a colleague shared a vast storehouse of "True Colors" resources. Upon administering the assessments to her class, she reported that facilitating group projects became a lot easier because the students now had a common language to draw from. The "Blues" (social butterflies) were now quick to scoop up "Oranges" (the action-oriented) as

groups began to form. While learners don't typically fit neatly into any one category, the spirit of self-discovery is a first step toward recognizing student voice.

Amplifying V.O.I.C.E.- Student Support Squad

Incorporating a student technology support squad at each instructional level creates opportunities for student ownership. At the elementary level, support squad members can create tutorials and build technology-related projects, like soundproof recording boxes. Middle and high school level students can troubleshoot software and hardware issues while earning credits and hours for their service. Aside from providing authentic learning experiences, teachers will feel supported- and inspired- in their exploration of digital tools. For students, these experiences may set them off on a path toward identifying a future career. Supplementing the existing adult technology teams with student volunteers promotes student agency, collaboration, and critical thinking skills.



Figure 7- Elementary students create soundproof recording boxes.

Metacognitive Strategies

Metacognition, or thinking about thinking, can help students become better learners. How can this be done in the classroom? According to developmental psychologist Marilyn Price-Mitchell, “With greater awareness of how they acquire knowledge, students learn to regulate their behavior to optimize learning.” As those abilities increase, research reveals that students attain higher achievement in school. “When teachers cultivate students' abilities to reflect on, monitor, and evaluate their learning strategies, young people become more self-reliant, flexible, and productive.” Price-Mitchell suggests a few ways to orchestrate this move:

1. Teach students how their brains are wired for growth.

As students explore how they learn, praising the process (effort) rather than the results (grades) promotes a growth mindset (“I can’t do this *yet*”) as opposed to a fixed one (“I can’t do this.”).

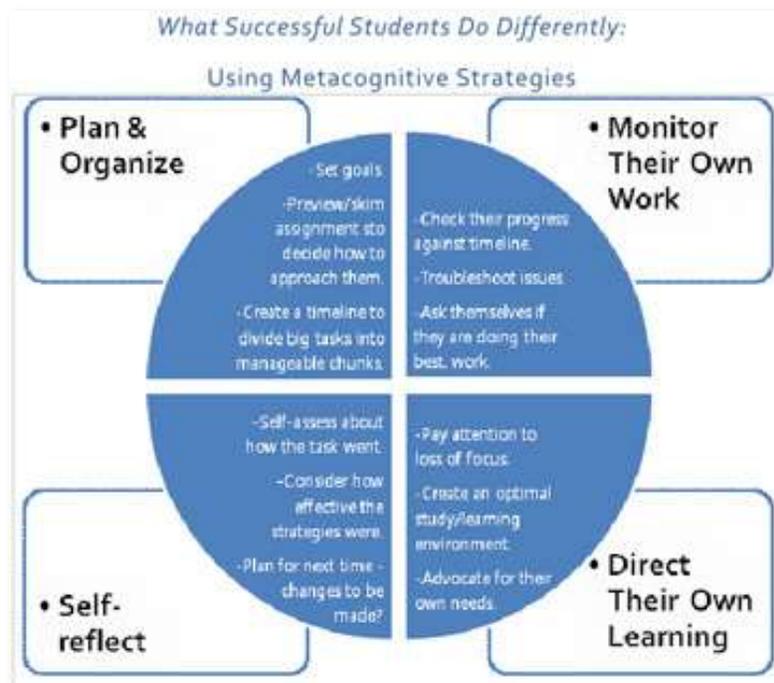


Figure 8- Courtesy of <http://inclusiveschools.org/metacognitive-strategies/>

As an added benefit, research shows that new neural pathways are formed during the very act of learning how to learn.

2. *Give students practice recognizing what they don't understand.*

Creating a classroom culture where mistakes and confusion are valued as learning experiences are vital metacognitive opportunities. Purposeful conversations about challenges and how they were overcome (or not) contributes to the cultivation of a culture for learning in a meaningful way.

3. *Provide opportunities to reflect on learning.*

Students are given the chance to reflect on the learning process through purposeful questioning. *How has my thinking changed since the beginning of this activity? What metacognitive strategies helped me overcome a challenge? How can I apply this experience to my next challenge?*

Increasingly, a one-size-fits-all approach to demonstrating understanding is becoming outdated. Our classrooms are filled with personalities, each with unique approaches and skills. There are places in our curricula where students can take more ownership of their learning, and it doesn't have to be "just one more thing" for teachers to manage. Innovative instruction paired with technology makes it easier than ever for students to showcase the many talents they possess, and the latent creativity bubbling inside them.

Track 03: Innovation and Creativity

*“High time we made a stand/
and shook up the views
of the common man”*

“Sowing the Seeds of Love” -Tears for Fears

In 1997, Apple was losing ground in sales to their main competitor, IBM. At the time, many consumers considered Apple's products to be no more than creative toys with confusing operating systems. Apple's innovative "Think Different" advertising campaign has been credited with turning the tide. Introduced in 1997, the simple black and white photos of innovators from various walks of life accomplished an incredible feat: they captured the essence of Apple's appeal without any images of their products.

Surprisingly, the campaign's creator, Craig Tanimoto, was inspired by an IBM marketing campaign. "IBM had a campaign out that said 'Think IBM', and I felt Apple was very different from IBM. I thought 'Think Different' was interesting," he said. "I then thought it would be cool to attach those words to some of the world's most different-thinking people." His final product, a 60-second TV commercial displaying iconic pictures of such visionaries as Jane Goodall, Bob Dylan, and Picasso, ended with these words emblazoned in white on a black background:

There are people who see the world differently.

They see things in new ways.

They invent, create, imagine.

We make tools for these kinds of people.

Because while some might see them as the crazy ones,

we see genius.

(FADE TO APPLE LOGO AND TAGLINE)

Think different.

After the commercials aired, consumers began to see the Apple brand in a new light and sales began to surge. Thanks in part to the “Think Different” campaign, Steve Jobs would live to see his products become synonymous with creativity and innovation.

