

# Implementing Blended Learning:

Moving Toward the Eight Elements  
of a “Truly Blended” School



**Dr. Leslie Santee Siskin**

New York University

Sivan 5778

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# Executive Summary

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## What happens when day schools enter the new, largely uncharted territory of blended learning? Where, and how far, do they intend to venture? What would it look like if they got there?

This report, based on a four-year study of day schools that are introducing and implementing blended learning practices with support from The AVI CHAI Foundation, presents overall patterns of these schools' goals and progress. Between fall 2012 and spring 2016, we visited schools, usually for two days of observing classes across grade levels and subjects, and conducting interviews with teachers and administrators. We studied 23 schools, visited 80 classrooms, interviewed 120 teachers and administrators, and reviewed dozens of school and classroom documents in print and online. We also spoke with program providers and funders, and tried out many of the online sites and programs the schools were using.

Our first finding is that schools exhibit considerable variation in their first steps toward blended learning. Depending on immediate needs, existing capacity, and even chance opportunities, the schools made decidedly different choices about where, what, and how to begin blending. Formats ranged from station rotation models<sup>1</sup> in elementary grades to flex models<sup>2</sup> in high schools, with almost every variation in between. Blended learning looks different even within a given school, varying considerably from classroom to classroom, subject to subject, and even day to day. Some schools (particularly new schools) adopted blended learning as a key element of their school design, for every teacher and in every classroom, while more established schools began with just a few teachers, moving cautiously toward wider use.

<sup>1</sup> Students remain inside their own classrooms rotating among “stations” for whole-class instruction, small group activities, and independent work on computers. Station rotation is not unlike “centers” employed by many pre-school and kindergarten classrooms.

<sup>2</sup> Students follow personalized programs or “playlists,” choosing among online instruction providers which lessons to do when. This method is often, but not always, accompanied by face-to-face student time and mentoring with a teacher or advisor.

The second, and most striking, finding of this study was that despite the wide range of variation in starting place, pace, and forms of practice, educators displayed surprisingly strong agreement on what a “truly blended” school would look like, offer students, and require of faculty and staff. They understand blended learning as existing on a **continuum** that extends from (1) the stereotypical image of a traditional text-based and teacher-led classrooms through (2) technology-enhanced (adding new tools to existing practice) to (3) truly blended, and on to (4) fully online education. Across schools, subjects, and grade levels, educators in the day schools agreed that their goal is *not* to move all the way to the fully online end of the continuum but rather to move to, and sustain, the stage they describe as “truly blended.” This continuum marks both a shared understanding and a common goal—further along than simply “technology-enhanced,” but not so far as “fully online.” In overall intent and direction, their consistency is strong.

Third, they share consistent, specific, and relatively concrete descriptions of what that stage entails. They describe **eight elements** that characterize a “truly blended” day school:

1. Increasing content opportunities
2. Variety of instructional mode and media
3. Diagnostic assessment and data use
4. Differentiated instruction
5. Personalized pathways
6. Production and publication of student work
7. Shift in teacher role to designer and facilitator
8. School-wide planning and support

Though most schools have not yet reached the goal of a truly blended day school, their administrators and teachers are convinced that they are moving in the right direction. The study shows that they are indeed making progress toward their intended destination.

To further explore these elements, we drafted—and then refined with the help of study participants—a rubric and implementation wheel graphic to describe and assess in greater detail progress from the default starting point of a stereotypical traditional school to the final aspirational attributes of each element in a truly blended school, with illustrating examples of current status in between. To the surprise of many, we did not find a particular element that offered the most advantageous starting point, or a particular order in which implementation should proceed.

Yet we did observe interactions and interdependencies (and some overlap) among the eight elements. For example, advances in one element could be constrained by delays in implementing other elements (e.g., teachers found efforts to do more effective *differentiating instruction* limited if they did not have access to *diagnostic data use* to guide them). On the other hand, when schools pushed forward immediately to use *diagnostic data* in classrooms, this was of limited use if teachers lacked access to a *variety of mode and media* to make anything more than the simplest changes in reading groups or extra practice time. An ambitious early adopter teacher *shifting her role* to become a designer/facilitator is likely to stall without *school-wide planning and support*. And a *school-wide plan* is not much use unless teachers are willing to shift their *teacher roles* and use the new tools in a *variety of modes*.

With room for local adaptations, carefully considered efforts across the eight elements, accommodation for variations in teacher interest and capacity, and considerable patience as they wait for programs to attain the high standards they've set, the day schools are making considerable progress in moving forward. They describe “truly blended” schools, as one staff member put it, as “not using technology for technology’s sake.” Instead, they view it as using new tools to leverage larger school and classroom improvement, create new benefits for students, better prepare students for 21st century lives and careers, and move their programs forward within the context of sustainable costs and tuition models.

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**We drafted a rubric and implementation wheel graphic to describe and assess progress from a stereotypical traditional school to the aspirational attributes of a truly blended school.**

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The path is long, and the schools’ leaders and educators readily acknowledge that they still have a long way to go. But overall, their direction and commitment to keep moving are clear. Blended learning, this study concludes, has much to offer day schools, and day schools have much to teach the wider field of general education about implementing blended learning.

# Implementing Blended Learning: Moving Toward the Eight Elements of a “Truly Blended” School

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This report, based on a four-year study of day schools that are introducing and implementing blended learning practices with support from The AVI CHAI Foundation, presents overall patterns of these schools’ goals and progress. In a field characterized by considerable variation in practices, uncertainty about outcomes, and even confusion about the term “blended learning,” what emerges from the data is a surprising clarity and consistency.

Despite beginning to blend in different places, and moving forward at different paces, schools exhibit remarkable agreement in two ways. First, the schools’ leaders understand blended learning as operating along a **continuum** that extends from traditional text-based and teacher-led classrooms all the way to fully online education. The leaders’ goal is not to move all the way to the online pole on the continuum but rather to move to, and sustain, a stage they describe as “truly blended.” Second, they share consistent, specific, and relatively concrete descriptions of what that stage entails: **eight elements** that would characterize a “truly blended” day school. Though most schools have not yet reached this goal, their leaders are convinced that they are moving in the right direction. This study shows that they are indeed making progress toward their intended destination.

To provide a context for understanding that work, this report begins with a brief overview of activity in the field at the time of this study. The report goes on to describe the AVI CHAI Foundation initiative, and the study on which this report is based. Next, the report presents the continuum, where variations in initial steps toward blended learning converge around a common destination. The final section details the eight elements that school leaders agree would characterize the “truly blended school” they seek to become, and a rubric reflecting progress toward that goal.

## The Field

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In recent years, the field of blended learning has grown at an increasingly rapid pace. Federal agencies, state and district education boards, charter school organizations, commercial vendors, reform advocates, and foundations have identified blended and online learning as opportunities for increasing access, improving education, and/or containing costs (Miron & Gulosino, 2016; see also Bernatek, Cohen, Hanlon, & Wilka, 2012; Calkins, 2014; Pane, Steiner, Baird & Hamilton, 2015). District and charter schools are redesigning programs, introducing new tools and technology, and opening up curricula to bring in a remarkable array of new online resources for use wholesale or incorporating into blended learning environments. According to the International Association for K–12 Online Learning (iNACOL), in 2012, 66% of school districts offered online learning programs and by 2014, this proportion had risen to 81% (iNACOL, 2015). As another national study concluded, “Digital education is no longer a trickle in public schools. It is moving rapidly downstream at storm-level intensity. It is coming, say some vendors and policy makers, whether schools are ready or not.” (Burch and Good, 2014, p. 40)

Despite that intensity—and widespread agreement that “it is coming”—there is still much uncertainty about just what “it” actually is, or even what to call it. What Burch and Good refer to as “digital education,” others label as blended, personalized, hybrid, student-centered, or next-generation learning. As noted in an *Education Week* commentary on these variations, “We are, let’s face it, a Tower of Babel when it comes to defining what we’re all doing here.” (Calkins, 2014) Following the most frequently used terminology, and common use in the day schools studied, this report uses the term *blended learning*.

There is also considerable variation in just how educators are going about “it.” A leading and frequently cited research team worked to devise a sufficiently “flexible” umbrella definition

of blended learning: “A formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace, and at least in part at a supervised brick-and-mortar location away from home.” (Staker & Horn, 2012, p. 3) Under this umbrella, the researchers note, are very different kinds of practice. Some schools use a *flipped* model, where students listen to recorded lectures on their own time, reserving class time for deeper learning discussions with their teachers. Others use *station rotation* models, with students inside their classrooms rotating among “stations” for whole-class instruction, small group activities, and independent work on computers. Still others use a *flex* model, where individual students follow personalized “playlists,” choosing among online instruction providers which lessons to do when. As Larry Cuban, an expert on the history of school reform, observed, “variation in district schools and classrooms is the norm, not the exception.” (2017, p. 11)

The AVI CHAI Foundation’s work is driven by an interest in “personalized learning” which seeks to accelerate student learning and enthusiasm by tailoring the instructional environment—what, when, how and where students learn—to address each student’s needs, skills, and interests. Personalized learning supports students in taking ownership of their learning process, and in developing deep connections with their fellow students, their teachers, and other adults. The use of technology alongside face-to-face instruction—blended learning—is a powerful tool for personalized learning. The AVI CHAI Foundation’s work is shaped by the understanding that personalized learning is the goal, while blended learning is a means to achieve that end.

The AVI CHAI Foundation believes that blended learning provides teachers and students with ongoing performance assessments, enables teachers to work with students in smaller groups on common instructional needs, and allows students to work with peers and teachers within and outside of the classroom. This approach encourages students to do the most relevant, challenging work while giving teachers more time to help students make breakthroughs when they get stuck.

## The AVI CHAI Foundation Initiative

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In fall 2010, The AVI CHAI Foundation began an ambitious initiative to encourage Jewish day schools to move into the realm of personalized learning. The foundation suggested blended and online learning to help schools move toward two goals:

1. Improving the quality of education by increasing individualized instruction and enabling students to develop skills and ways of thinking needed in the 21st century; and
2. Reducing the cost of day school education.

