

RAPID MEDIA DEVELOPMENT FOR TRAINERS

CREATING VIDEOS, PODCASTS, AND
PRESENTATIONS ON A BUDGET

JONATHAN HALLS



More Praise for *Rapid Media Development for Trainers*

“If you’re a training professional who uses any type of media (video, audio, graphics, or screen text) in your learning programs, then *Rapid Media Development for Trainers* is for you. Jonathan Halls draws upon his 25-plus years of experience in media development and learning psychology to explain these topics in simple terms. He explains why media development is important, and how it fits into the context of learning. He shares well-researched insight into media design, as well as lessons learned from his own vast experience, and equips you with proven techniques to use when creating your own projects. You’ll reach for this reference guide again and again when designing or delivering training programs. I can’t wait to add this new book to my resource collection!”

—Cindy Huggett

Author, *The Virtual Training Guidebook:
How to Design, Deliver, and Implement Live Online Learning*

“Whether you’re a classroom trainer or an e-learning developer, *Rapid Media Development for Trainers* is a great primer on incorporating digital media into your toolkit. From capturing and editing audio, to creating guerilla-style or more formal video assets, to incorporating graphics and onscreen text, Jonathan Halls digs into virtually every aspect of digital media creation.”

—Cammy Bean

Author, *The Accidental Instructional Designer:
Learning Design for the Digital Age*

“Being media-development-savvy might have once been a specialty or luxury in the learning space, but it is fast becoming the norm—at least in the minds of today’s and tomorrow’s learners. For learning professionals, understanding and being adept at designing and developing digital content is what will soon separate the ‘indispensable’ from the ‘passé.’ In *Rapid Media Development for Trainers*, Jonathan Halls has created a must-have guide to help you bridge this skill gap and get your media development game on point!”

—Halelly Azulay

Author, *Employee Development on a Shoestring*
Host, *The TalentGrow Show* Leadership Podcast
Leadership Development Strategist at TalentGrow

Buy This Book!

Rapid Media Development for Trainers

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Presentations on a Budget

JONATHAN HALLS

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Contents

Preface	v
1. The New Learning Frontier: Digital Content	1
2. Digital Media and Learning: A Glove Fit	13
3. Creating Digital Media Fast and Affordably	23
4. Audio and Learning	31
5. Planning Audio Content	41
6. Your Audio Toolkit	53
7. Creating Digital Audio Content.....	63
8. Editing Digital Audio Content	75
9. Video and Learning.....	85
10. Planning Video Content.....	95
11. Your Video Toolkit	109
12. Creating Video Content	119
13. Editing Video Content.....	133
14. Graphics and Learning (by Connie Malamed).....	145
15. Screen Text and Learning.....	159
16. Planning and Creating Screen Text	167
17. Editing Screen Text for Learning	179
References	185
About the Author.....	187
Index.....	189

Preface

It's a noble endeavor to be a learning professional. When people allow you to influence their thinking, it's a privilege beyond words. We as a community of professionals should never take this for granted. A hundred years ago, this privilege lived mostly in classrooms. In the 1930s, radio gave our profession a new venue. Soon after that, television. Now, the 21st century offers many more spaces for learners to build knowledge and skills. We face new modalities, new platforms, new calls for personalization.

Our influence truly extends beyond the classroom. And just as we need skills to deliver meaningful learning in the classroom, learning professionals need solid skills and disciplined methods if we are to influence learners in these new spaces. The skills of classroom facilitation take time to learn, as well as a lifetime of successes and failures to perfect; it is no different with media production. It is just as unconscionable to leave it to chance when developing media as it is when preparing for the classroom. You might be able to get by once or twice, but there's a real discipline to consistently producing quality media. Above all, winging it mocks the privilege learners have given us to influence them.

