



## Exceptional Educational Technology

by Ellen Turner, GeeGuides Education and Research Support  
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Technology is a tool that when used wisely has the potential for great benefit to all human endeavors, not the least of which is the education of our youth. And yet education in the U.S. is far from fully integrating educational technology into the learning process and using it to its full potential.

One of the barriers to full, effective integration of educational technology may come from the fact that many educators are “digital non-natives,” or “digital immigrants.” They grew up and received their training in a pre-computer, textbook-centered world, and some of them resist educational technology because they have difficulty learning how the programs work, integrating them into their current teaching practices, and using them to transform those practices. On a deeper level, many digital non-natives experience a general uneasiness regarding the overwhelming glut of information, the constant busyness, and the growing feeling of separation from fellow humans that characterize the “wired world.” To add to these very legitimate concerns related to technology use, there is the fact that today’s youth spends many hours obsessively playing non-educational computer games. While these are disturbing trends, it is important to remember that the key to avoiding them and to fully benefiting from use of technological tools (computers, T.V., cell phones, internet, etc.) lies in how one chooses to use them.

Furthermore, digitally non-native educators and parents must come to understand that a digital interface is what is familiar and engaging to today’s students, the “digital natives.” They were born into and are comfortable with a world that runs on computer technology, and digital formats tap into their cultural background. Expressing her thoughts on teaching digital natives, Colorado 4<sup>th</sup>-grade teacher Erika Hupperts says, “I think that in this day and age using technology as a tool in teaching is an easy and familiar way to captivate and entice our learners. Kids are very familiar with using technology. They're also very willing to experience the quick visual changes that technology can provide. Their attention in some cases can be extremely limited. As adults, we seem to have a tendency to hang on topics for extended periods of time.”<sup>1</sup> The digital natives use computer technology in their daily lives outside of school, and they expect to use it in school. They need to feel that what they are learning in school is relevant to what they are learning and experiencing elsewhere. The *Partnership for 21<sup>st</sup> Century Skills* warns,

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<sup>1</sup> Erika Hupperts has been teaching for 12 years, special Ed. from 1986-2000, and 4<sup>th</sup> grade from 2000 to the present (2006-07). She is one of two Durango, CO, teachers piloting geeART16. Her insightful observations based on personal experience with the program have led us to quote her quite freely and enthusiastically.

“Today’s education system faces irrelevance unless we bridge the gap between how students live and how they learn.”<sup>2</sup> A relevant education system would provide our youth with the tools they need for participation in the future workforce. To, again, quote the *Partnership For 21<sup>st</sup> Century Skills*, “Students will spend their adult lives in a multi-tasking, multi-faceted, technology-driven, diverse, vibrant world – and they must arrive equipped to do so.”<sup>3</sup>

In an effort to effectively prepare the youth to help our country remain competitive in an increasingly information-based world economy, *the United States National Educational Technology Plan* calls for more digital content in our nation’s schools. The integration of digital content across the curriculum will help to foster computer literacy by providing daily interaction with digital resources and productivity tools. The educational technology plans of many states are beginning to mirror this aspect of the Federal Plan. In other words, at least on paper, full educational technology integration is in the works.

However, in the day-to-day reality of education, many schools are still far from integrating educational technology programs into the teaching of each subject. Apart from the resistance of digital non-natives, perhaps the most daunting obstacle schools face is limited budgets. It is proving difficult to keep up financially with the rate at which computer technology evolves, and with the related costs of maintaining the necessary infrastructure, hardware, software, tech support and professional support. Dr. Ruzena Bajcsy (director of the Center for Information Technology Research in the Interest of Society at UC, Berkeley) relates the current need for change to the situations created by previous technological revolutions of similar magnitude in history. She states, “All of this technology will never be used unless there is sustained and substantial investment into the necessary infrastructure covering not only schools, but libraries and homes, similar to the investment that was made in the past in electrification and later in telephone infrastructure.”<sup>4</sup> The exponential rate at which technology is developing poses a financial challenge, but it is one that we can and must meet, through the full political and financial support of the federal government.

