FOREWORD

Tony Bingham

If you've ever used your smart phone or mobile device to look something up, you've experienced mobile learning. Mobile devices are the consummate "just in time" learning tool, and they are remaking the learning profession.

I gave my first speech on mobile learning at the 2011 ASTD International Conference & Exposition. The topic of mobile learning was beginning to resonate in the training and development field as the proliferation of smart phones and the emergence of tablets caused all of us to realize the power these devices had for learning. ASTD has published three research reports on the topic since then, and a recurring theme in those reports is that organizations know mobile learning is an important component of a comprehensive learning strategy, but many either don't know where to start or don't believe they have the resources necessary to create and sustain a mobile learning strategy.

That is why I am so pleased that Chad Udell and Gary Woodill have collaborated to make this book, *Mastering Mobile Learning: Tips and Techniques for Success*, possible. In these pages, you will find great information not only on how to get started, but *why* to start—now.

Mobile learning isn't a fad. Smart phone sales continue to soar, and the reason is that people want their mobile phones for more than phone calls. A March 2013 report from IDC states:

> Driving volumes forward will be an increasing emphasis on smart phones, further penetration into emerging markets, and ongoing replacements on a worldwide basis. Looking ahead to 2017, IDC believes that total mobile phone shipments will reach 2,281.4 million units worldwide . . .

"The worldwide mobile phone market is poised for slow and certain growth, but the profile of the market is changing," says Ramon Llamas, research manager with IDC's Mobile Phones team. "Voice connectivity has always been the cornerstone of mobile telephony, but the proliferation of 3G and 4G takes the experience into data transmission and consumption. Consequently, we expect 3G mobile phones to make up a growing majority share of the overall market, while 4G mobile phones grow at a faster rate than the overall market."

In some countries, people have mobile phones, but not computers. Students in school today—the future workforce—use smart phones to access and share information every day. Mobile technology is transforming homework. A colleague recently told me that her high school student used Apple's Siri and YouTube videos accessed via his smart phone to complete a research paper. Do you think when he and his peers get into the workplace that they'll expect to have relevant learning content delivered to their mobile devices? Of course they will.

It is time for the learning profession to dive in, and Chad and Gary are pointing the way.

The book is laid out in five parts and provides the most comprehensive guidance on mobile learning adoption and implementation that I've seen. Chad and Gary have enlisted experts to help create this book, and you will benefit from their thoughtful contributions. From the honest assessment of what mobile learning is—and as importantly, what it is NOT (spoiler alert: it is *not* e-learning on a mobile device) in Part 1, to the last section, which provides an excellent assessment on one of the most-reported barriers of mobile learning adoption—how to keep up with the new developments in the space—Chad and Gary provide a roadmap that is useful for every learning professional.

One of my favorite sections is Part 2, "Strategic Thinking About Mobile Learning." Included are two chapters that both address the business case and the business drivers for mobile learning. Learning and development efforts achieve their best results when they are aligned with business goals and objectives. Understanding the business case for mobile learning—and being able to effectively advocate for its adoption—is a critical component in achieving more mlearning penetration in more organizations.

Mobile technology is changing the world and our experience of it. From an organizational perspective, mobile learning allows for a spectrum of possibilities that were not present before, and they continue to evolve. You, as learning professionals, impact organizations in ways other functional areas cannot, because you develop the talents of the people who do the work to achieve business goals. It makes sense that you should use the most effective tools and resources you can to do your best work. Mobile is one of those tools. Chad and Gary's book shows you how.

PREFACE

This book is a true collaborative effort on the part of many people at Float Mobile Learning. It is based on almost five years of blog posts, whitepapers, presentations, webinars, and newsletters from several members of the Float team, all on the topic of mobile learning. This aggregation of blog posts and other materials has been curated, merged, edited, extended, and updated to produce the chapters of this book. The book is for people wanting to learn more about the process of strategizing, designing, and implementing the emerging set of mobile learning technologies and the content and experiences that they make possible. The sequence of chapters in the book roughly follows a roadmap that we have developed for clients that outlines the entire process of implementing mobile learning, from initial stages of vision and planning, to choices about infrastructure, the design of content, and the management of the implementation of mobile learning systems.

