Connections and Convergence: eMINTS and Personalized Learning

Monica Beglau
Christine Terry
Connections and Convergence: eMINTS and Personalized Learning

This paper describes and contrasts the two primary paths to designing personalized learning environments in U.S. K-12 schools: 1) the technology-driven path, and 2) the pedagogical- and student-driven path. The paper explains how Springdale Public Schools and eMINTS National Center in the University of Missouri (MU) College of Education approach the pedagogical- and student-driven path.

Background and Significance

The concept of personalized learning has gained considerable traction over the past 10 years, fueled in part by significant resources made available through grant programs such as the US Department of Education’s Race to the Top-District (RTT-D) program. During the 2012 and 2013 competitive rounds, RTT-D awardees designed proposals to create innovative personalized learning environments that could be reliably replicated and scaled. The US Department of Education defined personalized learning as:

“... learning environments that are designed to significantly improve learning and teaching through the personalization of strategies, tools, and supports for students and educators that are aligned with college- and career-ready standards (as defined in this notice) or college- and career-ready graduation requirements (as defined in this notice); accelerate student achievement and deepen student learning by meeting the academic needs of each student; increase the effectiveness of educators; expand student access to the most effective educators; decrease achievement gaps across student groups; and increase the rates at which students graduate from high school prepared for college and careers (US Department of Education, 2013, p. 27).”

A generally agreed upon premise to personalization of learning is that it is linked, ideally, to the use of technology. When reviewing the technology designs of many school districts, including RTT-D applicants, there appear to be two distinct systems of
support put in place or expanded in order to provide educators and students with resources critical to the development and refinement of technology supported personalized learning environments. We have titled the two distinct systems: 1.) the technology-driven path; and, 2.) the pedagogical- and student-driven path.

The technology-driven path – Based on our observations, the technology-driven path relies on specific classroom design elements that incorporate high levels of multi-media technology to create digital learning platforms. For example, some school districts are using “... digital textbooks that combine typical content with audio, video, and multidimensional representation...” (Tanenbaum, Le Floch, & Boyle, 2013, p 4). The path proposed within this pathway focuses heavily on the type of technology used and the extent to which it is used. This reflects, what we are calling the technology-driven path to personalized learning.

The pedagogical- and student-driven path – Other districts, with which we have worked, are determined to make profound changes to their overall pedagogical focus to create personalized learning environments. Springdale Public Schools, a 2013 RTTD grantee, chose to capitalize on an existing relationship with the eMINTS National Center. The district is expanding its use of the eMINTS pedagogical approach as a key element in plans to build personalized learning environments for students. These environments provide educators with professional learning resources that model the type of personalized learning that is focused on student voice and student choice. Students and teachers deploy technology resources using eMINTS pedagogical paradigms so that all digital resources are chosen based on their fit with the pedagogy and student needs. The path to personalized learning outlined by schools, such as Springdale School District, may be thought of as the pedagogical- and student-driven path.

Essential components of personalized learning environments.

“Student choice is the starting point. Grab their attention at the beginning and you can take them anywhere. We all reach the same goal in the end but we might have 28 different ways of getting there.”

-C.T. ERICKSON, Grade 4 eMINTS Teacher, Springdale, AR

Building a sustainable system of support for high-quality personalized learning environments requires that all participants have a clear and shared understanding of the essential components of such environments. Wolf (2010) summarized the top five elements central to personalized learning as envisioned by a group of education leaders convened by the Software & Information Industry Association (SIIA) in collaboration
with the Association for Supervision and Curriculum Development (ASCD) and the Council of Chief State School Officers (CCSSO):

1. **Flexible, Anytime/Everywhere Learning:** learning beyond the traditional school day or building “…through online or blended learning, hands-on opportunities in the community, and instruction offered by a range of teachers, experts, or technologies” (*ibid*, p. 14).

2. **Redefine Teacher Role and Expand Meaning of “Teacher”:** significant changes from the teacher serving as the sole knowledge delivery mode to “…teachers as facilitators of learning…” (*ibid*, p. 14).

3. **Project-Based, Authentic Learning:** using real-world opportunities to “…increase the relevance of learning and improve students” ability to apply knowledge and used critical thinking skills” (*ibid*, p. 15).

4. **Student-Driven Learning Path:** students are explicitly included in the design of their learning “…tailored to the expressed interests and abilities, whole child factors, schedules, and goals of the students” (*ibid*, p. 15).

5. **Mastery/Competency-Based Progression/Pace:** assessment is less of learning but more as and for learning so that “students address standards at the time and in the manner that meets their needs, rather than being taught only when the entire group covers a certain topic” (*ibid*, p. 16).