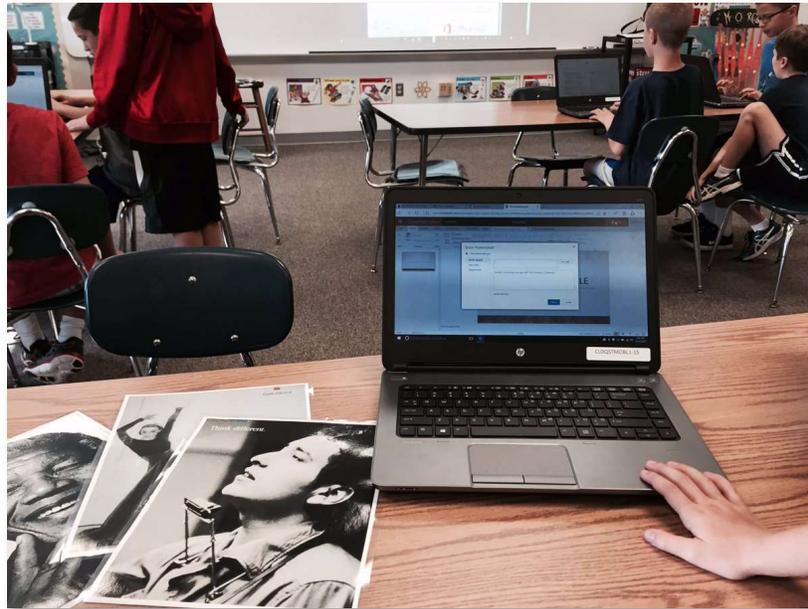
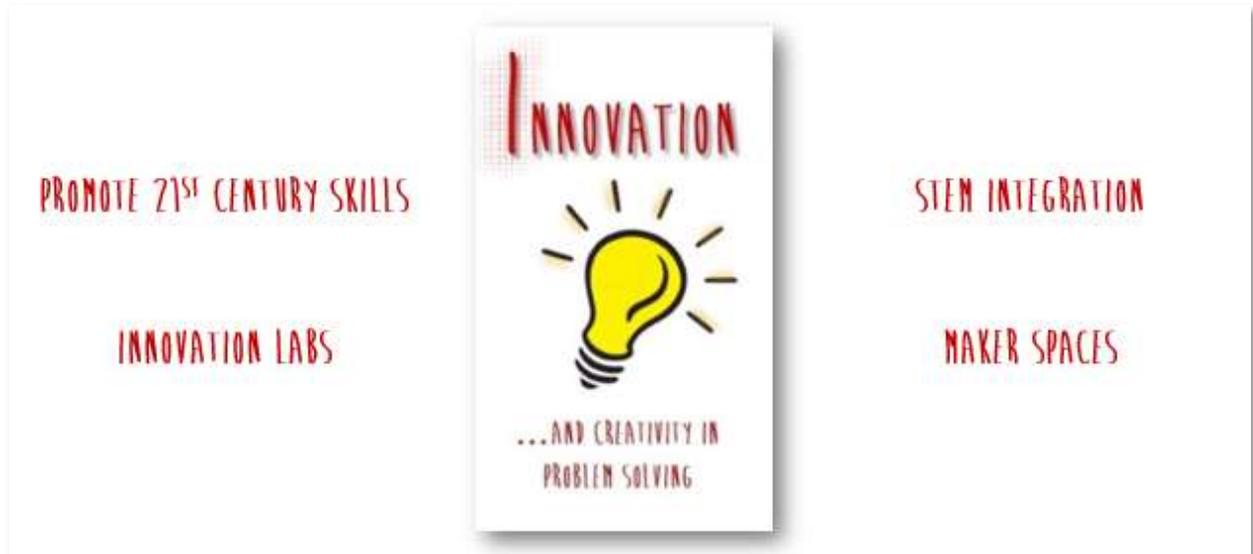


Figure 9- Apple's "Think Different" ad campaign introduces students to the characteristics of innovators.

In his seminal book, *The Innovator's Mindset*, George Couros defines innovative thinking as “a way of thinking that creates something *new* and *better*.” Fortunately, I teach in a district that proposed a new idea: a STEM program that is fully integrated into our students’ elementary experience. There are many areas in our curriculum that present opportunities for students to flex their creative muscles, and the same is true in districts without formalized STEM initiatives. Innovation labs, classroom makerspaces, and project-based learning activities provide venues for our students to think and work creatively. Simply stated, presenting opportunities for innovative thinking increases the chances that it will happen.



The United States produces a lot of creative people, and it's not by accident. According to author and journalist David Ignatius, "The sweet spot for [the United States] is somehow being rigorous enough in giving people the basics, but also loose enough in letting people experiment and be creative." Outfitted with innovative teachers and leadership, many of our schools have everything they need to be the factories where the next generations of creative minds are produced.

Cultivating Creativity with STEM Integration

Creativity is the currency of the future. Armed with intuitive technology, it is creativity that separates the innovator from the imitator in our modern age. The way my school district addressed the need to incorporate creativity was to create an integrated STEM program for grades K-8, then offer it as an elective for grades 9-12. As one of the architects of the program, I can tell you it took plenty of creativity to get our vision off the ground.

At the first planning meeting, our superintendent played a video clip from the movie *Apollo 13*. In the clip, a group of engineers is huddled around a table strewn with random parts, feverishly devising a way to solve the astronauts' re-entry dilemma. "We've got to find a way to make this...fit into that," the lead engineer implores. The challenge from our superintendent was the same: make an integrated STEM program fit into our elementary curriculum. As we zoomed out, the challenge became how to foster innovation and creativity within the constraints of a budget, staffing, and limited instructional time.

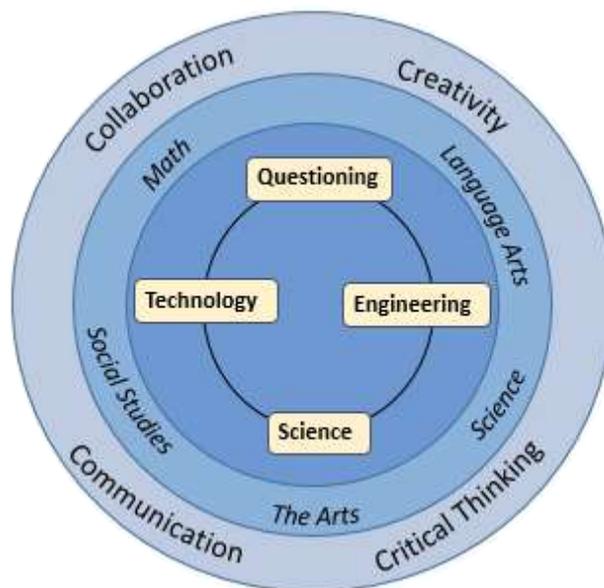


Figure 10- Vision for an integrated STEM program. (Central Bucks School District)

We asked ourselves: What do we believe is best for students? What does STEM mean to us? What is the ultimate goal of our STEM program? We attempted to answer these questions by crafting a vision: our STEM program would enrich students' authentic learning experiences by building their 21st century skills in collaboration, critical and creative thinking, and communication to solve real-world challenges. It would be a STEM program with a soul, one that would teach empathy alongside curricular connections and 21st century skills. Custom-

made, project-based units would center on real-life challenges. We would repurpose spaces within our schools: empty classrooms, erstwhile computer labs, and unused storage spaces.

