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Introduction

I recently read a bumper sticker posted on a colleague's cubicle that stated "I've Gone Google." *What?* How can someone "go Google"? Sure, we all use Google's search engine on a daily basis, but beyond finding information for work and home, can someone truly "go Google"? I started asking myself, what is the impact that "going Google" can have for teachers and students in the classroom?

What was once a start-up company run out of the garage by a couple of Stanford grad students has become one of the biggest companies in the world. Google spent its first few years developing the number one search engine on the web. For many, that's the only thing they know about Google—it's a search engine. But Google is so much more.

Google has spent the past decade developing an entire suite of tools that have revolutionized the way in which we use the Internet. These tools have made the world a smaller place by giving users a chance to work virtually from anywhere, with anyone, at any time they choose. Google has taken advantage of its size and ability to create a large scope for making these tools available to teachers and students—for free.

Google's mission is to organize the world's information and make it universally accessible and useful. With regard to education, our goal is to leverage Google's strengths and infrastructure to increase access to high-quality open educational content and technology, more specifically, in science, engineering, technology and math. We support access to computing curriculum and educational technology for all students, leveling the playing field so that students and educators alike have the opportunity to shape the technologies of their future. The creators of tomorrow's innovations are everywhere, ready to be engaged and inspired. (Google, n.d.-a, n.p.)

So, what does it mean to "go Google" in your classroom? In a nutshell, it means taking advantage of the educational applications, or "apps," created and shared by Google as part of your curriculum. Whether it's as basic as conducting a search for a research paper, or as complicated as using Google Earth to develop an interactive virtual tour, "going Google" implies that teachers and students utilize Google tools to help them achieve 21st century skills.

■ THE WORLD HAS CHANGED

Over the past 15 years, the world has changed for our students. The students of today have been exposed to more media than any previous generation. Just look at the numbers:

- 89 percent of 18- to 24-year-old Americans are online.
- Digital Natives aged 12 to 24 spend 4.5 hours a day viewing screen media (TV, Internet, Internet video, mobile video), excluding games.
- 82 percent of seventh- to twelfth-graders “media multitask” while doing homework, e.g., IM, TV, Web surfing, etc. (Frontline, 2010, n.p.)

The problem is, our classrooms haven’t changed. Look inside classrooms across the United States and you’ll find a similar arrangement to those of the past century. Students are lined up neatly in rows with the desks facing a board with text written on it. Sure, the board may be a white board instead of a chalkboard, but the method of delivering materials to students is far behind the way in which students absorb material from their portable devices and computers.

Jim Shelton (2011), Assistant Deputy Secretary for Innovation and Improvement in the U.S. Department of Education, describes the situation in American classrooms:

For too many of our students around the country, “boring” has become the adjective of choice to describe their experiences in the classroom. Students have been locked down by the concept of seat time and locked out of the technological revolution that has transformed nearly every sector of American society, except for education” (n.p.).

■ TWENTY-FIRST CENTURY SKILLS AND THE MODERN CLASSROOM

As we’ve moved from a paper-and-pencil past toward a 21st century classroom, we know that the classroom needs to progress. Marc Prensky (2010), founder of Games2Learn, looked at the changes our education system needs to undergo. He says,

The reason a lot of people are stuck, I think, is because they confuse the old ways, the best ways of doing something once, with the best ways of doing those things forever. So it’s not that kids shouldn’t learn to communicate. It’s not that they shouldn’t learn to express complex ideas. Of course they should still learn all those things. Those are what we call the verbs. The nouns that they use, whether it’s the essay or the paper or the writing or whatever it is, or whether it’s the video or the podcast or the [sic] that’s what changes. (n.p.)

We know that our education system needs to improve, but what skills are necessary to empower our students for the jobs of tomorrow? Let’s look over

the list of skills emphasized for 21st century classrooms, and you'll find that technology's influence is evidenced throughout.