The working hypothesis was that blended learning could improve educational outcomes by encouraging more self-directed, personalized, and data-driven instruction, in line with changes on the horizon in 21st century technology and education (Kannai, 2010). Cost-savings could potentially result from increasing the student/teacher ratio, reducing the need for staffing “tiny” classes for small numbers of students, and/or expanding curricular offerings without adding faculty.

This initial strategy took three distinctive, yet complementary, forms of grant-making:

- Small grants to encourage and assist existing schools in adopting blended learning;
- Larger grants to help start new schools with a blended learning model at the core of their design from the get-go; and
- Targeted grants to stimulate development of high-quality online Jewish Studies courses and resources.

In addition, partnering with the Jewish Education Project, The AVI CHAI Foundation sponsored the Digital JLearning Network to provide schools with coordination and technical assistance (<http://digitaljlearning.org/>). Two years later, the foundation partnered with the Affordable Jewish Education Project (AJE) and the Kohelet Foundation to “accelerate the process” in what they called “BOLD” day schools, with larger grants to implement blended learning more rapidly and at a larger scale. There are many facets to this ambitious undertaking; fuller descriptions (<http://avichai.org/north-america/day-school-educational-technology/>) and reports (<http://avichai.org/areas/na/>) are posted on The AVI CHAI Foundation’s website. This report focuses on what has been learned from

studying the experiences and expectations of the original group of day schools—established and new—that implemented blended learning with The AVI CHAI Foundation’s support from fall 2010 through spring 2016.

## The Study

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This report draws on data from a larger study of the AVI CHAI Initiative, collected between fall 2012 and spring 2016, in which a team of researchers from New York University’s Institute for Education and Social Policy followed the progress and challenges of implementing blended learning in more than 30 day schools. The schools reflect a range of grade levels (elementary to high schools), location (urban and suburban), affiliation (pluralistic to Orthodox), and distinctive design models (station rotation to flex, as described below). The schools include those in the initial phases operation and well-established schools beginning to introduce new technologies into their long-standing educational practices.

Over a four-year period, we visited schools, usually for two days of observing classes across grade levels and subjects, and conducting interviews with teachers and administrators. Where time or travel logistics made visits too difficult, we met with school staff at conferences, or conducted interviews by telephone. We also gathered and analyzed documents such as recruiting brochures, enrollment data, financial plans and reports, and lesson materials. Repeated visits allowed us to observe changes over time, and to explore whether issues, concerns, or the emerging list of blended learning “elements” appearing in one site held constant across schools, or was unique to a particular school or type of school. Across the sites, faculty and administrators were gracious about spending considerable time with us, generous in sharing their experiences and insights, and eager to offer help to colleagues in other schools undertaking or considering similar work. In all, we studied 23 schools; visited 80 classrooms; interviewed 120 teachers and administrators; and reviewed dozens of school and class documents. In addition, we spoke with program providers and funders, and tried out many of the online sites and programs schools were using.

## The Schools: Variations in Place and Pace of Blending

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Across the day schools we studied—as in the wider field—there is considerable variation with respect to incorporating blended learning. Most schools in our study were experimenting with ways to blend new technologies and teaching techniques into traditional schools, while five were starting brand new schools, building their designs from the beginning around blended learning (Siskin, 2017). Depending on immediate needs, existing capacity, and even chance opportunities, the schools made different choices about where, what, and how to begin blending.

Some schools were in the early phases of integrating technology in the classroom (as opposed to “blended” teaching, as defined above). One staff was figuring out what to do with a class set of iPads a generous board member had donated. Another was trying to figure out how afford such devices for three classrooms where teachers were eager to use them. One teacher showed YouTube videos to inspire students writing Purim schpiels in class; in another school moving further along, students used video-making tools to produce a documentary on gleanings and food use to present to the state legislature. While it is possible to integrate technology into the classroom without actually achieving a blended learning model, we don’t believe—at least according to the definition of blended learning guiding The AVI CHAI Foundation’s work—that teachers can achieve blended learning without integrating technology.

In one school, which was more standardized and more invested in blended teaching, all teachers used the same station rotation format and online provider; in most, each teacher chose when and which (if any) technology to use. Whether technology integration or some version of blended or online learning, many schools began with just a single teacher or two: one introduced online instruction for all General Studies classes while maintaining traditional teaching for Jewish Studies, while another brought blended learning into every subject and every classroom, but in different ways. Formats ranged from station

rotation models<sup>3</sup> in elementary grades to flex models<sup>4</sup> in high schools, with almost every variation in between. Even in the BOLD schools, working with consulting teams on school-wide planning, observers reported substantial variation in both format and frequency of use (Maas et al., 2016).

## Place

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Blended learning progress looks quite different, not only from school to school, but within schools. In fact, blending learning varies considerably from classroom to classroom, subject to subject, and even day to day. As one head of school explained of blended learning, “I don’t think there is one answer. You have to consider the teacher, the content, the student needs, and the school needs. We are talking to ourselves about being thoughtfully blended...we’re experimenting.” At one site, for example, teachers use differentiated reading instruction in English (the same news story online at multiple reading levels), virtual simulations in math classes, and a flipped classroom in chemistry. Another site has a flipped class in *Tanakh*, simulations and robotics in physics, and individual students doing exclusively online courses in subjects the school cannot offer on its own.

Most of the variation observed occurs at the classroom level. While two new schools implemented blended learning through school-wide plans, most left decisions about which programs to use—and when and how to use them—at the teacher’s discretion. Individual teachers experiment with what technology or tools might work for a particular unit, lesson, or even student. They search online or talk with colleagues about online tools and programs to use, and make considerable investments of time and effort searching for, and assessing, sources. Several teachers talk of “exciting find[s],” many of

<sup>3</sup> Students remain inside their own classrooms rotating among “stations” for whole-class instruction, small group activities, and independent work on computers. Station rotation is not unlike “centers” employed by many pre-school and kindergarten classrooms.

<sup>4</sup> Students follow personalized programs or “playlists,” usually choosing among online instruction providers what lessons to do when. This method is often accompanied by face-to-face student time and mentoring with a teacher or advisor.

which are free, from government sites (NASA or NOAA), private developers (Khan Academy), or social media (YouTube).

In the wide variation of their searching, some implementation patterns do emerge by subject (see also Maas et al., 2016). As one department head explained, teachers “have to have a content-driven reason for wanting to try things, and content needs are very different.” So, too, are content resources. Reading, English Language Arts, and Math teachers are more likely to find, and more frequently use, instructional *programs* such as iREADY or DreamBox, while Social Studies and Science teachers report more success with online *resources* (e.g., NASA, National Geographic) to supplement their own instruction. Hebrew and other language teachers might use online instruction for practice or remediation, and social media for fluency. Teachers in Jewish Studies reported the most difficulty finding resources that met their standards. Though some used iTalAM, Sefaria, Aleph Beta, or Google Maps, others simply made their own by recording lectures or student work, or by building websites.

The format for *how* teachers use or create resources for blending (as opposed to *which* resources they choose) varies as much by individual teacher as it does by subject. For one teacher leading the blended learning shift in his school, that is a “tremendous benefit, and a selling point: it unleashes creativity.” If unleashing the creativity of teachers—and finding new and better tools and techniques to teach different content at different grade levels—is, as many advocates assert, one of the most promising aspects of blended learning, then substantial variation by place should be seen as a positive sign.

## Pace

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Variation over time, and pace, are also prominent characteristics, at least in those early, still “experimenting,” years in established *and* new schools. One school head greeted the research team with the caution, “What you are seeing today—we might not be doing that next month.” Indeed, day schools, as private schools less constrained by the complex and often cumbersome regulations and routines of public school bureaucracies, seem uniquely positioned to make quick adaptations or change

providers (see also Pane et al., 2017 for a similar finding on charter schools). Several made mid-course corrections in the middle of a semester.

So far, teachers and leaders have been less than satisfied in finding adaptive programs that tie performance data to instructional strategies (especially at the secondary level), online or blended programs that meet their standards for Hebrew language, and sophisticated programs in Judaic Studies. But these teachers and leaders are persistently seeking, and expecting that, as the field develops, new programs will improve in various ways:

- Being educationally sound and engaging for students;
- Offering instruction and opportunities for inquiry as well as practice; Providing usable data, not only on how well students are performing, but in which skills and with which strategies their performance improves; and
- Becoming more affordable (or even open access).

Although the established schools are at different stages in embracing blended learning, there is evidence that they are developing a more nuanced understanding of the difference between basic technology integration and the utilization of technologic tools to blend learning and provide personalized, data-driven learning.

The new schools, after a few months or a year of planning, moved to “radical” redesign of the typical Jewish day school model, incorporating blended learning school-wide from Day One. In established schools, however, educators talked of shifting to blended learning more “slowly” or “cautiously” as they experimented, revised, and even rejected initial trials. A few educators were skeptical, comparing blended learning to other “fads” in education reform they have seen come and go, like “film strips.” Others were convinced of the long-term potential of blended learning, but deliberately followed a “go slow to go fast” strategy, arguing that educational change works better when it carried out incrementally, in more “organic” ways (see Siskin, 2015b, [http://avichai.org/knowledge\\_base/15477/](http://avichai.org/knowledge_base/15477/)). These educators noted that “in a school like ours, it’s a process; it takes more than two years” or “it’s transitional, over four years.” Others observed that it isn’t only the teachers who desire gradual change: “when kids have been brought up with traditional frontal teaching, it has to be gradual transitions

over time,” or “at first the students were very resistant, they felt I should read to them; 8 of 12 wanted more frontal teaching.” While we did not interview parents, school leader data suggest parents might also prefer incremental adoption of blended learning practices, as opposed to more radical, sweeping implementation over a short period of time.