Ensuring that the five elements described by Wolf are not only in place but also functioning at highly successful levels requires schools and districts to evaluate their perceptions of technology and pedagogy and the intersections between the two. While both paths require the power of technology to succeed, the implementation impacts all aspects of personalized learning such as: a) administrative policies; b) educator professional development; and c) perceptions of the role of student voice in the design and delivery of instruction. Each path requires the creation of a system of support and has some commonalities; however, each is characterized by different uses of resources, different investments in operational structures, and a different mindset regarding the meaning of personalized learning. We believe the elements as conveyed by Wolf (2010) have more in common with the pedagogical- and student-driven path than the technology-driven path.

**The two paths contrasted**

“Students develop significant ownership for their work and are much more persistent in seeking a solution to (mathematical) problems they have generated themselves.”

*Kim Stichnote, Secondary Mathematics Teacher, Ashland, MO*
A trend among many districts is to provide “digital learning platforms” which are key to their development of a personalized learning pathway (Tanenbaum et al., 2013). This pathway using adaptive instructional software programs convey the districts’ intentions to use technology as the fundamental driver for personalizing lessons, by adapting content and instruction, and responding to student feedback and assessment results. The technology provided to both teachers and students in these districts includes digital, hand-held web-based devices such as computer tablets and smart phones. The devices are intended to allow teachers and students to access instructional materials and activities that would be personalized to individual student needs within the school environment or outside of school. The technology is being used to facilitate and support “anytime, anywhere” access to learning via adaptive instructional software.

One advantage of the technology-driven approach is the potential to reach larger numbers of students since limited resources can be directed towards equipment and devices as opposed to more costly teacher professional development. The technology-driven approach may also be more acceptable to educators since it may not require significant changes to teaching styles and methodologies. The approach generally relies more on pre-planned instructional materials and activities that can be used to supplement rather than replace current classroom instruction. Finally, responsibility for the optimal usage of the technology falls more upon technical support staff and students who may be more familiar with technology than the traditional classroom teacher.

In contrast, the creation of personalized learning environments through a systematic immersion in pedagogical approaches that redefine learning illustrates a very different view of the role of technology. The pedagogical methods undergirding this view must align with techniques and strategies that develop and support the knowledge and skills needed by all learners (teachers, students, administrators, technical support staff, and instructional coaches) in a personalized learning environment. Bray and McClaskey (2014) articulated this different lens through which the role of technology in personalized learning can be viewed:

In a personalized learning environment, learners can access appropriate tools to support their learning. They have critical thinking skills so they can self select the tools they need to support any learning task, whether at a school or home. ICT (Information and Communication Technology) literacy would be an essential skill in a personalized learning environment. As 21st century learners, they collaborate, share and learn with their peers, experts, and other learners around the world (Bray and McClaskey, p. 15-16, 2014).

The uses of technology at the heart of the eMINTS pedagogical model align very closely with the stance outlined by Bray and McClaskey. eMINTS staff have worked for the past 16 years to ensure that the pedagogical model at the foundation of its professional learning programs has strong ties to the most recent theoretical, practical, and research-based findings.
The eMINTS pedagogical- and student-driven approach to personalized learning

eMINTS pedagogy seeks to transform classrooms into highly engaging, technology-rich, student-centered learning communities where students are engaged in solving authentic, real-world problems; collaborating with other students, teachers and individuals outside of the classroom on projects; and becoming savvy consumers of information as well as producers of new knowledge.

eMINTS pedagogy has been built around constructivist theories and social learning premises since its inception as a statewide program in 1999 (Kaplan, Terry, & Beglau, 2014). Through professional learning experiences that both model what personalized learning involves and include collegial opportunities for participants to engage in creating personalized learning environments, educators gain the knowledge and dispositions needed to implement personalized learning.

eMINTS programs of professional learning and accompanying support mechanisms have a long-standing association with groups such as the Partnership for 21st Century Learning and the International Society for Technology in Education (ISTE). The flagship professional learning program, eMINTS Comprehensive Professional Development (eMINTS Comp), has been awarded the highest level of alignment (Mastery) with ISTE’s standards for teaching and leading in the digital age.

