Integrating Instructional Technology into the Early Childhood Classroom: A Framework for Inclusive Planned Activities


The integration of instructional technology into inclusive early childhood classroom activities – activities that are directly connected to the curriculum – has often proved to be an elusive goal. Illinois State University colleagues Howard P. Parette, Jr. and Craig Blum, co-authors of the newly published preservice textbook Instructional Technology in Early Childhood: Teaching in the Digital Age (Brookes Publishing Co., April 2013) hope to make that goal easier to achieve by providing a framework designed specifically for early childhood teachers in inclusive classrooms. According to Dr. Parette, the framework offered by his textbook may be the first of its kind.

“To the best of our knowledge ours appears to be the only framework that presents the connection between learning standards and the instructional benchmarks for a planned activity. [Our framework] identifies the technology and the instructional strategy to support the use of that technology, paired with assessment methodology so that an outcome is assured.” His textbook, he says, emphasizes “the thoughtful use of the technology as opposed to experimentation without a clear connection to learning objectives.” The end result, he says, is the ability to assess the effectiveness of technology tools in the curriculum.
In their book the co-authors write that their framework is based on early childhood education best practices and current understanding of curriculum standards, instructional practices, universal design for learning (UDL) principles, assessment strategies used to document instructional effectiveness, and an understanding of the emerging role of technology in current classroom settings.

“We field-tested the framework for two years at Illinois State with early childhood majors,” Dr. Parette notes. “We created a unique course specifically for them to test this framework. We’ve tweaked the process and our understanding of it. Our students have developed a clear understanding of the framework and how to meaningfully include students with disabilities in planned activities. That’s a major development, from my perspective, and it’s the reason why our framework is the linchpin of our book.”

The Framework: A Method Developed from Evidence-based Principles

The authors’ framework provides teachers with a formal method of connecting instructional technology to the curriculum instead of relying on an improvised approach. The framework, Dr. Parette notes, encompasses characteristics that distinguish developmentally appropriate programs that integrate technology into their curricula. Such programs, he points out, include technology-supported learning experiences and activities “that are high-quality, have curriculum modifications and adaptations, include embedded learning opportunities, and use explicit, child-focused instructional strategies.”

In creating a developmentally appropriate, technology-supported learning environment, he asserts, teachers assume roles as primary decision makers and problem solvers. “They are the day-to-day designers and implementers of planned learning activities for all children, as well as the primary problem solvers and assessors of children’s performance. These roles are especially important in the process of thoughtfully integrating technology into the early childhood classroom.”

He cautions, however, that even with the most carefully planned classroom activity there will be steps in the activity that children with disabilities cannot perform. Therefore, he explains, “we’ve included a basic problem-solving process through which teachers can break down planned activities via a human demands approach. Every planned activity
consists of steps with do demands – physical demands that are placed on a child. Say demands include an obligation to communicate; remember demands require mastery of a sequence of steps in a planned activity, a routine sequence, or facts.” Using this process, which the authors have dubbed SOLVE IT, “teachers can systematically break down every step in an activity and compare what they know about the child to the expected demands, gaps, or discrepancies.” This is where AT, or partial participation, comes into play by “enabling even children with disabilities, for whom we have planned in advance if we know about their disabilities and the technologies they use, to participate. But there are unanticipated gaps in any planned activity. That’s what our framework is about: helping these children to be included in a meaningful way.”

