Learning Enlightening Reinforcing Trying Explaining Comprehending Sharing Inspiring Relating CONNECTING Communicating Discovering Writing Debating Discussing Thinking Questioning Perceiving Anticipating LEARNING Weighing Personalizing Reinforcing Galvanizing Dreaming Edifying Spurring Building Experimenting Organizing Planning Finding Modeling Describing Assuring Savoring Explaining Apprising Discovering Provoking Helping Uniting Conceiving Debating Fostering Observing Challenging Intriguing Responding Implying Risking Creating Dreaming Transforming Engaging Mastering Reasoning Cogitating Sharing Predicting Strategizing Listening Discerning Relating Stretching Pondering Reflecting Galvanizing Individualizing Asking Contemplating Informing Enjoying Relishing Deliberating Speaking Describing Energizing Accomplishing Reading Learning Enlightening Reinforcing Trying Explaining COLLABORATING Comprehending Sharing Inspiring Relating Communicating Discovering Writing Debating Discussing Thinking Questioning Perceiving Anticipating Weighing Personalizing Reinforcing Galvanizing Dreaming Edifying Spurring Building Experimenting Organizing Planning Finding Modeling Describing Assuring Savoring Explaining TRANSLATING Apprising Discovering Provoking Helping Uniting Conceiving Debating Fostering Observing Challenging DISCOVERING Intriguing Responding Implying Risking Creating Dreaming Transforming Engaging Mastering Reasoning Cogitating Sharing Predicting Strategizing Listening Discerning Relating Stretching Pondering Reflecting Galvanizing UNDERSTANDING Individualizing Asking Contemplating Informing Enjoying Relishing Deliberating Speaking Describing Energizing Accomplishing Reading Learning Enlightening Reinforcing Trying

Reaching the
National Educational Technology Standards
(NETS) with ePals

ePals

From headlines to checkout lines, public discourse about education seems to inevitably converge on significant questions about whether our students (or their teachers) are being prepared for real life in the 21st century. Technology seems to have infiltrated virtually every aspect of life, except for what happens in the average school classroom. When present in schools, technology is often used mechanically, for word processing or simple searches. For two decades, the education profession has pursued a goal of "integrating technology into the classroom" with little more than incremental results. The Digital Age, however is about quantum, rather than glacially-paced, incremental change. Hence, calls for transformation arise from many quarters of society, as shown by the Partnership for 21st Century Skills[1], Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future[2], and a host of other corporate, governmental and media reports.

But a quiet revolution is progressing that has the power to reshape the behaviors that, until now, have kept classroom performance and substantive technology use flat-lined (NAEP, 2004, 2007[3]; Partnership for 21st Century Skills, 2004[4]). By participating and collaborating in the ePals global community, and systematically employing its communication and collaboration tools and curricula, students and their teachers can truly bring digital age learning to life in classrooms. At the same time, learners and educators build pathways to mastering the ISTE National Educational Technology Standards for both Students (NETS-S) and Teachers (NETS-T).

Defining What Needs To Be Done: NETS for Teachers and Students

With the 2008 launch of NETS-T, the "upgrade" of educational technology standards is two-thirds complete. (The refreshed set of administrator standards will be unveiled in 2009). **Articulating these standards is a critical first step, but the real test will be to ensure that they are implemented.** This will be especially challenging with the new NETS-T because they stem from the following premise: *Effective teachers model and apply the National Educational Technology Standards for Students (NETS-S) as they design, implement, and assess learning experiences to engage students and improve learning; enrich professional practice; and provide positive models for students, colleagues, and the community.*

The recently released NETS-T breaks new ground, explicitly challenging educators to employ 21st century pedagogy, using 21st century tools, within a global context. **The new emphasis on creativity, communication and collaboration raises the bar for the types of learning experiences all students will have**, questions how these

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[1] Partnership for 21st Century Skills: http://www.21stcenturyskills.org/

[2] National Academy of Sciences, http://www.nap.edu/catalog.php?record_id=1146

[3] National Assessment of Educational Progress, http://www.nces.ed.gov/ltt;
http://www.nces.ed.gov/nationsreportcard/reading/

