High-Touch and High-Tech: Mixing the Ethos of the One-Room Schoolhouse with Cutting-Edge Technology

ABSTRACT: This article seeks to examine the ethos and applicability of the traditional one-room schoolhouse to modern-day schooling when enhanced by cutting-edge technology. We begin by reviewing the literature around effective theories of schooling and how the ethos and approach of the one-room schoolhouse fits into the current thinking around individualized instruction and student support. We then explore the literature related to the use of technology in customizing instruction based on student needs. Finally, we offer a possible framework for melding technology with the high level of support that was found in the traditional one-room schoolhouse. DOORS—Digitally Optimized One-Room Schoolhouse—will offer a model for disruptive innovation that will provide a foundation for innovative teaching and learning practices leading to increased student achievement.

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Introduction

Public K-12 education has been the subject of great debate in the United States for decades. There are many issues surrounding education, from funding to achievement, to the purposes of schooling, and multiple viewpoints on each of those issues. National education policy has become increasingly prescriptive and the number of school improvement strategies, programs and consultants intended to improve student achievement has exploded since *No Child Left Behind* was enacted in 2001. Despite this expansion of both awareness and efforts to improve student achievement, the State of Michigan has not appreciably improved student achievement. In fact:

> *Michigan is one of just six states that actually posted learning losses in overall student performance in fourth-grade reading since 2003. This is particularly troubling, since students who don't read well by fourth grade are likely to be unsuccessful as they move through the grades. Meanwhile, in fourth-grade math, Michigan gained about 2 points, putting us second to last place in the country for improvement.*
>
> <div align="right">Education Trust – Midwest (2014)</div>

These trends cannot be accepted as the best Michigan has to offer.

Why has there been so little progress in elevating student achievement? According to Lezotte and McKee (2006, p. iv), "We know that the system-in-place known as the public school system was never designed to successfully teach a high-standards curriculum to ever-more diverse students." Michael Fullan (2001) agrees, adding that there are strong systemic forces supporting the status quo that resist or even stymie the changes that would improve teaching and learning that would lead to improved student outcomes. One contributing factor is that "local school organizations have grown more complex and fragmented as they responded to various state & federal interventions, and to a more demanding political environment" (Cohen, 1982). This has required schools and districts to engage in a flurry of meeting mandates that not only lack coherence, but are often at odds with one another. This creates resistance to change, and a school culture that mistakes activity for progress:

> *In schools, for example, the main problem is not the absence of innovations but the presence of too many disconnected, episodic, piecemeal, superficially adorned projects. Rather than contributing to substantial improvements, adopting improvement programs may also add to the endless cycle of initiatives that seem to sap the strength and spirit of schools and their communities.*
>
> <div align="right">*Michael Fullan (2001)*</div>

The current system of schooling is the byproduct of the industrialization of the United States in the mid-1800s (Darling-Hammond, 1995). The factory model of education was developed with students divided into age-based classrooms and curriculum becoming formalized and standardized. This system was efficient and effective at sorting and selecting students, which was its intent, but is unequal to the mission of educating all students to high standards (Lezotte and McKee, 2011).

> *Structuring schools in the image of the factory model wherein students are placed in age-based groups would work if the range of individual differences amount students the same age were nonexistent or minimal. While student populations were never really homogeneous, the past two decades of unprecedented growth in student diversity, plus an ever-widening economic gap among students have yielded even larger and increasing academic and cultural differences among students. No longer can the problem of individual differences be ignored.*
>
> Lezotte and McKee (2012)

How, then, can Michigan educators address these issues around diversity and equity? The discourse around student achievement has become increasingly focused on student-centered learning, with an emphasis on differentiation of instruction and customization of learning experiences.