**EXPECT IT: Making the Connection**

The authors’ early childhood planned activity framework, Dr. Parette explains, consists of the following processes, or steps, in addition to SOLVE IT:

- **EXPECT IT** – connecting to standards and learning objectives
- **PLAN IT** – designing the planned classroom activity
- **TEACH IT** – implementing the planned activity

Before any instructional activity can be considered, says Dr. Parette, a connection must be established with the learning standards associated with a curriculum. EXPECT IT establishes that connection. Many opportunities exist to address learning standards in a typical early childhood classroom, Dr. Parette notes. Although learning standards are typically printed in published curricula used by early childhood programs, they are also accessible on websites maintained by State Departments of Education. “Teachers must understand these standards and the associated learning objectives in the curriculum prior to the development of any planned classroom activity,” Dr. Parette cautions. From their book, the authors offer the following illustrations of EXPECT IT in action:

_Mrs. Hears, a preschool teacher in Illinois, examines her curriculum guide to plan prereading activities that will be part of circle time (large-group instruction) for the week. Because it is the beginning of the school year, the students are just beginning to develop emergent literacy skills, and Mrs. Hears knows that the language arts section of her_
curriculum guide emphasizes development of early reading skills. The first standard in the language arts section of her curriculum focuses on application of word analysis and vocabulary skills. She also notes that five benchmarks, or learning objectives, are listed beneath the standard. Knowing that she must choose from among these learning objectives before designing her planned reading activity for circle time, Mrs. Hearns decides that she will focus on two learning objectives: 1) Identify some letters, including those in their own name, and 2) Make some letter–sound matches. Now that this decision has been made, Mrs. Hearns can move forward with the next phase of technology integration.

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After Mr. Bivens examines the language arts curriculum guide for his kindergarten class, he selects two learning objectives that require his students to listen to a recorded story, recount the elements of the story, and then answer questions about the story. Mr. Bivens can now make other decisions to plan his technology-supported classroom activity.

### PLAN IT: the Framework’s Core

The framework’s core phase, PLAN IT, which follows the EXPECT IT curriculum connection, consists of three components:

- **TECH IT** – selecting technologies to be used in a planned activity
- **ARRANGE IT** – deciding on groupings and instructional strategies to be implemented
- **CHECK IT** – deciding upon the method of assessment for a child’s in-class performance

Dr. Parette emphasizes that the framework’s focus is on education, but describes technology’s key role. “The selection and utilization of appropriate technology powers the effectiveness of our framework.”

The authors again utilize “Mrs. Hearns” and “Mr. Bivens” to illustrate a teacher’s thought process in technology selection and classroom implementation:

Because her learning objectives focus on letter identification and letter-sound matches, Mrs. Hearns decides that she will use a Starfall.com activity to address recognition of letters and sounds associated with four phonemes: /b/, /p/, /k/, and /d/. These activities
engage the children as the animation and sounds prompt them to follow along, pronouncing the names of letters and sounds along with the recording. She also wants to use PowerPoint slides that would allow her to use animation, recorded sounds, and Boardmaker symbols in her planned activity. Mrs. Hearns can use her computer and digital projector to show them on her wall-mounted screen. She will also use a word processing program to create response cards with the letters b, p, c, and d. The cards will be laminated, and each student in the class will have a set.

Mr. Bivens wants to read The Very Hungry Caterpillar to his class during opening circle, and he knows that several versions of the book are available on YouTube in engaging video formats. He also searches the SMART Activity Exchange, which has many teacher-developed activities categorized by standards, content, and grade level. He finds numerous SMART Notebook lessons for this story, which he can simply download and use with his SMART Board. He chooses one that includes recounting and comprehension questions that will allow students to physically manipulate pictures on the SMART Board screen to demonstrate their understanding of the elements and sequences in the story. Both Mrs. Hearns and Mr. Bivens chose several familiar technologies to support their planned activities. They relied both on available software and other instructional technologies in their classrooms, as well as already-developed materials available on the Internet.

TECH IT: the Need to Overcome Barriers to Technology Integration

While the book’s descriptive scenarios are based on “best practices” among educators, Dr. Parette and his colleague remain concerned about the barriers that keep such practices from being more widely implemented. One such barrier is the lack of sufficient preservice technology training in education programs. Although early childhood teachers entering the workforce may be masters of emerging technologies for personal use, they often lack the knowledge and skills needed to effectively select and use instructional technology tools in their classrooms. In fact, as the authors discuss in the book’s opening chapter, the technology aptitude and comfort level of young children entering school may outstrip the ability and confidence levels of their teachers.