The exploration of free, web-based resources proved to be fruitful. Computer programming curriculum was offered at www.code.org, including the highly-engaging “Hour of Code” activities. A windmeter build from the *Engineering is Elementary* program inspired a unit about harnessing the wind’s renewable energy. Dayton’s STEM Center informed a primary unit that involves building a safety harness for Humpty Dumpty.

Completely original units were written, including one about designing a prosthetic leg. Empathy is fostered each time a student meets a “client” (a fictional amputee) and learns about

Plunger \$10.00 	Duct Tape \$5.00 	Foam \$5.00 	Construction Paper \$1.00 	Paper Towel Tubes \$2.00 
Sponge \$1.00 	Cardboard \$1.00 	White Paper \$1.00 	Twine (2 feet) \$2.00 	Popsicle Sticks \$1.00 
Tinfoil (large square) \$2.00 	Toilet Paper Tubes \$1.00 	Sneaker \$3.00 	Foam Sheet \$2.00 	



Figure 11- Prosthesis project materials and prototypes.

the problems they face in everyday life. Groups work through an engineering design process to create a working prototype, keeping track of their “costs” using an Excel spreadsheet.

Advertisements are written, filmed, and shared to showcase the students’ biomedical engineering prototypes.

In hopes of branding our new, custom program, engineering design process posters were created and placed prominently in classrooms throughout the district. Twitter accounts were created to share and promote the many successes the program was beginning to enjoy. Pictures and videos from each of our 15 elementary schools were uploaded to district websites and shared with the community. (You can see more project ideas by clicking “QUESTv” at our website: www.cbsd.org/quest.)

As an added bonus, student feedback was overwhelmingly positive. 97% of students surveyed said our STEM program gave them the opportunity to think and work creatively. 98% agreed that they were presented with opportunities to show grit. Nearly 85% reported that they were inspired to try to solve a problem and/or build something outside of the classroom. We had succeeded in creating a venue for creativity and innovative thinking.



Figure 12- Cultivating creativity on “Young Innovators’ Day”.

Expanding on the success of the program, our school has begun hosting an annual “Young Innovators’ Day”. Like the rotation through athletic challenges on Field Day, students spend the day rotating through different engineering design challenges. Local resources are tapped, including career presentations from parents who work in innovative fields like software engineering and chemistry. The day of creativity and engagement concludes with an assembly from a nearby science center.

Amplifying V.O.I.C.E.: Instructions Not Included

There are multiple approaches to integrating STEM activities into today’s classrooms, and budgets are often the deciding factors in what that integration will look like. An inexpensive option is building a Lego kit without the instructions (many kits have 80-100 pieces and are under \$5 per kit). The activity can be introduced by reading Going Places, a story that celebrates innovation, creativity, and divergent thinking by Peter and Paul Reynolds. The story begins in a classroom as a teacher is distributing go-cart kits for a building contest. Each child receives the

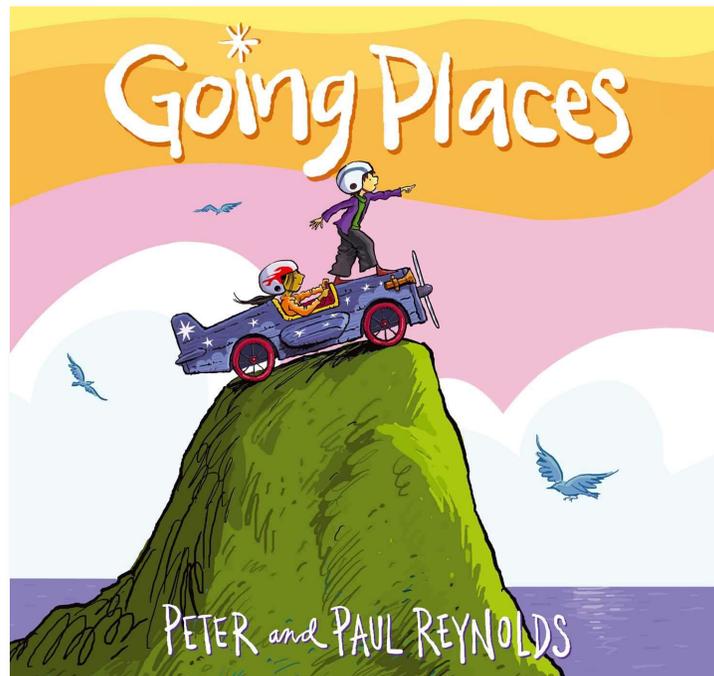


Figure 13- Going Places, by Peter and Paul Reynolds

same kit containing identical instructions and materials. The goal of the contest is not only to build the go-cart but to win a soapbox derby-style race with it. The main character, Rafael, happily builds his cart, following the instructions to the T. Once finished, he peeks over his backyard fence to see how his neighbor, Maya, is doing. Her project looks nothing like a car; in fact, it's an airplane. "Who said it HAD to be a go-cart?" she asks a befuddled Rafael.

After finishing the story, the students are informed that they, too, will be participating in a building contest...with Legos. Every group receives the exact same kit, each containing the same number of pieces. However, the groups will receive only the pieces: no instructions, no pictures on the box to follow. It is up to them to build something creative that uses all of the pieces. As they start working, some groups try to build what they think the kit is supposed to be while others build contraptions from their wildest imaginations.

As the groups share their creations at the end of the activity, they quickly notice that no two creations are alike. "Are there any similarities or differences?" I ask. "What do our



Figure 14- A Lego™ kit without instructions cultivates creativity.

creations say about us?” I then reveal the picture on the box of the kit—what their creation was supposed to be. I have yet to encounter a child—or adult—who doesn’t like their own creation better than what was intended to be built. The message? When we think and work creatively, we often produce something that is better than what was asked of us...a valuable lesson that can be applied outside the walls of the classroom.