On rare occasions, an administrator spoke of taking a “huge leap,” or having “moved very quickly; maybe too quickly.” Most, however, reported having taken small steps. In three different schools, staff used the phrase “baby steps” to describe their progress; while in one school, the staff said they were “still in our toddler stage.” Interviewees described being engaged in a long-term process, part-way along a lengthy path: “that’s the path we are on. Maybe not very far down the path, but we are on it,” “it’s a process,” or “this will happen, but we’re not there yet.” Whatever the pace, educators were confident—and our research confirmed—that progress was taking place, and that these schools would continue along the blended learning path.

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## The Continuum

Given the variations in forms, starting points, and pace, it is remarkable that across schools, classrooms, and subjects, a strong sense of converging toward a common destination emerged in the interviews. Educators might use slightly different language (“a path,” “a process,” or “a journey”), but the overall characterization was consistent. One administrator categorized this path, as we do in this analysis, as a **continuum** that stretches from *traditional* through *technology-enhanced* to *truly blended* and finally, to *fully online*<sup>5</sup>.

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## Traditional

The point of departure in most educators’ conversations, is the stereotypical image of the **traditional** school. In such schools, text-based and teacher-led instruction happens in classrooms

<sup>5</sup> It is important to note that the continuum does not imply that steady movement from “traditional” all the way to “fully online” is the desired outcome. Rather, The AVI CHAI Foundation’s goal was to assist schools in moving toward blended learning, not to move them all the way to fully online learning.



where teachers speak and students listen (or at least sit quietly). Schools offer the curriculum that their own staff is prepared to deliver, and students of the same age move together through that curriculum, taking the same lessons at the same time. Assessment is characterized by recitation, or “regurgitation” of lessons learned, whether on short-answer tests or short essays that no one but the teacher will see.

None of the day schools in this study actually looked like that, even at the beginning of their “experiments in technology”—at least not in all classrooms, and certainly not all the time. However, several administrators and teachers said they see practice that is too often, in too many classrooms, too close to this image for their own satisfaction or what they view as successful learning for this generation of students. At one long-established school, where teacher autonomy had been dominant and highly valued, a teacher talked of his surprise when “The Rabbi said he would like less frontal teaching, to see reverse or flipped classroom, or blended. He said those things to the entire faculty.” Across schools, teachers—as well as administrators—talked of the persistence of “frontal teaching,” or “teaching as telling,” and our observations confirmed this perception. School personnel expressed frustration with “whole-class” instruction that does not work well with “increasingly heterogeneous students” with different skills or interests. Indeed, their hope is that over time, implementing blended learning will pull them even further away from the “default mode” of this traditional model.

### Technology-enhanced

The second stage, **technology-enhanced** (referred to above as technology integration), adds new tools to existing practice, to increase efficiency, enrich classroom instruction, and/or expand curricular offerings. But this stage does little to disturb the routines and regularities that historian David Tyack has called the basic “grammar” of traditional schooling (Tyack & Tobin, 1994; Cuban, 2003). In the Christensen Institute’s classification system, this is not “disruptive” but rather “sustaining” change: innovations intended to improve the quality of services or products already offered to better serve its existing client base (Christensen, Horn & Staker, 2013). This is a common pattern in district and charter schools, at least in this early era of blended learning. A major national study by the Gates Foundation and the RAND Corporation found “promising evidence” of the potential for blended learning, but acknowledged that most technology use is through relatively “simple” and “predictable” additions to existing practice, rather than transformative change (Pane, Steiner, Baird & Hamilton, 2015; see also Zheng et al., 2016). In day schools, as well, educators report “greater use of online activity as a supplement to traditional practice, rather than a shift to fully blended” (Siskin, 2015a, p. 10; Deeter, 2015), where the shift implies changes in teacher assumptions and practice as well as in student activity and learning.

Within the overall strategy of The AVI CHAI Foundation's work in this area, we consider this stage as reflecting "evolutionary" rather than "revolutionary" change, characterized by small, incremental steps toward a more fully blended learning model. These first steps often happen, as one school head described it, "at the margins," where technology affords new opportunities for innovative teachers who create extraordinary lessons or projects using new media, exceptional students who need extra time, or administrators who figure out how to offer "one-off" courses a school could not otherwise provide, and to retain a student they would otherwise lose.

Many of the schools at the start of the study were at this stage, taking their first "baby steps," trying "to figure out ways to integrate technology to help kids learn," or to keep up with nearby public schools that are increasingly introducing new devices. Others were pushing to make technology use a more common, even routine, assumption. In one site, school administrators moved all attendance and grading online, but found even that small step to be a challenge for teachers unaccustomed to using computers for things they had, for so long, done by hand. In another school, a shift to Google Docs for faculty communication posed challenges: "Getting people to use it... was a big project. They'd ask, 'can you give me a hard copy, or send as attachment?' That took a few years." Indeed, in all but two schools, we found teachers for whom using technology was a daunting task. As one teacher explained, "our head [of school] is techno-savvy; our faculty, not so much." In some interviews, teachers referred to themselves as "a digital dinosaur," or a "Luddite," or apologized for "not really using computers." One teacher, who arrived for her interview with an iPad-using researcher, tentatively asked "is that what they call a tablet?" A veteran teacher, just starting to use a SMART Board the school had purchased discovered, to her surprise, "I can show PowerPoints. I'm able to save my work, and that's kind of amazing." In designing implementation plans that build in invitations for technological novices, small steps are both appropriate and necessary. As one such teacher proudly declared in the second year of the study, "I'm the dinosaur here. But I can still learn." Moving to technology-enhanced, for teachers such as these (the exceptions, not the rule),

nevertheless represents a large change, even if administrators describe it as a baby step.

As teachers began learning the technology (or applying it to teaching and student activity, rather than social media or their own work), their small steps were often at the margins of their own practice: occasional use for particular lessons or particular students. The self-described "digital dinosaur" mentioned above began using lessons from an online college course to add new ways of explaining difficult calculus concepts to struggling students. A Hebrew teacher used broadcast video from an Israeli news station to challenge students' translation skills; to improve fluency, she had them perform and record their own script for a large family ordering food in Israel ("parents used to say 'my son studied in high school for years, but goes to Israel and can't order a pizza'").

However, these were *occasional* interventions, not yet routine, and "not on most days." A thirty-year veteran teacher added a Google Maps activity to the lesson he was teaching on Avraham's journey, giving students the starting town, endpoint, and several stops along the way, but letting them independently plot and use satellite images to view the path. With great enthusiasm he recounted how "One student said, 'he walked a lot in his life'. Mazel tov! In all these years, no one ever got that." Through such small steps, many teachers reported large improvements in student engagement and learning, and affirmed their intention to try more such activities. As more teachers in more classrooms use more of these resources—and as schools offer more online courses to more than the occasional student with a scheduling or remediation problem—they incrementally progress through the stage of technology enhancement.

In this stage, administrators measure progress by counting: how many students have access to computers...how many teachers are using technology...how many online courses are available to meet students' diverse needs. But these administrators make a sharp distinction between the *quantitative* measures of technology-enhanced and the *qualitative* shift to "truly blended," where teachers use technology to put students at the center, use data to guide their curricular and instructional decisions, and

lead classrooms where each student learns at a pace and in a manner that is most appropriate for him or her.

Almost all the schools in our sample affirm that truly blended is where they want to be, even if they are not there yet. One administrator estimated that “About a quarter of the population is doing something online during the course of their day” but “a traditional teacher who shows a TED video now and then—that’s not blended learning. That’s using video, you could use it to stimulate discussion, but it’s not really incorporated into the flow. It’s just an extra piece.” Another pointed to the progress made in her school as “Some activities, computer opportunities, CDs for enrichment or concepts, or for support,” but “not blended learning, not really.” As still another put it, “Integrating technology? I’d say 95% are doing something. Actually doing blended learning? That’s a lot more difficult, but I’d say about half.” Nonetheless, these are important steps along the continuum to where these schools are heading.

## Truly Blended

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The field itself is increasingly making and refining definitions to clarify the distinctive meaning of the term “blended learning.” Where the Christensen Institute initially and inclusively described blended learning as any practice in which “students learn online in an adult-supervised school environment for at least part of the time,” the Institute subsequently added qualifiers to distinguish it from “technology rich”: “A formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home.” (Staker & Horn, 2012) Key features of the more recent distinction include the idea that technology—while still an important factor—is used for *instruction* rather than merely as a supplementary resource, and that it provides data used by students and teachers to make informed decisions that personalize progress, pace, and path.

Educators across the day schools have also been moving to a clearer distinction between technology enhanced (which adds to the learning environment) and actual blended learning. As

several educators told us, blended learning is “not about the technology.” It’s about using the technology to leverage larger change and improve opportunities for teaching and learning. As one enthusiastic teacher in Jewish Studies explained, it is “Taking technology and bringing in Talmud skills, and trying to bring that together; it’s two separate things coming together to create a new whole.” After another told us that many teachers were using technology, but “only two” had gotten to the point of a “true blended” classroom, with “all of the elements,” we generated a list of features surfacing across interviews, and refined that list through subsequent visits. Eight elements consistently emerged, as discussed in detail in the section on “The Eight Elements of a Truly Blended School.”

## Fully Online

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At the far right of the continuum lies **fully online** learning, in which students follow a personalized playlist of courses provided through online instruction (usually through a commercial or state provider). The Jewish day schools in our study did not aspire to become fully online. However, since fully online is part of the conceptual continuum, it merits explanation.

The most “disruptive” model in the Christensen typology—the fully online virtual school—has the advantage of offering an array of courses no brick-and-mortar school could match. Indeed, this model eliminates the academic need for a brick-and-mortar school. It opens up new possibilities for populations that are not served, or underserved, by traditional schools (e.g., homeschooling families). Several states and some charter organizations have set up fully virtual schools for those who do not, or cannot, attend a physical school—or for brick-and-mortar schools that cannot offer a full curriculum. In the latter, more hybrid model, a physical school with a small staff can provide social experiences, support, and supervision to students who receive instruction primarily from online providers rather than onsite teachers.