On August 4-6, 2010 in Boston, Massachusetts, three organizations—the Software & Information Industry Association (SIIA), the Association for Supervision and Curriculum Development (ASCD), and The Council of Chief State School Officers (CCSSO)— hosted a symposium on the need for foundational change in public schools. These education and technology leaders, in considering the current structure of schooling, came to the followings conclusions about customized or personalized learning:

- *Our education system must be fundamentally reengineered from a mass production, teaching model to a student-centered, customized learning model to address both the diversity of students' backgrounds and needs as well as our higher expectations for all students.*

- *Educational equity is not simply about equal access and inputs, but ensuring that a student's educational path, curriculum, instruction, and schedule be personalized to meet her unique needs, inside and outside of school.*

Despite a growing group of innovative leaders understanding the need for deep changes how we educate students, little impactful change has occurred. Educating a

student today still looks very much like it did at the start of the 20th century. The model proposed in this paper—DOORS: Digitally Optimized One-Room Schoolhouse—proposes a radical departure from traditional schooling, one that blends the best teaching practices with cutting-edge technology.

Personalized Learning and the One-Room Schoolhouse

Stoney Creek School, Rochester, Michigan

The idea of personalized learning is grounded in the very beginnings of public education, harkening back to the one-room schoolhouse. The one-room schoolhouse served multiple ages and each student was taught according to where he/she was academically and progressed at his/her own pace. The teacher and students were generally part of a small, close-knit community; as a result, communication between teacher and parents was frequent and fluid and the teacher knew each student beyond academics. This familiarity allowed the teacher to provide physical, emotional, and academic support to students as needed. In addition, the school that included all ages in one classroom allowed older or more advanced students to support younger or struggling students (Reese 2011).

Swidler (2000) argues instruction in one-room schoolhouses attempts to carry out the values that are preferred by the parents whose children attend the school and the surrounding community. Swidler's study of a contemporary school in Nebraska finds that the parents and teachers believe that the type of instruction present in one-room schoolhouses prepares them for success in their future educational endeavors.

In consideration of the social benefits of the one-room schoolhouse, Hastings' (2015) analysis of Swidler (2000) submits one unique benefit of the one-room schoolhouse is that it offers a chance to avoid the current youth culture. Swidler argues that parents of the Nebraska school think that the one-room schoolhouse setting allows their children to delay entry into the dominant youth culture because the school keeps the students until 8th grade and because it is set up to teach them patience. Finally, he argues the school protects a community way of life, and the community has fought to keep the school open precisely because of its close-knit relationship with the community. With closer attention paid at the individual level, one-room schoolhouses can lend a stronger focus on values and ideals as expressed as fundamental to the surrounding community rather than attempting to maintain a socially centrist or secular structure.

Once the sole educational institutional structure, the popularity of one-room schoolhouses fell out of favor in the industrial era. Per Hastings (2015) the number of

one-teacher schools has been dropping steadily since the beginning of the 20th century. In 1913, the number was around 212,000 (Gulliford, 1996). By the end of the 20th century, estimates of the number of one-room schools are dramatically fewer, but hard to nail down. Researchers tend to mark the number of one-teacher schools somewhere between 428 (Gulliford, 1996) and 380 (Muse, et al., 1998). According to Gulliford (1996) the number of one-room schools is less than .05 percent of all schooling opportunities in the United States.

Yet, many of the primal ideals that constituted the basis of the one-room schoolhouse could be reintroduced as an option for public school students—either in a charter school model or as an alternate schooling option as a part of a school district. In a recent Norfolk Daily News blog, Rachel Wise, a member of the Nebraska State Board of Education, makes the following observation:

> *There are some great similarities between teaching and learning in a one-room schoolhouse and teaching and learning in a highly successful classroom today. It begins with the teacher — the heart and soul of the learning experience for every school student every day.*
>
> *At our August meeting, the state board started a new study committee on competency-based education. The first task will be to define competency-based education. Typically, the definition includes a learner-focused education experience. Student progress is based on their ability to demonstrate proficiency or mastery of key concepts and skills. Competency-based education is typically very personalized, tied to individual learner needs.*
>
> *Hmm, sounds like the strategies used by teachers in one-room schoolhouses.*
>
> *Teachers today have digital tools and resources to individualize and personalize learning for every student every day while the teachers in the one-room school houses had few resources, but they used those limited resources to individualize and personalize learning for every student every day* (August, 2015).