We need to be disciplined and skillful with media content. This can seem daunting for many learning professionals with limited experience recording a podcast, shooting a video, designing a graphic, or writing screen text. So when Justin Brusino, who talked me into writing my first book, suggested grabbing a beer to talk about another, I threw out the idea of drawing together these modalities into one book. There are some great books that focus on individual modalities such as video, audio, graphics, and screen text. But learning professionals are more and more being asked to work with all of them, and so I have written this book for readers who want to become masters at creating learning media.

In a way this book reflects some of the workshops I have done over the past decade and a half in London, Singapore, and Washington, D.C., on concepts relating to 360-degree storytelling and transmedia. After all, in the future we'll need to use different modalities and platforms interchangeably, blended with other learning methodologies. Thankfully, Justin bought the idea and the beer, and has once again patiently guided me through the proposal process. Thanks, Justin.

I've sought to do two things in this book. First, to distill what I've learned over the past 25 years into a foundational framework that offers a mindset for thinking about constructing content that will cause learning. Second, to share practical methods, drawn from the professional media world and applied to consumer-level equipment, that will help you consistently make high-quality media content.

This book attempts to provide breadth rather than depth. It's tough to squeeze 25 years of experience and learning into a couple hundred pages. So I have aimed to provide this framework as a tool you can use to deepen your skills and knowledge with practice and experience. It's been tough to write because, like any subject matter expert, I've been tempted every step of the way to cram in more details, rather than remain focused on providing a foundation. It's the subject matter expert's curse. But Jack Harlow, my development editor, has helped me stay disciplined and keep this book foundational. Thanks, Jack.

Thanks also to Associate Editor Caroline Coppel, who oversaw the copy edits and shepherded me through the production of the book and subsequent reviews. She has been patient and understanding, which I have especially appreciated because she has worked around my relentless schedule of seminars and travel.

I know a lot about learning psychology and its relation to audio, video, and writing. I've been studying and teaching it for years. But I'm a "layman with an opinion" when it comes to graphics, not an expert. And yet it's one of the modalities we all use, whether it be for presentation slides, in handouts, or part of a e-learning program. So I faced the challenge of whether to research and write as a journalist or consult a recognized expert. After a conversation with Justin and Jack, I thought, why not ask Connie Malamed to write a chapter? Connie comes to graphics with a healthy balance of being both a graphics expert and instructional design guru. And she's a great writer. Her book *Visual Language for Designers* is both an instructive and visually beautiful book, informed by cognitive principles. As with her other books, it belongs on your shelf if you're serious about media. I am so pleased that she agreed, and I am hugely grateful for her writing chapter 14.

I am very conscious that what I write is as much about what I have learned from others as it is about my own thinking. So it's fair to say that this book reflects the wisdom and skills of many people who have taken me under their wing. During my earliest days of broadcasting, the late Alex Vale and Bruce McNeily were both hugely influential. Later, my days at BBC Production Training were incredible. While I had the honor to be a steward of this prestigious organization, the wisdom, expertise, wit, and good nature of its faculty shaped my thinking. This especially includes former colleagues at the Elstree and New Media training units in London: Paul Myers, Phil Ross, Simon Fox, Ian Hider, Paul Roberts, Simon Kidd, Mike Wright, Gareth Watkins, Ian Wyatt, Nigel Maslin, and others who were all my teachers. This book is as much yours as mine.

I also want to thank the participants of my workshops around the world with whom I have worked. Literally thousands of people in more than 25 countries have shaped my thinking with tough questions and thoughtful challenges. And their ensuing content production has been truly inspiring.

Writing can be a lonely pursuit. You withdraw from people to think, plan, write, and then rewrite. And then rewrite again. You stop answering emails and find yourself distracted when hanging out with friends as your mind continues to wander back to elements of the book you are struggling with. But it's not all that lonely when you have the support of someone special. My wife, Sharon, is that special person, always an enormous support. She stayed up late on our vacation helping me scour the manuscript for typos and providing comments. And she put up with my absentmindedness and blank stares for weeks at a time during the writing period. This book is as much her success as it is mine.

