SylvanSync™:

A Digital Teaching Platform, Version II

A White Paper

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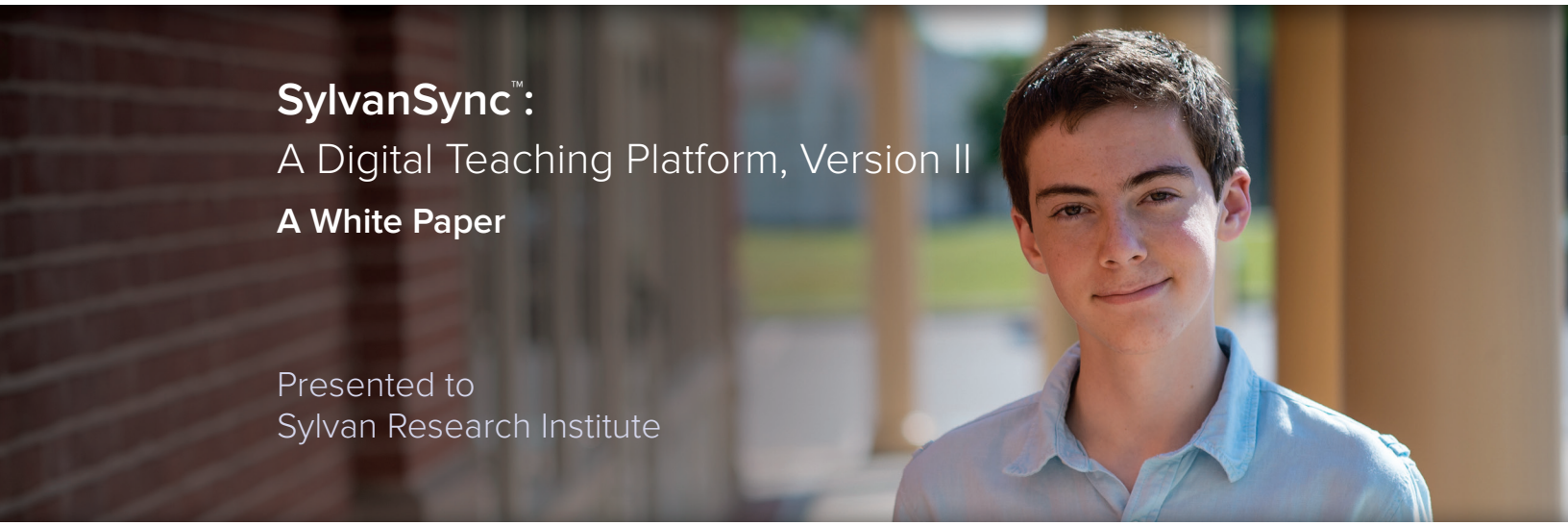

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Presented to
Sylvan Research Institute

About the Authors

Chris Dede, Ed.D., is the Wirth Professor in Learning Technology at Harvard Graduate School of Education in Cambridge, Massachusetts. His fields of scholarship include emerging technologies, policy, and leadership. His current research includes grants from the National Science Foundation, Qualcomm, the Gates Foundation, and the U.S. Department of Education's Institute of Education Sciences, to explore immersive simulations and transformed social interactions as means of student engagement, learning, and assessment. Chris has served as a member of the National Academy of Sciences Committee on Foundations of Educational and Psychological Assessment and a member of the 2010 National Educational Technology Plan Technical Working Group. In 2007, he was honored by Harvard University as an outstanding teacher, and in 2011 he was named a Fellow of the American Educational Research Association.

John Richards, Ph.D., is the President of Consulting Services for Education, Inc. of Newton, Massachusetts and Adjunct Lecturer at the Harvard Graduate School of Education, teaching a course entitled "Entrepreneurship in the Educational Marketplace." John has been a leader in the educational technology industry for more than 25 years. At CS4Ed he provides strategic planning, market research, and business solutions for the education technology industry. Previously, he was the President of The JASON Foundation for Education, General Manager of Turner Learning—the educational arm of Turner Broadcasting, and Manager of the Educational Technologies Division at the research and development company Bolt Beranek and Newman. His most recent book (with Chris Dede) is *Digital Teaching Platforms: Customizing Learning for Each Student* (Teachers College Press).