For most established schools, a shift to fully online learning would be unthinkable. Most do not believe that model has sufficient educational or social merit. Many express concern that too much online learning would decrease, or devalue, the

very things that families find worth paying for: “If students spend their time in class on computers, if there were even enough to go around, we will be faulted for abdicating our responsibilities,” or “I would get calls saying, ‘I’m not paying this much for baby-sitting.’” Educators and administrators also worry that without strong teacher–student relationships and low teacher/student ratios, families would turn to public schools: “They expect a lot of personalization. If I said we are doing blended so we can have 30 in a class working on computers, they wouldn’t buy it.”

Two new schools initially planned a hybrid school model that would offer fully online learning, at least in General Studies. One turned to the state’s new virtual school; the other created its own bank of course offerings through a mix of commercial (i.e. ALEKS, Pearson), university (Stanford Online High School), and open access (Kahn Academy) providers. Both of these new schools developed cost-saving models in which instruction would be delivered online, but in-person supervision and support would be provided by “tutors,” “mentors,” or “facilitators”—responsible adults or even college students, but not actual teachers, and not at teacher salaries.

Before long, however, both schools shifted strategies, deciding that the content knowledge and pedagogical skill of an actual teacher were essential ingredients for successful blended learning. These schools retained online courses, but blended teachers back in—though not fully back to the traditional classroom model or to one teacher per course. At one school, for example, a single science teacher taught earth science, biology, and chemistry, all in the same room at the same time but to different groups of students, augmenting the online curriculum at one-third of the cost. At the other school, part-time teachers with subject-matter expertise came in some days to supplement online instruction, again well below traditional costs. As a head of school, after the first few months of frustration with fully online learning, concluded “It’s all about the teachers.” Teachers, the school leaders decided, were critical to successful learning, although both jobs and schedules could be configured differently and less expensively in a truly blended model.

Fully online might be useful in extraordinary *circumstances*, such as a student who was away or a school that is committed

to offering a course they can’t staff. Fully online might also be useful in extraordinary *situations*, such as snow storms that shut down most schools but allowed a blended school’s students and teachers to “beam in.” But across schools, the emergent pattern was consistent: fully online learning could add capacity, but as the exception rather than as a desired school norm.<sup>6</sup> In short, none of the schools felt that fully online was the right place for them to be. Whether they avoided it altogether, or drifted into it briefly, they saw this as going too far and wanted to pull back and further develop the stage they had identified as truly blended.

## The Eight Elements of a Truly Blended School

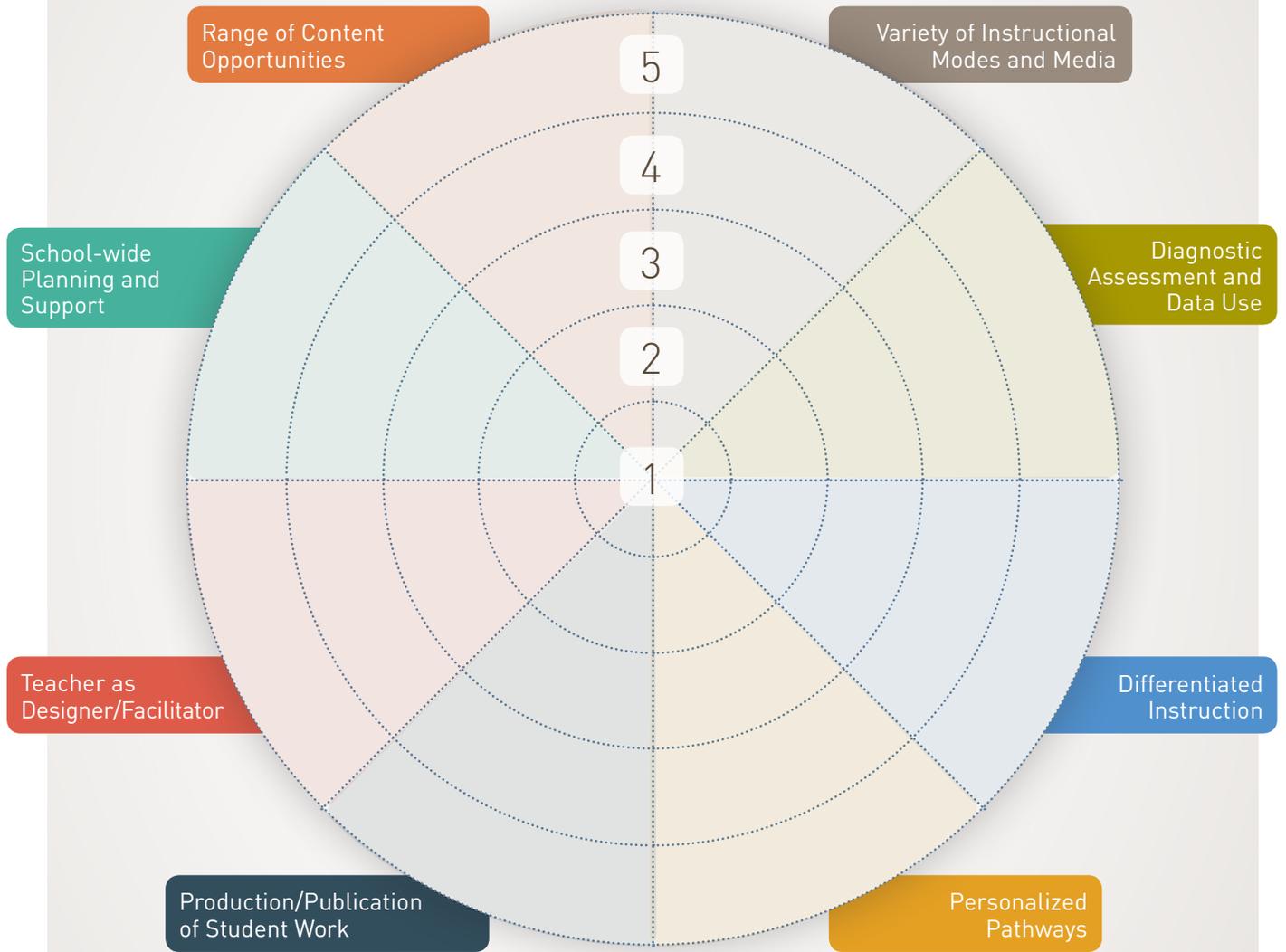
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Since most schools were moving through **technology-enhanced**—or back from **fully online**—to reach **truly blended**, it became important to discover, in greater detail, what they meant by that term. From initial visits and interviews, we developed a list of distinguishing features. In follow-up interviews and observations, we shared and refined the list. Features associated with only one school, subject, or type of school, were omitted or incorporated into more inclusive terminology.

Rather than a numerical spreadsheet or evaluation checklist, we used *implementation wheels*, adapted from earlier research studies of school reform but configured to reflect the implementation of blended learning in day schools (Siskin & Robinson, 2007). To accompany the implementation wheels, we drafted a *rubric* as a relatively easy way for teachers and administrators to consider the characteristics of each element and represent their own progress.

<sup>6</sup>Recent research has also called into question the effectiveness of virtual schools (Barbour et al., 2017) and the enrollment attraction (Dobo, 2017; Niehaus, 2014) of hybrids (e.g., Carpe Diem charter schools) that have heavily shifted instruction from teachers to fully online.

# Blended Learning Implementation Wheel



## Blended Learning Implementation Rubric

	1-Traditional	2	3	4	5-Truly Blended
Range of Content Opportunities	Curriculum standardized for whole class	Enrichment and research activities online	Online opportunities for remedial or exceptional needs, without increasing staff	Array of courses and resources beyond what faculty can provide, available to all	Wide range of online instruction, accessed by all, when it suits student needs
Variety of Instructional Modes and Media	Teachers talk, students listen and read	Groups cover same content, vary pace; Online practice and extra help	Groups do different activities; Teachers use multiple media; Some online instruction and resources	Activities vary in form to match content and student needs; Some teachers shift instruction; Some students choose	Teachers shift easily and often; Coaching and self-directed learning informed by data; Independent learning opportunities available to all
Diagnostic Assessment and Data Use	End of course exams, state tests, teacher observations; IEPs for special needs	Resource rooms; Different placement of students and pace of instruction by category	Digital programs give feedback on skills and pace to teachers; Some teachers use data to group, some to assess competency	Digital programs give frequent and useful data to teachers on placement, pace and style, and to students on progress and needs	Teachers, administrators, students and parents view, use, and discuss data frequently to define needs, differentiate learning, and assess competency
Differentiated Instruction	Students in a class are processed as a "batch;" Extra practice after school, or summer school	Student groupings for level and pace	Data driven student groupings, i.e. bluebirds and robins; Regular data reports trigger regroupings	Time and task vary within some classes, and for individual students	IEP's for all students; Variations in time, task, and style are routinely and purposefully planned
Personalized Pathways	All students have same curriculum; Benchmarks at set times	Online activities given for extra practice, enrichment, or free time	Students at/above class level choose extra projects, courses; Students below clear level choose skill practice modes	Students choose when and how to work on set skills and curriculum; Monitor own progress	Students choose among options for content, media, pace, and place
Production/ Publication of Student Work	Work turned in to teacher; Some display at science fair, holiday concert, or classroom wall	Students share work and give feedback to peers	Projects shared within and across classes; Some teachers visit and view other student work	Teachers visit and share work; Some student work sent to external review; Data and feedback shared with students, parents	Students are expected to post and publish projects (e.g., films to YouTube) to real audience; Connections across subjects and to real world are expected
Teacher as Designer/ Facilitator	Teachers hired and evaluated to know content, keep control; Frontal teaching; Tech in lab; PD is idiosyncratic or generic	Talk about tech; Some teachers sent to iNACOL or ISTE; Differentiation is valued; Some tech in classes	Teachers hired and evaluated on being open and innovative; Some teachers create and curate; Online resources used in classrooms	Many teachers create and curate; Many access data and shift approaches to meet student needs and styles; Many choose among media options to fit content or student	All teachers use data to inform pace and personalize lessons; They are comfortable with a repertoire of media and approaches; They can and do relinquish control
School-wide Planning and Support	Individual teachers teach on their own; About blended learning? Teachers wish you luck with a "passing fad"	Early adopters are praised, but status quo prevails; Curriculum offerings match staff capacity	Leaders see value, approve PD and tech upgrades; Offer and schedule exceptional online activities and courses	Blended learning is topic at faculty meetings, and experiences are shared; Investment in class resources and infrastructure; IT is in strategic plan; Strategy to identify and assess products and providers	Schoolwide sharing of purpose, strategy and plan; Problem solving and adapting are routine; Different needs and resources seen as normal; Tech and blended learning recognized as tools to achieve mission beyond staffing capacity

The rubric was refined with the help of study participants, and further field-tested in sessions at two national conferences (iNACOL and the North American Jewish Day School Conferences) in 2015 and 2016. Using the rubrics, individuals considered and colored in wheels to reflect their assessments of their own sites, and then compared results. Schools complete the wheel by coloring in each of the eight areas from the inside radiating out to reach the number of segments that represent its progress in accordance with the rubric in that area (on a scale of 1 to 5). In site visits and conference sessions, educators agreed on the characteristics and rubric classifications in general. But even within the same school, respondents had different ideas about their own progress—reflecting differences in grade or department, position in school, or level of involvement in blended learning. Since the implementation wheel is not a precise measurement instrument, but a tool to prompt reflection and conversation among staff, we consider that a strength, and a useful starting point for discussions. We would expect that any school using the wheel and rubric would have similar results, and that challenging conversations and differences of opinion are likely to be more productive than consensus.