Again, it's a noble endeavor to be a learning professional. The fact that people open their minds and allow us to influence them, whether it be in a classroom or through a podcast they enjoy on their phone, is an incredible privilege. It's the same with books. I'm privileged that you picked up this one and genuinely hope its influence provides a foundation for you to become a master at creating rapid media content for learning.

Jonathan Halls
Washington, D.C.
December 2016

The New Learning Frontier: Digital Content

In This Chapter:

- What skills do learning professionals, whether they are trainers, teachers, or professors, need to create digital learning content?
- What are the three characteristics of the new digital content ecosystem?

Learning professionals have always worked with media. Whether it's a flipchart, mimeographed handouts, or acetates on an overhead projector, media has always been an important part of delivering training and educating people. It provides learners with multiple ways of learning and reinforcement. For example, an acetate shown on an overhead projector can more efficiently illustrate how a car works than just a trainer's verbal description. And providing handouts gives learners something concrete they can refer to after the learning event.

Until about 10 years ago, media such as audio or video was produced by broadcast professionals who had big budgets and advanced technical skills. They used expensive, complicated cameras and fancy microphones and tape recorders, and generally worked in TV and radio stations or production houses. The equipment simply was not accessible to the average trainer, and even had it been, it was very complicated to learn and use.

But that's all changed. Today, you can create your own audio and video content for use in the physical classroom and virtual learning ecosystem for a fraction of what it would cost to hire a production team. And using media is no longer a matter of owning one VHS copy of a sales training video that you guard jealously and never loan out in case it's not returned. Today, you can create your own audio, video, graphics, and screen text content that the learner can access any way she wants—on a phone, tablet, or desktop. She can access it anywhere that has an Internet connection and anytime that suits her schedule.

If you've attended a conference anytime over the past decade, you'll have heard people using buzzwords like *blended learning*, *flipped classroom*, *MOOCs*, *augmented reality*, and *social learning*. In

fact, you may already be exploring these new approaches to learning in your own work. Given that these innovations are becoming common words in the learning professional's lexicon, it's easy to become blasé and forget how profound they are—and to miss the profundity of the changes likely to come down the pike in the future. This is probably because our world is change-weary.

The amount and speed of change for most people probably became most apparent about 15 years ago, when a connection to the Internet became common for many people in the workplace. The innovations since then have been dizzying.

What Is Media?

A lot of people think of *media* as a collective term for radio, television, and newspapers. *Media* comes from the word *medium*, which means an intervening agency, means, or instrument by which something is conveyed. TV, radio, and newspapers convey information. But so do many other things. A signpost on the side of the road is a medium, as is a bumper sticker or a restaurant menu. Learning professionals have used many media over the years, including chalkboards, films shown on movie projectors, slides, felt displays, and even posters. In this book, the term *media* is used in its broadest term as anything that is a means to convey information.

Flashback

Let's reflect on what this change has been. In the mid- to late 1990s, the Internet was that thing on a computer in the corner of the office or a library. In some workplaces, you had to book time to use it. A few years later the Internet knocked on our front doors in the form of the old dial-up modem that coughed and spluttered to bring us content from the world's big providers, like AOL, BBC, and AltaVista. It most often took 30 to 40 seconds for a page to download. This was less than 20 years ago.

The Internet became more reliable a few years later, with broadband connections using the existing copper cable technologies that had supported telephones. Then fiber optic burst on the scene, offering scorching fast bandwidth speeds. Now the Internet travels in your pocket and briefcase through your smartphone and tablet.

The first webpages were mostly made up of the written word, although some included images that took forever to download. Then, developers introduced audio to the web, such as Real Networks, which developed RealAudio Player in the mid-1990s. Video then became a reality, boosted by YouTube, formed in 2005.