SylvanSync™:
A Digital Teaching Platform

SYLVANSYNC

SylvanSync is an integrated technology platform that is being developed by Sylvan Learning, Inc. ("Sylvan Learning") to provide digital resources to support teaching and learning in ways that are appropriate for students of today. This platform helps teachers motivate, engage, and instruct students in a highly individualized manner. The SylvanSync platform helps track student progress, identifies the most appropriate learning resources for each student, and removes much of the administrative burden associated with more personalized approaches to instruction. Results from initial field research on SylvanSync were positive and consistent. SylvanSync students made gains on the STAR Reading and Math assessments from their original diagnostic assessment that exceeded expected gains. (Rockman et al, 2013a).

SylvanSync is designed to support the teacher in a distributed-cognition implementation, with people and technology in an intellectual partnership. This is in line with new trends in the industry. Teachers and students use their strengths and skills to form a partnership for learning. SylvanSync supports both the teacher and the student by providing an integrated assessment and learning technology platform that personalizes the experience for each student and provides rich forms of content and feedback. This is an example of a new form of educational technology called a "Digital Teaching Platform" (DTP) (Dede & Richards, 2012). This paper analyzes the research behind DTPs and examines how SylvanSync exemplifies this new kind of pedagogy.

TRENDS IN TECHNOLOGY

Ubiquitous Computing Environments

According to the U.S. Department of Education, every classroom in the country now has Internet connectivity, and the student-computer ratio is moving closer to one-to-one (Snyder & Dillow, 2011). A new movement, "Bring Your Own Device" (BYOD) is sweeping the nation. By modifying policies and putting in place procedures for securing computers as students log on to a school's infrastructure, districts are addressing the need for digital curricula while preserving privacy, safety, and security. In a few years, this trend will place the country on the verge of one-to-one computing in schools that complements students' ubiquitous access to technology in the rest of their lives (Dede & Bjerede, 2011).

At the same time, online learning is supplementing or even replacing classroom activities in a variety of ways. Christensen, Horn, & Johnson (2008) predict that 50 percent of all high school classes will be online by the year 2020. Studies show that blended learning (face-to-face plus online) is more effective than either face-to-face only or online only (Bonk & Graham, 2005). This emerging technology-rich environment offers both challenges and opportunities for education. The concept of a Digital Teaching Platform can help educational entities turn the challenges of the technology into opportunities through empowering teachers to personalize learning to address individual students' needs and interests.

Building on Students' Learning Strengths and Preferences

Today's students have been described as having an information-age mindset, being referred to as Millennials, Digital Natives, and the Net Generation. While this portrayal of generational learning strengths and preferences can be oversimplified, the technology and media used by children during their formative years do have an influence on how they learn, as do the media used by adults. As Green & Hannon (2007) argue, "...the use of digital technology has been completely normalized by this generation, and it is now fully integrated into their daily lives" (p. 10).

The Internet is a constantly evolving infrastructure that now supports many media, including such disparate applications as "groupware" for virtual collaboration; asynchronous threaded discussions; multi-user virtual environments; videoconferencing; and mobile, location-aware wireless devices with embedded location-aware capabilities (see, for example: http://community.educationworld.com; http://www.curriki.org; http://ecomuve.gse.harvard.edu; and http://ecomobile.gse.harvard.edu). Research indicates that each of these media, when designed for education, foster particular types of interactions that enable various learning strengths and preferences (Dieterle, 2009). For example, shy students who are typically silent in face-to-face settings often "find their voice" in online dialogues. Students who think slowly but deeply, as well as learners who are not native speakers of English, benefit from asynchronous online interactions that provide time for reflection and interpretation.

DIGITAL TEACHING PLATFORMS

The Digital Teaching Platform (DTP) is a new educational product category that provides the primary instructional environment in today's technology-intensive learning environments. Unlike prior comprehensive curriculum and assessment products that were designed to replace the teacher, a DTP is designed to incorporate and support the teacher, while serving as the primary carrier of the curriculum content. It supports the teacher with a suite of integrated tools for curriculum planning, student management, and student assessment.