In places like New Orleans, San Francisco, Brooklyn, Austin, and even Grand Ledge, MI, one-room schoolhouses are beginning to once again take hold and offer alternate educational opportunities for students and their families (Kamenetz, 2014). In several of the current forms, the model is used to house students in a single space as they work through modules of learning at individual computer stations. Several online learning platforms have been launched in sites where learning outcomes are low as a means of providing educational pathway repair opportunities. In many of these settings, the instructional support in the space is generally as a tutor or technology expert aiding students as they move from one module to the next. However, putting students in front

of a computer to work individually is not innovative, nor does it build community. It lack the dynamics of the one-room schoolhouse.

The concept of the one-room schoolhouse does not need to be a physical "one room," but a place that embodies the model. The emergence of new technology in education has bolstered the learning outcomes for students as the one-room schoolhouse model now incorporates innovative teaching practices, including *flipped classrooms* (Sams and Bergmann, 2012). Flipped classrooms are exemplified by students learning content through watching videos either at home or in the lab and then "delve deeper into the lecture the following day through a lab, a follow up activity or some other classroom conversation. In typical teaching practices, students listen to a lecture at school and then do the follow up activity alone at home where a teacher cannot help them if they have difficulties. The flipped approach changes it around so students can watch the lecture alone and then go to class where the teacher is there to help" (Dewitt, 2012). In essence, the one-room schoolhouse structure allows for extended learning and deeper application through individualized pacing of skill development, richer engagement with technology, and profound development of understanding through application and project-based learning with a certified teacher in the room serving as a guide-on-the-side, rather than lone luminary forced to develop, drill, and deliver content to a disconnected classroom.

Innovative institutional governance is another advantage of the one-room schoolhouse model. Where once, as Leight and Rinehart (1999) state, "From almost the turn of the century, these small places were marked for extinction, deemed by experts to be inferior to the 'modern' specialized schools of the cities and the suburbs," (p. xi); it is becoming ever clearer that public education as we know it today continues to fall short of the academic and social objectives that we deem as pertinent to the general well-being of our society. The explosion of the charter schools, in conjunction with the ever-expanding role of technology in our schools has led some communities to invest in single-space schools where ability, rather than age, dictate a student's progression.

Several online academic institutions have been started to provide parents with options for choosing the best academic environments for their children. The one-room schoolhouse is another take on the charter concept and can be developed into a

Strange School, Grand Ledge, Michigan

stand-alone structure for learning, absent any connections to a larger district. On the other hand, institutions like the Strange School in Grand Ledge, MI have found success in maintaining a single-space learning environment for students and basing teaching and learning on the individualized student needs while focusing attention on the ideals of the community. At the Strange School (2015) where, "traditional values

of rural education still guide the learning here, our students are also making use of the latest technologies to expand their experiences and enrich the educational process."

The increasing interest in emulating the one-room schoolhouse experience is grounded in the every-growing awareness that student need individualized learning experiences that can only be provided in an environment where students are well known and receive extensive support based on their specific academic needs. Differentiated instruction is a key component of this approach, but so are innovative acts of teaching and learning, and less restrictive governance models. This is the basis for the DOORS model described in full later in this paper.

Differentiated Instruction

According to Carol Ann Tomlinson, differentiated classrooms "engage students in instruction through different approaches to learning, by appealing to a range of interests, and by using varied rates of instruction along with varied degrees of complexity and differing support systems" (Tomlinson, May 2014). Differentiated instruction is a student-centered strategy that is designed to meet the needs of diverse learners and thus accommodates students with a wide range of abilities. Because students are more engaged in their own learning, it can motivate previously unmotivated learners and help more students achieve at higher levels.

> *The notion of differentiating instruction—altering teaching strategies, content, assignments, even the rules and structure of the classroom itself to teach students with varying needs, interests, and levels of preparation—has become a mainstream concept in education, considered key to raising student performance and closing the achievement gap.*
>
> Pappano, 2011

Although mainstream in conversation, effective differentiation in practice is complex to use and thus has been difficult to promote to teachers who often already feel overwhelmed by the size and diversity of their classes. Many teachers hesitate to differentiate their instruction because they think they lack time, administrative support and professional development resources (Hootstein, 1998, cited in Scherer, 2009). Advancements in classroom technology may hold the key to teachers successfully differentiating instruction.