It's incredible to think about how much has changed in the past few decades and compare it with the changes in communication through history. Take for example the printing press, which

radically changed society. It took half a millennia to innovate the next communication technology, the telegraph. And it's not just the technology that has changed, but also our lifestyles. In the United States, there are more mobile phones than people. According to a 2013 report from IDC, 79 percent of smartphone users reach for their device within 15 minutes of waking, showing the role these devices play in today's lifestyle. More recent research by Gallup shows that the majority of smartphone users check their phone at least once every hour. Half check their phones several times an hour (Newport 2015). People are connected and using the new technologies in so many ways that learning professionals have incredible opportunities not available before to help their learners develop new skills.

In the span of time equal to half the average person's career, the amount of change has exploded, and there's no sign it will stop. For learning professionals, the media tools we can add to our professional toolkit have expanded dramatically. This new range of tools offers more flexibility for the learner and greater precision in delivering content. Now any trainer, teacher, or professor can create audio podcasts or videos, publish online content, and design graphics to help their learners. But of course just being able to make content does not mean the content is good or will actually lead to learning. The challenge for learning professionals is to take it from being just a new form of media to something that is professional and deliberately structured to lead to learning.

Purpose of This Book

Written for learning professionals, *Rapid Media Development for Trainers* will help you make polished digital content that aids learning. It's easy to think that the principles and techniques we explore are relevant for stand-alone content, such as videos you may show in the classroom or podcasts you make available on demand through a learning management system. However, they are also relevant for building PowerPoint presentations that form the basis for e-learning content. The disciplined, creative use of digital content such as audio and video can add life to what might otherwise be dull e-learning experiences.

The focus is on the four modalities most within learning professionals' reach:

- video
- audio
- graphics
- screen text.

These modalities will be explored in the context of two important characteristics of digital content: multiplatform distribution and personalization.

One challenge of the topic of digital content is that many people instinctively put this book on the shelf with their books about learning technologies. While this book talks about technology, it is not a technology book. It doesn't get into the intricacies of HTML, JavaScript, or audio and video codecs, all of which will continue to change in the future. There will be no ogling over cameras or

discussions about whether Adobe Premiere is better than Apple Final Cut. It's actually about learning and how these new everyday tools can help you in the noble practice of helping others learn. As such, this book is about the psychologies of learning and media, the art and science of teaching, and the practice of production.

Throughout this book, we will use the term *learning professional*. While there are significant differences among workplaces, schools, and colleges, the actual cognitive process of learning is the same for adults and children. More research from both the adult learning and K-12 learning worlds is being drawn on by respective practitioners. For example, you'll see in chapter 2 that Atkinson and Shiffrin's memory process model is used to explain learning and media communication. Their model is used by special education teachers in schools as well as trainers working in the field of skills development and expertise. It's also referenced in media psychology. So this book is written for anyone engaged in the business of helping other people learn, whether they are workplace trainers, teachers, or professors.

Essential Digital Media Skills for Learning Professionals

We're at a point when media competencies will soon become an important part of the learning professional's job description. Right now, many learning professionals are exploring how to incorporate digital content into curriculums to make learning more dynamic. They are engaging in exciting innovation.

However, if you review their work you'll be surprised at how much is dull, uninspiring, and boring. And how much really looks amateur. This is only natural: The typical learning professional didn't go to film school or study to work in broadcast radio. They went to college and mostly learned how to facilitate learning in a classroom. But the ability to create professional-looking media soon will be the baseline standard. Video shot with a wobbly camera won't be acceptable. Podcasts that have poor audio quality or fail to engage the listener won't be acceptable. Graphics designed with no purpose or meaning won't be acceptable. Screen text organized haphazardly or amateurishly crafted won't be acceptable.

Learning professionals need a deliberate set of skills that draws together both teaching and media competencies. One without the other will not be enough. Just about every trainer or teacher has heard comments like "I'm a good talker, so I can easily deliver a great training session" or "I'm a subject matter expert, so I'm perfect for designing this class." Such statements betray a fundamental misunderstanding of what skills are required to successfully manage the classroom dynamic and create experiences that lead to learning. They exude an ignorance of the instructional design processes that make complex information easy to learn. And they demonstrate an incomprehension of the practical skills, based on research into the science of learning, that are required to successfully facilitate learning and take years to refine.