The financial burden of keeping up with educational technology can also motivate educators to ensure that the benefits of any educational technology programs they adopt are well worth the cost. The North Central Regional Educational Laboratory (NCREL), in

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<sup>2</sup> “Executive Summary”, p. 4, *Learning for the 21<sup>st</sup> Century*, Partnership for 21<sup>st</sup> Century Skills, 2002,  
[http://www.21stcenturyskills.org/index.php?option=com\\_content&task=view&id=29&Itemid=42](http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=29&Itemid=42)

<sup>3</sup> “Executive Summary”, p. 4, *Learning for the 21<sup>st</sup> Century*, Partnership for 21<sup>st</sup> Century Skills, 2002,  
[http://www.21stcenturyskills.org/index.php?option=com\\_content&task=view&id=29&Itemid=42](http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=29&Itemid=42)

<sup>4</sup> Bajcsy, Ruzena. “Technology and Learning,” *2020 Visions – Transforming Education and Training Through Advanced Technologies*, U.S. Department of Commerce, Technology Administration, Office of Public Affairs. Sept. 17, 2002

a report called, Critical Issue: Using Technology to Improve Student Achievement writes, “Because effective use of technology must be supported by significant investments in hardware, software, infrastructure, professional development, and support services, ... legislators and the public are calling for evidence regarding the efficacy and cost-effectiveness of technology in K-12 schools.”<sup>5</sup> One way for educators to ensure the cost-effectiveness of prospective educational technology programs is for them to get very clear about what objectives they are looking to achieve with any given program. In the *Technology and Learning* article, Teachers and Technology – What’s Left? the author advises: “...crucial considerations in technology education are foresight, vision, and planning with clearly defined objectives in mind from the beginning so that a productive course of action can be charted...”<sup>6</sup> Another *Technology & Learning* article suggests that “...for a technology to add value, it must do something better than it has been done before or do something new that’s desirable. These two concepts – doing something better and doing something new – are at the heart of what constitutes an ‘exemplary’ educational technology program.”<sup>7</sup>

The company GeeGuides offers such a program through its visual arts curriculum, geeART16. At its inception, the company’s founders, professionals from the audio and film industries, conducted objective, third-party research and held roundtable discussions with leading educators (among the facilitators were Goodman Research Group<sup>8</sup>, educational consultants Dr. Marianna Adams of the Institute for Learning Innovation<sup>9</sup>, and Troy Smythe of Smythe Consulting,<sup>10</sup>) to discuss and define what is needed and desired in educational content, and the specific ways in which current educational content is lacking or failing. From the start, the company’s goal has been to address the specific needs that were exposed in these meetings, and to implement innovative solutions in the planning and creation of the first in their series of digital curricula, the award-winning, animated art curriculum called geeART16.

The GeeGuides geeART16 curriculum is a comprehensive, introductory visual arts program that teaches visual literacy, art appreciation and creative self-expression through web-based, animated, interactive lessons. The content meets and exceeds National and State Curriculum Standards, providing students with the tools they need to understand,

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<sup>5</sup> North Central Regional Educational Laboratory, “Critical Issue: Using Technology to Improve Student Achievement”, Nov. 2006,

<http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te800.htm> - issue

<sup>6</sup> Kleyn-Kennedy, Cynthia. “Teachers and Technology – What’s Left?” *Technology & Learning* magazine. November 1, 2006.

<sup>7</sup> Simkins, Michael. “Does Technology Pay? – Investing Wisely Takes Discipline.” Feb. 15, 2006. *techLearning* magazine, [www.techlearning.com](http://www.techlearning.com)

<sup>8</sup> GeeGuides contracted the Goodman Research Group to do third-party research on its learning program, in 2005. To read about their study and its findings, please go to this link: [http://www.geeguides.com/assets/documents/companyBrief\\_0002.pdf](http://www.geeguides.com/assets/documents/companyBrief_0002.pdf). To find out more about GRG: <http://www.grginc.com/>

<sup>9</sup> <http://www.ilinet.org/staff.htm>

<sup>10</sup> [http://www.geeguides.com/everything\\_else/about/bios](http://www.geeguides.com/everything_else/about/bios)

interpret and create meaningful art. Students explore many important aspects of the visual arts during their geeART16 experience. They learn how the masters applied the elements and principles of art for effective artistic communication, and then apply these techniques to their own artworks. They explore reasons for creating art, its relationship to other subjects, how it is influenced by historical and technological developments, as well as learning about the history and function of museums, the variety of jobs that require artist training, and more. The program beautifully bridges any perceived gap between 21<sup>st</sup> century computer technologies and the age-old human pursuit of art, bringing back the arts in a compelling format for today's schools.