The DTP's combination of computer-student-teacher interaction is a "distributed-cognition" system that takes advantage of the benefits of technology and the skills of the teacher. The DTP encourages students to take on greater responsibilities in learning.

The technology:

- **Motivates and engages student.** It presents well-designed learning experiences and provides frequent feedback on progress. This can enable students to enter a "flow" state that builds their motivation and focus (Csikszentmihalyi, 1991). Coupled with a well-prepared teacher, technology can engage students in their learning and, over time, build long-term intrinsic interest in the content they are mastering (Lepper & Henderlong, 2000).
- **Expedites and improves assessment.** In the past few years, sophisticated technologies are enhancing our ability to customize instruction through adaptive testing and ongoing formative evaluation. Effective embedded assessment is enabling substantial gains in students' mastery of material while lowering the amount of time needed to accomplish this level of performance (Feng, Heffernan, & Koedinger, 2009). In addition, the National Science Foundation has recognized the promise of this approach and is funding a Pittsburgh Science of Learning Center to realize this opportunity (www.learnlab.org).
- **Personalizes learning.** Recent developments in technology-supported assessments make it possible to obtain reliable insights into students' academic needs more accurately, and in less time than was possible with traditional, paper-based static assessments. These

advances also make it possible for teachers to ensure that students are engaged with learning experiences designed to address their unique needs. Teachers can continuously monitor student's performance and adaptively challenge students with learning opportunities at the appropriate level. These are activities that mirror those of skilled tutors who produce very substantial learning gains (Bloom, 1984).

- **Facilitates application of learning and the building social networks.** The 2010 National Educational Technology Plan (U.S. Department of Education, 2010) documents how social media and learning communities can enhance students' motivation and performance. These tools and infrastructures offer teachers exciting new possibilities to promote creativity, collaboration, and sharing. These are core skills for all students in the twenty-first century's global, knowledge-based innovation economy (Araya & Peters, 2010). Providing intrinsic motivation to play, and therefore to practice, is an important feature of the eLearning games to be incorporated in Digital Teaching Platforms. It enables students to participate in online games or in other activities where they apply and extend the skills they mastered in the learning center (Salen & Zimmerman, 2005). Students are more highly motivated in this type of learning because the experiences provide autonomy and choice (Ryan & Deci, 2000). In her review of the literature on educational games, Dondlinger (2007) found that all researchers agreed that, "… motivation to play is a significant characteristic of educational video games" (p. 22–23).

  Moreover, Pivec & Pivec (2008) reviewed the games literature and found that "skills, knowledge, and attitudes can be improved by means of Game-Based Learning …given the right environment" (p.1). The eLearning games have the potential to continually engage the student in the kinds of practice activities that will improve their skills (National Research Council, 2011).

The teacher:

- **Builds a relationship with the student based on trust and respect.** This is an example of effective apprenticeship learning that encompasses intellectual, emotional, and collaborative dimensions (Collins, 1991). The teacher focuses specifically on each student's individual needs and provides appropriate coaching and scaffolding.
- **Monitors student progress and engagement.** The presence of a thoughtful, well-trained educator can elicit inspiration and fuel a desire to succeed in ways that cannot be replicated through computer delivery alone (Derry & Potts, 1998). The face-to-face, one-on-one teaching environment is an ideal situation for learning, and a good teacher can use the personal relationship to reach a student who has grown uninterested or jaded. It is the teacher who can see the spark of understanding or the seed of doubt, and then immediately set to work to take a student to a higher cognitive level.
- **Provides direct instruction on skills when appropriate.** The embedded computer-assisted assessment allows the teacher to focus on areas where the student is struggling. The software provides access to appropriate curricular materials that are designed to address these specific needs.