Across North American elementary and secondary Jewish schools—both established and new—the following eight elements emerged. For each element discussed below, we first describe the default or starting point of a stereotypical **traditional** school. Next, we outline the aspirational attributes of what this element might look like in a truly blended school. Lastly, we provide illustrative examples of current status, or progress thus far, among day schools in our study.

### Element 1: Increasing Content Opportunities

In a standard **traditional** school, content is standardized by grade level and subject. A common curriculum is delivered to the whole class (possibly with variations in pace). The curriculum is encountered within the classroom, brought in by texts or teacher lectures, and extends out through homework assignments. Administrators organize course offerings by semesters, in sequence, according to available staff as well as state or college entry requirements.

By comparison, in the **truly blended** school, educators implement an array of course options and within-course content resources that go well beyond what the school's faculty can provide, and are available to all students. This includes online instruction, commercial and government providers, and access to people with particular expertise.

Many of the schools began with a desire to increase content opportunities as a “primary reason” for adopting blended learning, and as a relatively easy way to add technology and solve routine problems. For administrators, it eased the annual struggle of trying to fit students into available course slots, when timing or topics just couldn't fit: “Because we did not reach a threshold enrollment or because we don't have expertise on site,” or that “We cannot run as a school because we do not have the numbers to support them, such as advanced math courses and languages beyond Hebrew and Spanish.” As other studies have reported, class sizes of 3 or 4 students, not uncommon in day schools, present an educational and financial challenge (Bloom, 2016). Introducing online courses also, as one head of school admitted, addressed a slightly different, but no less difficult, problem: that “third rail we don't often talk about, when a student just doesn't get along with the teacher.”

Across the schools—especially the high schools—administrators report considerable progress in this area:

- “It really opened up the door for us. We had used a few online courses for electives, and now more students than ever signed up, completed, and enjoyed.”
- “It affords a broader range of electives or courses for people who have learned all we can teach them in an area.”
- “As a small school, online learning allows us to give kids the opportunity to take a rich array of elective courses for which we would be unable to provide live instructors.”
- “30 AP courses—that's no challenge for us because we don't need minimum numbers of students to justify cost of a teacher.”

For teachers, blended learning afforded options to increase content opportunities within existing classes, and many teachers described this as their primary reason for beginning

to blend. They could offer new kinds of materials, such as virtual labs, documentary videos, or real-time NASA data . They could provide remedial, extra practice, or enrichment lessons tailored to individual students' needs. And, as they became more confident using new technologies, they could create assignments for students to become producers, as well as consumers, of digital content.

At the time of this study, progress was less pronounced in Jewish Studies, apart from rich supplementary resources on Holidays, Hebrew letters, and Israel visits. There was high teacher interest, but not a lot of good options. Some teachers were concerned about the relative *quantity* of options: “There are not a lot of materials in Judaic Studies that can be popped in.” Others lamented the lack of *quality*: “I was very disappointed with the video quality, and the educational quality. A few are rigorous, but really boring and really dry.” Many teachers decided to move slowly: “Until we find the right content, we’re not doing much.” Fortunately, the field is expanding, with the increased use of iTaAM and Lookstein Jewish studies courses.

Increasing content opportunities—as [iTal AM](#), [LVJA](#), and [OJSC](#) have—solves immediate and practical problems for many schools. Overall, progress has been considerable, and forward momentum continues. Most schools had moved to Level 3 on the rubric, providing online opportunities for remedial, exceptional, or specialty needs without increasing staff, while a few had reached Level 4, with a wide array of online courses and resources available to all students and incorporated into the regular offerings. Three new schools might even be considered at Level 5, although choices were often determined more by what faculty found or administrators deemed reasonably affordable than what would ideally suit students.

## Element 2: Variety of Instructional Mode and Media

In the **traditional** model of schooling, instructional mode and media are rather simple and standardized: teachers talk, often standing at the front of the room or in front of a chalkboard, and students listen or read texts. Students may move more slowly, or take more time to practice in areas where they struggle, but the mode of instruction, as well as the content, is consistent for the whole class. Even before the introduction

of technology, many classrooms had moved away from this default image, at least some of the time. Kindergarten students, for example, learn animal names and sounds in Hebrew by singing together, and explicit lessons in cooperation while playing. High school students work together to produce and perform in a school play. Yet those alternative, more active modes of learning are often reserved for special subjects, special days, or rewards for good behavior. The normal state in the traditional school is teacher talk and text-driven.

When educators speak of the **truly blended** environment, they describe an expanded array of material form and formats, with teachers purposefully choosing to fit particular content or student needs. Teachers and students shift easily and often across a rich repertoire of curriculum resources and pedagogical strategies: individual coaching, small groups, or independent work on projects or with online resources. Across that variety, and accounting for shifts in media and mode, is a coherent, carefully crafted plan.

For increasing variety in instructional mode and media, teachers talk of not just adding more content, but choosing the form and format in which to deliver it. They look to technology as a means to do things they had trouble doing before, such as science labs (which are often under-resourced). Blended learning, as one explained: “Let’s us use resources that aren’t in the classroom, like the virtual lab.” Another science teacher pointed out that virtual experiments allow for observations they couldn’t do even with a lab: “Simulations, things that are hard to—or that you can’t—see. Air molecules moving, colliding. [It can] help build a mental model in their heads that would be too tedious to do on paper. Electrons moving through wires; you can see charge.” For yet another science teacher, technology brought students closer to the actual work of physics: “We’re using a slow-motion video off an iPhone to look at crashes, how much time elapses, frame by frame. Each is a 240th of a second. It’s neat, because this is what people really use, and we can do it on our own devices.”

As they experiment, teachers determine which lessons are better learned through technology, and which are better learned in person. In the anecdote described earlier, where a Rabbi for decades had taught Avraham’s journey by telling, he found

that Google Maps allowed students not just to recite the narrative, but to appreciate time and distance in a new way. For other teachers as well, what began as a straightforward technology enhancement could, and in many classrooms did, prompt new considerations about how students learn differently through different media. At an elementary school where chicks were hatching in an incubator, an inexpensive video cam allowed students in other classrooms to observe their progress, in real time, without the “hassles” of coordinating visits to that room. (Virtual visits were useful in sharing lessons on the lifecycle and patience, but the teacher stressed that to really appreciate the fragility, fuzziness, and chirping of chicks, only a physical visit would do.) A math teacher using an online instructional program found that introducing new and difficult concepts worked better in person, “I try to instill good habits of math style; that [is something] I do better,” but other activities were more efficient online, when “the computer can teach them this or that.” For her, the back and forth of blending different instructional modes is calculated carefully: “Other things, I do what only I can do, the aspects that would be difficult to learn on ALEKS. I’m cherry-picking the hard things to teach them myself.”

In Jewish studies, where resources were more difficult to find, teachers also found that different tools served different purposes, or provided different entry points for student learning: “Students do prefer to read Rashi on Sefaria. The text has connected verses; you can get that with one click. In previous classes they would each have to bring a Tanakh, or I’d have to find some way, because it is often important to see those verses. Now, they can do it themselves, and it’s just one click away.”

Across subjects, teachers stressed that while online tools were good for particular purposes, they still needed to retain the personal touch: “Google Docs and Drop Box for assignments, Aleph Beta to stimulate debate, but I also handwrite tests to make it a little more personal.” As they move closer to the stage of truly blended, making carefully considered media choices develops into a new skill. As one teacher—an active and reflective explorer of how media matters—explained, “Genre matters. Like haiku versus epic, it’s choosing technology that suits the message. You choose a genre. If you use oil paint or watercolors, the product will be different. It’s new for us to have to attend to that.”

While choosing the technology to suit the message may be new for most teachers, using the new technology is new for students as well. This means that when schools engage a variety of mode and media, they need to add instruction in technology skills to their teaching repertoires, including lessons in how to click and drag, use a mouse, troubleshoot when you can’t log in, and be attentive to internet safety. In higher grade levels, such instruction might include how to navigate particular software, troubleshoot device gremlins, recognize bias or fraud online, and utilize the internet in an ethical manner.

Several teachers discovered that they needed new teaching strategies on how to behave online, particularly when students found ways to navigate around carefully designed school filters. One new school needed to create a new dress code policy for when students participated in “beam in” days from their own homes. Particularly challenging were lessons on how students should assess the credibility of information accessed online when alone and/or unsupervised:

- “Their first searches, what they found were Holocaust deniers.”
- “They have to be taught that just because it’s online doesn’t mean it’s true.”
- “How to find and assess websites, they have to make critical assessments. Is it fact or opinion? In life, they will have to make judgments, and they need to learn how to do that here.”