[4] Partnership for 21st Century Skills: http://www.21stcenturyskills.org/

experiences will reinforce the "rigor, relevance and relationships" called for in various school reform initiatives[5], and makes it imperative that we move beyond the decontextualized assessments that have typified "high stakes" testing, replacing "teaching to the test" with "preparing for real life as the operant goal." Although gaining digital fluency poses different challenges for teachers and students, communicating and collaborating online in safe, secure and supportive communities of practice represents the environment required to transform education. The characteristics of 21st century pedagogy, as defined in a recent whitepaper[6] by Cisco's Global Education group, includes: placing the learner at the center, teachers drawing from a repertoire of strategies and skills, interdisciplinary and project-based work, and authenticity.

ePals: Where Learners Connect™

ePals brings to the table a dozen years of pioneering leadership in a key area of 21st century skills that centers around responding to the challenges posed by the new NETS-T standards. Founded in 1996 and merged with In2Books in 2006, ePals offers K-12 students and teachers around the world a safe environment for building and exchanging knowledge based on protected connectivity tools, evidence-based curricula, and authentic, collaborative learning experiences. The ePals Global Learning Community™ (www.epals.com) is the largest online community of K-12 learners, enabling half a million educators and millions of students across 200 countries and territories to safely connect, exchange ideas, and work together. **The company's mission is to support lifelong learning through collaborative experiences that empower and inspire.** A special focus of ePals is to empower the most economically disadvantaged students throughout the world with academically rigorous learning experiences. This is accomplished in a number of ways, including through low cost computing initiatives such the Intel powered Classmate PC and the One Laptop Per Child program [OLPC], where ePals connects students in developed nations with students in marginalized developing nations (eSchool News, 2008). Also, In2Books, ePals' flagship literacy program, is available for free to Title I classrooms. Finally, ePals has also partnered with the New Partnership for Africa's Development Council to connect schools with the ePals global community (eSchool News, 2008).

The ePals projects and curricula cover a wide range of timely, content-rich, interdisciplinary topics. They are based on Vygotskian principles of modeling and apprenticeship that have been shown to significantly improve comprehension, writing, and other literacy-related skills. Through its In2Books curriculum, ePals nurtures analytic thinkers by having students read, write, and think about real-life situations with an intellectual e-Mentor (e.g. an adult pen pal) who is a central part of the experience. In2Books has built a research-based model for improving literacy, critical thinking and subject matter understanding. Instruction focuses on genre and content area study, informed book choice, and genre-related literacy strategies for comprehension, vocabulary, fluency and writing. Research results have shown that

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[5] SREB http://www.sreb.org/programs/hstw/Outstanding/op2004.asp

[6] Equipping Every Learner for the 21st Century http://www.cisco.com/web/about/citizenship/socio-economic/docs/GlobalEdWP.pdf

students involved in the In2Books curriculum perform statistically better on standardized reading tests than peers not taking part in the program and have an increased interest in learning[7,8].

The pedagogical principles shared by ePals and the NETS are significant and mutually reinforcing. While the NETS involved thousands of educators focusing on what students should know and be able to do in the digital age, as well as on what skills and knowledge teachers require to guide such growth, **ePals draws on the daily experiences of more than half a million educators in 200 countries and territories who are making digital learning come to life for their students**. Moreover, examining the kinds of challenging, authentic, and supportive environments ePals provides to develop reading, writing and critical thinking skills can help us deepen our understandings of how to overcome the challenges posed by the new national technology standards for teachers and realize their implementation.

Getting to Transformation: ePals and the NETS

It is important to remember that the NETS (both for students and teachers) are not linear, but are recursive. Each reinforces the other, and may be returned to several times over the course of any particular project. They only seem linear here because we are using print as our medium! Accordingly, we explore the five NETS-T goals in contexts that demonstrate how the communication and collaboration capabilities of ePals support the development and mastery of these skills. Let's look at what ePals has learned about charting practical paths to NETS goals for students and their teachers.

NETS-T 1. Facilitate and Inspire Student Learning and Creativity

"Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments."

NETS-T 2. Design and Develop Digital-Age Learning Experiences and Assessments

"Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS-S."

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[7] Gambrell, L., Hughes, E., Calvert, W., & Igo, B. (2008). Authentic literacy tasks: Reading, writing, and discussion. Clemson, SC: Research Report Submitted to ePals/In2Books.

[8] Teale, W. H., & Gambrell, L. B. (2007). Raising urban students' literacy achievement by engaging in authentic, challenging work. The Reading Teacher, 60, 728-739.