Many options exist for integrating STEM challenges into classrooms, like the creation of innovation labs and maker spaces. Although they share the goal of fostering critical thinking and creativity, there are subtle differences. Inspired by innovation labs at M.I.T., Stanford, and Harvard, innovation labs look different from school to school: some live inside a corner of the library while others may take over an unused classroom or storage area. Innovation labs typically boast at least some technology that students can utilize to exhibit their unique approaches and skills. Seating is purposeful and promotes collaboration, and collaborative tools are available to work through the design process. Green screens, whiteboard tables, laptops and tablets are all components of an innovative toolbox that allows for open-ended thinking and making. These spaces are not independent of the school building at-large. Instead, they serve as spaces to supplement and enhance classroom instruction.

Amplifying V.O.I.C.E.- DIY Record Player

Can you create a record player out of a pencil, pin, and a piece of paper? I pose this challenge (which I stumbled across on YouTube) to incoming students and groups of adults during conference breakout sessions. It takes some creative thinking to solve the seemingly

impossible challenge. The first step is to stick the sharpened end of the pencil into the hole in the middle of the record (the point of the pencil should be resting on the table). Twist the pencil in your hand...this is your turntable. The paper should be rolled into a cone, then taped shut. Tape the pin to the narrow end of the cone, then rest it on one of the record's tracks. As you spin the record, music will emit from the cone (speaker). Note: use records that you don't care about very much. The pin will scratch the groove away, rendering the record useless after each track is played the first time.



Figure 15- Mr. Wizard demonstrates how to build a record player.

Maker spaces, which often exist on a portable cart, engage students by creating flexible environments where they can learn by doing. Using low-cost materials like popsicle sticks,

cotton balls, pipe cleaners, paper plates, and cardboard, students collaborate to brainstorm, design, and build projects that connect to classroom instruction. For example, a second-grade colleague challenged her students create shipping containers for the eponymous rabbit of their read-aloud story, *The Miraculous Journey of Edward Tulane* by Kate DiCamillo. No matter the approach, innovation labs and maker spaces are relatively inexpensive ways to create venues that foster innovation and creativity.



Figure 16- STEM connections to literature in 2nd grade.

The Case for Creativity

Creativity is the currency of the future, and ideas are the coins of the realm. Fortunately, today's schools are brimming with the ideas of young, imaginative minds. And yet schools need to do a better job staying relevant in terms of innovative and creative thinking. So says Sir Ken Robinson, the author and TED speaker of the most popular TED Talk of all time, "Do Schools

Kill Creativity?”. Robinson contends that a shift to personalized learning is “non-negotiable” if we are to fully prepare students for fulfilling and productive lives. “The problems tend to arise when kids go to school because the deeper they get in, the more they start to lose interest,” Robinson says. “It’s the construct of school that beats the love to learn out of students.” He supports his claims with three observations:

- **It’s a time of technological revolution in many industries:** As seen at Apple, the rate of technological change has increased rapidly over the course of the last 30 years and shows no signs of slowing down. It is the soft skills like collaboration, creativity, grit, and resiliency that need to be instilled in our students. “Kids need to be able to communicate and work in teams,” Robinson says.
- **We have to think differently about the individual self:** Many personalized learning frameworks, like V.O.I.C.E., seek to uncover the innate abilities of students. As Robinson says, “[Children] have deep natural talents, but we have to discover them and cultivate them. If you have a narrow view of ability, you generate an enormous amount of inability.” Schools are the perfect venue for this type of discovery and cultivation to take place.
- **We have to rethink how we do school:** According to Robinson, education should “include a sense of the individual in its design and purpose”. Many of the organizational constructs of schools are based on efficiency and cost-effectiveness. “We organize our kids’ learning by their date of birth,” he says. “We don’t do that anywhere else, except school.”

"CREATIVITY IS THE
CURRENCY OF THE FUTURE;
IDEAS ARE THE COINS OF
THE REALM."



Laying the foundation for a culture of innovation starts with building relationships rooted in trust. Teachers are powerful role models for innovative thinking; if they are expected to take chances, they must know that their peers, administrators, and students trust them to experiment...and possibly fail. STEM integration, maker spaces, and innovation labs all provide practical opportunities for kids to hone their 21st century skills and discover their own unique voices. As an added bonus, creativity and engagement often go hand in hand. As Simon Sinek aptly puts it, "Working hard for something we don't care about is called stress; working hard for something we love is called passion."

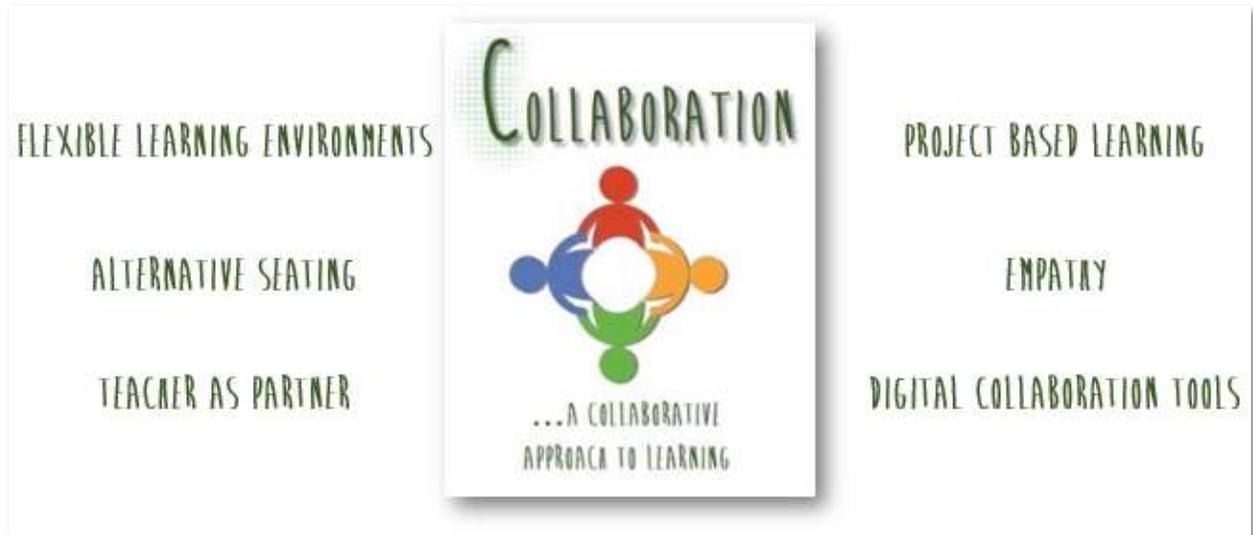
Track 04: Collaboration and Engagement

*“Sounds of laughter, shades of life/
are ringing through my open ears/
inciting and inviting me”*