Technology's Role in Personalized Learning

Grace Smith and Stephanie Throne in *Differentiating Instruction with Technology for K–5 Classrooms*, outline six ways technology can positively impact student performance as framed by the Center for Applied Research in Educational Technology (CARET):

> *Technology can improve student performance when the application:*
>
> 1. *Directly supports the curriculum objectives being assessed.*
>
> 2. *Provides opportunities for student collaboration.*
>
> 3. *Adjusts for student ability and prior experience, and provides feedback to the student and teacher about student performance or progress with the application.*
>
> 4. *Is integrated into the typical instructional day.*
>
> 5. *Provides opportunities for students to design and implement projects that extend the curriculum content (e.g., student-created products, multimedia, and video streaming).*
>
> 6. *When used in environments where teachers, the school community, and school and district administrators support the use of technology.*

Smith and Throne make a direct connection between the use of technology and differentiated instruction: "Differentiated instruction focuses on teaching strategies that give diverse students multiple options for taking in and processing information, making sense of ideas, and expressing learning. Technology tools can support good instruction and offer personalized learning environments in which students interact with software, conduct research, create products, and communicate with others outside their school. Both differentiated instruction and technology tools are important for 21st-century education, a.k.a. digital age learning."(p. 8)

Research has shown a positive effect for the use of technology with students (Linden, 2008; Santally, Boojawon, & Senteni, 2004). Chaung and Chen (2009) found that

extensive interaction between users and computers seems to increase differentiation and recall, promote problem-solving skills, enhance comprehension and encourage higher-level cognitive thinking. However, true change requires more than simply adding computers or technology to a classroom. A teacher must use those resources differently to fit each student's individual learning needs.

Adaptive Technology

Adaptive technology is defined by Izumini, Fathers, and Clemens (2013) as software that learns and alters itself based on the user's inputs, while allowing for interaction with a broad base of learning styles (p. iii). The cornerstone of adaptive software is hypermedia, the interactive elements (audio, video, hyperlinks, etc.) that allow the software to act in response to the user's choices. Izumini, et al. continues, "Using the adaptive technology, students can learn the material through an avenue of their choosing and at the pace that best suits them; when they encounter difficulty the teacher can step in and coach them past the problem individually or in a small group, while their classmates continue." In essence, adaptive technology learns as the student learns and is able to adjust instruction to facilitate learning. This technology, when used appropriately and with significant support, will greatly facilitate differentiating instruction according to each student's need.

Teacher 2.0

While technology can drastically improve education, it cannot be a stand-alone approach to learning. Virtual schools that have no teacher support and depend on parents to monitor learning have had notable failures; for example, the Michigan Virtual School was designated a priority school (the bottom 5%) by the Michigan Department of Education in 2014. According to Kentaro Toyama, "Quality primary and secondary education is a multi-year commitment whose single bottleneck is the sustained *motivation* of the student to climb an intellectual Everest. Though children are naturally curious, they nevertheless require ongoing guidance and encouragement to persevere in the ascent. Caring supervision from human teachers, parents, and mentors is the only known way of generating motivation for the hours of a school day, to say nothing of eight to twelve school years" (2011).

Just as technology cannot stand alone, effectively incorporating technology into student learning requires a different kind of teacher. This "teacher 2.0" will need to have in-depth knowledge of learning platforms and technologies and be committed to creating a climate and culture that fosters student ownership of learning. In addition, teachers will need to have an innovation orientation and learning mindset because they will have to keep up with constantly changing technology. Traditional teacher preparation programs cannot meet this need as currently configured.

Thurlings, Evers and Vermeulen (2014) conducted a literature review focused on the specific teacher innovative behavior of integrating information and communications technology (ICT) into classroom practice. They found that teachers were more likely to be technology innovators if they had certain attributes (Figure 1), most importantly self-efficacy (confidence in one's ability to perform tasks), curiosity, and positive attitudes and beliefs around the use of technology in teaching and learning. With these critical

attributes, teachers can empower students to become active partners in their own learning.