Communication and Collaboration

Our classrooms should strive to reflect an environment in which students are comfortable sharing their ideas with one another and with external partners as well. The modern work environment demands that employees be able to communicate their thoughts. Simply working on worksheets or taking a bubble sheet test isn't going to be a huge benefit for students looking to participate in the 21st century.

Students of today enter an increasingly globalized world in which technology plays a vital role. They must be good communicators, as well as great collaborators. The new work environment requires responsibility and self-management, as well as interpersonal and project-management skills that demand teamwork and leadership. (Pearlman, n.d., n.p.).

Collaborative projects were once seen as somewhat of a novelty, but now are essential for working in the Internet age. Technology has made work location relatively meaningless—students can work in collaborative groups from anywhere. Yet so many of our classes incorporate assignments in which students work independently, confined to desks and rarely involving their classmates. A 21st century classroom looks to engage learners in collaborative groups, where learning takes place in and out of school.

Creativity and Innovation

Most American classrooms can be described as rigid, traditional, even boring—this is not the environment where creativity and innovation typically flourish. Whether it's due to the amount of material that needs to be covered in order to prepare for a standardized test, or the traditional nature of teaching in the current classroom model, bringing in new ideas and allowing students to explore their own creativity is a tremendous challenge facing many classrooms.

Former North Carolina Governor Jim Hunt (2010) shared the following concerning the need for creative thinking in our schools:

A creative mindset is in increasingly high demand: employers are vying for workers who are able to dream big and deliver big with the next must-have product. Creative thinking fuels innovation, it leads to new goods and services, creates jobs and delivers substantial economic rewards. However, without adequately cultivating creativity in our schools at the state and local level, states like my home state of North Carolina will not be able to compete with other states and countries who already do. (n.p.)

We need to use technology-related activities to facilitate creativity and promote innovation with our students. Kids are excited to show what they know,

by creating projects that demonstrate their skills. For a 21st century classroom to be effective, our assignments need to give students more than random facts for an upcoming exam; they need to provide students with the opportunity to design projects that inspire and motivate them.

Critical Thinking and Problem Solving

For several years, there has been an assumption on the part of parents and teachers that our children aren't learning as much as they used to. Our national test scores have gone down over the past decade, and there is a growing sense that it is due to the overabundance of available technology.

A 2008 study reviewed test scores of 800 thirteen- and fourteen-year-olds and compared them with similar tests of teens from 1976, a generation ago. The results? In one test, only one in ten of the current teens tested with top scores, down from one in four twenty years ago. In another, only one in twenty reached the top score compared to one in five from the 1976 batch. (Jordan, 2008, n.p.)

Is technology really to blame for the decrease in test scores? Here is the challenge for the modern teacher—we need to capitalize on our students' interest in and ability to use different technologies, but we don't want to isolate the technologies to the point that computers do the thinking for our students. As Jason Levy (quoted in Dretzin, 2010), principal of I.S. 339 in New York, stated, "Kids are going to need to be fluent in technology. They're going to need to be excellent at communication. They're going to need to be problem solvers. That's just the way the world is now" (n.p.).

One thing we can agree on: New technologies are going to continue to impact the classroom. A teacher of 21st century learners is going to need to use these technologies to enhance their critical thinking and problem solving skills, not replace them.

■ HOW TO USE THIS BOOK

Going Google isn't like your typical *Technology for Idiots* textbook. Learning how to use the different tools in the Google library is part of the goal, but you should also come to understand how to use the tools as part of an effective teaching strategy. That being said, *Going Google* wasn't designed to be followed from cover to cover, either. Rather, you should be able to scan quickly to any given section of the book to learn more about a tool and its classroom application.

The book's goals include allowing readers to do the following:

- Preview five major points to consider about each tool or group of tools at the beginning of the chapter or section.
- Discover ideas for implementing a Google tool in your instruction.