“With the increasing use of smartphones and held-held devices we have new technologies, particularly apps, that are easily available,” declares Dr. Parette. “Smartphones and tablets, because of their popularity, present us with an array of tools that can be
downloaded and used.” The result, he adds, “is that when children arrive in school they have already had exposure to these tools or they use them often at home.” The problem, however, “is that because of the marked logarithmic growth in availability, preservice programs have been unable to keep pace with the evolutionary changes in technology and make decisions about effective practices and how best to prepare future teachers to utilize these tools to support instruction.” In many instances, he continues, “our institutions of higher learning are way behind the curve regarding the impact of technology in public school settings.”

Even though recent textbooks and articles have covered technology use in early childhood settings, he notes, “I’m saddened that they fail to connect instruction and assessment to the features of mobile technology tools. Discussion of that connection is needed now. How do we integrate technology effectively into the curriculum as opposed to [providing] simple descriptions of how that technology is utilized? As a field we need to go beyond simple descriptions. Hopefully, the framework we offer is a step toward building the needed preservice technology foundation.”

Ongoing budget limitations are an inescapable reality that also impede classroom technology integration, Dr. Parette says. “Most classrooms with which I’m familiar have a budget of $50-$100, which includes all materials and supplies. With a tight budget, how will apps and other tech tools that support instruction be affordable unless technology supports are part of the infrastructure that’s made widely available to teachers by school districts? We see Smart Boards placed in classrooms but that technology is often unsupported by professional development.”

**TECH IT: Teacher Training and Culture Are Determining Influences on Technology Selection**

While there is no question about the explosion of technology use among even the youngest of students, there remain marked differences in technology adoption among families and teachers across the country. “Attitudes about technology,” says Dr. Parette, “are related to cultural and generational differences. For example, some families come from collectivist cultures where cooperation and collaboration are strongly held values. In such communities individual excellence is not as valued as being part of a group and achieving group success. We have seen that there are tools supporting the collectivist concept, such as Smart Board and iPad apps, that allow multiple users to participate. But there are also
other technologies that support children’s preference for solitary or individual involvement in the learning process.”

From a linguistic perspective, he continues, “an array of tools, including software programs, such as Clicker 5
(http://www.cricksoft.com/us/products/tools/clicker/guide/guide1.aspx) and ebooks now provide text in multiple languages.” Clicker 6 (http://www.cricksoft.com/us/products/tools/clicker/home.aspx), he notes, does not yet offer multiple languages but very soon may offer the languages currently available on Clicker 5.

Dr. Parette and Dr. Blum recently conducted an analysis of 130 ebooks, including low-cost, no-cost, and more expensive selections. “We found that many of these books have multiple languages available and allow access to digital text, which acts as a support for kids from diverse backgrounds.” The authors also found that access to computers and mobile communications is increasing exponentially across all economic strata. For example, he says, “we see that more and more families from underserved areas are visiting libraries to use computers there, and more computers are available in home settings. With the increased use of smartphones on a universal basis comes web access and thus access to tools available from websites and downloadable apps.”

He cites VoiceThread (http://voicethread.com/) as a readily available program that enables children to comment on content by using text, audio, or video. From a classroom perspective, Dr. Parette notes, “teachers can allow children to create and show their products, to capture them on video, and to make comments in their native language. As researchers and teachers, we can capture the process involved in children engaging in an activity as well as their products. Links can be shared between the VoiceThread and families, which promotes family-school connections. We ask our preservice students to use Voice Thread often, not only to embed in their planned classroom activities but also for use in hands-on experiences in a university classroom where they can comment about what their perception was, what their experience was, which reinforces the value of the VoiceThread tool.”