“Across the Universe” -The Beatles

Paul McCartney's solo career was saved by an unlikely collaboration. After a string of successful post-Beatle solo albums in the 1970's, McCartney found his popularity waning among the younger generation of the 1980's (his new fascination with synthesizers was alienating some of his older fans as well). Then, on Christmas day, McCartney received a fateful phone call...from Michael Jackson. Amid a string of hits from *Thriller*, Jackson was seeking a songwriting collaborator and hoping to fly to England to write and record with the ex-Beatle. McCartney accepted, and they soon recorded three songs, including the single "Say, Say, Say", with legendary Beatles producer George Martin. The song was initially described by critics as "bipolar", like two different songs blended together. Despite negative reviews, it shot to #1 on the charts in December of 1983, rejuvenating McCartney's solo career and creating some inroads for Jackson with McCartney's more mature listeners.

As classroom leaders, teachers can cultivate trust and empathy among their students by providing opportunities to collaborate. "We can't all be good at everything," Simon Sinek says, "...this is partly the logic behind having a team in the first place." In some cases, teachers have begun to see their role in the classroom less as a facilitator but rather as that of a resource—a "guide on the side". In a collaborative culture, the use of technology not only makes communication more efficient, but also provides opportunities to identify authentic, real-world connections and problems for groups to tackle together.



Soft Skills at Google

In a recent *Washington Post* article, Cathy Davidson explored Google’s hiring algorithm to see if “hard skills”—technology skills, in this case—were requisite to work at the company. When the data of their top-performing employees was analyzed, it turned out that technology skills finished near the bottom of the list. Tellingly, six of the top seven were “soft skills”:

- Being a good coach
- Communicating and listening well
- Possessing insights into others (including others’ differing values and points of view)
- Having empathy toward and being supportive of one’s colleagues
- Being a good critical thinker and problem solver
- Being able to make connections across complex ideas

As we prepare our students for jobs that haven’t even been created yet— some of which will likely be created by the innovators at Google— it is important to note the power of collaboration. Of the soft skills valued at Google, at least five of them overtly reference

collaboration. When the best collaborative teams at Google were studied, they were found to share the same skills: “equality, generosity, curiosity toward the ideas of [their] teammates, empathy, and emotional intelligence.” And most important of all? Emotional safety. “To succeed,” Davidson writes, “each and every team member must feel confident speaking up and making mistakes. They must know they are being heard.”

Amplifying V.O.I.C.E.: Class Meetings

A practical way to ensure that all voices are heard is to conduct structured class meetings. Donna Styles, author of Class Meetings: Building Leadership, Problem-Solving and Decision-Making Skills in the Respectful Classroom, outlines how class meetings create an environment where students are empowered to have their views heard and reflected upon. In order to conduct an effective class meeting:

- *Students sit on chairs in a circle.*
- *Meetings are held weekly.*
- *A set format is followed.*
- *Students lead the meetings.*
- *Both problems and suggestions are discussed.*
- *Students encourage and compliment one another.*

Each student takes a turn as the “leader” of a class meeting at some point during the school year. Students submit issues to the group— problems affecting some or all of the students, or a suggestion for a class activity— by placing slips of paper inside a “Class Meeting” box in the classroom. It is up to the student leader to keep the meetings focused and

running smoothly, ask and clarify questions, and summarize key points. The teacher, who is also seated in the circle, serves as a group member— listening intently and making comments only when necessary while supporting the student leader as a coach.

Class meetings promote many lifelong skills: leadership, public speaking, problem solving, critical thinking, and interpersonal skills. “Students realize that it is their classroom as much as the teacher’s, and they take ownership and pride in that,” Styles observes.

“Problems in the classroom are no longer just the teacher’s problems to solve—they become the class’s problems.” Students become more comfortable asking questions and taking risks, which helps establish a positive classroom climate and culture. As a teacher who has utilized class meetings in an elementary setting, I can attest to the fact that they not only promote student voice, but also generate excitement, empathy, and passion in the classroom.

Amplifying V.O.I.C.E.: Utilizing Sociograms

Many of the decisions that are made in today’s classrooms are based on data. Standardized assessment scores, responses to interventions, and placement exams all figure prominently in our students’ academic lives. However, in today’s data-driven classrooms very little data is generated about the interpersonal dynamics among students. Employing sociograms can help teachers understand the relationships that exist within their classrooms. Based on the work of psychologist Dr. Jacob Moreno, sociograms clarify the connections between students and identify patterns of leadership and isolation. Moreno’s work with sociometry began in 1951 with the goal of forming more efficient squadrons in the United States Navy. Asserting that humans are essentially social beings, Moreno’s sociograms seek to

uncover the inner-workings of groups by creating visual representations of interpersonal data (Figure 17).

The process begins by posing questions that students respond to on paper: “Name three classmates that you would most like to play with” or “Name three classmates you would least like to spend free time with.” For anonymity, students are each assigned a number or letter and only the teacher will see their confidential responses. The responses are then tallied and analyzed: positive choices indicate “leaders”, while negative choices indicate “isolates”.

Sociometric Choice Matrix							
Chooser	Chosen						
	A	B	C	D	E	F	G
A		+		+	-	-	
B	+				-	-	+
C				+	+		
D	-	-	+		+		
E		-	+	+			-
F		-	-	+	+		
G	-		+	+		-	
+ Choices Received	1	1	3	5	3	0	1
- Choices Received	2	3	1	0	1	3	2
Total Choices Received	3	4	4	5	4	3	3

Figure 17- Sample results from a sociogram (International Encyclopedia of the Social Sciences)

In this sample class, Student D is likely a leader because he was chosen positively five times versus zero times negatively. Although it is possible that Student D demonstrates negative character traits, he can still be utilized to model interpersonal skills because of his influence on the class. The sample sociogram also shows that Student F is likely an isolate because he was chosen negatively three times versus zero times positively. Monitoring the feelings of isolates helps to provide targeted support in collaborative settings. While sociograms are not foolproof, they are useful starting points for identifying and addressing the social-emotional needs in classrooms.