All eMINTS professional learning programs include face-to-face and online learning experiences with content, extended resources, and opportunities for participants to engage in collegial coaching. eMINTS pedagogy is based on four underlying research-based components of: high-quality lesson design, community of learners, purposeful integration of technology, and authentic learning:

1. Theoretical background in constructivism and the social aspects of learning along with the application of these theories through high-quality lesson design and accompanying assessment. Lesson design also includes a focus on understanding of the role of standards and competencies as well as how to ensure that students demonstrate mastery of skills critical to success in school and career settings.
   a. Assessment as and for learning with limited assessment of learning
   b. Management of student data
   c. Facilitation of student understanding of their own assessment results

2. Use of classroom management techniques based on the development of a community of learners.
a. Engaging students in learning environments that help them develop intrinsic motivation, personal responsibility, persistence, self-monitoring, and the ability to work both independently and as part of a group.

b. Ensuring students have skills essential for success in school and career settings:
   i. Ability to set and monitor goals
   ii. Capacity to ask open-ended questions
   iii. Competence in organizing and prioritizing tasks
   iv. Facility in selecting appropriate technology and other tools to achieve desired goals

3. How learning can be powered by technology with a variety of digital options used as “mindtools” (Jonassen, Peck, & Wilson, 1999) to “…amplify learners’ abilities to construct knowledge for themselves, rather than be ‘taught’ by preprogrammed lessons” (p. 152).
   a. Exploiting the power of various technologies to help learners engage in higher order critical thinking skills including:
      i. Evaluating and analyzing information
      ii. Making decisions
      iii. Connecting ideas
      iv. Solving problems
      v. Representing knowledge gained and solutions to real-world problems
   b. Understanding how to choose the best technology for the task at hand.

4. Development of personalized learning experiences that represent authentic learning and include strategies such as:
   a. Inquiry-based learning
   b. Project-based learning
   c. Problem-based learning

eMINTS professional learning programs also include personalized coaching to enhance participants’ ability to translate concepts they have learned into classroom practice, school leadership, and technology deployment (Joyce & Showers, 1995). Studies have found combining in-classroom coaching and professional learning to be effective in changing teacher practice (Neuman & Cunningham, 2009). Individuals who are certified to deliver eMINTS professional learning programs are trained using Costa and Garmston’s (2002) Cognitive CoachingSM methodology. The goal is to help teachers with lesson planning and reflection on practice, to support administrators in their role as instructional leaders, and to help technology specialists understand their roles in supporting personalized learning.

The programs available to schools and districts through eMINTS can be combined on a customized basis to create the sustainable system of support needed to implement personalized learning. The programs include the following:
• **eMINTS Comprehensive Professional Development (eMINTS Comp)** – primarily for classroom teachers led by certified trainers who model uses of technology as “mindtools” and use instructional strategies based on constructivist and social learning theories. eMINTS Comp includes systematic monthly in-classroom coaching and mentoring sessions designed to help participants “translate” what they have learned in professional development sessions into classroom practice. The coaching and mentoring sessions also provide participants with time to experience their own “personalized learning” with their trainer. Appendix A provides the most recent version of the competencies that eMINTS has delineated for both teachers and students.

• **Professional Development for Educational Technology Specialists (PD4ETS)** – helps district staff develop the skills needed to deliver eMINTS Comp including how to provide effective coaching and mentoring to participants. PD4ETS helps district staff to participate more effectively in their district’s implementation of eMINTS or eMINTS-based programs.

• **Innovative Teacher Leader (ITL) Program** – develops teacher leadership skills to provide personalized just-in-time support for peer teachers who are implementing personalized learning in their classrooms. Participants learn how to support their peers using techniques designed to solve problems of practice and share successful experiences.

• **eMINTS Veteran Teachers Program** – provides support to classroom teachers who have completed eMINTS Comp and helps them maintain and extend their professional learning experiences over time. The Veteran Teachers Program can be customized to meet the needs of varying groups of teachers or districts.

• **eMINTS4Administrators** – helps school- and district-level administrators understand the professional learning around both pedagogy and technology that teachers are experiencing in eMINTS Comp. The program also provides administrators with opportunities to interact with administrators whose districts have successfully implemented eMINTS.

• **eMINTS4Techs** – gives insight to school- and district-level technology coordinators about the importance of their role in the district’s implementation of personalized learning strategies. Online webinars with various technology experts offer technology coordinators the opportunity to communicate with others who have successfully managed large-scale technology implementations.
SUMMARY and CONCLUSIONS

Personalized learning offers the promise of higher levels of student learning and engagement. The availability of significant resources in the form of grant funding from the U.S. Department of Education and other sources along with promising initial research findings have prompted schools and districts to adopt one of two personalized learning approaches. The technology-driven path relies more on specific classroom design elements that incorporate high levels of multi-media technology and software platforms that utilize adaptive assessment and instruction. The pedagogical- and student-driven path often requires significant changes to the district’s overall instructional philosophy, framework, and methodology. Technology resources provided to both students and teachers through the student-driven path are deployed based on pedagogical paradigms. All digital resources are chosen based on their fit with the pedagogy and student needs.