In summary, he states, “there are now many tools that support cultural and linguistic diversity. It’s our responsibility as educators to become informed about those resources. At
the university level we need to make those resources available to preservice students, to make families aware of where those resources are and how to access them."

**ARRANGE IT: Technology’s Role in Curricular Sequences**

Curriculum design, write the framework’s developers, can be based on three major sequences: easy-to-hard, logical groupings and/or prerequisite skills. Currently, they say, most teachers follow a pre-developed curriculum. However, they may need to adapt a curriculum for children in an inclusive classroom or to provide a supplemental curriculum using one of the three sequences.

In the easy-to-hard sequence, the easiest skill for a child to learn is taught first, an approach that lays the foundation for the more complex tasks to follow as more demands are placed on the student. With very young children, the authors caution, “it is essential to ensure that the child is not overloaded with activities that are too complex while technology integration proceeds.” According to the authors, the following research-based principles ought to be considered when integrating technology into the curriculum and instructional strategies to ensure that the strategies are appropriate:

- The multimedia principle, in which very young children learn better from words and pictures than from words alone
- The coherence principle, where young children learn better when extraneous words and sounds are excluded
- The signaling principle, which employs cues – such as highlights, animation flashes and pictures that indicate what comes next – about a presentation’s organization
- The redundancy principle, which states that young children learn more effectively via animation and narration than from animation, narration and on-screen text
- The spatial contiguity principle, i.e. space on a screen, which employs corresponding target words, letters or pictures that are presented in proximity to each other rather than far apart on a page or screen
• The temporal contiguity principle, i.e. order of presentation where corresponding target words or letters and pictures are presented simultaneously rather than successively.

Failure to consider these principles, the authors warn, can result in extraneous overloading, which can sabotage the children’s ability to learn from multimedia. Their advice to teachers: start with simple visual materials and gradually increase complexity, emulating the easy-to-hard sequence. They caution, however, that multimedia complexity should never exceed developmentally appropriate levels and should always consider the complexity of the learning task. “Cluttered visuals with too much information are never good,” Dr. Parette counsels.

A helpful free app he suggests is Educreation ([http://www.educreations.com/](http://www.educreations.com/)). It’s designed to help teachers structure presentations that follow the easy-to-hard curricular sequence. Educreation, he explains, lets teachers bring in images, draw, and record. Children, too, can record their voices as content is being delivered. Teachers can also pose questions to students, enabling them to perform a task after they’ve seen the task presented on screen. “There are technologies that allow us to consider easy-to-hard depending on the students with whom we are working. Some children will need a lot of support with each step or several steps. Other students will be able to complete the same task independently, with no support.”

Logical grouping – also called “clusters” – is the second curricular sequence. Clusters do not fall into easy-to-hard order, the authors explain, and are often taught more logically. Logical grouping, they write, is often used for life skills instruction in activities such as clean-up chores in collaboration with peers, or when the curriculum is designed to follow a natural order. In those instances, technology can be used to support a logical concurrent sequence. Teachers can arrange a step-by-step job list on their iPads. The list is organized with several icons that act as reminders of when to clean up, what steps to follow, and how to share tasks with other children. “By using that technology a teacher is supporting the children and learning skills concurrently and naturalistically regardless of the skills’ complexity,” he says.

Foundational skills must be mastered by children in the third curricula sequence: prerequisite skills. The sequence begins with the mastery of letter, name, sounds, short vowels, and consonants. The second phase involves sound mastery of consonants and
short vowels. In the third phase children learn to blend three sounds to read C-V-C words (consonant-vowel-consonant words, such as “dog”). For teacher technology support, Dr. Parette recommends Starfall (http://www.starfall.com/), which has multiple levels of complexity. “At the outset of this sequence children are presented with alphabet recognition and sounds. At another level sounds are blended together to create words. At still another level children are reading sentences and coping with comprehension.” He also recommends Clicker 6 for development of prerequisite skills. “A Clicker 6 voice feature pronounces sounds paired with pictures of words and letters as children move from screen to screen. But as children proceed through the instructional sequence they may say the sounds without speech support and then hear the answer. In a later screen whole consonant-vowel-consonant words can be blended together to produce sequencing ranging from very easy to more difficult.”