Project-Based Learning

Project-based learning (PBL) is a learner-centered approach that challenges students to explore real-world problems. When PBL succeeds, students demonstrate a deeper knowledge of content that is relevant to their lives in an authentic way. However, the authors of *Setting the Standard for Project Based Learning: A Proven Approach to Rigorous Classroom Instruction* caution that PBL is susceptible to missteps: wasting instructional time due to poor planning, general teacher under-preparedness, or disguising traditional assignments as projects. In order to prevent PBL from becoming a failed approach, they outline seven key design elements for any project-based learning activity:

- *Challenging problem or question:* At the heart of any good project is a good question to solve or a problem to explore (Example: “Should the United States have fought in the Vietnam War?”) By answering a question that speaks to their interests and passions, PBL offers students the opportunity to use and apply their knowledge as opposed to reciting facts.
- *Sustained inquiry:* A wealth of facts are accessible online, but inquiry promotes a more active process. As students investigate their problems, questions lead to deeper questions, affording students the opportunity to showcase critical thinking skills. Among the questions they will pose: Who am I doing this project for? What is my audience?
- *Authenticity:* Real-world connections increase student motivation and engagement. Addressing real-world problems, like improving a local park or reimagining a space within a school, creates a venue for students’ interests, cultures, experiences, and concerns to have an authentic impact.

- *Student voice and choice:* When students are afforded ownership, they care more about their finished product. Allowing for a variety of ways to demonstrate understanding increases engagement and creates pathways to showcase creativity and innovative thinking.
- *Reflection:* As students reflect on their learning experiences, true growth takes place. Project journals and informal reflection sessions promote metacognitive strategies and help students understand how to set and attain goals, a hallmark of lifelong learners. It can also inform their planning and preparation for their next project.
- *Critique and revision:* Students can be overtly taught how to give and receive feedback, an invaluable real-world skill. In addition to formative teacher feedback, students gain a level of comfort as they give and receive feedback from each other.
- *Public product:* Creating a tangible product that can be shared and discussed publicly, ideally with an audience outside the walls of the classroom, is an exercise in authentic



Figure 18- A collaborative elementary and secondary 3D printing STEM challenge: Design a modern-day token for Monopoly.

communication. In PBL, the medium is the message: student understanding can be demonstrated with more than just test grades.

Aside from student engagement, teachers are beneficiaries of the approach in another way: innovative instructional practices are honed during PBL experiences. Cultivating creativity, designing and planning relevant instruction, managing and communicating with collaborative groups, and demonstrating flexibility are all instructional best practices inherent in PBL. As teachers model these 21st century skills, students benefit in a trickle-down fashion.

Facilitating collaborative projects is sometimes challenging in a traditional classroom setting. In order to increase engagement, empower choice, and promote collaboration, many teachers have turned to flexible learning spaces. By providing choices for students—sitting, standing, or laying down—teachers create opportunities for students to think critically about their own learning style: How do I work best? Where is the best place for my group to collaborate? Of course, for a classroom to be flexible it must start with a teacher displaying that same flexibility; some traditional classroom furniture may have to go by the wayside. Similarly, traditional classroom management practices will need some modification. Varied



Figure 19- An artist's rendering of a flexible learning space.

seating options are typical of flexible learning spaces: stools, sofas, beanbags, and exercise balls. Students desks—which are of varying heights-- are reimagined as adjustable workspaces that can be combined to create bigger collaborative spaces. The teacher’s desk mirrors this change, taking up far less room than in a traditional classroom. When teachers are open to innovative uses of classroom space, they create environments that foster the very 21st century skills that they’re cultivating with their innovative instructional practices.

If students are to become engaged and motivated, teachers need to tap into the “why” that drives their learners. Collaborative projects promote engagement in an organic way by paving pathways for students to identify their passions and communicate them in authentic and innovative ways. In V.O.I.C.E. classrooms, one of the strongest collaborative relationships is the one between motivation and engagement.

Motivation & Engagement

Too many of our students are bored, and disengagement only grows as they work their way toward graduation. The findings of a 2015 Gallup survey, *Engagement: The Involvement in and Enthusiasm for School*, of nearly one million American students shed light on some troubling trends. For example, only half of U.S. adolescents report feeling engaged in school, and 20 percent of them report being “actively disengaged”. The reason? “[Students] feel less cared-for by adults and see less value in their work.” As students progress through middle school, more and more of them report feeling unmotivated (Figure 20). When specific scenarios are disaggregated (“I have fun at school.” “In the last 7 days, I have learned something interesting at school.”), the truth about the relationship between school and motivation becomes

clearer (Figure 21). How can schools, who profess to instill “lifelong learning”, stay connected with their students?

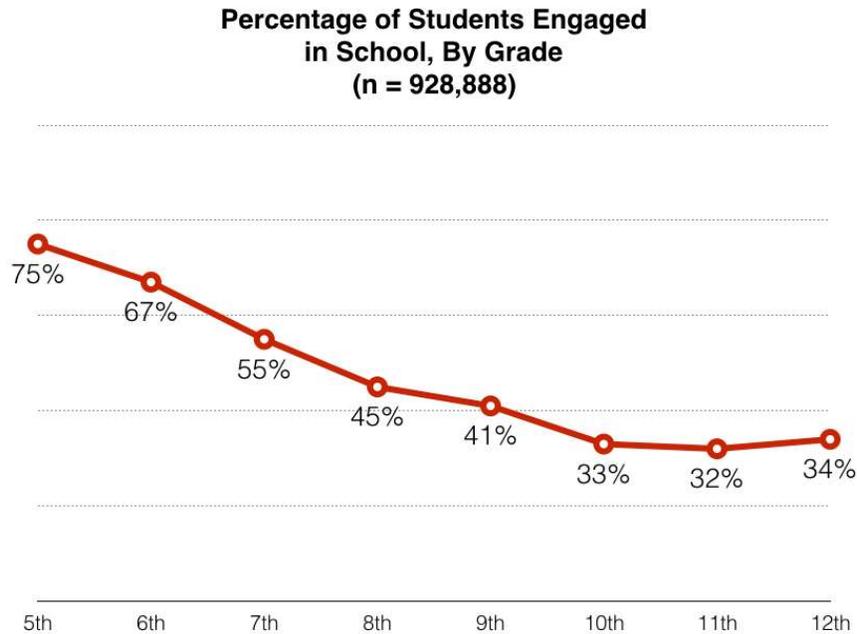


Figure 20- Gallup student poll: Engaged Today- Ready for Tomorrow (Credit: dangerouslyirrelevant.org)