<table>
<tr><td colspan="2">Teacher Factors that Influence Innovative Behaviors</td></tr>
<tr><td>
• Openness
• Curiosity
• Positive attitudes and beliefs about:
• Student ability to learn
• The usefulness of technology
• Continuous earning
• Learning Goal Orientation
</td><td>
• Self-Efficacy (confidence in ability to use technology)
• Problem-solving approach
• Persistence
• Ability to recognize and evaluate opportunities
• Strong content knowledge
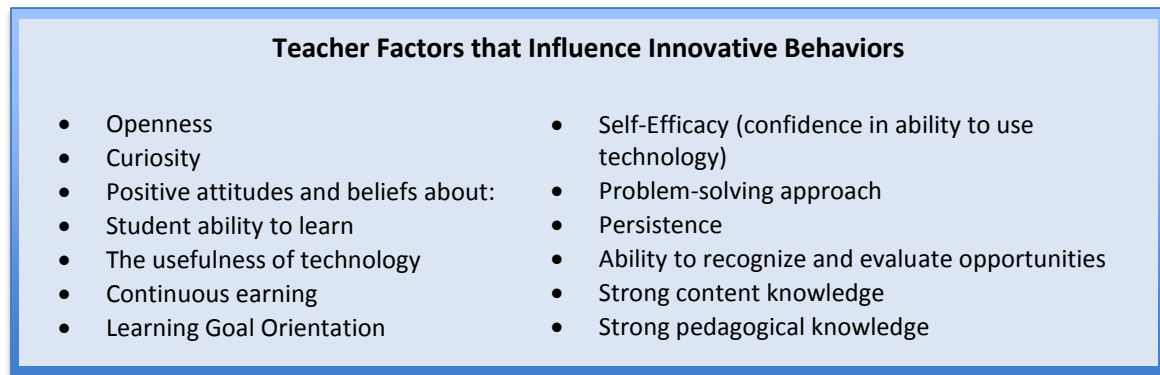• Strong pedagogical knowledge
</td></tr>
</table>

Figure 1

Technology isn't the only area where Teachers 2.0 will need expertise. The DOORS school will consist of multi-age classrooms. Multi-age classrooms are very different from multi-<u>grade</u> classrooms.

> *A true multi-age classroom consists of intentionally grouping children from different ages forming one class, which spans a minimum of two grade levels (Lloyd, 1999). This type of learning environment requires a specific skill set from the teacher as the implementation and assessment of such programs is different than in a traditional classroom.*
>
> Kemmis, 2011

Teachers who are successful in multi-age classrooms share embrace four basic beliefs: differentiating instruction, social collaboration, capitalizing on student interest, and the use of flexible grouping (Hoffman, 2003). According to Kemmis (2011) who cites the study, suggests that the results of Hoffman's work "indicate a need to place a high performance on accepting and celebrating diversity." Teachers also need to see students as partners in their learning, not just vessels to be filled.

In addition to the individual attributes of the teacher, having the right culture and appropriate resources and supports are critical to successful integration of technology into the classroom. Teachers need ongoing professional development opportunities to stay current in the fast-moving world of technology. Teachers will also need the appropriate resources (curriculum and technological) and opportunities to engage in professional dialogue with their peers.

The DOORS model integrates the "high-tech" of computerized learning with the "high touch" of the one-room schoolhouse. A caring, highly qualified teacher will guide and motivate students of varying ages and learning levels in achieving excellence, and facilitate learning through a variety of modalities to create a true community of learners.

Current Approaches to Integrating Technology into the Classroom

Before discussing the specifics of the DOORS model, it will be instructive to review the current models of blended learning, i.e., integrating technology into K-12 education. Connections Learning outlines six clusters as shown in Figure 2.