In self-report surveys, teachers noted that they perceived their own inadequacy in adding technology into the curriculum[9,10]. **Providing children with rich learning experiences that involve technology is not likely to happen by accident**, and requires highly skilled teachers at the helm, including veteran teachers who may feel insecure about their own technology skills. To assist all teachers in this regard, ePals offers a place where teachers can go to develop such skills and see best practices modeled. **Project based learning is an effective strategy for creating meaningful activities that provide a meeting ground for core subject knowledge and its application through the use of 21st century skills. ePals provides a powerful and supportive environment for conducting digital age learning while simultaneously embedding professional development through actual case studies.**

ePals supports teachers by providing exciting authentic learning experiences on subjects of global interest and understanding, such as global warming, maps, habitats, water, and natural disasters. From the teacher's perspective, the projects are comprehensive (i.e., they include alignment with state and national content standards, lesson plans, related content and vetted websites, suggested culminating activities, and substantive informal assessment rubrics). Insofar as students are concerned, the projects promote deeper understanding of global issues, literacy and critically thinking by incorporating important elements and other genre related literacy strategies:

> **ePals Project Snapshot:**
> **Our World's Water**
>
> *When is water good to drink? In this project, students research the world's water problems, focusing on how their personal water use affects aquatic ecosystems in their communities. Students participate in email exchanges, exploring the global importance of water, particularly in their ePals' location.*

1. **Activating prior knowledge and building context**
2. **Genre study**
3. **Development of academic vocabulary**
4. **Asking and answering essential questions**
5. **A series of purposeful email exchanges**

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[9] Becker, H. (1999). Internet use by teachers: Conditions of professional use and te[...] Teaching, learning and computing: 1998 national survey. (Center for Research on In[...] Organization Report No. 1).

[10] Smerdon, B., Cronen, S., Lanahan, L., Anderson, J., Iannotti, N., & Angeles, J. (2000). Teachers' tools for the 21st century: A report on teachers' use of technology (NCES Publication No. 2000-102). Washington: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics.

With its match technology, ePals also makes it easy for teachers to find a partner classroom in a country of their choice to collaborate on:

a. **An ePals Project**
b. **Language practice**
c. **An original project**
d. **Cultural exchanges**

In addition, ePals eliminates the stress of locating and qualifying curriculum design and materials by providing educators with an abundance of high quality content and lessons relating to a particular subject. Educators benefit from powerful partnerships because, for example, ePals projects are anchored around content from National Geographic, providing direct access to primary sources of the highest quality. Teachers can select those elements relevant to their classroom needs and enjoy the experience and satisfaction of creating their own custom units. This process engages teachers in virtual authentic professional development experiences.

In a specific area like writing, ePals also offers teachers support in helping students use writing for purposeful subject area learning. In order to write effectively and meaningfully, students need to learn what they are talking about. This brings reading, research, and information literacy into an authentic context, where learning becomes deeper and more sustained. The NETS-S standard "Research and Information Fluency" is an essential skill that can explicitly be developed in completing ePals projects. Along with planning strategies to guide their inquiry, students involved in the projects are guided by the teacher in locating, organizing, analyzing, evaluating, synthesizing, and ethically using information from a variety of sources and media. Further, ePals projects provide opportunities for students to evaluate and select information sources and digital tools based on the appropriateness to specific tasks. In other words, students are not left to their own devices to "go beyond Google"; instead, they are scaffolded in ways that help them learn these strategies and skills.

It is significant that NETS-T standards 1 and 2 challenge both teachers and students to "go beyond" what is in the book, to generate new ideas, products, or processes, and to create original works. This focus on originality applies equally to arts and sciences. Burniske and Monke[11] remind us that "chief among the classroom practitioner's responsibilities while creating global, telecollaborative projects is the establishment of a forum for student expression, a forum that nurtures exploratory discourse rather than the recitation of homogenized thought" (p. 57). The intention of applying what is known in order to extend knowledge itself is a defining characteristic of powerful ePals projects. These projects often result in creative writing, videos, as well as simulations that explore complex systems and issues, or identify trends and forecast possibilities.

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[11] Burniske, R.W., & Monke, L. (2001). Breaking down the digital walls: Learning to teach in a post-modem world. Albany: State University of New York Press.

NETS-T 3. Model Digital-Age Work and Learning

"Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society."