- Explore how the tools help students to meet national standards. Chapters begin with a reference to one of the National Education Technology Standards (*NETS*) for either teachers (*NETS-T*) or students (*NETS-S*). You will also find references to the Framework for 21st Century Learning in various chapters, developed by the Partnership for 21st Century Skills.
- Observe timely screen shots to help you visualize what you're learning.
- Find tips for "going Google" at the end of most chapters.

Because some of the terms used in *Going Google* may be considered technology jargon or "geek speak," I've included a glossary at the end of the book to help you understand unfamiliar words or concepts (Glossary terms are denoted by boldface italics.). I've tried my best to explain terms like HTML and RSS, but some of these acronyms are tough to illustrate quickly. The glossary should help clear up any misconceptions or confusing terms.

It's important to note that the tool tutorials in this book can't stay current forever. Google prides itself on innovation, and the tools in its library are always changing in their look and feel. Just while writing this book, Gmail, Calendar, Blogger, Docs, Sites, Reader, iGoogle, Picasa, and Search all had changes in the way they look. I want you to learn the essential features found within each of the tools. You'll always be able to copy and paste in Google Docs, whether the shortcut is found in the edit menu or not. No book can account for the stylistic changes Google will make, but I hope this book will help you learn the tools' important features and how they can be incorporated into your curriculum.

POWERFUL TOOLS FOR 21ST CENTURY CLASSROOMS ■

The premise of this book is simple: Educators want to use the best tools to engage their students and prepare them for their future. Google has created a comprehensive library of tools that can help teachers accomplish the goal of developing 21st century learners. After reading this book, there are a few things I hope you'll want to do.

- Explore the skills that students will need, moving forward in the 21st century.
- Learn about the different Google tools and discover how you can leverage the various programs in your classroom.
- Identify several classroom projects you can incorporate into your curriculum.

If you've only used Google as a search engine, this book should provide you with an overview of a variety of tools you can use with your students. If you've been using Google tools for a long time, I hope you'll see some new ways in which you can incorporate the programs you love into your classroom curriculum. Who knows? Maybe by the end of our time together, you'll have "gone Google" as well.

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Part I

Communicating and Collaborating

Over the past decade, the demands of the modern workforce have shifted. No longer is the factory model of production a viable solution for educating our students. Collaborating with colleagues has become the norm in the business world, and yet our classrooms are still stuck in a 19th century framework of desks lined up in neat little rows. For the past 150 years, students have been expected to work on projects independent of one another, even though they are sitting right next to each other. The question has to be asked: Why? With so many advances in technology and a deeper understanding of learning theory, why are we still doing things the same way they were done so long ago? Tradition. Google tools offer one method of breaking down the constraints of the traditional classroom by providing students with the ability to work on projects at any time, with anyone, in any place. This is an example of the kind of change our classroom needs. Teachers know it, students know it, and our leaders know it.

Schools must be more than information factories; they must be incubators of exploration and invention. Educators must be more than information experts; they must be collaborators in learning, seeking new knowledge and constantly acquiring new skills alongside their students. Students must be fully engaged in school—intellectually, socially, and emotionally. This level of engagement requires the chance to work on interesting and relevant projects, the use of technology environments and resources, and access to an extended social network of adults and peers who are supportive and safe. (U.S. Department of Education, 2010, n.p.)

Collaboration involves much more than simply working together on a project with others. Collaborative activities ask students and teachers to engage with one another, learn from one another, and rely on one another as an integral part of their education.

Collaborative projects really make for an excellent education experience not only because students bounce ideas off each other and improve each other's writing skills, but also because the process itself teaches them how to work well with others—a valuable skill for everyone. (Richard Ellwood, Technology Coordinator and Digital Arts Teacher, Columbia Secondary School, Google, n.d.-c)

■ CREATING A COLLABORATIVE CLASSROOM USING GOOGLE

We've seen how the classroom needs to be updated. In order for our students to stay competitive on a global scale, we need to help them develop the necessary skills. In the Framework for 21st Century Learning (Partnership for 21st Century Skills, 2004), collaboration requires students to

- Demonstrate the ability to work effectively and respectfully with diverse teams
- Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
- Assume shared responsibility for collaborative work, and value the individual contributions made by each team member.