One of the messages we want to relay is that, while mobile learning is doable, it is not simply a matter of using a mobile device to send training content to employees. It is more complicated than that, for many reasons. While it is new and still constantly changing, mobile learning is already happening and producing real benefits for those who have the vision and skills to carry it out. The material in this book is designed to make you better equipped to design and build mobile learning solutions in enterprise environments. After reading this book, we hope that you will appreciate the thought and planning that need to go into any mobile learning project and be able to master mobile learning yourself.

We want to thank many people for their contributions to this volume, starting with all the authors. As well, this project was only possible with the material support and encouragement of

Tom Marchal, president and CEO of Float Mobile Learning, and John Feser, COO of Float Mobile Learning. Thank you, Tom and John. Because of them, Float has a community of support in terms of colleagues who make our work better and easier every day.

At Wiley, Senior Editor Matthew Davis was the first person to appreciate the materials that the Float team had produced, and he ably facilitated the process that brought this book to fruition. Ryan Noll, senior editorial assistant, steered the book into production. Thank you to both of you, where Dawn Kilgore expertly moved it through the process. Thank you to all at Wiley involved with this project. And thanks to Matt Forcum for the amazing cartoons featured throughout the book.

Chad Udell would like to thank his wife, Renee Udell, for the care, love, and support she offers. Of course, he wants to thank his children, Sophia, Liam, and Carter, who never fail to entertain and amaze him. Chad also wants to thank his colleagues and friends at Bradley University, Jim Ferolo, and others, for their continued support and collaboration. Finally, Chad's parents, Bill and Jan, continue to give him inspiration and something to strive for. Thank you all so much.

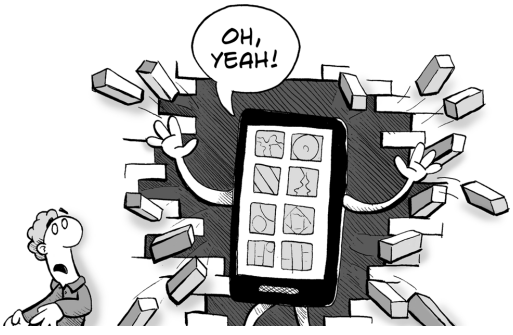
Gary Woodill would like to thank his wife, Karen Anderson, for her loving support each day, and his colleagues at his consulting company, i5 Research—Sheilagh Marchand-Pegg, Matt Campbell, and Karen Balcomb—who have provided stellar backup over the past four years. A heartfelt thank you.

Gary and Chad would also like to thank Justin Brusino, community of practice manager, Learning Technologies, at ASTD, and Tony Bingham, ASTD's CEO, for their continued support for this project and for advancing mobile learning in the marketplace and raising awareness of its benefits to the diverse ASTD communities and members.

On behalf of Float, Chad and Gary would like to thank any and all of you who have continued to read our content, hear our message, and connect with us in the community. We know we have some of the very best clients in the world, and because of you, we've been lucky enough to amass this experience and expertise. Thank you very much.

INTRODUCTION

Chad Udell and Gary Woodill



The adoption of each new technology goes through a set of predictable stages. At first, the technology is just an idea percolating in the imaginations of a few visionaries, who see the possibilities, but are not in a position to deliver the technology. Then, one or two inventive individuals or companies builds an initial piece of equipment that incorporates some of these ideas, but is usually a much cruder version of the technology that comes later. As time goes on, more and more people develop expertise in the new technology and start to expand on it and share it.

Mobile learning has followed this pattern. From its first beginnings in the early 1990s, mobile learning has grown from a few experimental sites to a wave of new users in educational and training settings, with a growing body of knowledge on how to use this new learning technology in the most optimal way. The authors and editors of this book have developed a rich knowledge base about mobile learning from working with clients and the learning and development (L&D) industry over the past five years. We now want to share what we have learned with others in the industry, in order to help grow this new and exciting field.