As education shifts, such concerns have emerged nationwide, in all kinds of schools (Stanford History Education Group, 2017). In most day schools studied, teachers developed relatively simple (though not always successful) lesson plans to tell students what to do and not do. One well-established school had a librarian who created a sophisticated rubric to judge credibility and reliability of online sources. In a new school oriented toward experiential learning, teachers set students to research the tree octopus, exploring an elaborately designed website where they slowly discovered for themselves that it is a totally fictional creature—a lesson they retained and referred back to repeatedly (<http://zapatopi.net/treeoctopus/>).

Overall, teachers across the schools were enthusiastic about bringing new technologies, modes and media for teaching into their classrooms. But they were less confident about their own choice-making skills in these areas, and less certain that the resources they found fit their high academic or intellectual standards. They are far from the traditional model, but not yet at the state of truly blended they hope to reach. Most schools were at or approaching Level 3, with individual or groups of students engaged in different kinds of activities using multiple media, and online instruction used in particular classes, at particular times, or for particular students.

### Element 3: Diagnostic Assessment and Data Use

In the stereotypical **traditional** model, assessments come at the end of the year or semester, in the form of exams or essays that students turn in to the teacher, and that only the teacher sees. These assessment tools are typically used to compare student performance to each other, within the class. Occasional assessments (SATs, ACTs, state assessments, the Jerusalem Exam, etc.) offer larger-scale comparisons beyond the school, but provide results long after the course is over, or students have moved on to the next grade. More rarely, individual diagnostic assessments are used to determine special needs and design special accommodations or placements.

By contrast, in a **truly blended** school, teachers and administrators talk of diagnostic data through formative assessments that are frequent, offering rapid feedback for students and fine-grained information that teachers can use to adapt pedagogical strategies, pacing, and placement. These teachers and administrators imagine receiving data in formats that they can make use of to fine-tune their teaching, and share with students and families to assess progress, celebrate competencies, determine needs, and differentiate learning.

For many day school educators—especially those in elementary grades—access to diagnostic data is a major motivator for blended learning, although they acknowledge minimal training or experience with data use. These educators look to online providers as a new resource to help inform instructional decisions about placement and pace:

- “To do assessment much faster, to differentiate; we were looking for ways to do that, and saw technology as the way.”
- “iReady, what’s really important is data for the teacher.”
- “With the LMS (learning management system), the teacher has access to knowing if it’s mastery or not. That’s something you don’t have with more historical traditional models. So there’s more control for teachers to hone in on what’s different. That’s a tremendous benefit.”

A few elementary schools have moved far enough in this area to be able to share data with students and their families in conferences, or online. To build capacity in this area, some schools have contracted with providers to offer teacher-training workshops onsite. Others have identified early adopters among their staff to coach and support colleagues. Across the elementary schools, teachers report feeling increasingly comfortable with data use, and of using data not only to place students in small groups but to change those groupings frequently, relieving some of the stress or stigma of being placed and labeled in a “slow” group. Depending on progress with particular skills, placements might change weekly. In one school with a heavy investment in data use, we observed changes even between morning and afternoon. For high schools, by contrast, progress in this element has moved much more slowly. Few online providers offer data as fine-grained or frequent as skills-based programs like iReady, though some, like Pearson, provide frequent assessment reports in math.

Moving beyond data use for pace and placement to understanding and utilizing it to guide *pedagogical strategies*, however, was a difficult challenge for all schools. Indeed, a substantial body of research has found this to be the case for teachers more generally. While teachers report that data are helpful to understanding student needs, and that more fine-grained data can help identify problems before they become major concerns (or result in having to repeat courses), few have the training or time to use data productively or incorporate it into routine practice. (Datnow & Hubbard, 2015; see also Cohen, 2013; Maas et al., 2016; Strosberg, 2013)

While the first steps in diagnostic assessment and data use were quickly and eagerly taken by most schools, only a few

have made enough progress to feel that they are approaching the desired state in this element. They use online programs to provide feedback and fine-grained data, but teachers primarily use that data for grouping, or to determine competency in a particular skill or stage of learning so students can move on to the next stage or course. Most see themselves as Level 3, though a few elementary schools have moved to Level 4 with data use routinely incorporated into teacher planning and daily practice.

One new secondary school, in contrast to the general pattern, had moved to what we would consider Level 5, truly blended. This school was gradually replacing course grades with competency badges. This shift in practice involved faculty, families, and students in rich conversations about goals, skills, modes of assessment, and shared data, to the point where students were designing their own badges and assessments for anyone to earn. Students with diverse interests or special needs could work through individually tailored units and projects, accessing and showing the data to demonstrate their own progress. For most of the schools, however, there remains a considerable distance between access to data and its sophisticated use for teaching.

#### **Element 4: Differentiated Instruction**

Deeply embedded in the **traditional** model of schools is the practice of batch processing, whereby students move as a group, pre-sorted into set classes by age (in elementary school) and by age and prior achievement levels (in high school). Teachers tend to “teach to the middle,” devising activities for the whole class and encouraging all students to conform to classroom behaviors, learning norms, and achievement to the common standard. Students who need more time are offered extra practice after school, or in summer school, but are still expected to catch up (or drop out). Where learning styles or skills diverge from the standardized educational program, students may be “placed” in alternative arrangements for remediation or enrichment. In more extreme cases, they may be counseled out to another school.

At the desired state—the **truly blended** school—educators imagine the possibility of differentiating instruction to meet

the diverse needs of all students, with individualized learning plans for each child, where appropriate variations in time, task, style, approach and standard of learning are routinely planned and frequently checked for necessary changes. Students advance at their own pace, moving ahead if and when they demonstrate learning of established goals or competencies.

While administrators across the day schools work through what they call the “nightmare” of scheduling—trying to match the right students into the right classes with the right teacher at the right time—teachers still spoke about the composition of their classrooms as a challenging mix of very different students, with different skill levels and interests. Even in small schools with small classes, they say, this is a growing challenge: “The school is handing you increasingly heterogeneous classes,” or “It’s a continually diversifying student body.” Despite careful attention to levels and tracks, as one veteran teacher lamented, “The lower and middle tracks are very diverse in background and interests and we have a significant number of attention deficit issues. The combination has made teaching a whole-class untenable. I spent the first semester hitting my head against a wall.”

To reduce this kind of frustration, administrators have tried to differentiate by multiplying levels of tracking or adding special services that they hope blended learning will ultimately reduce the need for. As one high school head put it, “People think the only way to differentiate is to add more classes, more sections, more resources. Not having to add more layers, more levels, we think that’s where the potential is.” Another administrator expressed a similar concern, and the same hope: “We were constantly adding layers of people onto staff for remedial or enrichment. Budget-wise that’s not sustainable, it will empty our pockets. So this [blending learning] is really the opportunity for us.” For teachers and administrators, a major motivation for embracing blended learning is the expectation that this approach will make differentiation easier within classes and reduce the need for more sections.

We note here that almost all of what we saw in terms of meeting the challenge of differentiation was structural: efforts to differentiate mostly took the form of grouping students within one class and increasing or lowering the pace, level, or

standards of learning. While these types of *structural changes* differentiate the student experience somewhat and take steps toward reducing the need for additional classes or staff members, we saw less evidence of *pedagogical changes*. Where we saw schools moving toward blended learning, we saw few providing additional professional development or in-school support to change instructional practices to meet varying student needs.

One elementary school used a learning center with a specialist to assist in making sense of diagnostic data, where “Teachers are checking in—getting progress reports and monitoring, weekly reports from data, and opportunities to differentiate.” One of those reports concerned a student having a “visceral” negative reaction to online work; for her, the differentiating strategy was to do less online for the next few weeks. Another school focused on differentiating literacy instruction, in a class where “Most were below or approaching expected levels.” This class’s teacher reported that “Most students liked the program. In class they could discuss the ‘same’ reading material that each had read their own leveled version of. And while the expected growth benchmark was 34.8 points, they actually showed a gain of 86.5.”

In an established high school, the strategy taken by the above-mentioned teacher who reported “hitting his head against the wall,” was to differentiate in the second semester through varied media, small groups, individual consultations, and flipped lectures students could watch onscreen at their own pace. Although orchestrating, and even keeping track of learning in such an environment brought its own challenges, this teacher noted, “I’ve never seen such dramatic improvement so quickly, and I’ve been teaching about twenty years.”

Not all efforts to differentiate within classes were so successful. As described above, differentiation often translated into simply making adjustments in pace, or relying on more practice with provider-designed tasks that tended to be basic skills and drills (see also Maas, et al. 2016).

However, as teachers experimented with new tools, many discovered that different technologies better serve different students. As one school’s administrators learned, in searching for the “right” instructional program for Hebrew, what is beneficial for some might not be suitable for all: “We have students with

hearing loss, but NETA [now called Bishvil Ha-Ivrit, a Hebrew language program] is speaking and listening. So we have a couple [of students] doing Rosetta [Stone, a language learning program], which is more visually integrated.” Other administrators also saw the increased variety of mode and media as a resource to accommodate special needs students who would otherwise be ill-served in the traditional model: they could enlarge text-size, wear noise-canceling headphones, hit the pause and repeat button, or use different programs or levels. Importantly, in contexts where *all* students were using a variety of mode and media, special needs students could do so without stigma.

### Element 5: Personalized Pathways

In the **traditional** model, all students take the same curriculum through a set sequence of courses, with minor variations for advanced or remedial tracks into which they are placed by teachers or administrators. Benchmarks to assess their progress happen at pre-established points in time, with consequential measures taken at the end of each year or semester. All students in a class are assessed to the same standard.

By contrast, in the **truly blended** model, personalized pathways go beyond the leveled learning opportunities of classroom *differentiation* to engage every student in a customized learning plan with a degree of choice over the content, media, pace, and place of learning. Along with their teachers, students monitor their own progress toward competency and move ahead accordingly.