Creating personalized learning environments is a daunting task and requires the thoughtful convergence of pedagogy and technology. Programs such as those developed and tested by the eMINTS National Center can help schools and districts navigate the hazards and challenges encountered. Through consultation with the experienced educators at eMINTS, schools and districts can create a series of roadmaps that will ensure successful arrival at their chosen destination: higher levels of student performance through the achievement of truly personalized learning environments.
References


APPENDIX A

eMINTS Teacher Profiles:
Examples of pedagogy- and student-first approaches to personalized learning.
Kim Stichnote
Secondary Mathematics, Southern Boone School District, Ashland, MO

“Students learn that solutions to difficult problems often require multiple attempts, working with other people to arrive at an answer, and understanding why an answer is right. “

-KIM STICHNOTE, Secondary Mathematics Teacher, Ashland, MO

Kim Stichnote has been a secondary mathematics teacher for the past 24 years in Southern Boone County in Ashland, MO. Kim is completing her final year of eMINTS Comprehensive Professional Development.

Since Southern Boone County is a relatively small school district of approximately 500 students in the high school, teachers can get to know each student personally and can shape each one so that they are meeting their potential. Kim described how she helps students who are struggling, “I ask them the little questions to give them a bread crumb trail to follow and then eventually they will end up where you want them to go,” Kim explained.

Kim cultivates student engagement by scaffolding her students’ learning. Students create and solve their own mathematical problems when studying specific topics (such as solving quadratic equations) as opposed to solving problems from a textbook. Students develop significant ownership for their work and are much more persistent in seeking a solution to problems they have generated themselves. Students then present the problems that they have created and solved to their classmates. The practice results in all students completing the assignment and also in students wanting to have the best problem and the best solution to share with their
peers. Kim doesn’t lower grades for wrong answers but rather uses each wrong answer as an opportunity to help students understand key concepts. They learn that solutions to difficult problems often require multiple attempts, working with other people to arrive at an answer, and understanding why an answer is right.

Kim uses technology in her classroom as a supporting tool that extends beyond word processing and research. She also encourages students to use platforms such as Google Docs so that they can access their work anytime anywhere. Students use laptops, iPads, and their own devices so that they can learn to troubleshoot in multiple formats.

Kim related an example of how technology helped her support one of her students who was suspended from school. Kim used technology by having her other students use apps on their iPads to capture how they solved problems used in class as part of Kim’s instruction. The students’ solutions and dialogues were varied in their complexity. Kim then added vocabulary and additional dialogue explaining key concepts. The files were uploaded to Google Docs where the suspended student accessed them on a daily basis. Kim has since perfected the process for use with students who are out of class for extended periods of time for illness or other reasons.

Kim described one of her favorite assessment techniques called “Can You Move It.” See the structure at: https://docs.google.com/document/d/1Ceeu6iej6r4xNOFMW0k5gnzYD1kwjPPHEzWiMmTF8/edit?usp=sharing Students chose their problem and graphed the equation. Students then shared their graphs with classmates and the peer feedback allowed them to see immediately if they were on target or not. When students were then required to use their graphing skills later in a formal assessment situation, they were able to with ease. Students were able to recall and then apply what they had learned months before.

Kim related how important it is for her and her colleagues to know that their students have developed the accountability needed to maintain and then retrieve knowledge they have learned over time, not just for the short term. She believes it is critical that teachers layer learning in a manner that provides students with opportunities to retain, retrieve, and apply what they have learned over the long term.

In what she calls her “Twitter Travels,” Kim follows a wide variety of teachers from as far away as Alaska and Australia to glean ideas and ways to deal with instructional challenges. She plans to become a contributor to her Twitter Travels as well as a consumer of information.

Kim offered advice to others who are working to personalize learning for their students: be open to change and realize that the worst thing that happens is it doesn’t work so you have to try another way. “If teachers are asking their students to try even if they might fail and then support them, teachers have to be willing to do the same thing …try even if you fail and keep learning. Surrounding yourself with people you trust and who will support you when you try something outside of your comfort zone is really important.”
Sue Adams
K-8 Gifted Education, Southern Boone School District, Ashland, MO

“My goal, and why eMINTS has been so important for me, is to constantly push my students to the edge of their learning.”

-SUE ADAMS, K-8 Gifted Education Teacher, Ashland, MO

Sue Adams is in her 21st year of teaching. She has taught learners at a variety of levels including college, high school, and now primary, elementary and middle school. She has a background in Health and Physical Education and is currently teaching K-8 Gifted Education in the Southern Boone County School District in Ashland, MO. Sue is finishing her third year of professional development in the eMINTS Comprehensive program.