The state of the mobile learning industry is rapidly changing around the world. The American Society for Training and Development's (ASTD) *2013 State of the Industry Report* confirmed

that, as of 2012, mobile learning contributed only about 1.5 percent to the formal training hours offered by organizations, but that figure is misleading, as the report explains:

> The 2013 ASTD/i4cp study, *Going Mobile: Creating Practices That Transform Learning*, found one of the major challenges of implementing mobile learning is measuring its use and effectiveness. Forty-one percent of respondents in that study who use mobile learning admit that their organizations do not have metrics in place to assess the program's effectiveness. Over half of survey respondents say their organizations use mobile learning for just-in-time learning (65 percent), job aids (63 percent), and on-the-job support (52 percent). How much time an employee spends in an app, accessing this valuable information, may prove to be elusive as organizations are challenged to measure it.

This quote reinforces our strong view that mobile learning is mostly not about formal training. We also learn by looking things up when we need an answer, watching videos on our own time, and by chatting with others. All of these activities, and more, are available through the use of mobile devices. The problem is that these activities are often not thought of as learning, because they are not part of a formal curriculum developed by a training department. But, by using these activities, employees are still learning, often gaining knowledge that they can use immediately, retain, or come back to later.

The purpose of this book is to shift the thinking of learning leaders, instructional designers, and educational app developers working in large organizations to see learning differently when it comes to mobile. We want to show that appropriate and relevant learning can happen anywhere, any time, and any place, if you are equipped with a mobile device such as a smart phone or tablet computer. Beyond that, we want to help readers see the development of large-scale mobile learning as doable, using tips and techniques that we have learned and developed over the past few years.

We have organized the book as a means to success with mobile learning. It follows the same path as the roadmap that we use with our clients, and follows a broad sequence of five areas that you need to master if you are going to develop and deploy effective mobile learning in your organization.

The book is a compilation of the experiences of a group of authors, all associated with Float Mobile Learning, a learning technology company headquartered in Morton, Illinois, USA. Most of the essays in this book were originally written as blog posts over a four-year period, and are based on a wealth of actual experiences assisting clients to develop mobile learning in their own organizations.

The book is divided into five parts, each corresponding with a major phase of the development and delivery of mobile learning.

We think that it is important to understand mobile learning in some depth before launching into a specific project. As our colleague, John Feser, Float's COO, argues in Part 1, mobile learning, in his (and our) view, is not an extension of e-learning, but a set of disruptive shifts in how learning and development will be carried out in the near future. Executives must care about mobile learning, because the shifts identified by John will definitely impact the bottom line of companies. There are at least seven shifts in how learning will be carried out in enterprises, as outlined in Chapter 2 by Gary Woodill, Float's senior analyst.

So where to start? At Float we believe strongly that you need to start with a mobile learning strategy, says Scott McCormick, Float's director of client relations, in Part 2. That takes into account what Chad Udell, Float's managing director, calls the six Ps (Platforms, Policies, Procurement, Provisioning, Publishing, and Procedures). Scott, Chad, Gary, and John then present a group of chapters with details on different aspects of developing a mobile learning strategy.

In Part 3, the same group of authors writes about the varieties of activities and experiences that can fall under the category of mobile learning. Gary introduces the important concept of "affordances" to describe the different capabilities of mobile computing technologies and how these capabilities can be applied to carry out a specific training mission. It is important to understand the instructional design choices with mobile learning, before setting out to create mobile learning activities and experiences.

Part 4 is on the design and development possibilities of mobile learning, based on all we have learned over the past five years in this field. Because many companies want to start by converting existing print and electronic learning materials, Chad discusses the impact of ubiquity and mobility in designing for

mobile learning and lists a number of considerations in designing mobile learning from existing content. A number of formats are available for developing mobile materials, as Heather Ford, Float's senior designer, indicates in her chapter on digital publications, and Daniel Pfeiffer, a programmer at Float, tells us about designing for multiple screen formats. In this section, Gary also talks about design for both assessments and social media, while Jim Ferolo, Float's director of user experience, writes about general mobile learning design principles, as well as the specific experience of designing a geolocation-based app. Part 4 also includes chapters on solving technical issues in mobile learning.

Then, in Part 5, Adam Bockler, social media and marketing manager at Float, looks at how mobile learning can be integrated with social media. Chad deals with the important issue of security in a mobile world in this section of the book, while Jim argues that training in mobile development is critical for success in the implementation of mobile learning. The book ends with Gary's thoughts on managing a large-scale mobile learning project, as well as a chapter on keeping up with new developments in this field.