The student:

- **Demonstrates their understanding and eventually their mastery of skills.** The system continually adapts so that the student is challenged, yet not frustrated. Guided by the teacher, the system provides direct instruction through independent practice and mastery tests.
- **Uses feedback from the technology and the teacher to improve.** Motivated by the teacher and an engaging curriculum, the learning process requires that the student pay careful attention to the insights provided.
- **Asks for guidance as needed from the teacher.** It is critical for the student to strive to reach the point when constant outside assistance is no longer necessary.
- **Takes ultimate responsibility for learning the material.** The natural goal for all instruction is for the student to have command of the material, and ultimately to learn to learn. This requires thoughtful, committed effort. The practice and learning must go beyond the directed learning in the center, to extend their learning in online activities wherever they are.

Digital Teaching Platforms build on and synthesize these affordances. No current DTP fully realizes the potential of all these new capabilities, which are still emerging, but this is a very promising evolutionary path for instructional technology and classroom assessment.

In summary, SylvanSync is an example of a Digital Teaching Platform (DTP), a new educational product category that effectively provides an innovative type of primary instructional environment made possible by today's technology-intensive learning settings. This paper examines the trends and research supporting the use of DTPs such as the SylvanSync system.

SYLVANSYNC AS A DIGITAL TEACHING PLATFORM

The Dynamic of the Tutoring Interaction

As described above, a DTP is designed to support the teacher, carry the curriculum, and personalize student work. The DTP has significant implications for Sylvan Learning because of Sylvan's 30-year focus on individualized learning. For Sylvan Learning, its digital teaching platform, SylvanSync, is used to motivate and engage students in ways that are appropriate for the twenty-first century. SylvanSync uses assessment data to customize the learning experience as it integrates teacher-led instruction with digital content and online experiences. SylvanSync places the student at the epicenter of his/her own learning ecosystem—parents, schools, in—center, and home—all of which are in sync with a student at the center. This is critical to Sylvan's commitment to addressing the supplemental learning needs of the students it serves.

Assessments

As discussed above, a prerequisite for a personalized learning experience is adaptive computer-assisted assessments. Traditionally, in a Sylvan Center, much of the teacher's time is focused on the administrative details of the ongoing monitoring of a student's learning, and on adjusting the experience to address the student's progress to ensure that each student is provided with appropriate content challenges and support. SylvanSync provides a natural connection between assessments and the content. This eases the bureaucratic load on the teacher and allows the teacher to focus on interactions with the students.

Sylvan uses several different diagnostic assessments to understand each student's initial needs. To assess a student's skill set, Sylvan has partnered with Renaissance Learning and is using the STAR Reading Enterprise and STAR Math Enterprise tests. These computer-adaptive, Common Core aligned tests are norm- and criterion-referenced tests of a student's academic skills in reading and math. The Student Outlook Survey is used to assess noncognitive factors, or student mindset. Recent research has shown that these noncognitive factors play an important role in student learning (Rockman et al, 2013). The Student Outlook Survey is comprised of three scales for students in grades K–5: academic perseverance, academic self-confidence, and school engagement. For students in grades 6–12, a fourth scale, valuing school, is also included. Progress assessments are administered every 24 sessions to validate student progress.

Ongoing assessments, in the form of independent activities and mastery tests are all embedded within the instructional flow that is used by the teacher and the student in this distributed–cognitions system.

Personalization

The customization of the learning experience starts with understanding each student's needs and interests in relationship to what the student is expected to know at a specific instructional level. The SylvanSync system is empowered by an integration of the formative assessment system with the curriculum materials based on implementing "learning progressions" (Confrey & Maloney, 2012). Sylvan uses learning progressions as a systematic and coherent way of organizing content and as a basis for their adaptive backbone. The results of the STAR tests have been used by Renaissance to create empirically validated learning progressions that are mapped to Common Core State Standards (Renaissance Learning, 2013; Renaissance Learning, 2012). Sylvan has mapped its Common Core aligned content to Renaissance's learning progression to create its own learning progressions in reading and math.