ARRANGE IT: Readily Available Technology Via a Toolkit; No Need to Reinvent the Wheel

According to the authors, once early childhood teachers have decided on specific technologies to be used in classroom activities, other decisions need to be made. How will the selected technologies be used in conjunction specific instructional strategies? Evidence-based strategies may include direct instruction, exploratory play and guided discovery, modeling and hand-modeling, prompting and scaffolding. Instructional arrangements can include large groups and small groups as well as learning and activity centers and, occasionally, individual settings.

The trouble, according to the authors, is that some elements of the instructional strategy decision-making process are outside of teacher control. For example, they write, state standards may be mandated. “The early childhood program may have already made a decision about the curriculum and how many computers and other technology infrastructure supports – such as digital projectors, scanners and software – are available in the classroom.” The program, they add, may even prescribe a particular set of instructional strategies. “The degree to which a program has implemented a multi-tier system of support is typically decided by a program or a school district, not the teacher.” Therefore, advise the authors, “it is essential to have an understanding of the program and its underlying instructional strategies, curriculum and tiers of support, and available technology.”
Enter the authors’ technology integration toolkit, which shows preservice teachers in an era of tight school budgets how to access, select and deploy readily available free technology in support of instructional strategies. “Teachers need to be aware that they do not have to reinvent the wheel as they are planning their activities,” the authors write. “A very quick web search can lead them to materials that have already been developed by others. These materials can be downloaded and used in their entirety or slightly modified. There are also share sites for various software programs that provide ready access.”

The term readily available, Dr. Parette explains, describes technology tools with several essential characteristics. “These tools can be free or inexpensive; they’re readily available at resource sites such as Starfall or any of the online activity exchanges, such as Boardmaker Share (http://www.boardmakershare.com/), or IntelliTools Classroom Suite Activity Exchange (http://aex.intellitools.com/); they spotlight teacher-created materials which can be easily downloaded and are ready for immediate use.

“There’s free software and also free graphics programs that teachers can download. These programs are developmentally appropriate for children because they feature childlike characters and sound effects that encourage the engagement of kids.” Then there are tools that are available at local stores, including the Leapfrog Learning System products, which have supports designed to support emergent literacy and reading skill development.

“We recognize that unless teachers are in an environment where there’s a budget to support providing an array of technology tools, most teachers will not have access to many of these tech tools,” Dr. Parette comments. “We feel strongly, however, that a computer with Internet access is central to the ability to access the world of content and other readily available resources when paired with an LCD projector or a Smart Board. Big-screen capability is far more engaging and is of greater interest to very young children, including those with disabilities.”

ARRANGE IT: “We Can Make Things Move on the Screen”

The toolkit, he says, “currently starts with basic access to a range of computer-based resources although it’s likely that in the near future access will transition to tablet or smartphone technologies.” Beginning with a computer and a projection system, other tools can be added on, he says, “because most teachers will have access to camera features in their smartphones – and many have digital cameras, a tool that enables teachers to
capture images, which can then be imbedded in PowerPoint. We refer to the Microsoft suite as being a readily available, powerful tool because PowerPoint has animation features which support UDL." He recommends the following sites as repositories of ready-to-use PowerPoint activities: Special Education Technology British Columbia (http://www.setbc.org/); Talkingbooklibrary.net (http://talkingbooklibrary.net/); Tar Heel Reader (http://tarheelreader.org/) and Pete’s PowerPoint Station (http://www.pppst.com/). These tools, he explains, “enable teachers to create truly animated presentations as opposed to static presentations consisting of text interspersed with pictures. We can make things move on the screen. We can embed sound and video.”