This is not an academic book with lots of references and footnotes, or discussions of theory or esoteric concepts. Rather, it is intended as a practical primer of useful thinking and experience with developing mobile learning in the real world. If you read the book using the sequence of sections that we have provided, you will get a sense of the development process for producing a large-scale mobile learning system from beginning to end. However, you may also wish to hone in on a specific topic that interests you today, using the Contents and the Index to find what you are looking for. We hope you enjoy the book and find it useful.

UNDERSTANDING MOBILE LEARNING

PART 1

CHAPTER 1

Enterprise Mobile Learning
A Primer

Gary Woodill and Chad Udell

Although people have been learning while mobile for millennia, what we mean by "mobile learning" is the ability to move from place to place while using mobile devices to receive from and contribute to a variety of digital information sources. While a large variety of lightweight devices can be used in mobile learning, the important part of this definition is that *the learner is mobile* and not confined to a specific location.

As a society, we've become much more mobile, both as individuals and as groups, than people who lived only a few decades ago. We are nomads, often on the move, but remaining connected to our friends, families, workplaces, and information sources. For many people, such as sales staff, field services workers, consultants, transportation personnel, and high-level executives, being mobile is a major component of their work environments. For many other people as well, commuting to work is part of life and takes up a significant part of the day.

But, as we move about, most of us are equipped, often from our early teens now, with one or more mobile devices connected to a range of information and communication services. The ability to move about while remaining connected is the essence of mobile learning. This change has an impact on both the place

and the timing for learning. It empowers learning outside of fixed places specifically designed for learning, such as classrooms and labs, and makes information for learning available any time it is needed. Full-scale adoption of mobile learning will have a profound impact on the structure of enterprise learning and development departments in ways that we are just beginning to understand.

Business Drivers of Mobile Learning

These are early days in the adoption of mobile learning within large enterprises. Some of the business drivers that are moving mobile learning forward in such organizations include:

- *The need for speedier training is evident.* Because we live in a time of rapid technological change, there is often a need for more frequent training as new procedures, strategies, and technologies are adopted by companies.
- *Time available for training has been reduced.* At the same time, hyper-competition and the demand for multitasking by workers has meant that there is less time available for training. Training often has to be done "on-the-fly" or outside work environments. Mobile learning offers one solution to this problem.
- *Mobile learning reinforces a major goal of enterprise learning and development departments.* Enterprise learning is a bit of a misnomer. In reality, most enterprise training is actually meant to increase performance and has very little to do with what is traditionally thought of as acquiring new knowledge. Gaining knowledge and long-term retention of information is often a side-effect of corporate training; but make no mistake, if companies could forego training employees and still maintain or increase performance, they would. Mobile allows resources in the learning and development departments to be spent on efforts to increase performance by having information available when needed, rather retaining knowledge for a long time.
- *The infrastructure for mobile learning is already in place.* The widespread deployment of mobile computing means that the infrastructure for mobile learning is usually in place, and

most workers already carry a mobile device with them most of the time. While some companies want to issue standard, "company liable" smart phones or tablets to their employees, many organizations are taking advantage of the existing situation by using a "bring your own device" (BYOD) strategy.

- *Many workers are already mobile.* For many jobs, the workforce is already "on the road," meaning that it is often expensive to bring them into a central location for training. Still other workers don't go into the workplace every day, but work from home or from other locations. Some are commuters who may be able to work while using public transportation to reach their physical workplaces. Finally, within a large building or campus, employees may move around a specific area as part of their jobs. All this means that, for many workers, mobile learning already fits with their lifestyle and work habits.
- *With globalization, mobile devices may be the best way to reach all employees.* Global sourcing and global labor mean that employees or customers who need training may be anywhere in the world. For some, a mobile smart phone or tablet may be the only computing device available.

In addition to presenting training materials, mobile learning can be used for performance support, research, and learning management. Mobile learning, when properly designed, can be described as "just in time, just enough, and just for me." The capabilities of mobile learning extend well beyond the methodologies of traditional training and allow greater efficiency and effectiveness of the training and development function within an organization.