Such flippancy is not that much different from saying “I’m good with technology, so I can easily shoot video and create digital learning content” or “I’m good with software, so I can edit the audio into a podcast.” These statements also undervalue all that goes into crafting truly engaging and inspiring content. To that end, as our profession learns what digital content competencies for learning professionals look like, this book hopes to inform that conversation in a practical way by drawing together media and learning psychologies and mapping them to the practical production techniques and standards used in today’s media world.

The Digital Content Ecosystem

To make sense of how digital content can transform your learning practice, it’s helpful to consider the digital content ecosystem. Let’s start by reviewing the general media world and other aspects beyond the learning world. Most people are exposed daily to the world of digital content. They’re reading online newspapers and magazines, posting messages on Facebook, watching videos on YouTube, sending emails, and conducting web searches. However, in our chaotic lives it can be hard to find time to reflect on how these things piece together. There are numerous ways to dissect it, but this book will consider three important characteristics of the new digital content ecosystem and then consider what they mean for learning. They are:

- Digital content is multimodal.
- Digital content is multiplatform.
- Digital content can be personalized.

The main focus of this book is on the multimodal aspect of digital content. However, you will also benefit from an understanding of digital content within the context of multiple platforms and personalization.

What Is Digital Content?

The term *digital content* is mostly used to refer to digital media such as text, graphics, audio, and video. However, technically speaking, it is information or data that have been coded as binary digits: Think ones and zeros. So digital content can also include software and information such as GPS coordinates. This book adopts the more general use of the term and uses it to describe text, graphics, audio, and video that is published electronically or made available for download on multiple platforms and that offers an opportunity for the end user to personalize it.

The idea of multimodal content revolves around the word *convergence*. Convergence is a buzzword that’s been around for a long time and refers to the coming together of technologies. The web is classic

convergence because it brings together the computer, telephone, television, radio, and newspaper to one device or platform. Twenty years ago you had to go buy a newspaper to read the *New York Times*' editorial on the presidential primaries. Then you had to go into your den and turn on the TV to see what the candidate looked like kissing babies and shaking hands. To hear a discussion that goes into more depth, you might listen to the radio in your car. The physical experiences we had with audio, video, and the written word were generally very separate because they were different self-contained media that relied on different modes of communication. TV was driven by pictures and generally struggled to efficiently convey detailed content that was not visual. Radio used the spoken word, which afforded it more detail but struggled to convey facts and figures. Newspapers provided a more sit-down and in-depth experience, which allowed for details and analysis. In addition to the different modes of communication, people tended to consume text, audio, and video at separate times in the day: newspaper in the morning, radio during commutes to and from work, and TV in the evening.

All of this changed with convergence—the coming together of technology. Computers and telephones, particularly today's smartphones, brought the convergence of audio, video, text, and graphics modalities. This means you can read the editorial on the *New York Times*' webpage and move your mouse or finger and click on a video or podcast to create a seamless, multimodal experience. Convergence has also altered the physiological experience of media consumption. We no longer move to a room that has a television to see video, or head outside for the morning's copy of the *Wall Street Journal* tossed on the doorstep by a kid delivering newspapers. Everything is now on one device. And that device travels with us. You no longer go to the medium for the content; the content comes directly to you.

Following convergence, digital content has also experienced a divergence. The web—which for many people was an entity residing on a desktop computer—has effectively diverged to other platforms, so it exists now on smartphones, tablets, and other seemingly unrelated objects like cars, game consoles, home alarms, and even weather devices. The web will continue to connect more and more devices.

It's important to stay abreast of these developments because what's described here is just the start. The opportunity to give more control to learners through digital technology will continue to gather pace. Experts already predict with certainty that physical connectivity will extend to robots and even neural implants. Yes, that's right: Advanced research is under way to use neural implants to treat and manage neurological conditions such as post-traumatic stress disorder. How long will it be before such technology is able to plug into a brain much like a USB stick and provide the knowledge and skills to perform a psychomotor skill?