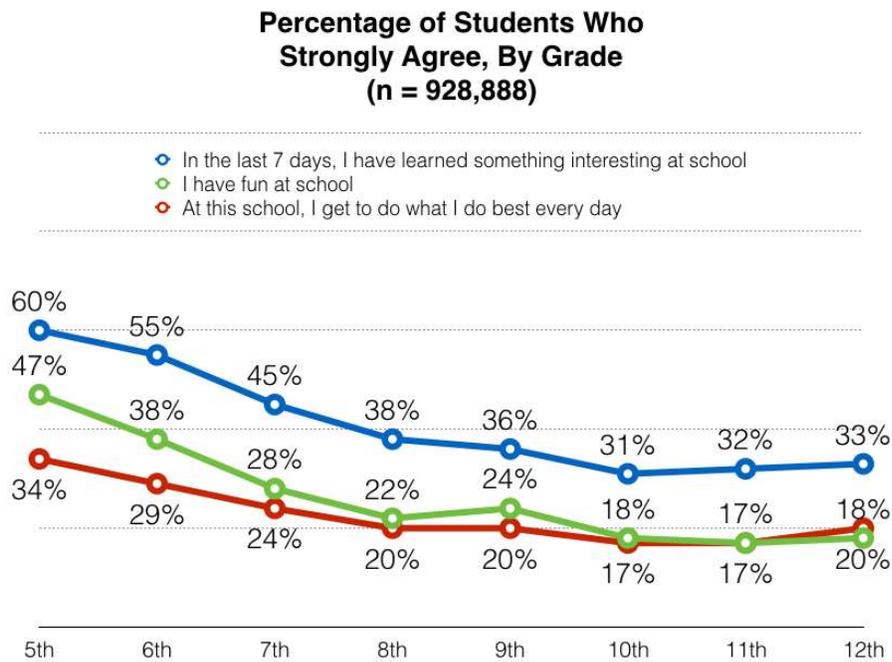
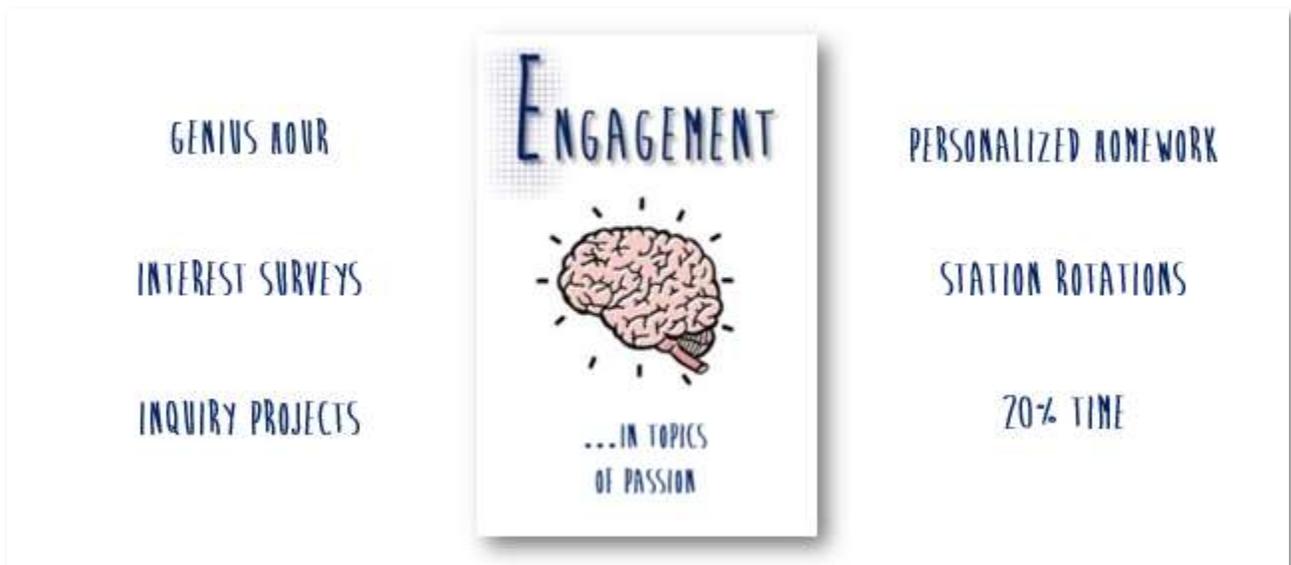


Figure 21- Gallup student poll: Engaged Today- Ready for Tomorrow (Credit: dangerouslyirrelevant.org)

According to Carol Dweck, one of the world's leading researchers in the field of motivation, "Effort is one of the things that gives meaning to life. Effort means you care about something, that something is important to you and you are willing to work for it. It would be an impoverished existence if you were not willing to value things and commit yourself to working toward them." Students need dedicated time to identify and pursue their passions, an ongoing practice that the 3M company instituted for its employees back in 1948.



An innovative powerhouse of over 22,000 patents (including masking tape and reflective traffic signs), the Minnesota-based 3M puts its money where its mouth is in terms of creativity and passion. Fifteen percent of each work week is carved out so that its employees can pursue their creative passions and ideas. This "15 percent time" has been credited with producing many of the company's best ideas, which are then refined during cross-pollination between departments. The most famous example is Art Fry's attempt to create a better bookmark: the Post-It Note. To this day, fifteen percent time is still offered to every 3M employee, both

scientists and salesmen alike. Hundreds of 3M employees even make cardboard posters describing their 15 percent time projects and present them at an annual company innovation fair.

Imitation is the sincerest form of flattery. Companies like Google have sought to apply 3M's innovative approach to their own business models. Increasing to "20 percent time", Google has been able to replicate 3M's impressive returns: Gmail, Google Earth, and Gmail Labs all originated from their employees' "20 percent time". Creative output is recognized and valued at Google and 3M, a condition that must be present for this innovative practice to work. Big business has embraced the power of passion, creativity, and motivation. It is time for schools to follow suit.