The Mobile Learning Ecosystem

Many components go into a successful mobile learning experience. Together, they can be seen as a "mobile learning ecosystem." Components include a large variety of mobile devices with many features and capabilities, several types of content, a handful of different operating systems or platforms, a network of mobile communications providers with different standards, offerings, and price structures, a developing suite of tools for content creation, and

a set of new concepts and uses for mobile learning that we are just beginning to understand.

Mobile devices come in many shapes and sizes and have many ways of connecting to and distributing information. Input devices include microphones, cameras, keypads, small keyboards, clickable scroll wheels, mini joysticks, touch pads, touch screens, voice, Wi-Fi, Bluetooth, RFID, Near Field Communications, infrared, accelerometers, sensors, magnetic field detectors, and styluses. Output methods include text, sound, video, images, digital signals, LED lights, and various forms of 2D and 3D projection onto surfaces or directly into the eyeball. Work is underway on devices that stimulate the senses of smell and taste using a mobile device.

Mobile Learning Applications

Learning designers and developers have many choices for how to facilitate learning using mobile technologies. The specific techniques that you choose to implement in your mobile learning design will depend on your learning theories, your experience at training or teaching, and the characteristics and needs of the learners you are trying to train. Mobile learning applications can be broken into five broad categories.

Content Transmission and Retrieval

Learning materials relevant to an employee can either be created by the training and development department and "pushed" to the learner, or can be retrieved by a user at "the point of need." Because of the nature of mobile learning, it is best if learning materials are in the form of small "nuggets" of information, rather than large-scale productions or courses. For most workers, mobile learning is something that is usually done in small amounts, but several times during the day. Notifications can be used to alert employees to a required or important piece of information they need to consult.

Capturing Data

In contrast to e-learning, mobile phones and tablets are bidirectional, allowing users to employ them as data-gathering and storage devices as they move about. An inquiry-based pedagogy makes sense

for mobile learning and turns a mobile device into a research tool (see Chapter 24). First-person documentation activities can include maintenance of a learning portfolio, monitoring and trend tracking of local phenomena, and the creation of user-generated content.

Communicating and Interacting with Others

Because mobile devices can be networked, they are great for communicating, coordinating actions, and collaborating with others. Networking allows for texting, social media, voice communications, group games, simulations, experiences in virtual worlds, and real-time mentoring, as well.

Computing Algorithms

Mobile devices such as smart phones and tablets can also be thought of as computers in their own right. Many of these are more powerful than many desktop computers just five or ten years ago and, because of that, they can be programmed to do almost anything. This has spawned a mobile app industry that has exploded, with over two million separate pieces of software available in various app stores on the Internet. Thousands of apps now available can be used for mobile learning.

Contextual Inquiry

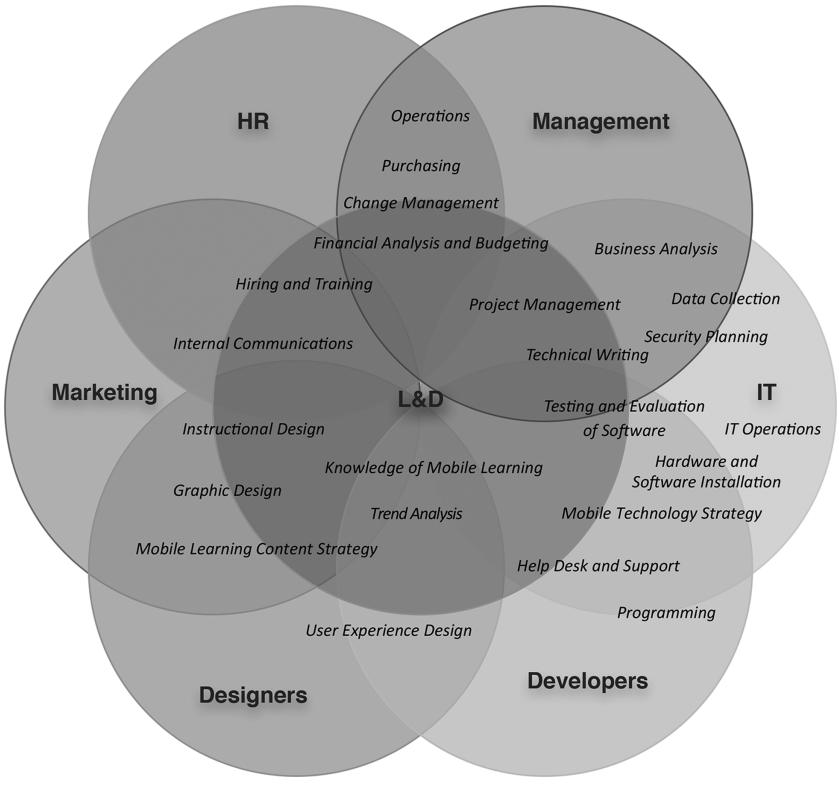
Not only can mobile devices retrieve information from databases, but they can also be used to interact with "smart" objects and/or other mobile technology–connecting people in a person's immediate environment. Additionally, the ability of many devices to detect a user's location and orientation allows for new kinds of informational experiences, such as augmented reality and geofencing.