This standard applies the power of "networked knowing." Classrooms may be the last remaining venue for the "sage on the stage" as almost every other domain in society has moved to a more socially constructed source for the knowledge that fuels growth. By encouraging teachers to bring these practices within the classroom walls, they open possibilities to strengthen learning in even more powerful ways, applying another ePals' experience: *Learning with another person, adult or peer, is deeply motivating and inspires individuals to reach further for understanding.*

ePals' In2Books program harnesses this lesson by providing an ideal community service opportunity for busy employees to make a real difference in the lives of children. Millions of children lack the literacy skills they need to succeed, and ePals uses cutting-edge technologies to connect students with volunteer eMentors who can help them meet this need. Adult pen pals model for teachers and students what it means to be "an innovative professional." In2Books curricula show how 21st century pedagogy unites a learning community of students, families, teachers, and pen pals. This continuous support network encourages members to share resources and learn from one another. It also develops personal relationships that challenge students intellectually, increase their personal and professional aspirations, and reinforce home and classroom learning experiences.

ePals Project Snapshot: Natural Disasters

In this project, students learn about the natural disasters of the world, particularly those most likely to occur in their ePals' country.

We can better understand the difference "real life" learning can make in classrooms by reflecting on the experience shared between ePals in Kansas and Sri Lanka, which tell a story of global sensitivity in response to natural disasters. This project, which partnered students in the two locations, began during the Tsunami tragedy in 2004. The exchange made the tragedy of the tsunami real to children in Kansas who live nowhere near water and therefore didn't understand tsunamis. Most children in Kansas initially learned about the tragedy by watching the news, listening to stories told by their teacher and families, or researching natural disasters including tsunamis. But by direct digital communication, students in Kansas learned from their Sri Lankan ePals about the causes of tsunamis, their destructive force and how water is used to generate electricity (in Sri Lanka electricity is generated through hydroelectric power rather than coal). Sri Lankans were curious about cyclones and storm cellars, having formed their mental pictures of Kansas from seeing "the Wizard of Oz." Following their exchange with Sri Lanka ePals, the Kansas students conducted a school supply drive for the Sri Lanka school.

Three years later, a tornado destroyed a Kansas town, wiping 95% of the town off the map. The children in Sri Lanka wrote to their ePals in Kansas after learning of the devastation on the news. Their letters showed great kindness and worry. These Kansas ePals were unharmed by the tornado, but the concern and

The NETS-S standard 2 places a premium on "Communication & Collaboration," which is essential for students to play their role in a global society. The ability to read, write, reason and speak is the gatekeeper to all other academic progress. In the 21st century, literacy takes on an expanded definition, one in which everyone must function as reader, author, editor, researcher, publisher and information professional at one time or another. Communications can take on more forms than ever before, and

students need to become fluent in each of them. Moreover, the comprehension and creative aspects of locating, interacting with and applying information in all forms are entry-level expectations of 21st century employers.

ePals has a unique feature to support cultural understanding and improved literacy through safe email exchanges with classmates around the world using the first student email system with built-in instant language translation (currently in 9 languages and 72 language pairs).

Research has consistently shown the benefits of student exchanges. Neilsen[12] notes that as students "composed questions for their keypals and wrote introductions of themselves, their literacy enabled them to extend their reach beyond the school and the curriculum as they knew it. Soon worksheets on vocabulary were abandoned for a chance to write to a real person they did not know and might never know, but who would write them back." (p. 136)

Lankshear, Snyder, and Green[13] noted the importance of the social nature of learning in connection with written language acquisition. "The more transparently we embed specific learning tasks in meaningful social practices, the more likely it is that learners will grasp not only the operational aspects but the important cultural and critical dimensions as well" (p. 138).

NETS-T 4. Promote and Model Digital Citizenship and Responsibility

"Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices."

If students are prevented from learning appropriate and safe digital behaviors in school, how can we expect them to fully take their place in society? The much-reported misuse of web 2.0 tools and social networks by teens centers on students who have not had appropriate instruction in safe, responsible practices in school. Instead, paralyzed by threats and fear, far too many schools withdraw to a "head in the sand" posture that in effect says "bad things may happen out there, but at least they won't happen here!" ePals provides a better alternative, by having developed processes and tools, combined with effective education, that helps students develop ethical behaviors, positive attitudes and leadership while learning to use information and technology safely, legally and responsibly. ePals incorporates the best of evolving technologies in a safe and secure environment. Students and teachers engaging in discussions in forums can find fully vetted related content through Explore More™, ePals' contextual search engine.