Getting her gifted students to participate in planning their own instruction has been a challenge. Sue often finds that gifted students are uncomfortable with planning what they want to learn because they have rarely been asked to do so. She overcame her students’ reluctance by breaking the task of planning their own learning down into smaller pieces. She started by presenting an interesting topic, such as Rube Goldberg machines, to students and getting them to think about creative ways that they might want to investigate the topic. She then moved her students into thinking about how they would demonstrate what they learned and how they would present their findings. From there, Sue engaged her students in creating rubrics to evaluate the many different products they came up with. Giving students options in a way that is carefully scaffolded with the desired goals and objectives in mind has been a successful way for Sue to reach her overall goals with her students. “My goal, and why eMINTS has been so important for me, is to constantly push my students to the edge of their learning.”

Sue describes how student engagement in her classroom might appear to be “chaos” to the casual observer. However, what is really happening is the social and emotional engagement and growth that occurs when her gifted students get the opportunity to be together as learners. The students already all have an internal love of learning so getting them motivated is not a problem. Rather, the goal is to get her gifted students to reflect on their learning in ways that help them better understand themselves. Sue related that
her eMINTS professional development helped her to examine the questions she was using as prompts for her students’ reflections. She was getting the same superficial responses until she changed the questions she asked her students, requiring them to think more critically.

Sue believes every learner, gifted or not, can be introspective about their learning at a level that is meaningful to them. She feels that it is up to the teacher to ask the types of questions that push students to engage in deeper introspection.

Another key feature of helping students to reflect on and personalize their learning is ensuring that the end products they create are presented to an authentic audience. Whether students are presenting to peers, to students who are younger or older than them, or their work is being published online in the form of YouTube videos or other methods, Sue finds her students striving harder to perfect their work.

Sue gave an example of a unit centered on creating an “Inventor’s Fair” to showcase how she uses technology tools. Students had to learn about and define the process of invention by studying several different inventors’ successes and failures. Using an app that allows students to summarize and share their findings about specific topics using digital “sticky notes,” Sue’s students had a visual model and used it to figure out how to organize what they learned from their research. They quickly determined that notes with information about an inventor’s birth date or place of residence had little to do with what they were interested in, namely, how the inventor’s successes and failures contributed to the students’ understanding of the process of invention. Students were engaged because they were focused on what they were doing and the digital tool enhanced their conversations and collaboration. Sue recalled, “It was what every learning day should be!”

Sue feels that peer collaboration through eMINTS and Professional Learning Communities (PLC’s) has made her a “braver” teacher because it gives her the confidence to take risks knowing that if she needs feedback, it is always available in a collegial atmosphere.

Sue’s advice to others on the journey towards personalizing learning for students is to strive to break those old teaching habits that are rooted in the cycle of the teacher always being in control or being the one who is right.
Dustin Curtis is in his fifth year of teaching at Bayyari Elementary School in the Springdale Public School District in Springdale, Arkansas. This is his second year teaching students who are split between 4th and 5th grade levels. He also has three years experience teaching 4th grade students. Dustin served six years in the military and is a veteran of the Iraq War. He is in his first year of eMINTS Comprehensive professional development.

Dustin characterized his first year in eMINTS professional development as reinforcing his philosophy of teaching that includes “…real world relevance using technology to enhance the educational experience.” eMINTS helps him align all of the service learning projects that he has developed to relevant education standards.

Dustin described one of his favorite units that involved helping his students develop and operate an “espresso coffee shop.” He initially thought the unit would be centered on Arkansas state standards for social studies related to understanding economics concepts. After working through several eMINTS professional development sessions about aligning instruction to standards, Dustin and his grade level partner created a stronger framework for the project. They also revised the unit’s alignment to include additional standards related to cultural and geographic concepts.

The new unit framework gave Dustin and his students opportunities to explore a variety of cultures and their contributions while relating them to social studies standards about early American history. With a high percentage of Hispanic students in his classroom, Dustin capitalized on his students’ eagerness to learn more about Honduras, Mexico and other Central American countries that produce coffee. The work extended throughout the semester and helped his students learn about everything from fair trade to the

“I can do the research with them (students) now instead of for them. I can now spend more time thinking about the group and then each individual and how I can best benefit and support them.”

-DUSTIN CURTIS
development of slavery and the Civil War. Dustin believes “...anything that you want to learn about can be tied to the reading and writing standards. eMINTS has helped me to focus more on the content standards with the strategies that are taught in professional development sessions”

Dustin continued relating his example of the espresso shop unit to describe how he uses his students’ interests and talents in designing instruction. The real-world connections that the shop provided had students asking him for help with additional informational resources they might not otherwise have sought out. For example, when teachers who patronized the shop asked about the origin of the coffee and how it was harvested, students had a reason to research the topics and read associated informational texts so they were prepared to answer the questions. “Having a purpose for reading is so much more meaningful to students than just having them come in cold and read an article or something that the teacher has chosen,” Dustin noted.