New technologies now allow content producers of any type to create a personalized experience for the individual recipient. For example, Amazon remembers what you have previously bought and browsed to build a profile of your interests. It suggests other products it thinks you might like. Your storefront is personalized to your tastes so the Amazon homepage you see on your tablet, as you

wait for a flight at the airport, is very different from what the person sitting next to you sees on his Amazon homepage.

Let's dig a little deeper into what this means for learning professionals.

The Web vs. the Internet

The terms *World Wide Web* and *Internet* are often used interchangeably. However, they are different. The Internet is the system of physical connections of billions of computer networks and devices around the world. It has been around since the 1960s. Applications like the web, email, Voice over Internet Protocol (VoIP), and file sharing use the Internet.

The web is a system of content that is viewed using a web browser such as Explorer or Safari. It is made up of webpages containing text, graphics, video, and audio files. Each page has its own name or address called a URL. These pages contain hyperlinks, the driver of interactivity, which connect to other digital content. The web was invented in 1989 by British scientist Tim Berners-Lee. The web is often called a medium, and although this is a helpful analogy, it is probably more accurate to call it a space where information resides.

Digital Content Is Multimodal

Your digital learning content could be experienced through multiple modalities.

For example, if you are teaching a mechanic to change a car tire, you might choose video because it involves psychomotor skills. Or if you are teaching a salesperson how to sell a new product, you might use a combination of these modalities, such as a webpage that seamlessly blends video, graphics, and screen text.

Each modality has its own set of strengths and weaknesses for communicating information and stories. It's up to you to choose the modality that best fits the topic of learning. You wouldn't start by picking the modality—say, video—and then searching for content that would be well suited for it. Instead, the digital learning professional looks at the learning objective first and then asks, "What is the best modality in which to present this objective?" We'll dive deeper throughout the book when we work through the editorial and production issues of each modality. But first, let's spend a few moments exploring each one:

- **Video:** Video is perfect for showing action, space, and to a lesser extent, interesting visual content. It can communicate action faster than words and more realistically than graphics. However, it struggles to convey complex, detailed information, and if there's no action, viewers very quickly get bored.

- **Audio:** Audio is good for narrative learning and has been described as the “theater of the mind” because it forces the listener to draw on her imagination and memory to construct meaning. It uses music and sound effects as well as the spoken word; because of this, it can be a powerful modality. However, audio struggles to convey complex information with lots of detail, and learners must listen from beginning to end to get a sense of the overall message, which may be time-consuming.
- **Images:** Graphics and photographs are good for quickly communicating information such as relationships, space, and emotions. They also bring an aesthetic quality and are helpful when communicating to groups that speak more than one language. Images are also easier to remember. But graphics work best when they focus on single points of information and may struggle to convey lengthy ranges of information. They also are not as effective for conveying concrete, specific information, such as quotations or legal messages. For example, if you use a picture of someone smiling, is that smile happy or sarcastic?
- **Screen Text:** The written word is good for conveying concrete, specific information such as facts, figures, and complex ideas. It is ideal for concise, detailed knowledge. However, it is not always the fastest way to communicate, and it can struggle to convey some abstract concepts that may be better expressed with graphical diagrams. For example, a diagram may be more effective than two pages of text at showing how a car engine works.

Multimodal Versus Multimedia

This book uses the term *multimodal* rather than the more popular *multimedia*. Multimodal is more descriptive for our purpose because audio, video, text, and images are not the physical medium, rather they are modes of communication that exist in a space that is consumed through a medium such as a tablet or smartphone.

Other Forms of Content

If you’re creating educational content, you may be involved in other forms that are closely linked to these four modalities. However, the cost and level of complexity to produce them makes it likely that you would outsource their production. While the average learning professional can most likely find time to learn and make videos, podcasts, and presentations, the following content forms pretty much require full-time attention from highly skilled craftspeople.