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[12] Neilsen, L. (1998). Coding the light: Rethinking generational authority in a rural high school telecommunications project. In D. Reinking, M. McKenna, L.D. Labbo, & R. Kieffer (Eds.), Handbook of literacy and technology: Transformations in a post-typographic world (pp. 129–143). Mahwah, NJ: Erlbaum.

[13] Lankshear, C., Snyder, L., & Green, B. (2000). *Teachers and technoliteracy: Managing literacy, technology and learning in schools.* St. Leonards, Australia: Allen & Unwin.

Teachers and administrators can determine who can read comments, posts, and emails. Educators can keep their students messages within the class, share them with other classes, their schools, or the ePals community, as they elect. By demonstrating their judicious control of the use of the service, teachers model responsible behavior for students.

Once this is in place, the NETS-S goal of "Digital Citizenship" for students to "demonstrate personal responsibility for lifelong learning" and "exhibit leadership for digital citizenship" becomes attainable, as they have been placed at the center of their own learning.

NETS-T 5. Engage in Professional Growth and Leadership

"Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources."

In sustaining its online professional learning community for over a decade, ePals has learned that effective professional development for teachers is authentic, ongoing and has real time relevance and specificity to what is happening in the classroom. Job embedded professional development, supported by coaching and mentoring, has been shown to be the most effective strategy for creating real change in classroom behaviors[14], resulting in 80-90% transfer, compared with 5-10% adoption from theory, practice or demonstration alone.

The NETS-S "Technology Operations and Concepts" standard provides a good starting place, as it makes possible the digital communities of practice that support ongoing professional growth. This skill set can be the easiest to achieve, as it only requires reflective practice. **When students and teachers discuss how use of the Internet, email, blogs, forums and other collaborative tools have contributed to the experiences that have allowed them to learn, every one of this standard's elements comes into focus.** They have the opportunity to select from tools that include multimedia capabilities (such as PowerPoint presentations and streaming audio and video), calendar, survey, and rich text editor capabilities, as well as searchable archives for easy access to past postings. Or, teachers can ask other teachers questions and seek resources through Ask An ePals Teacher. As teachers discuss issues and plan lessons, they are building their technological comfort and expertise.

ePals' Maps project provides opportunities to introduce emerging technologies including Geographical Information Systems (GIS), GoogleEarth, and other innovative technology tools. By investigating current tools, we can develop understandings of how our worldview expands through the creation and use of new tools (from compass to sextant to satellite).

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[14] Joyce, B., & Showers, B. (2002). *Student achievement through staff* development (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Conclusion: Now's The Time!

With the launch of NETS-T, the education profession is prepared as never before to embark on a transforming journey into digital age learning. The vision, research and capabilities now align to bring to scale benefits previously known only in the most innovative classrooms. Whether you are a classroom teacher, administrator, teacher educator, district technology coordinator, curriculum director, school board member, parent, business leader, or taxpayer, there is a vital role that only you can play. As the "tipping point" is reached—where transformation of education changes from Mission Impossible to Mission Inevitable, here's what you can do:

1. **Learn about NETS-T and NETS-S sufficiently to discuss them with co-workers, district administrators, and local and state education policy makers.**

2. **Hold your school board and district curriculum personnel accountable for implementing the NETS-T and NET-S.**

3. **Implement an e-Mentoring project like In2Books in your school and give students the experience of participating in a virtual community with adult mentors.**

4. **Become an e-Mentor – share your expertise with others.**

5. **Share your experiences with implementing successful Internet-based collaborative research projects for the benefit of other teachers.**

6. **Get involved yourself! Join and actively participate in the ePals global community by finding a classroom across the country or across the globe and collaborating on an ePals Project.**

Author Bios:

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Nina Zolt's work in education has focused on improving learning opportunities for all students in a digital age. She has extensive experience as an entertainment lawyer, digital media executive and designer of digital learning products. She is the founder of In2Books and the co-founder of ePals and the Chief Learning Officer of both. Currently, she is a member of the Washington D.C. Advisory Board of Directors for Teach for America and the Board of Trustees of the

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William H. Teale is Professor of Education at the University of Illinois at Chicago, author of over one hundred publications, former editor of Language Arts, and a member of the Reading Hall of Fame. His work has focused on the intersection of technology and literacy education, early literacy learning, and children's literature. He has served as consultant to organizations such as Children's Television Workshop, RIF, and Reach Out and Read and advised on productions like *Between the Lions* and the National Head Start Association *Heads Up! Reading* Program. He currently chairs the Academic Advisory Board of In2Books.

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