Dustin described the authentic assessment techniques he used with the espresso shop project. Dustin has all students balance the daily receipts for the shop. He observes their presentations within and outside of their classroom to assess accuracy of information and specific writing and presentation skills. Dustin believes that it is very challenging to design assessments that truly assess what students know. He has found that the technology tools and strategies he has learned during his eMINTS professional development sessions have given him many more options for assessing his students. From PowerPoint to videos to apps that are available to students on their iPads, he has found that his students’ interest in technology has fueled their desire to not only be accurate in terms of content but also to attend to the appearance of their end products.

“Students are more like directors who are writing the scripts, which have to be accurate, and also making sure their production is attractive,” he related, “I think this is how students begin to become directors of their own learning. If a teacher is truly invested in helping them with that, you have to start at the elementary level. The biggest role I play is that of motivation. I have to know what they want to learn, keep them motivated to learn, and yet tie the learning to the standards. If they are doing what they want to do, they are directing their own learning and will keep themselves going.”

Dustin is excited to have the high levels of technology, especially a computing device for every student, that eMINTS brings. He uses the technology to support his belief that textbooks are not really needed in classrooms where learning is truly personalized for
students. Dustin has turned a large portion of the responsibility for locating information and researching topics over to his students. “I can do the research with them now instead of for them. I can now spend more time thinking about the group and then each individual and how I can best benefit and support them. I’m actually planning instruction as opposed to collecting materials. I’m analyzing the standards more and seeing where my students need more emphasis to accomplish them.”

Dustin has a strong network based on mutual support with his fellow grade level teachers, providing them with summaries of what he and a colleague are learning in eMINTS. Dustin also works closely with the middle school that his students attend when they move to grade six. He formed a close association with the teacher who is responsible for the Environmental and Spatial Technology (EAST®) program at the middle school. For more information see: http://www.eastinitiative.org/aboutcontact/

Middle school students who were involved in the EAST® program came to Dustin’s classroom to help his students understand geographic information system (GIS) needed to support mapping. The mapping provided a portion of the foundation for another service learning project that involved a fund raising effort for Heifer International. For more information see: http://www.heifer.org/about-heifer/index.html

Dustin’s students had researched the coffee industry in Central American countries for their espresso shop unit earlier in the school year and learned about the levels of poverty often found in those countries. The students wanted to have a fund-raising project to contribute to Heifer International so that they could make a difference for families who shared their cultural background.

Another interesting connection between the middle school and elementary school occurred when the EAST® middle school students learned more about the espresso shop project that Dustin’s students were engaged in. Dustin’s students were so enthusiastic about their espresso shop that the middle school students decided to “franchise” a similar shop for their school.

Advice that Dustin offers to others who are working to personalize learning for students is to accept that the teacher’s role has changed from being the giver of information to being another student. “I may have more background knowledge than they (students) have, but I have to use that to facilitate and guide their learning. With technology they can find out anything they want to know but they may not have the experience to know if what they have found is valid or not. That’s where I come in, to help them with that.”
C.T. Erickson
4th Grade Teacher, Harp Elementary School, Springdale Public Schools, Springdale, AR

“Make sure you are teaching to the standards and not worrying about what is happening around you because as we know it is constantly changing. Teaching to the standards allows you to control what you can control and not get burned out.”

-C.T. Erickson

C.T. Erickson is completing her fourth year of teaching fifth grade at Harp Elementary in the Springdale Public School District in Springdale, Arkansas. C.T. teaches literacy and science in the school’s partially self-contained program. She is completing the first year of eMINTS Comprehensive professional development.

C.T. described how she develops lessons and units for her students. She begins with pre-assessment surveys completed by her students to determine their interests and levels of prior knowledge before she constructs learning objectives for units and lessons. C.T. described a special collaborative project she is participating with the University of Arkansas College of Education. C.T. and university faculty created a one hundred-item science survey for students that included factual items as well as interest items asking students to choose projects that were of the most interest to them. “I think this survey really took my students’ interest in science to a whole new level,” C.T. related. Students were placed in groups based on the interests they expressed on the survey to begin outlining and creating units of study. Students are researching activities, lesson plans, experiments, and outside resources that will help them learn the unit concepts. “Who knows better than my students what they want to learn?” asked C.T. “I might know what concepts need to be taught but fail miserably in the translation to lessons because I don’t understand their interests and motivation to learn. Their work on these units will be impactful and purposeful.” University of Arkansas faculty and fourth year college students will eventually help C.T. evaluate, edit and finalize the lessons and units to ensure alignment to relevant learning standards.