Current Clusters of Blended Learning Models	
Traditional Schools with Online Options	
Online Lab Model: Instruction is delivered by online teachers through a digital learning platform, but within a brick-and-mortar lab environment. The lab is often supervised by paraprofessionals with little content expertise.	**Self-Blend Model:** Students take one or more multiple online courses to supplement their traditional schooling. The online courses are taken outside of the school facility, and the student's core instruction is still conducted in the traditional brick-and-mortar building.
Blended Schools	
Rotation Model. Students rotate on a fixed schedule between online learning and traditional classroom learning. The face-to-face teacher typically is accountable for both the online and in-classroom work.	**Flex Model:** Most of the instruction is delivered by an online platform with face-to-face teachers available for on-site support. Teachers provide tutoring sessions and small group sessions. This model is often used for dropout and credit recovery students.
More Virtual than Traditional	
Online Driver Model: Students receive all of their primary instruction online through an online platform and an online teacher with occasional face-to-face check-ins.	**On/Off-Site Rotations:** Students come on-site on a scheduled, part-time basis.
Adapted from "Blended Learning: How Brick-and-Mortar Schools are Taking Advantage of Online Learning Options" Connections Learning, www.connectionslearning.com - downloaded 7/15/15	

Figure 2

Figure 2 represents a continuum of technology use, from incidental use in the classroom to online only. Most schools fall at the upper end of the continuum. Rather than adopt one strategy, the DOORS model will tailor all learning—classroom and online—to each student's specific needs and incorporate technology with strong individual, small-group

and paired student activities to give DOORS student meaningful and interactive opportunities for learning.

Figure 3 offers a graphic depicting the models and where they land on the continuum of schooling. Elementary schools would utilize a different mix of models from a high school. Different populations of students might use different models as well.

According to a report by the International Association for K-12 Online Learning (2015), the adoption of these various models of blended learning often depend on the initiative of one or two teachers rather than a school-wide effort. This is where the DOORS concept is unique: a DOORS school is established as a blended learning, student-centered environment from the beginning, with talented, innovative teachers who deeply care about their students and embrace the use of technology in teaching.
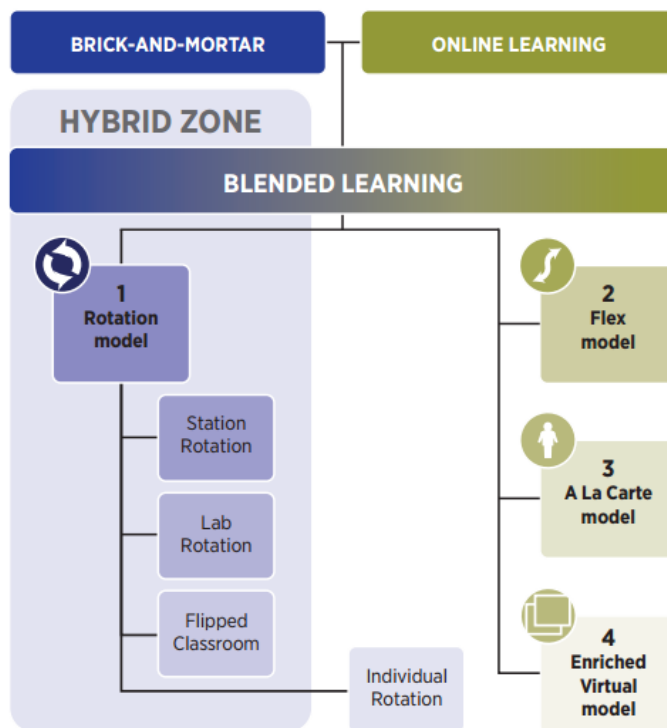

Figure 3

DOORS: The Digitally Optimized One-Room Schoolhouse

The International Association for K-12 Online Learning (iNACOL), in their 2015 report "Blended Learning: The Evolution of Online and Face-to-Face Education from 2008-2015," says this about blended learning: "Blended learning is not about the technology itself. *It is about the shift in the instructional mode to personalized, student-centered learning to ensure each student's success.*" [Emphasis added.] In existing schools, there can be many institutional barriers to change, and the move to a student-centered teaching approach is not universally accepted, as discussed earlier in this paper. A DOORS school will avoid many of these issues because the project would not be a new idea imposed on an existing structure, but would create a new structure and recruit teachers who have both the credentials and the mindsets necessary to operate in an entirely new way.