- **Video Animation:** This could be a technical diagram that sequentially shows what happens when an airline passenger goes through each step of screening at an airport. Or it could also be a cartoonlike video. Animation is complex and requires training to pull off well.

- **Augmented Reality:** This is when information is overlaid on a live picture. For example, in a historic house such as Thomas Jefferson's Monticello, tourists walking through his office might aim their smartphone at his desk, which contains a writing polygraph (a clever device that duplicated his handwriting), and either text or a graphical overlay would explain the machine or the fact he wrote more than 20,000 letters using it. Then, if the tourists turned the phone's camera down the corridor to the library, they might see a description of the library and interesting information, such as the fact that Jefferson had owned 6,000 books that were ultimately donated to the Library of Congress. Augmented reality seems somewhat futuristic, but it's already in use.
- **Data Stories:** This is something more common in newspapers and mainstream media. A graphical interface is created to tell an evolving story, when changes can easily be tracked by data. For example, it might be a map of U.S. electoral districts showing voting patterns or the actual results of a live election. Or it may be something that changes more gradually, such as demographic or GDP information for different countries, which changes annually. The data might be input manually or automatically.

Digital Content Is Multiplatform

Digital content no longer exists on just one device, with learners logging in to their work or personal desktop to access learning material. Today, people access learning on smartphones, tablets, laptops, and desktop computers. Because digital content has become multiplatform, here are three things to consider when producing learning material:

1. the physical relationship between the learner and device
2. the importance of identifying which platform is best for the learner
3. the practical considerations of making content for multiple platforms.

The Physical Relationship

The physical relationship the learner has with a device is critical and affects his pace of learning as well as motivation. Consider how video is experienced across different platforms. When you watch video on an IMAX screen, the picture is enormous and you literally move your head from left to right to experience the film. It's incredibly immersive; the lights are turned out, which reduces distractions, and the soundtrack is produced in surround sound to make the whole experience very realistic.

Watching at home on your television is entirely different. The television is likely set up on the other side of the room, maybe 10 to 15 feet away from you. Unlike watching at the cinema, you will move your eyes to take everything in. You might be in the kitchen or otherwise distracted, and the acoustics are unlikely to be as good as in the cinema. The experience is much less immersive.

Consider watching that same video on your computer. Neither your head nor eyes move because the screen is only a foot or so away. And there's every chance you'll be interrupted by email and the temptation to check the web for something. It's even less immersive than watching TV.

That same video will be much different on your smartphone. Rather than moving your eyes, you'll move your hand toward your eyes as you bring the screen closer to you. The panoramic shots that were awesome at the cinema look tiny and crunched on your phone. But it's cool because you can take the content with you.

The same video, experienced on different devices, looks incredibly different. And the experience is different too. What does this mean for learning?

What's Best for the Learner?

Depending on who your learner is, different platforms will be more appropriate. If your learner is office-based, producing content for desktops may be most appropriate. If you're providing just-in-time learning for mechanics or technicians who visit client sites to fix things, content on a mobile device, either a smartphone or tablet, might work best.

In the future, content will be delivered on more than just desktops, smartphones, and tablets, and learning professionals need to keep up-to-date with these new innovations. *Internet of Things* is a term used to describe how physical objects become part of the Internet by having sensors, electronics, and software embedded that connect to other objects and software to exchange real-time data that can be used for all manner of tasks. Buildings already connect to the Internet to provide security, and cars use it for maps and live traffic updates. Our challenge will be learning how to make our content work for those emerging platforms.

Practical Considerations

Creating content for different platforms can get messy because not all objects are the same. Computer screens are generally bigger than tablets, so content will look different on each device. And even individual models will improve with future releases.