When C.T. thinks about “student engagement,” she relates that she keeps in mind the fact that she has 28 different students who are in 28 different places and interested in 28
different things. She doesn’t see her students as a “captive audience” but rather as a group of individuals who all need a voice in their learning. “Student choice is the starting point. Grab their attention at the beginning and you can take them anywhere. We all reach the same goal in the end but we might have 28 different ways of getting there,” she noted.

Technology tools are ubiquitous in C.T.’s classroom. She estimates that her students use some type of technology tool 95% of the time they are in class. C.T. described how she uses technology tools to organize as well as differentiate instruction. All students may be looking at the same basic document but using technology tools, C.T. differentiates the document to accommodate students’ lexile levels and/or the questions they respond to. “I think it helps preserve the dignity of students who might be reading at a lower level because their assignment looks like pretty much like the assignment everyone else is doing.”

C.T. knows her students are learning key concepts needed to demonstrate competence on statewide assessments stating, “That’s where quick assessments and data tracking come in. I can tell you at any point in time exactly where all of my students are in terms of the standards.” She provided further explanation by noting, “When I have our weekly conferences, I can talk with my students about what I am seeing and then I ask them, ‘what can I do as your teacher to help redirect your learning so that you are able to understand this?’ That’s what makes the conferences so powerful.”

C.T. uses multiple means of assessment including commercial programs purchased by the district that are correlated to Common Core standards, strategies such as “Four Corners,” “Exit Slips,” and frequent conferences and conversations. She believes that student conferences are especially helpful in understanding how English Language Learners (ELL) students are progressing. The conferences allow her to hear what students are thinking rather than relying only on written assessments, which may be challenging for ELL students to complete.

C.T.’s advice to other educators who are working to improve their teaching she replied, “I don’t compare my journey to someone else’s end destination. As a teacher it can be very frustrating to observe others and think they have it all together. Finding the joy in the journey and the joy in the failures is the best way to make it. I can learn the most from my failures if I will just reflect on them.”

C.T. shared further advice, “Make sure that you are teaching to the standards and not worrying about what is happening around you because as we know it is constantly changing. Teaching to the standards allows you to control what you can control and not get burned out.”
Holly Linneman
Multi-grade Intermediate (Grades 4-6) Teacher, Windsor Street Montessori School, Columbia, MO

“My students’ ownership in their learning begins with their ownership of the classroom. They are very proud of everything in the classroom and all of the areas where we work and they learn each day.”

-HOLLY LINNEMAN

Holly Linneman is in her fifth year of teaching at the Windsor Street Montessori School in Columbia, MO. She is currently teaching the multi-grade intermediate group (grades 2 through 4). Holly began her eMINTS4All professional development program in summer 2014.

Holly deliberately connects her students’ interests and talents to their learning by discussing the major topics and concepts that will be covered during the year with them. Her students play a significant role in determining how the units are presented and taught. Students discuss their interests as a group and as individuals. If some of their interests are not already contained in the major topics and concepts planned to the school year, Holly incorporates their interests into the curriculum. Holly uses weekly one-on-one conferences with her students to continue learning about their interests and talents so that she can continuously personalize their learning experiences.

Students in Holly’s classroom experience high levels of ownership in their learning. Holly believes that students become engaged in their learning by beginning with ownership in their classroom. Holly related how her students were somewhat distressed
to learn that their Fall Open House was to be a “parents only” event. Her students wanted to be on hand to show their parents around their classroom and explain how they learned each day. At their request, Holly helped her students use an app called “Audio Boom” to ensure that their voices were part of the Open House. The Audio Boom app allowed students to create QR codes that were strategically placed around the classroom. When parents scanned the codes with their Smart Phones, the app played a short recording by a student describing that area of the classroom and how it contributed to student learning.

Holly also scaffolds her students’ sense of ownership in their learning as she and each of her student build rubrics for projects they are working on. Her students start with more structured experiences in grade 4 and gradually build to becoming more autonomous learners by grade 6.

Reaching out to peers and others is an essential element in Holly’s professional growth plan. She believes that the only way to get better at something is to have a sounding board composed of people you trust.
Sonja Yoder
English Language Arts Grades 5 and 6, East Lynne 40 School District, East Lynne, MO

“What I gained the most through my eMINTS professional development was how to assess students in ways that are engaging so that I get accurate data about my students’ strengths and weaknesses and can better meet their needs.”

-SONJA YODER

Sonja teaches English Language Art to students in grades 5 and 6 in East Lynne, MO. She has 21 years of teaching experience. Sonja completed the extended three-year eMINTS Comprehensive Professional Development program.