Personalized pathways for learning is an element that sits squarely at the intersection of a longstanding tension for day school administrators. As private, tuition-dependent schools, there is an imperative to respond to the demands and desires of students and their families. As Jewish schools, the idea of educating each student according to his or her way of learning has a particular resonance. Yet as tuition-dependent, financially constrained schools, there are limited resources to accommodate these expectations and ideals. Administrators view blended learning as a mechanism to do more of what they’ve long tried to do: create a supportive learning environment to meet each student’s unique needs: “It’s the focus on the individual student—parents see that, value that, [and] often haven’t seen it in other schools.”

Personalizing pathways is, in part, achieved through increased content opportunities: students not only learning different things, but learning things they themselves play an active role in choosing. As one administrator observed, “Blended [learning] offers the most individualized learning I’ve ever been able to experience. Students have access to different teachers who can help them. With our learning lab, they can avail themselves of different people, or find courses that aren’t traditionally offered.” For example, at one high school, a student who wanted to pursue Advanced German could take the course she needed through the state’s virtual academy. Another student, unwilling to take another course with a particular teacher (who happened to be the *only* teacher offering the needed course), was convinced to stay in the school because she could take the course independently online. Allowing for student choices in courses or projects means creating opportunities for flexibility in scheduling courses *and* in moving away from lockstep grade-level groupings: “It means not just redesign the classroom, but also redesign the day. We want a one-room school, where it doesn’t matter how old the kid is” or “We want multi-age classrooms, to have flexibility.” For two of the new schools, those “wants” were built into routine practice from the outset. For most established schools, this degree of personalizing pathways remains a longer-term goal.

Nevertheless, at the classroom level, moving toward more personalized pathways to reflect student choice is something most teachers can do. They might, for example, have students writing their own books. In one elementary school, each student chooses a famous person to write biographies about. In a high school, each student writes his or her own novel. In many classrooms, students can—at least some of the time—choose which projects to work on, decide when they need more practice on particular skills, and select the programs that will best help them. Students actively monitor their own progress, and are involved in deciding—usually in consultation with their teacher—when they are ready to move on. As one teacher who had tried, with some skepticism, to turn over more control of personalized pathways to his students concluded, “It works. There’s more of an active agency in choosing what they’re going to learn. Like all of us, they like having a say in what they do.”

Still, in this element perhaps more than any other, the fundamental “grammar” of the traditional school retains a deep hold. Most schools have found it difficult to move beyond Level 2 (where some students make some choices about which activities to engage in for enrichment, practice, or free time). In fact, almost all the schools remain at Level 2. Moreover, both of two new schools that fully implemented personalized pathways at the start failed to attract enough enrollment to stay open, suggesting the possibility that families—as well as faculties—may have a hard time moving too far too fast in this element.

### Element 6: Production and Publication of Student Work

In the **traditional** school, student work is turned in to the teacher, who evaluates it and is usually the only person to see it. Some work, selected by the teacher, might be posted on classroom walls or school halls. And, from time to time, student work is featured or showcased in science fairs, concerts, plays, and publications (newspapers, yearbooks, literary magazines)—although most of these settings are part of elective offerings, reserved for a select few students.

In the **truly blended** model, students are expected to produce and publish work for a wider audience—to be, as one head of school put it, “Producers as well as consumers of knowledge.” Students use a variety of formats and media (e.g., producing videos for YouTube, preparing projects for a real audience such as community members or legislators, or creating products for real users). Connections across subjects and to the real world are expected.

This was not an element that most teachers or administrators associated with blended learning when they began their efforts. Instead, they framed blended learning in terms of being “consumers”: utilizing newly available resources and tools created by others within their classrooms. Yet, as they experimented with new possibilities, exploring new potential for student work (new kinds of work or work to reach new audiences), these teachers and administrators began to discover the power of production and publication of student work.

Of all eight elements, we consider this to be the most powerful for leveraging the kinds of larger change educators hope to

realize.<sup>7</sup> Creating and publishing work for an external audience—as opposed to writing papers that only a teacher will see—was highly consequential not only for how students (and teachers) understand that work but for the *kind* and *quality* of work students do.

In many schools, the early experiments in this element were baby steps, sometimes inadvertent ones. Working in small groups on computer projects, students share their own work with, and give feedback to, peers—making their work “public” at least to each other. One new elementary school institutionalized a phrase—recycled from the “cooperative learning” movement—to encourage sharing in the blended learning classroom: “Ask yourself, then ask a friend, then [if necessary] ask a teacher.” The school found such collaborative problem-solving and feedback to be a strong motivator for improving the quality of student work.

In an example of a larger step, two established schools decided that peer-group audiences improved student learning and encouraged a similar phrase. An elementary school had students use online publishing resources to create biographies and host a book fair to share their work with younger students. One high school teacher, whose students had, for many years, written and performed a Purim *shpiel* (skit), was slow to introduce blended learning, but enthused at the response when her students recorded and uploaded their video—taking it far more seriously, she reported, than any prior class. Other teachers found other outlets for student work, such as building robots for a national competition, producing a documentary film, and creating an elaborate rain-garden for community use. As they found more ways to make student work project-based and public-facing, educator enthusiasm grew:

“This year we had more of a blended model. We had an [online] instructor two times a week, and students developed their own game. A teacher in the classroom the other three days, to make sure they were on task, communicating—21st

<sup>7</sup> We see this as so powerful because it is more easily adopted than other changes in teacher behavior and practices, yet it forces changes in classroom time use, teaching, learning, and assessment.

century skills. I feel this was the model of what a blended class should be. The students came up with the most beautiful, exciting game, presented it to the entire school—to applause. It was very exciting, and they would say it is their top academic experience.”

The shift toward greater use of the production and publication of student work happened slowly, but schools found that this element changed and facilitated shifts in other elements as well—a valuable “jump-starter” for wider progress toward truly blended learning. Although this element seems to be the most powerful in that regard, it was not quickly or easily implemented—or even attempted—at most schools. In terms of the rubric assessment, this is where we saw most variation, across and within schools, making any statement about “average” or “most” schools less helpful. The one distinctive feature of progress in this element is that where a teacher, department, or school succeeded in moving to Level 3, they quickly moved on from there to Level 4 or 5. And they made rapid steps forward in other elements, most notably in teacher role.

### Element 7: Shift in Teacher Role to Designer and Facilitator

Teachers, in the extreme **traditional** model, are hired and evaluated on the basis of knowing their content and controlling their classes. Pedagogy is primarily frontal teaching, with whole-class instruction in elementary schools and lectures in high schools. Technology equipment and computers, if any, are kept in a lab or library rather than in classrooms. Professional development, if any, is either idiosyncratic (supporting individual teachers who want to acquire or improve their own skills in some area) or generic (delivered in motivational or substantive lectures by an occasional external expert).

In what day school educators describe a **truly blended** school, teachers are still content-experts or grade-level experts, *not* the sole deliverers of that knowledge. They are comfortable with, and make use of, a wide repertoire of modes, media, and approaches to learning. They deliberately include online instruction as a part of their repertoire, and relinquish a degree of control so as to encourage student agency and exploration of other sources of learning, including online resources. They

use data frequently and well, to inform pace and placement, personalize lessons, and guide their pedagogy. In a truly blended school, professional development is differentiated to meet individual teacher needs, provided when needed, and encouraged through small educator groups or teams sharing knowledge with each other and through external sources.

Of all eight elements, a shift in the role of the teacher may well be the most difficult, demanding, and essential. As Michael Fullan, a leading researcher on educational reform argues, teachers are at the heart of any successful change effort: “Educational change depends on what teachers do and think—it’s as simple and as complex as that” (Fullan, 1991, p. 117). That may well be true in educational change of any kind. But in this context, changing the teacher role is particularly complex in at least two significant ways.

First, in the move to truly blended learning, teachers are being asked to behave and think in new and complex ways. They are not simply being asked to add computers to the classroom—but to use data well, to choose modes and media appropriately, to tailor instruction to individuals or small groups effectively, and to be “proficient technicians, innovative designers, and expert facilitators of student learning in a variety of learning modalities.” (Liberty, 2016, p. 9; see also Gray et al., 2010; Horn, Gu & Evans, 2014) In such a new field, no one has been well prepared to do all of this, and few have substantial experience or expertise to draw on.

Second, the shift is complex because teachers are *all* new to this, all learning at the same time. What is perhaps a surprising finding was that this is a radical and challenging shift for everyone—for new and younger staff...seasoned veterans with many years of experience...reading teachers choosing from among numerous available programs...and Jewish Studies teachers searching to find high-quality options from a limited pool of programs. Like their students, teachers have different capacities and require differentiated learning opportunities.

As many administrators recognized, teachers’ support needs were different because “They are all in a different place.” It might be they teach different subjects: “Teachers have to have a content-driven reason for wanting to try things, and content

area needs are quite different.” Or they may be new teachers with classroom management needs (“beginning and need help”)...or veteran teachers “who do not have a lot of technology skills” or “need to grow.”

Across schools, advocates found teachers to be “not so much resistant,” since “most are open to good ideas, and committed to the learning of their students,” but rather “reluctant” because this is new, unfamiliar terrain—and something they did not know how to do (or do well). In the case of reluctant veterans, the self-professed “digital dinosaurs,” the professional development challenge started with the technology: one was “not ready” for new technologies, another “brilliant, inspirational, but all frontal. It’s just beyond her to do this.” One administrator introduced us to a teacher by saying: “I told her you were looking for a Luddite and she’s up for it.” These teachers were well aware that “We need a lot more training...if this [iPad] is something they want me to use. The older I get, the harder it is. It’s challenging.” Yet with the patient support of colleagues and school leaders, several took up the challenge *and* became enthusiastic (though not expert) converts.

Younger, novice teachers required a different kind of support. Conversant with iPads, web searches, and social media, these teachers might build a website for their class the first week of school or contribute to online Jewish resource sites. But these tech-savvy new teachers still had to figure out how to *teach* with technology—an entirely different undertaking. In addition, some struggled to learn how to relate to students, maintain order in the classroom, and/or design a syllabus. In rare cases, we found veteran teachers who had an established repertoire to draw on (“I always have a Plan B”), and, through prior employment or recent independent effort, had developed strong tech skills; these individuals often took a leadership role among faculty in moving to a more blended model.