For example, 15 years ago the average webpage was designed to have a resolution of 800 x 600 pixels. As screen quality improved, designers started designing for 1024 x 768 pixels. When smartphones offered web connectivity, people were viewing web pages designed for 1024 x 768 pixels on phones with much smaller screens. Phones are catching up, but even now there are significant differences. The Apple iPhone 7, for example, is 1334 x 750 pixels, and the Samsung Galaxy S7 has a resolution of 2650 x 1440. And just to keep us on our feet, tablets feature a whole range of different dimensions.

But remembering exact dimensions is not the point, partly because they'll continue to change. More important is that every device is different and if we design digital content for one screen it's going to look odd on all the others. So this presents challenges. Do we create a special version

of our content for each platform or device model? Or do we create one that matches the lowest common denominator? Or do we look for something that can morph into the appropriate size for different devices?

In their book, *Mobile Usability*, Jakob Nielsen and Raluca Budiu (2013) argue persuasively that content should be made specifically for each platform to take advantage of the user experience it offers. This means considering the pros and cons for each platform. For example, accessing content on a smartphone offers portability and on-demand access to learning. However, navigating with a finger, rather than with a mouse, is much clumsier. So interfaces need to be designed taking this into account. Likewise, content needs to be designed differently. Video that looks great on the big screen or on television can look unnatural on a mobile device and movement such as pans or zooms might jerk abruptly.

While Nielsen and Budiu are referencing general content in their book, as opposed to sites specifically for learning, they suggest you should have a specific site for desktop, another site or app for phones, and another for tablets. This gets expensive. An alternative is to adopt what's known as responsive design, which optimizes your website to display differently on different devices, taking into consideration their screen resolution.

Digital Content Is Personalized

The third characteristic of digital content is that it is personalized. Apart from the very personal experience of carrying content around on your tablet or phone, technology allows producers to offer content that can intuitively meet specific needs while also giving users the opportunity to tailor content. Earlier, we discussed websites like Amazon that suggest books or products you might consider purchasing based on what you previously bought or products you browsed. While Amazon offers personalized suggestions, other platforms, such as Spotify and Pandora for music, give users control over personalization. You can choose your favorite genre or songs and create a virtual radio station that plays the music you like, ignoring what you don't, wresting control from the radio station's music director and firmly giving it to the user.

Learning professionals know that being able to personalize learning deepens the experience and offers greater autonomy, leading to more ownership of the learning experience. Technology allows us to make our content even more learner centered. What does this look like in more practical terms?

- **Content is available on demand:** Learners can learn when it suits their schedules, preferences, and needs. If it's a formal course of study, they can plan learning around their work. If it's short chunks of learning, such as nano- or microlearning, it can be available when the person needs it, just in time.
- **Content is nonlinear:** Learners can take modules of a course of learning in any order they want. If they want to start with theory before practice, they can do that. The other

way round is fine too—it's their choice. Of course, some curriculums need to follow a sequential progression, but quite a few do not. In addition, some learners may come with prior knowledge and would want to skip the more basic modules.

- **Authorship is shared:** Learning can be developed by learners and collaborators by way of blogs, wikis, and user-generated content. If students are doing an assignment on civics, different students could create content about a different aspect of government and share it. In the workplace, a lot of learning is informal and happens on the job. Learners could be co-authors in creating the company's overall curriculum.

Digital content technology allows us to give learners opportunities to personalize their learning and take greater control. They can pick and choose modules based on their immediate or strategic needs, they can tailor the digital content offering to the level of knowledge they require, and they can do it from anywhere they wish.

The Digital Ecosystem and Learning

The digital media ecosystem gives incredible control over how meaning and messages are developed, shared, and personalized by society. When you reflect on some of the key theories in adult learning, some obvious similarities with digital media emerge. Effective learning is personalized to the individual learner. Effective learning delivery uses different delivery methodologies based on the content. Transformative learning takes place when learners have the autonomy to process the learning in a way that makes sense to them.

While this book focuses primarily on planning and producing the multimodal aspect of digital learning content, multiplatform functionality and personalization should never be far from consideration. Chapter 2 explores these connections, considers how the brain processes media content, and suggests some universal media principles that ensure effective media content.

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