Google contributes to this framework by offering an online environment for creation and sharing, so that students don't have to work on projects alone anymore. The idea of having a group of students standing around while one of them inputs content into Power Point is a thing of the past. Using Google Docs, a group of students can contribute ideas to that same group presentation, but now all of them are working on the project at the same time. By having the students working simultaneously on the same project, it gives all of them the responsibility for the work, with each student having an integral role in the project's completion. Using Google tools for collaborative projects is helping teachers prepare students for the jobs of the 21st century.

Now, getting started with new tools and a shift in your educational philosophy isn't always easy. Many students are used to working on projects by themselves, and teachers are comfortable with assignments being an individual rather than a collective effort. Many teachers are still uncomfortable with the learning curve that technology and web-based tools requires of them. Instructors understand the need to share and work together pedagogically, but often they are still hung up on the technology tools themselves.

Google tools provide one important solution to these technological stumbling blocks. Once teachers start using these tools, they will find them simple to implement and see how effective they are for communicating and collaborating with students. Kids don't have issues adopting new technologies; their only concern is whether or not something works. If a suite of programs like Google tools makes their educational lives easier, they're on board.

■ USING GOOGLE IN THE CLOUD

So, what are the classrooms of tomorrow going to look like? Will students be organized into tidy rows, each working on handouts individually? Or will we see a structure where tables are found throughout the rooms? The future of our classrooms appears to be one-to-one computing, where each student has access to his or her own computing device. Whether that's on an iPod Touch, or a

NetBook isn't the issue; we are going to need to use tools that will function well on a mobile computing device. Google tools offer an effective solution for these smaller computers because files are saved "in the cloud."

Cloud computing means that files are saved through websites, rather than being stored on a local computer's hard drive. Mobile computers don't have the storage space to house a lot of files or programs, so the need to use the cloud is essential. Google Docs, Calendar, Groups, Sites, and Gmail are all housed on the Internet by Google, so files created in these programs will not fill up space on the devices themselves. Making use of cloud computing is a great way to prepare students today for the tools of tomorrow.

What are the advantages of one-to-one computing?

The America's Digital Schools (ADS) 2008 report identified widespread adoption of one-to-one computing programs and the growing use of online assessments among the key trends in education technology. Of the one-to-one districts surveyed in the report, 78 percent reported "moderate to significant improvement" in student achievement as a result of the program, compared with just 30 percent in 2006. (Dretzin, 2010, n.p.)

When we look at districts across the country working to implement a one-to-one computer initiative for their schools, it becomes even more important to have programs that allow students to work and save files in the cloud of the Internet. Students need to have an easy way to access their projects no matter where they are. We can't expect our students to try and keep track of files on multiple computers or various forms of storage. Most of my students couldn't even remember to bring a pencil to class every day. How can I expect them to remember a flash drive?

As you'll see in the upcoming chapters, one of the biggest advantages of Google tools is the ability to access information from anywhere or any device, as long as you have Internet access. Adopting a suite of programs like Google tools in the classroom will help prepare your students to work in the modern world. It's a simple investment that will yield both short- and long-term gains.

In this section, we're going to look at some specific tools that promote collaboration, communication, and critical thinking: Google Docs, Google Calendar, Gmail, Sites, Blogger, Groups, and we'll introduce Google+. We'll explore how each of these tools can help our students with critical thinking skills and provide teachers with additional avenues for increasing their productivity. As we look at collaboration and communication as crucial 21st century skills, we need to get students beyond the skill-and-drill education of the past and move our instruction into the global information age in which they thrive outside of the classroom.