The DOORS school students would no longer be sorted by age and grade, but would work according to their achievement level. A student may be eight years old and be working on what would normally be considered fourth-grade reading and on math standards work designated as second-grade level. This student would work with

students of various ages who are of similar ability in a particular area. This multi-age approach contributes to the growth of both older and younger students. Younger students are exposed to more complex subjects and activities than they would if they were alone or in their own "grade." Older students are empowered by opportunities to share their knowledge with younger students (Katz, 1995). Studies have shown that multi-age school settings yield higher levels of student satisfaction with school, better mental health, and more positive attitudes toward school and learning. This is especially true for at-risk students (Kemmis, 2011).

The physical layout of the school would be different from the traditional classroom. No longer the "sage on the stage," the teacher will move through the room as students work together in small groups or individually. Students will have more control—and responsibility—for their learning and be able to influence the pace of learning, where they learn, when they learn and the path they take to get there.

A DOORS school would incorporate a variety of the blended learning models described previously and be configured into core content areas where students could get help from the teacher individually or in a small group, and work together on project. There would also be other areas where students work on individual projects and on non-core subjects.

In their report on blended learning, Connections Learning visualized what a blended learning school might look like (Figure 4).
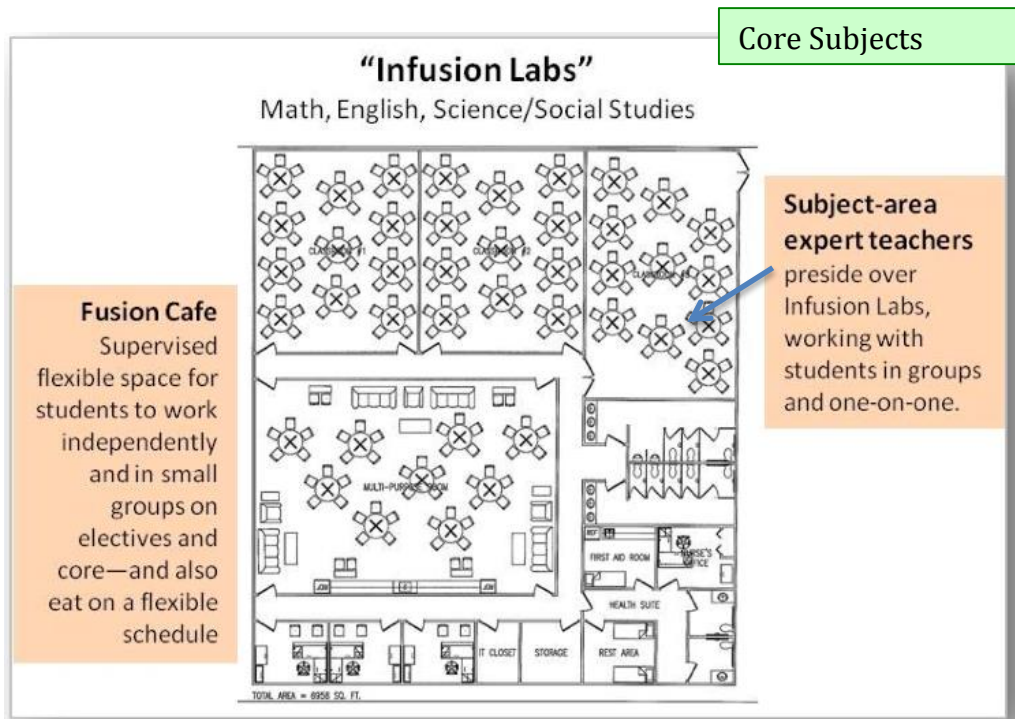
Figure 4

This model will provide the basis for a DOORS pilot elementary school. The project will recruit teachers who are skilled in terms of both pedagogy and technology use, and who have an entrepreneurial spirit that can embrace this bold educational experiment and the ambiguity that is inherent in any new endeavor. The project will also identify curricula that are appropriate to a multi-age nongraded school that is aligned with state standards, and incorporates computerized and online learning, as well as cooperative learning strategies. Through this "high-tech, high-touch" approach, the DOORS project will meet each student where they are and enable them to not only achieve excellence academically, but also empower them to become self-motivated, self-disciplined learners who benefit from the positive influence of the one-room schoolhouse ethos of caring and community.