Daniel Pink, the author of *Drive*, contends that there are three components necessary to generating motivation: autonomy ("the desire to be self-directed"), mastery ("the urge to get better at stuff"), and purpose ("the desire to make a contribution"). He uses these ingredients of passion to frame a discussion of genius hour: "Each week, employees can take a 'Genius Hour' — 60 minutes to work on new ideas or master new skills. They've used that precious sliver of autonomy well, coming up with a range of innovations." Our students require—and deserve--some time dedicated to identifying their passions, pursuing creative projects, and establishing a foundation for lifelong learning.

Track 05: Run-Out Groove

“This just feels like spinning plates”

“Like Spinning Plates” -Radiohead

There's a limit to how much music can fit onto each side of a vinyl record, just as there's a cap on the number of educational fads that a teacher can be expected to incorporate into their instruction. In general, about 22 minutes of sound can be cut into each side of a 33-rpm, 12-inch record. Sometimes, there is extra space left over; in the recording industry, this is called a "run-out groove". Typically, this empty space between the inner label and the outer sound recordings is labeled with the sound engineer's initials or other industry identification. Its main job is to guide the needle to the end of the record, and to do so quickly, quietly, and efficiently.



Figure 22- A run-out groove. (Credit: Matt Oberecker)

Perhaps you feel like most of your record, instructionally speaking, has already been recorded. After all, we've all honed a unique skillset that works for us in the classroom. We integrate new educational approaches, reflect on our craft, and adapt to changing times and populations as we attend faculty meetings, complete state assessment requirements, prepare for evaluations, respond to parent emails, and leverage current technology. Teaching in the 21st century can sometimes feel like spinning plates as we juggle demands in a solitary balancing act.

I am not advocating for a sea change in your classroom. Our students will always participate in standardized math testing, write essays in language arts, and take spelling tests on

Fridays. Personalized learning allows for the fine-tuning of your craft. Indeed, many have different elements of V.O.I.C.E. at work in their classroom on any given day. I am, however, challenging you to look at Side B (or maybe C or D, depending on your years of service) of your teaching record and think about what music is yet to be written. Will you let the needle coast effortlessly to the finish, or do you have other plans for your run-out groove?

At its best, it is my belief that the V.O.I.C.E. framework can pave pathways to a more personalized approach to learning by embracing creativity, valuing relationships, and promoting student agency. At the very least, it can jumpstart conversations about what 21st century teaching and learning could and should look like-- certainly conversations worth having. Ultimately, I believe that when we personalize learning for our students, we're giving them that which we all hope for in the classroom and beyond: a seat at the table.

The V.O.I.C.E. Soundboard

Like Kallick and Zmuda, a visual I often use during V.O.I.C.E. presentations is that of a soundboard. Sound engineers are always fiddling with knobs: turning up the vocals on one track, turning down the bass on another. I envision the V.O.I.C.E. framework operating in a similar way: certain areas in the curriculum may lend themselves to “turning up” the collaboration or innovation while others may warrant less opportunity for student choice. If a

teacher has a few of the levels turned up at any given time during their instruction, it's likely that personalized learning is taking place.



Speaking of music, personalized learning can even work in music class. Our school's music teacher was recently interested in personalizing an annual project he'd been doing with sixth graders for the past 20 years: the end-of-the-semester songwriting project. Nothing about his (distinguished) instruction had changed before the culminating activity; students learned about quarter notes, treble clefs, and time signatures just as they always had. It was the personalized touch, filtering his project through the V.O.I.C.E. soundboard, that not only enhanced the project, but transformed it completely.

He challenged his students to demonstrate their songwriting ability using a method of their choosing: utilizing songwriting software, exploring digital sounds, writing on traditional

staff paper, or performing live with instruments. I was fortunate enough to be in his classroom on the day his students got to work. After a few organizational instructions, he gave the green light to start working. What happened next was a testimony to the power of personalization.

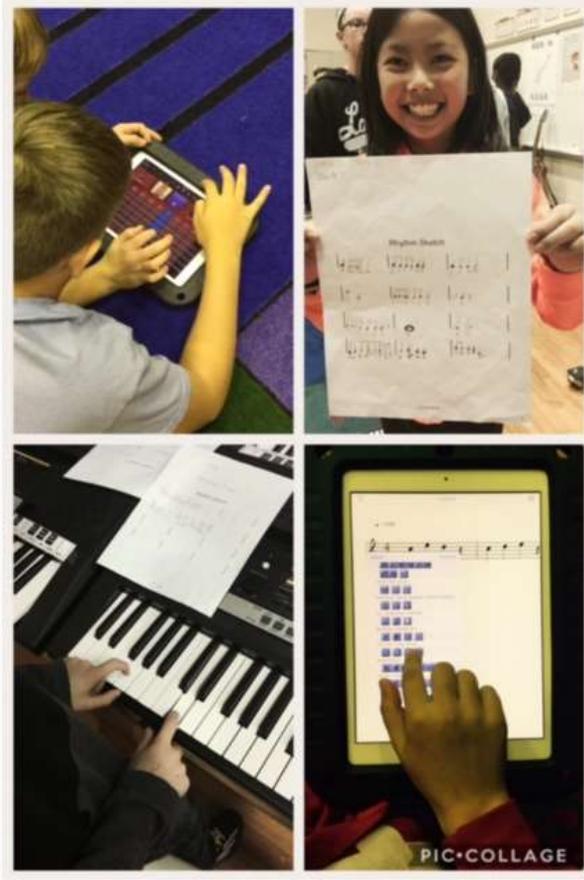


Figure 23- Sixth graders demonstrate their songwriting ability in various ways.

The kids flew, almost literally, off into different directions of the classroom. I saw pairs and trios form organically. Some kids went directly for the iPad cart; they began using iWriteMusic, a free songwriting app that allowed them to drag and drop notes, modify them with a tap, then play back a preview of their melody. Others used GarageBand to add layers of instrumentation to their work. Other students opted for traditional sheet paper and began writing. Still others used keyboard pianos to experiment with unformed melodies, or else tried to play the melody they were hearing in their head. I heard classical music, modern pop hooks, EDM beats, and good old rock n' roll. Student engagement was turned all the way up to 11.

The potential for personalization exists in every classroom, at every level. It doesn't require a leap of faith, only an open mind. Equipped with voice, choice, and agency, your students will not only demonstrate their understanding of the subject matter-- they'll come to understand a little part of themselves. Could there be nobler cause in the classroom? Giving a voice to the songs yet to be sung.

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