In addition to these five categories of mobile learning experiences, mobile applications can also be used to manage learning activities in the classroom or in the field. Live information on emergencies and instructions on what to do in those situations can be conveyed to a group of dispersed users very quickly. And mobile extensions of more traditional learning management systems allow the tracking of mobile learning by existing learning and development software.

Designing and Creating Mobile Learning Content

At the present time, no rapid authoring tools will easily allow a non-technical person to produce all of the above types of applications. At this early stage of the development of the field of mobile computing, it is usually necessary to use a combination of a designer and a software developer to produce a desired application or to use applications that have been built by others. Once you move beyond creating simple read-only content, you are entering a realm more akin to traditional software design and development than to e-learning or other instructional design and development paths.

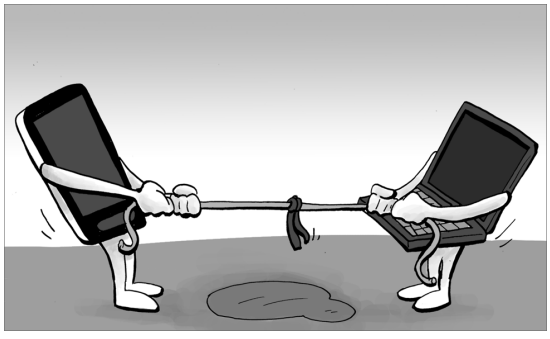
There is a recommended process (see below) by which mobile learning content can be built. We start with understanding the



Sample Process

business needs behind the desire to have mobile applications and content produced. Mobile learning creation involves several different design and development skill sets—producing a strategic business analysis of the need for mobile learning, understanding mobile content strategy, managing a sound mobile learning design and development process, leading a solid technology and programming team, and project managing both the development and implementation of an outstanding mobile learning system. Unless you have such a team with these skills sets in-house, you will most likely need to outsource the development of mobile learning to a competent vendor with these skills.

CHAPTER 2



The Seven Shifts in Enterprise Learning

Gary Woodill

Mobile learning has been involved in at least seven different shifts in enterprise learning in the past decade. While mobile computing is not the only factor causing these shifts, it is implicated in each one. Other factors include improvements and lower costs of computer technologies, the spread of computer networking, the rise of social media, the globalization of innovation, and the information explosion.

1. A Shift in the Location of Learning

Although the 1980s saw a marked increase in the use of classrooms in training and development, especially through the establishment of "corporate universities," this trend has now reversed with the advent of mobile learning. While lots of classroom training still takes place, increasingly the use of smart phones and tablets to look up information "at the point of need" is taking over from classroom instruction. This is particularly true for employees who are already "on the road," such as traveling sales staff, field services workers, and those in various transportation industries.

2. A Shift in Time

The development over the past fifty years of information and communications technologies (ICT) has moved the production and

consumption of learning materials from books and binders to a variety of online screens available from anywhere, at any time. Smart phones and tablets have accelerated this trend, as more and more materials are available in electronic formats on a user's mobile device, greatly increasing the speed of access. Instead of waiting for knowledge to be published in print form, which can take up to several months to go through the processes of writing, editing, refereeing, and printing, learning materials can now be written and produced rapidly and sent out to the world within hours. In addition, the adoption of newer, more powerful and faster mobile devices has also accelerated. With the collection of "big data" and continuous monitoring by sensors and user input, new knowledge now can be produced in "real time," while events are happening. As analytics and reporting matures in this space, we can expect that predictive analytics will allow us to respond immediately to learner needs for specific feedback and suggestions for what to do next.