The DOORS model is a radical departure from the current factory model of schooling and, as the pilot will demonstrate, will be a framework that truly provides a customized, student-centered approach to learning. This framework, once fully developed, will be flexible enough to be adapted to any appropriate educational setting, and will be particularly useful with at-risk students for whom the current factory model is woefully insufficient.

Steps in Creating a DOORS School

The design of a DOORS school, beyond having the elements outlined previously, must be customized to the local context. Indeed, the flexibility of the model is one of the primary advantages of a DOORS school. That said, there are certain factors that should be considered by any group seeking to establish a DOORS school. These factors are listed in Figure 5 on the following page.

DOORS

Digitally Optimized One-Room Schoolhouse

Key Components to consider when setting up a DOORS school

#1 Technology
- Continuously refreshed
- User-friendly for teachers & students
- Tied to learning goals, curriculum
- Able to adapt to student progress

#2 Teacher 2.0
- Strong pedagogical skills
- Comfortable with new technology
- Committed to blended learning
- High tolerance for change & ambiguity
- Learning for All philosophy
- High expectations for students and self

#3 Learner
- Recruitment strategies
- Retention strategies
- Student nonacademic support

#4 Curriculum
- Aligned to state standards
- Tailored to student needs
- Adapted to an ungraded system
- Incorporates formative assessment
- Uses technology to best advantage

#5 Ongoing Support
- Ongoing training for teachers
- IT support for hardware, software
- IT support for teachers

#6 Communication
- Teacher
  > to student
  > to parents/families
  > to school leader
  > to colleagues
- Principal
  > to student
  >to parents/families
  > to teachers
  > to community
- Student
  > to teacher
  > to parents/families
  > to other students

#7 Location
- Accessible to reliable internet connection
- Acccessible to students and families
- Safe, clean, inviting environment

Figure 5

A New Role for Teachers

Within this new paradigm, teachers will no longer be the "sage on the stage." According to the Clayton Christiansen Institute, teachers will spend face-to-face time in new roles including: mentor, facilitator, tutor, evaluator and counselor. Which role the teacher plays will depend entirely on the student's needs. In this scenario, teaching and learning is customized and personal.

Considerations When Choosing Software

There are endless options of teaching and learning software. A school may choose one outside provider or multiple providers, or they may decide to purchase software and install and organize it themselves. Key questions to consider include:

- What level of technology expertise will be needed to administer the software program(s)?
- Is the expertise on staff? If not, will new staff with expertise be hired or will the function be contracted out?
- Does the software package under consideration compatible with the available hardware or will it require an upgrade?
- Does the software adapt to student learning, adjusting content so students are successful but challenged?
- Will the software give students, teachers and adminstrator the data needed, in a usable form, to assess student learning?
- If there are multiple software programs being considered, can they be integrated (will they "speak" to one another?)?
- Does the software have a proven track record of improving student learning? Is it engaging and not simply "skill-and-drill"?

These are just a few of the question to consider when choosing software. Schools will want to assess what programs are currently in place and what budget they have as well. The key, however, to choosing the right software is to begin with student needs.

Brick and Mortar Considerations

Whether building new or remodeling existing facilities, certain attributes should be part of the plan. Obviously the DOORS school must be located in a space that is safe and clean. But it should also be inspiring for students and staff alike and flexible enough to meet students' changing needs. There should be areas for individual work, both on and off the computer, areas for small group work

and projects, etc. It is important that the DOORS planning committee address all the potential academic and nonacademic needs of students when choosing or designing the DOORS learning space.

Summary

A DOORS school, when thoroughly planned and thoughtfully implemented, may be able to do what other schools cannot: engage students in meaningful ways that allow students significant control over the pace, place and path of learning. This can only be done through the effective integration of technology and a caring, supportive teacher and classroom environment. A passage from a 2015 iNACOL report sums it up well:

> *Blended learning is not about the technology itself; it is about the shift in the instructional model to personalized, student-centered learning to ensure each student's success. However, it is difficult to navigate this shift and close achievement gaps without the effective implementation of technology to transform learning and support teachers in personalizing instruction.*

The DOORS model puts student personalized learning within reach of every teacher and school, and with it the possibility of unlocking learning and achievement potential of all students, regardless of their demographics, learning challenges, or where they live.

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