SylvanSync uses the results of the STAR tests to place students at a starting point on Sylvan's learning progression. Once on the progression, a student's ability to master content determines which content a student receives and in what order. If a student demonstrates competency with a specific skill on a pretest, or by completing instructional tasks, he/she will move forward on the progression. If a student cannot master a particular skill, then he/she will receive instruction in prerequisite skills and thus move back in the progression until he/she has mastered the prerequisite skills. In this manner, students receive the instruction they need, when they need it. This dynamic process provides a personalization of the learning experience. As noted in a recent study by the Parthenon Group (2011), "Personalized learning is necessarily faster, accelerated learning, and ideal for students who have fallen behind." At the same time, the Sylvan teacher can monitor student performance and provide targeted support where the student is having difficulties or using suboptimal strategies.

The Role of the Teacher

Sylvan teachers are trained to motivate students by engaging with them one-on-one around the technology-based content and the student-specific learning experience. Teachers provide immediate and direct feedback to students in the form of verbal praise, eye contact, and tokens, which can be exchanged for rewards. Teachers use the results of Sylvan's embedded assessments to stay focused on each student's immediate needs. Teachers communicate with the student quickly, to address issues as they arise. The SylvanSync technology helps teachers understand where students are in their learning progression,

so that they can know when to mentor, when to teach, and when to listen. Teachers help to build students' beliefs that, through effort, they can master challenging knowledge and skills. The intense interaction with the teacher is a critical part of the Sylvan Learning approach, which is enhanced and expanded by SylvanSync.

THE ROLE OF THE mySYLVAN WEB PORTALS

Anytime, Anywhere Learning

SylvanSync will continue to use the mastery model of instruction and focus on basic skills development, as Sylvan has done for decades. However, as a new dimension to this process, the mySylvan portal enables Sylvan to extend learning outside the learning center, making Sylvan Learning available anytime, anywhere. Initially, mySylvan provides enhanced communications with students, parents, and others involved in helping students achieve their academic goals. It keeps everyone up-to-date on student progress and provides additional resources and activities for students and parents, as well as important tips for parents on how to help their child. mySylvan also provides students the opportunity to extend and apply the skills learned in the Sylvan Center through participation in related web-based games, social networks, and other online opportunities that were described previously.

RESULTS OF THE FIELD RESEARCH

From November of 2012 through May of 2013, Sylvan conducted a field trial of the latest version of SylvanSync. This version included new content in reading and math that aligned to the Common Core State Standards and that leveraged a sophisticated adaptive backbone based on an empirically validated learning progression. Nineteen Sylvan centers in Baltimore and Minneapolis participated in the field study and in May of 2013, the independent research firm, Rockman et al, analyzed the academic achievement data for 319 students in grades K–8 who were enrolled in SylvanSync math (170) or reading (149). Students in the study sample attended, on average, 30 instructional sessions over approximately nine weeks. The results from the study are very promising.

Using Growth Norms developed by Renaissance Learning, Rockman was able to compare these students' actual academic growth over approximately nine weeks to the academic growth that would be expected as a result of typical classroom instruction without special intervention, or what Renaissance calls "moderate" growth.

Of the 162 **math** students in the sample, 77% made expected academic gains, and 60% exceeded the expected gains. In **reading** the results for the 149 students were similar. Over 80% made expected gains, and 71% of the students exceeded expected gains. (Of the 170 math students, 8 were in kindergarten, and there are no growth norms available for kindergarten students.)

In **math**, there was an overall growth of almost 44 scaled score points on average, which was twice the expected growth of 19.8 points. Overall, students in **reading** actually grew 65.7 points, while expected gains were 23 points. Actual gains were almost three times as great as the expected gains (Rockman et al, 2013a).

SUMMARY

SylvanSync is an application of a Digital Teaching Platform that is currently operational at Sylvan Learning. SylvanSync combines the implicit strengths of Sylvan's great teachers with the personalization capabilities of state-of-the-art technologies and the capacity to learn of an engaged, motivated student. This distributed-cognition implementation provides an environment that maximizes the student's ability to learn.

The teacher maintains the human element in teaching and learning. The technology provides the ability of embedded assessment to generate continuous diagnostic information, tied directly to specific prescriptive suggestions that are then mapped into the strengths of the curriculum. This loop provides an efficient learning mechanism.

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