## **I. GeeGuides is all about content.**

GeeGuides has drawn inspiration from innovative learning models in building its first curriculum, geeART16. As the *Partnership for 21<sup>st</sup> Century Skills* states, “We now have scientific insights that can inform educators about the cognitive processes of learning, effective teaching strategies for engaging students in learning and motivating students to achieve. ... We must incorporate this understanding into classroom teaching and learning...”<sup>11</sup> GeeGuides concurs, and developed the content, presentation and delivery of geeART16 based on proven learning models based on scientific findings. For example, getting inspiration from the *Contextual Learning Model of the Institute of Learning Innovation*, GeeGuides presents its concepts sequentially and contextually, building on students' prior knowledge and progressing to new contexts and new understanding from there. Dr. Marianna Adams of the Institute for Learning Innovation says of the geeART16 program, “Often we treat learning as discrete fungible pieces and then wonder why children can't think critically, build upon prior knowledge, or transfer their learning to other areas. The GeeGuides program requires that students revisit and revise their thinking along the way.”

In addition, GeeGuides drew from Dr. Ken Isaacs's research on “Relatability,”<sup>12</sup> in order to enhance understanding and retention of the concepts presented in geeART16. To very generally summarize Dr. Isaacs's work, if people are emotionally involved in what they are learning, they are far more likely to understand, appreciate and retain the concepts presented. The geeART16 program implements this motivational tactic by engaging students emotionally through animated video lessons taught by affable and well-developed characters. A penguin and a polar bear, who are polar opposites, guide students toward understanding through their own characteristic grappling with the new concepts. In other words, they learn and grow alongside the students. This reflects another proposition of the Relatability theory, which posits that to be most effective, any communication, and by inference teaching, should be presented in a collaborative,

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<sup>11</sup> “Executive Summary”, p. 4, *Learning for the 21<sup>st</sup> Century*, Partnership for 21<sup>st</sup> Century Skills, 2002,

[http://www.21stcenturyskills.org/index.php?option=com\\_content&task=view&id=29&Itemid=42](http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=29&Itemid=42)

<sup>12</sup> <http://www.spiraldynamics.org/>

dialogue format. Students can relate to these animated art guides and therefore, they readily accept them and the concepts they are teaching.

They also engage students through humor, and present quite sophisticated concepts in simple, familiar contexts that help students relate to and understand them. As teacher Erika Hupperts says, “Of course the children were quite impressed with the characters that were teaching them. I found it interesting that they identified with them so quickly - almost like they were new friends.” She elaborates, “The characters are a motivational tool that can accentuate the learning. Students can find a little piece of themselves in the characters and then use that to engage in the learning. Students are very much like these characters--they need help with some things, while they are the authority on others. Textbooks simply cannot imitate this quality.” Being intellectually and emotionally engaged and empowered by geeART16’s content and delivery, students truly do learn and retain new knowledge, and apply it to their own lives.

Other learning models that influenced the development of the geeART16 learning system are the Harvard Project Muse’s, The Entry Point Approach<sup>13</sup>, Visual Thinking Strategies<sup>14</sup>, and Dr. Clare Graves’s Theories of Human Behavior and Value Systems.

## **II. geeART16 uses technology to enhance learning.**

To give an overview of some of the digital features of the geeART16 program, it provides engaging animated movie-lessons, followed by online interactivities to allow students an opportunity to apply and assimilate new concepts. The program also features a virtual gallery that showcases exemplary artworks from around the world, allowing students to access, and view more closely, masters’ artworks. The challenges offer self-assessment features, providing instant feedback for teachers and parents, and exciting rewards for the students upon successful completion of the challenges. And, in addition to the hours of traditional “doART” activities available in any given lesson, there are also digital art activities that utilize a digital paint software program, which allows students to imitate real media and explore more artistic tools than what is available in a typical classroom. It also includes complete, yet adaptable, lesson plans for teachers and students, and in some packages includes two downloads of the digital paint program, one for school and one for home, to allow for homework and for parents to get involved. Home access to the digital paint program, the lesson modules, the teacher “doART” lesson plans and student “On My Own” art activities also fosters parent involvement in their child’s learning. Students’ artworks created at school can also be saved and uploaded to their online art portfolio to share with their parents and to help teachers track progress year-to-year.