For several schools—particularly those rapidly progressing toward truly blended classrooms—the solution to the diverse and urgent needs for support within the school was to create time in the schedule for groups of teachers to come together, debate possibilities, and address problems. As one administrator explained, “One of our big beliefs, to change teacher behavior, it has to be done organically. Coming from the top doesn’t work.”

Many administrators believed that coming from the outside doesn't work well either, at least not well enough to encourage major shifts in role and practice. While trainings from vendors or consultants might be useful in learning how to operate equipment or access data, professional learning and larger change are better, they feel, built up within the building. Several schools increased the frequency of faculty meetings—not full faculty, which is daunting in a dual curriculum school with many part-time teachers whose schedules scarcely overlap, but small groups, teams, or partner-pairings. Even scheduling those times together can be difficult, but across the board, those who have had the opportunity to participate in internal collaborative professional development found it useful, and immediately applicable.

One small group, at an established high school, met to investigate “Student learning, in general.” Their exploration was “Concrete, very grounded in research.” This resulted in practical suggestions about “The strategy of using summarizers at regular intervals in classes” or “How to format computer lessons, to have questions at the beginning, what to do during the lesson, and what to do after. That information was crucial in putting together blended lessons.” Another school also found that time for small groups with similar interests or schedules could be carved out so “We're seeing faculty working together as teams, [with] the first teams now becoming trainers, working together in ways we had not done before. That has ripple effects, and buzz and excitement.”

Such groups, and the kind of collegial learning they provide—ongoing, active, collaborative, connected to content, and directly grounded in teaching practice and student learning—reflect what much of the research on professional development suggests is effective practice for professional learning (Huberman, 1993; Little, 2006).

When teachers are being asked to design new kinds of lessons and to develop new kinds of teaching strategies, the chance to work with collaborative colleagues is particularly useful. Where knowledgeable external consultants are unavailable and/or unaffordable, it becomes essential. Most of the teachers who had such support made considerable progress in developing new roles for blended classrooms. Moreover, several new hires were selected for, and contributed, a high level of comfort with technology and innovation.

However, fewer than half of the schools had found ways to make time in their tight schedules for teamwork, and most schools had little faculty turnover. So, while a few schools moved quickly to Level 4, and two attained Level 5, most schools were still making slow or uneven progress in moving from Level 2 to Level 3.

### **Element 8: School-wide Planning and Support**

In the **traditional** model (at the extreme), school-wide planning largely focuses on finance, facilities, and faculty. Plans are developed within administrative offices, shared with boards, and announced to faculty. Curriculum planning, on the other hand, is done by individual teachers with little oversight from administration. Individual teachers teach on their own; administrators hire these teachers for content expertise or grade knowledge rather than technological skills, and coordinate schedules of what they can teach, slotting students into classes by age and (in high schools) level. Heads of school monitor hallways and check in on classes, field calls from parents, report to the board, and raise funds. Technology equipment provided by the school is primarily textbooks and chalkboards, with the occasional overhead projector, DVD player, SMART Board or computer lab.

In a **truly blended** school, educators imagine a state where technology and blended learning are recognized as tools to achieve school mission and educational purposes, and are incorporated into school-wide planning for finances *and* facilities. Student interests and needs drive curriculum planning, which extends well beyond what faculty could provide on their own. Problem-solving and adapting are routine and collaborative behaviors, starting from an assumption that, at different times, different teachers and different students may well have different technology needs, use different devices, and access a wide array of online resources. Professional development, using in-school teams or outside consultants, is differentiated—purposefully and routinely used to support blended learning in all classrooms as needed. Curricular and teaching plans drive technology purchases and use—not the other way around.

In terms of school-wide planning for blended learning, two different patterns emerged across the day schools studied. In

the new schools, founders were likely to create elaborately detailed plans for blended learning, and radical redesigns for the schools that would house them. In some, planning for other aspects of school operations were relatively less developed, but no less important. In one new elementary school, as the school head acknowledged, they held “A meeting, for parents, to talk about this earth-shattering blended model, but spent half the day on bus schedules.” In two new high schools, founders created remarkably innovative, carefully crafted school-wide curriculum plans, but at the expense of solid financial planning. Both high schools foundered, and ultimately closed due to inadequate enrollment.

The established schools, by contrast, had strong plans for facilities, finances, and faculty, but planning for blended learning and curriculum innovation was often underdeveloped. In several cases, that was by design—a deliberate move by school leaders who had seen too many prior attempts at administratively imposed change meet serious faculty resistance (Siskin, 2015b). In other cases, the shift toward blended learning occurred by chance. This was the case in one school that received an unexpected gift from a generous board member of a classroom set of iPads before the school had any plan for how to use them. In another such case, a few faculty were quietly experimenting with blended learning in their classrooms without official approval or encouragement. As one related, “We don’t really have a school model, this year. Teachers have been dabbling in different models, coming together to talk about what is and isn’t working.”

But as more teachers began “dabbling”—and as more administrators decided to move blended learning from peripheral initial use to a more prominent role—the importance of school-wide planning and coordination became clear. Few schools, for example, anticipated (or could have foreseen) the demands on existing facilities as blended learning moved from the

periphery to standard practice. As one early adopter observed, “Technology is tricky because of the state of the building. It’s hard to implement anything school-wide when we don’t have the infrastructure.” In older buildings, as more teachers made increasing use of online resources, new challenges confronted old equipment: “For a while, we were accessing the neighbor’s Wi-Fi. It was one of the most useful tools we had.”

In a new school in an old building, a science teacher happily moved classrooms to a second floor lab, with sinks and Bunsen burners—but beyond reach of the school internet signal. In another school, using reading differentiation, math simulations, and flipped chemistry, students working on any of those activities for class had to do them in the computer lab since the building had neither Wi-Fi nor hardware capacity for widespread classroom use. At yet another site, a teacher eager to show what she was doing in blended learning could not—because “the internet is down.” She reported sadly (and her teaching colleagues confirmed) that this was a frequent occurrence, but since the school was scheduled to move to a new building soon, the administration was unable (or unwilling) to invest further in the current site’s Wi-Fi capacity. In one school, bandwidth limitations meant that teachers needed to check each other’s lesson plans to avoid overloading the system.

While school-wide planning often was not (and perhaps need not have been) done in advance of initial baby steps toward blended learning—or by leadership teams alone—it quickly became apparent across schools that planning and purposeful support for blended learning needed to be incorporated deliberately and specifically into school-wide planning in facilities, finances, and faculty. All of the schools had moved to at least a Level 3 on the rubric in this element, and several leaders had taken their sites to a Level 4 or 5.

# Conclusion

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Across the day schools that participated in this research project, educators were moving forward to implement blended learning, and to make changes within the above-described eight elements. The most striking finding of this study was that—despite the wide range of variation in starting place, pace of change, and forms of practice—educators across schools, grades, and subjects displayed surprisingly strong agreement on what a “truly blended” school would look like, offer students, and require of faculty and staff. The continuum marks both a shared understanding and a common goal—further along than simply “technology-enhanced,” but not so far as “fully online.” In overall intent and direction, their consistency is strong.

In the details of program design, implementation patterns, and progress within the elements, their variation is just as striking. Each school begins with its own reasons, addresses its own needs, and builds on its own particular capacities. To the surprise of many, we did not find a particular element that offered the most advantageous starting point, or a particular order in which implementation should proceed. While new schools, for example, needed a high investment in school-wide planning well before they opened their doors, long-established schools could move forward by enabling early adopters to take the lead, encouraging them to experiment with technologies and teaching techniques—and then developing the detailed planning and support needed to expand.

While there was no set order for which elements schools should start with, we did observe interactions and interdependencies (and some overlap) among the eight elements. For example, advances in one element could be constrained by delays in implementing other elements (e.g., teachers found efforts to do more effective *differentiating instruction* limited if they did not have access to *diagnostic data use* to guide them).

On the other hand, when schools pushed forward immediately to use *diagnostic data* in classrooms, this was of limited use if teachers lacked access to a *variety of mode and media* to make

anything more than the simplest changes in reading groups or extra practice time. An ambitious early adopter teacher *shifting her role* to become a designer/facilitator is likely to stall without school-wide planning and support. At the same time, a *school-wide plan* is not much use unless teachers are willing to shift their *teacher roles*, and to use the new tools in a variety of modes. This is where systems thinking becomes particularly useful; because each element is part of the complex educational ecosystem of a school. Taking any element in isolation—without considering its implications for and interdependencies among other elements—can lead to unanticipated stalling, and sometimes even spectacular fails.

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## The continuum marks both a shared understanding and a common goal.

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With room for local adaptations, carefully considered efforts across the eight elements, accommodation for variations in teacher interest and capacity, and considerable patience as they wait for programs to attain the high standards they've set, the day schools are making considerable progress in moving forward. They describe “truly blended” schools, as one staff member put it, as “not using technology for technology’s sake.” Instead, they view it as using new tools to leverage larger school and classroom improvement, create new benefits for students, better prepare students for 21st century lives and careers, and move their programs forward within the context of sustainable costs and tuition models.

The path is long, and the schools’ leaders and educators readily acknowledge that they still have a long way to go. But overall, their direction and commitment to keep moving are clear. Blended learning, this study concludes, has much to offer day schools, and day schools have much to teach the broader field about implementing blended learning.

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USA

The AVI CHAI Foundation

1015 Park Avenue

New York, NY 10028

Phone: 212-396-8850

Fax: 212-396-8833

E-mail: [info@avichaina.org](mailto:info@avichaina.org)

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Israel

Keren AVI CHAI

44 King George Street

94262 Jerusalem

Phone: 02-621-5330

Fax: 02-621-5331

E-mail: [office@avichai.org.il](mailto:office@avichai.org.il)

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[www.avichai.org](http://www.avichai.org)