With smartphones, he continues, “teachers can take photos and don’t have to rely on scanning.” Nevertheless, he adds, “scanning remains essential to digital text conversion when a Kurzweil tool is used. We want teachers to be prepared to begin using these tools as soon as they complete preservice training. We provide them with access to Boardmaker for up to one year, through Mayer-Johnson’s Semesterware program (http://www.mayer-johnson.com/downloads/trials/semesterware/). Teachers can download a 30-day free trial from the Boardmaker website.”

Visual supports in a classroom are very effective tools for teachers, Dr. Parette emphasizes. “We show our preservice students free software and websites such as Starfall, Sesame Street (http://www.sesamestreet.org/) and PBS Kids (http://pbskids.org/). They’re taught to use YouTube. They learn, for instance, to incorporate a talking book on YouTube into planned activities. If teachers have access to a Smart Board or to an LCD projector that then becomes a front-end introductory piece. Our goal in exposing preservice teachers to our toolkit is to help them feel comfortable using these supports during their university experience. We want them prepared for real-world classroom settings in which they’ll be able to match the most appropriate readily available technology with the instructional strategies they select during the ARRANGE IT phase of the framework.”

**CHECK IT: The Role of Technology in Assessment**

In early childhood classrooms children create work products during instructional activities. Their work, the authors write, can be made permanent if captured and stored during the CHECK IT stage. Such storage allows for comparisons of outcomes and products to a specific acceptable outcome guided by EXPECT IT standards. Permanent products can
include a child’s transcribed work, completion of a worksheet, computer-generated artwork or the product of a specific activity, such as cutting paper or building a tower from blocks. Fortunately, the authors note, early childhood teachers have access to a range of technology options for creating permanent products for assessment purposes. Those options include:

- Free, printable, web-accessible worksheets that can be downloaded, completed and stored in children’s folders.

- Audio recording tools that can be used as a CHECK IT product to gather speech and language samples for assessment. The authors urge the use of

- PowerPoint so that children can record sounds directly onto slides (http://office.microsoft.com/en-us/powerpoint-help/), reflecting their knowledge and understanding of instructional content. They can record comments on a slide and connect the audio to embedded photos of icons representing themselves.

- VoiceThread enables teachers to upload content – including photos, drawings, text, audio and video.

- Video recorders and digital cameras that collect and archive visual evidence of student work and participation.

- Screenshots generated on a computer may be captured, entirely or in part, and pasted into Microsoft Word, PowerPoint, or other applications.

- Interactive whiteboards, e.g., Smart Boards, have space for notations on each side which teachers can save in their files.

**TEACH IT: Implementing the Plan**

After teachers have arrived at decisions in the EXPECT IT AND PLAN IT phases of the authors’ technology integration framework, all that remains, they write, “is to TEACH IT.”
SOLVE IT: A Supplemental Problem-Solving Approach for At-Risk Children

The final phase of the Parette-Blum framework addresses the needs of young children with disabilities within the context of day-to-day instructional planning by helping teachers design individualized plans. The framework addresses some of those students' learning needs without further planning or instruction. However, Dr. Parette cautions, many other children with disabilities face significant barriers caused by sensory and/or physical impairments that hamper their participation in planned activities. The authors provide the following illustrations of some of these barriers:

Noah and his classmates go to the literacy center to select and use word recognition apps that Mr. Bivens has downloaded onto several iPads that he uses in his planned instructional activities. The apps require children to make selections on the iPad screen using their fingers. Due to his limited fine motor skills caused by cerebral palsy, Noah has great difficulty using his index finger to make selections within the app.

Communication or social impairments may create barriers to successful participation in the interactions with other children and adults in planned educational activities. For example, Emily, a student with autism spectrum disorder, watches a YouTube video of The Very Hungry Caterpillar with her classmates. The video is projected onto a screen by a digital projector. After viewing the video, her teacher poses comprehension questions to the students using a Clicker 6 activity. Students are expected to raise their hands to answer the questions. Emily does not raise her hand to answer any question; when the teacher does call on her to probe her understanding, she looks away and fails to answer.