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<sup>13</sup> <http://www.pz.harvard.edu/Research/MUSE.htm>

<sup>14</sup> <http://www.vue.org/whatisvts.html>

Moreover, digital technology enables students to apply new concepts by simulating how they are applied in the real world. For example in the geeART16 “Math + Nature = Beauty” lesson module, students learn that Egyptian artists used grids to copy artworks, and then the students, themselves, use a grid to reproduce an artwork, mimicking the Egyptian technique. Additionally, in the “Museums” lesson module, students virtually apply restoration techniques to a timeworn artwork. In another simulation students mix black or white with colors to obtain shades and tints; and in yet more simulations, students mix black or white with colors to obtain shades or tints, and they get to mix source materials with a catalyst ingredient to create various pigments. The Corel Painter Essentials digital paint program comes bundled with the geeART16 enhanced and elite versions, and it is a starter version of one of the most widely used digital paint programs in the graphic design world, Corel Painter Essentials 9. Because of this, students can gain experience working with a program similar to one that is used everyday in the real working world of artists and that is similar to other prominent software programs used in the design and communications worlds. In sum, to quote the *Partnership for 21<sup>st</sup> Century Skills* again, “Infusing dynamic, real world contexts into classroom learning will invigorate teacher and student engagement.”<sup>15</sup>

The versatility of digital technology also allows for learners of many styles to become engaged in, and learn from, the geeART16 curriculum, as the content is presented in visual, auditory and kinesthetic formats (the latter involving hands-on interaction with ideas through the mouse, keyboard and screen, as well as through the traditional art activities provided). In this way, the program taps into many different learning styles and is entirely designed for student success. In addition, successful reading comprehension is fostered through the aid of an online glossary, visuals, audio clips and written exercises. The program also encourages students to make mistakes, take risks, and to explore ways to enhance their ability to communicate in their own artworks. The lessons also incorporate exciting interactive rewards, such as collectible artist cards and puzzle pieces, to motivate students to get every answer right in the challenges, no matter how many times they must complete the challenge to get all the rewards. It may be one of the few educational programs that can boast that students love the tests! In these innovative ways, the geeART16 program uses technology to empower all students for success.

Digital technologies allow all these learning tools to be brought together in one place, where access is easy and always available wherever there is a computer with high-speed internet access. Such variety and depth in content and learning interactivities that are available to students in geeART16 with just the click of a mouse, would be much more difficult, and in some cases impossible, to offer through traditional means. As the Goodman Research Group<sup>16</sup> found, students are deeply engaged by geeART16, as it allows students to be creative, and also allows them some control over their learning

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<sup>15</sup> “Executive Summary”, p. 5, *Learning for the 21<sup>st</sup> Century*, Partnership for 21<sup>st</sup> Century Skills, 2002,

[http://www.21stcenturyskills.org/index.php?option=com\\_content&task=view&id=29&Itemid=42](http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=29&Itemid=42)

<sup>16</sup> <http://www.grginc.com/>

experience and gives them immediate feedback. And what's more, actual use of geeART16 in the classroom and at home proves that kids love geeART16. As one student affirmed, "I don't like it. I love it!"

The digital technology through which the geeART16 visual arts content is delivered is not used for the sake of adding frivolous "bells and whistles" to enliven its lessons as a digitally delivered textbook might do; but rather, technology is used as an integral part of making geeART16 a highly innovative, extremely effective, engaging learning system that is fun for teacher, parent and student alike.

### **III. Simplifying teaching through technology.**

Technology is also used not only for effective delivery of excellent content, but is also used to simplify a teacher's administrative and practical, day-to-day tasks. Instantaneous and easy access to student records allows for real-time assessment of student progress, which in turn, informs instructional practices. The GeeGuides program also provides standards-based assessment rubrics, which teachers can use to guide their assessments and feedback on student artworks. Easy access to student portfolios and the convenience of using the provided assessment rubrics allows time for more thoughtful comments and in-depth assessment of student artworks. These timesaving features enable more art activities and more class discussions. Class discussions can be used for review, or to guide students in further developing their critical thinking skills.

The geeART16 program is complete and comprehensive, and yet at the same time, flexible and adaptable to specific classroom situations and needs. Teachers control the release of lesson modules, while at the same time allowing students to move freely within the released lessons. This gives teachers ultimate control of each student's, and of the whole classroom's, rate of progress with the material, while still allowing students a chance to learn at their own pace and in their own style, as they let their own interests guide what they click on and how long they stay there, etc. Colorado art teacher Joe Kroenung, who is using geeART16 with his 3<sup>rd</sup> graders, says that the program makes it possible for him to include a broader spectrum of visual arts content such as art history. Kroenung also notes that the program provides new perspectives on concepts he has already introduced.