3. A Shift in Context

When learning in a classroom or from e-learning programs on a desktop, users are generally not "in context." That is, they are not immersed in the environment or circumstances about which they are learning. With mobile learning, learners can be in the same context/environment about which they are learning or have questions. Because of this, mobile learning tends to be more relevant and motivating than those forms of training and development that take you out of context. Mobile learning particularly lends itself to inquiry-based learning, because it is able to answer users' questions immediately while they are exploring a particular context. Context, time, location, and learner needs play a much bigger role for mobile learning than they did for previous e-learning applications.

4. A Shift in the Amount of Information

There has been a huge explosion of data created, captured, and stored in the world in the past ten years. "Between the dawn of civilization through 2003, there was just five exabytes (or 500 million gigabytes) of information created," Google CEO Eric Schmidt told an audience in 2010. "That much information is now created

in two days, and the pace is increasing. People aren't ready for the technology revolution that is going to happen to them," he added (quoted in Kirkpatrick, 2010). While some critics have disputed the exact amounts of information created up to 2003 and since, there is no doubt that we are in the midst of a massive explosion of data, driven by the ease at which we can collect, replicate, and store it. Continuing on, Schmidt described the search engine's role as becoming more of a "Serendipity Engine," providing information to a user before it is even queried. Google Now is a first salvo in this sort of scenario. Personal agents like Siri on iOS devices are another approach to the problem of having too much information available for any one person to know.

This vast collection of data is now available to specially designed software that allows for "machine learning," whereby computers turn large data sets into useful information and predictions, available at a moment's notice. Increasingly, mobile devices such as smart phones and tablets, are the windows into this new world and are being used in educational settings for "adaptive instruction." The "semantic web" and the inclusion of contextual data for understanding information on a variety of networks is a rich area of research and development. The increasing ability for computers to parse and assign meaning to our written language will open many doors in this challenging area.

5. A Shift in the Location of Information

The digital revolution has shifted the location of information from printed materials and analog recordings to a variety of digital formats. Early computers (including the first personal computers in the 1970s) stored information on tape, then on local hard drives and servers. With the development of global networking, storage of information has now been transformed into "the cloud," a metaphor for the vast "server farms" owned by large companies like Google, Microsoft, Rackspace, Apple, and Amazon, among others. This has the benefit of reducing costs for information storage to nearly zero, and for making information available anywhere, any time. Information that used to be stored locally on a company server is now administered and mined by large corporations and the government. This has implications for privacy, security, and surveillance that we only now are beginning to understand.

6. A Shift in Learning Experiences

As discussed in Chapter 15, the many unique "affordances" (Gibson, 1977) of mobile devices has resulted in the possibility of new kinds of learning experiences. Geolocation capabilities, internal sensors, text messaging, social networking, and miniaturization of mobile computing have all resulted in new possibilities for mobile instructional design and performance support. Learning games using geospatial data, gesture recognition in simulations, supportive messages to people needing help, and collaborative learning opportunities are all real examples of how new affordances are already being used in mobile learning activities. As new affordances of mobile computing are identified and/or combined, other creative experiences will be developed for mobile learning.

7. A Shift in Control

The digital revolution, including developments in mobile computing, has resulted in a new set of powerful tools that can be used in new ways for enterprise learning. One issue that has not been settled is who is going to control the development and use of these new technologies. Is it going to be individuals, who then take control of their own learning? Is it going to be community control, whereby networks of collaborators are able to work together to accomplish their goals? Is it going to be educational institutions, which still retain the power to issue credentials for most professions? Or is it going to be corporations and/or governments, who are now collecting vast amounts of data on each of us, who will be able to analyze this data and turn it into information to influence their employees, other individuals, and communities? The answer to this question has not been determined yet, and the result may, in fact, be a balancing act of shared control among all four groups.

Although they may have had different starting points, the seven shifts in learning discussed above have all converged and are now evolving together. This has resulted in a complex situation for those in the learning and development industry, who must learn new skills and how to overcome new challenges brought on by these shifts.

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