Cognitive impairments may create problems with the children effectively learning within the planned educational activity. For example, Darian watches a PowerPoint-animated book – Green Eggs and Ham – that his teacher prepared for a large-group literacy activity. After viewing the book on a digital projector, the teacher asks comprehension questions about sequences in the story. Darian is functioning at an early emergent literacy level and does not remember the story sequence, so he cannot answer questions in the same way as his peers.
In each of these examples, a student exhibits problems in participating in a planned activity due to a disability. The presence of such disabilities often results in the child’s exclusion from the curriculum, calling attention to the need for different technology-based solutions.

“At-risk children will often be [identified] when teachers deliver a planned activity,” Dr. Parette acknowledges, “because although we as teachers think we understand their student characteristics and abilities, when we plan a step-by-step activity via a presentation of the activity in which certain demands are placed on children there are tasks which those children will be unable to perform.” This is true for all students, he acknowledges, but is especially true for students with disabilities. “In the planning process, if our framework is used appropriately a technology can be identified and used in tandem with a specific instructional approach.”

Some instructional strategies, he says, may not prove especially effective with certain technologies. “Take, for example, guided discovery versus direct instruction. Some tools are usable with direct instruction, especially if all the students in a class are equipped with iPads. Teachers can demonstrate. They can ask children to model with teachers providing feedback. The children then have an opportunity to practice by using their iPads.” Tools other than the iPad may not be capable of facilitating that kind of interactivity, Dr. Parette says.

What it comes down to, he explains, “is evaluating a tool’s features and then considering what teaching strategy I as a teacher ought to employ. Am I going to use modeling and prompting? Will the tool enable me to do that? The decision I’ll make is based on the connection between the technology and its features and a specific strategy.” When teachers make that decision, he adds, “they have to consider the tier of support that’s available in their classroom. We’re seeing RTI (response to intervention) being implemented more frequently in early childhood settings. Tools like Smart Board or an LCD projector paired with PowerPoint or a smartphone activity lend themselves to use by large groups. Other tools designed for sharing among children who are collaborating may not be appropriate for use by a larger group if the students are obligated to interact with the technology.”
Up Next for the Authors: An Online Version

Dr. Parette concedes that the current technology tools promoted in their textbook may be overtaken by ongoing technological advances. “The emphasis of our text is on process. We acknowledge upfront that the technology examples we provide are exemplars.” What’s most important about their book, he adds,” is the process we have laid out in the form of our framework, and the thoughtful use of that process by early childhood teachers.”

He anticipates that their textbook will eventually have an online version. “I envision an expansion of that online resource so that we can include video vignettes of effective use of the framework in a classroom setting, where readers can see how a teacher has considered Universal Design for Learning in the planning process, where we can see teachers utilizing effective assessment methodologies. That would be a powerful and significant support tool to help users of the text to better understand how to design their planned activities in the future.”

Their current textbook examines emergent reading, writing, social communication and behavior and play, but does not address math. “We were asked if we wanted to consider math. We chose not to do so in this iteration of the textbook because there seems to be a lack of consensus in the mathematics field regarding effective practices and the technologies that can best support math instruction. Math is a topic we want to consider in the next iteration, however.”

Dr. Parette is pleased that the framework provided by the co-authors offers teachers a formal process that has been field-tested. Nevertheless, he concludes, “much work remains to be done in this area. We want to delve deeper into the process and provide additional guidance and direction. We’re now producing a paper for practitioner journals that examines assessment methodologies and connecting those methodologies to tools. We’re evaluating the specific instructional strategies and how to implement those strategies with apps in a meaningful way. This specific level of guidance is a missing link in the field.”