Finally, GeeGuides provides online, over-the-phone, or in-person professional development and technical assistance, as well as an easy-to-use, online help guide; and students also have access to their own, animated tutorials.

### **IV. Web-based Advantages:**

The geeART16 program is delivered over the Web. This means little to no downloads, no tricky file transfers, and no more dealing with incompatible operating systems. Any

necessary updates are automatic and seamless to the end user and the tech coordinator. What's more, the way the content is accessed will still be technologically viable for generations to come. In addition, all data is stored safely on powerful servers. This frees up the user's computer memory, and what's more, saved geeART16 data is available at any time from any computer with a high-speed internet connection.<sup>17 18</sup>

Most schools only need a high bandwidth connection to access geeART16. For minimum system requirements, please follow this link:

[http://www.geeguides.com/assets/swf/system\\_req.swf](http://www.geeguides.com/assets/swf/system_req.swf)

## **V. Developing computer literacy through digital content.**

It is not only important to use great educational technology tools for more effective learning, but also for developing computer literacy. Developing computer literacy helps prepare today's youth to use the digital tools of the future workforce by infusing their daily learning experiences with them, now. This is why the nation's Educational Technology Plan calls for more digital content in the schools' curricula. The National Education Technology Standards (NETS) outline the learning objectives for digital content; specific benchmarks set for learning in technology include practicing the basic motor skills involved in computer use, to more conceptual skills involving navigating information resources and analyzing, synthesizing and producing representations of their conclusions, using a variety of digital formats. The standards also call for programs that help students develop and maintain a positive attitude toward technology. The geeART16 program answers the federal call for more digital content, and meets the NETS standards by building and expanding basic computer skills, developing research and productivity skills, and by fostering the development of a positive attitude toward technology by making learning multi-faceted, fun and engaging.

Other sources besides GeeGuides confirm the excellence and multidisciplinary approach of the geeART16 program. For example, the program won the Award of Excellence, 2006, from *Technology and Learning* magazine. The award announcement states, "Software and Web products being honored include innovative applications that break new ground in some important way and also best-of-breed examples that demonstrate clear superiority over similar products in the market."<sup>19</sup> The magazine's Editor in Chief,

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<sup>17</sup> eSchool News staff. "A Paradigm Shift for School Software? Web-based Applications are Changing How Educators and Students Approach Computing." Oct. 23, 2006.

eSchool News. <http://www.eSchoolnews.com>

<sup>18</sup> Paul Graham. "The Road Ahead," 2001. *Hackers and Painters*, O'Reilly, 2004, 272 pages, hardcover. ISBN 0596006624.

<sup>19</sup> *Technology & Learning* magazine staff. "Outstanding Education Technology Products Saluted." September 29, 2006. New Bay Media, LLC.

<http://www.techlearning.com/content/contest/awards/2005/?jsessionid=DVA1OZMXQ5EJCQSNDBGCKHOCJUMKJVN>

Susan McLester says, “Technology & Learning’s Awards of Excellence program has recognized outstanding ed tech curriculum products for 24 years. We have seen many incredible programs and have tested out many curricula and GeeGuides should be proud to receive this industry award and this recognition from teachers across the country.”<sup>20</sup> Criteria used for evaluation are: quality and effectiveness, ease of use, creative use of technology, and suitability for use in an educational environment. Furthermore, the geeART16 program was successfully reviewed in November 2006, by the California Learning Resource Network for listing in the database of electronic learning resources it provides for the state. In sum, educational experts outside of GeeGuides confirm that geeART16 enhances teaching and learning in the ways that educators demand and students deserve.

To experience this for yourself, please try our demo at this link:  
<http://www.geeguides.com/wp>.

### **Important Note**

#### **The importance of arts education:**

The current U.S. focus on improving test scores in fundamental subjects is contributing to the fact that the arts are being left behind. If you would like to know more about the importance of arts education, that the arts are a core subject under the NCLB law, as well as that they enhance learning in other subjects, improve standardized test scores, and help students develop important cognitive, social and personal skills, please see our white paper on the importance of arts education, at <http://www.geeguides.com/schools>.

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<sup>20</sup> GeeGuides press release, November 9, 2007; [www.geeguides.com/press](http://www.geeguides.com/press)