Sonja described how she crosses an emphasis on using data to inform instruction with the curriculum provided. “What I gained the most through my eMINTS professional development was how to assess students in ways that are engaging so that I get accurate data about my students’ strengths and weaknesses and can better meet their needs,” Sonja explained. She illustrated how she used the assessment strategies she learned about to set up a unit on various concepts related to equality for her 5th grade students. One portion of the unit focused on slavery, Civil Rights, and how the Underground Railroad helped slaves achieve freedom. Students read literature related to the Underground Railroad and then devised a plan to reenact how slaves would have used the Railroad if their school had been a stop on the Railroad. Students randomly drew roles to play from slave owner to slaves trying to escape to people along the way who helped them. The unit was very engaging for students and combined elements of history, reading (fiction vs. non-fiction), and using graphic resources. The unit culminated with discussions about the types of inequalities that are present today and how people deal with those problems.

Sonja feels that she has grown the most in her ability to help students design their own learning. She illustrated her journey from being a teacher who held the traditional ideas that students were not really capable of designing their own learning to one who gradually released control to students by allowing them to select topics they wanted to research to a teacher who now gives students more choice. For example, she used classroom discussion to help her 6th grade students write a research essay. She asked her
students to identify a research topic related to literature they had previously read about space exploration. She was concerned that their topics might all be rather simple such as researching various planets but her students surprised her by coming up with more complex topics such as properties of gravity, the future of the international space station and other galaxies. The experience really reinforced her belief that students can handle designing features

Sonja’s students have access to 1:1 laptop technology in the classroom. She uses technology extensively in the writing process with concept-mapping software and word processing to support students’ thinking. She invented a type of “speed editing” where students sit in a circle and use features of word processing software to quickly edit one another’s writing and finding examples of each other’s writing that they really like. She related that her students really like using the technology for editing since the editing process no longer requires that they completely rewrite their papers to include edits.

Sonja’s advice to other educators who are working towards higher levels of personalized learning is, “Take it slow. As educators we tend to see something that works and then we want to try it and we want it to work right away, she noted. “Sometimes we try to do new things that our students aren’t ready for. New ways need to be a more gradual expectation that we build with our students. Doing the small parts really well will work better in the long run,” she advised.
APPENDIX B

eMINTS Competencies for 21st Century Classrooms
## High-Quality Lesson Design

The best teaching and learning take place in classrooms where teachers value self-directed learning. Through the use of varied instructional and assessment strategies, teachers have the opportunity to create the kinds of lessons that meet the needs of learners.

1. **Self-directed Learners**: Teacher equips students to become self-directed learners.
2. **Assessment**: Teacher uses varied assessments (formative and summative) aligned to standards (process, content, technology).
3. **Instructional Decision-making**: Teacher makes instructional decisions based on data collected from formative & summative assessments.
4. **Learning Outcomes**: Teacher provides multiple opportunities for students to demonstrate proficiency of standards and learning outcomes.
5. **Diverse Learners**: Teacher’s day to day practices address the diverse needs and characteristics of all learners.

## Community of Learners

Continuous lifelong learning takes place in a community. eMINTS helps teachers learn the importance of building a community of learners where learners share, take risks, respect and push each other as they find their own best ways to learn and engage in deep content with one another.

6. **Classroom Environment**: Teacher establishes a classroom where students work effectively in teams.
7. **Risk-taking**: Teacher fosters an atmosphere of safety and connection so individuals feel comfortable taking risks and are willing to share.
8. **Leadership Development**: Teacher promotes the development of leadership skills in all students.
9. **Professional Practice**: Teacher improves professional practice and engages in lifelong learning in order to improve teaching & learning.

## Authentic Learning

Through the use of real-world projects, students become problem-solvers, collaborators, critical thinkers, inventors, and creators. Through the use of global content, students begin to ask and think about their world in new and innovative ways.

10. **Lesson Design**: Teacher constructs authentic, engaging, and student-centered units of study based on standards.
11. **Inquiry and Innovation**: Teacher promotes discovery, creativity, inventiveness and innovation.
12. **Questioning**: Teacher creates a classroom environment where questioning promotes critical thinking and inquiry.
13. **Knowledge Construction**: Teacher cultivates complex thinking and knowledge construction.

## Powered by Technology

Seamless integration of technology with authentic learning and differentiated instruction bring about true learning. Technology adds excitement and motivation for students and teachers as they use digital tools to enhance and expand learning beyond the classroom walls.

14. **Collaboration**: Teacher cultivates global collaborations and creates opportunities for safe interactions with others outside the classroom.
15. **Seamless Technology Integration**: Teacher develops a learning environment where technology is seamlessly integrated into the classroom as a fundamental tool for learning.
16. **Digital Citizenship**: Teacher prepares students to be digital citizens by modeling & teaching appropriate, responsible technology use.
17. **Information and Media Literacy**: Teacher prepares students to become information and media literate.