

A Principled Technologies Report

E-learning Accelerated Managing the rate of change in 2016

An analysis

Ian Huckabee Principled Technologies → EXECUTIVE SUMMARY

 \rightarrow E-LEARNING AND THE DIGITAL **BUSINESS**

→ THE NEW LEARNING ECOSYSTEM

 \rightarrow Learning data you can bank on







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EXECUTIVE SUMMARY

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ABOUT

HOME

SOURCES

THE EXPANDING LEARNING ECOSYSTEM

Learning has seeded itself in practically every environment today's worker encounters. It has propagated beyond the LMS, beyond the classroom, beyond performance support tools. Increasingly, the distinction between work, learning, and even home environments and learning environments is becoming obscure. Today's successful learning initiatives anticipate tomorrow's changes and improvements in developing and delivering learning and measuring its impact.

Our current reliance on mobile devices and the demand it has created for shorter content, collaborative and social environments, and personalized learning experiences are the primary drivers of this renaissance. While businesses grapple with what it means to be a digital organization, and while they deliberate over improvements to their current technologies, content development, and messaging, their audiences – workers, customers, and brand advocates – consume content at increasing rates. Media providers seamlessly blend this content into the lives of their consumers by strategically employing the latest devices, platforms, and channels, so they can reach audiences anywhere at any time with information that effectively changes behavior.

Moreover, consumers and media providers alike will quickly focus on new devices, platforms, and channels (a computer, a mobile device, a social media channel, a native app, or any combination of these) – and even discard old ones – when once-hot technologies lose their popularity.

What remains constant through all of this change is the need for top-quality content. When we hear phrases like mobile-first and cloud-first, we need to remember to think of media as content-first. In this report, we look at learning content and effective and sustainable learning strategies in the context of perpetual change – changes in the types of devices we use, our media environments, and the technologies that string them all together. We discuss underlying technologies, like the Experience API, that aim to support learning in this new paradigm. Finally, we present strategies that organizations can use to launch successful learning initiatives that will survive continuing shifts in technology.

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→ THE NEW LEARNING ECOSYSTEM

→ E-LEARNING AND THE DIGITAL BUSINESS

→ EXECUTIVE SUMMARY

TAL BUSINESS 🛛 🔿 LEARNING DATA YOU CAN BANK ON

1_)

HOME

E-LEARNING AND THE DIGITAL BUSINESS

To remain competitive, organizations must address the rate of change in technology. Digital business expertise and knowledge will grow within the organization's learning functions as the organization becomes more strategic and proactive in dealing with this change.





NEXT >

As we enter a time marked by a disruptive convergence of people, business, and things, successful training on any scale involves becoming a stronger digital organization.

E-LEARNING AND THE DIGITAL BUSINESS:



The effect of tech



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The difficult decade

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ABOUT

SOURCES

E-LEARNING AND THE DIGITAL BUSINESS

- According to the National Bureau of Economic Research, the relationship between technological change and on-the-job training is a critical one, given that any unexpected (and unaddressed) increase in the rate of technological change decreases the value of workers.¹
- In 2016, learning and development departments will conduct their usual business and create, revise, and maintain protocols for the adoption of new technologies and strategies for business and learning. Now, though, they will also be tasked with addressing an enterprise-wide cultural transformation toward becoming a successful digital business, where talent and skills are the top constraints on growth.ⁱⁱ
- While in 2015 we saw mobile devices proliferating in the workplace, and thus increasing the amount of mobilespecific learning, in 2016 mobility will be the norm. Organizations will serve the needs of their learners by focusing on content strategies for learning environments,ⁱⁱⁱ that are accessible by mobile and non-mobile devices alike.
- The mobile device will become less of an endpoint and more of an access point to a much more integrated and expanded learning ecosystem. In this ecosystem, users will be able to initiate learning in practically any environment, and learning will then continue in any number of modalities (see Section 2, "The New Learning Ecosystem").
- The amount of data that e-learning will generate will increase exponentially in 2016. Drivers for this increase are the data-rich, collaborative, informal learning experiences that are growing in response to increases in workforce mobility and data collection. Tracking technologies like the xAPI, which help to aggregate and analyze these data, also contribute to the increase in data overall (see "Technologies that string it all together" in Section 2, "The new learning ecosystem").
- In 2016, an organization's ability to make sense of this learning data by using advanced analytics will help determine its competiveness. In addition to gaining valuable feedback, tracking learner patterns, and targeting effective learning strategies and goals^{iv}, organizations can use analytics from training data with other enterprise analytics to draw stronger connections between training and business performance.

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→ EXECUTIVE SUMMARY
 → THE NEW LEARNING ECOSYSTEM
 → CONCLUSION
 → E-LEARNING AND THE DIGITAL BUSINESS
 → LEARNING DATA YOU CAN BANK ON

Learning managers will face significant disruption in 2016 as they endeavor to re-engineer learning content strategies across a landscape of rapid technological change.

E-LEARNING AND THE DIGITAL **BUSINESS:**

The effect of tech



HOME



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ABOUT

SOURCES

The difficult decade

E-LEARNING AND THE DIGITAL BUSINESS SUCCESSFUL MANAGERS OF CHANGE

- As organizations apply mobile-first and cloud-first strategies to learning, the successful ones will remain focused on a content-first approach. This will mean taking advantage of new media as they emerge without allowing them to eclipse learning content.
- The successful manager of change within workplace learning will understand and embrace new learning ecosystems for formal and informal cases alike (see Section 2, "The New E-learning Ecosystem").
- In 2016, content strategies will further scale to include not only traditional approaches, in which organizations create content to solve known problems, but also approaches that make other existing content readily available to learners. Through careful curation, learners will connect to the content that matters most to them and interact with it as they choose, on their various devices and in their chosen environments.^v
- Successfully operationalizing learning data through advanced analytics vi will become a priority for learning departments (see Section 3, "Learning data you can bank on"). Learner and learning data, which the organization's expanding learning ecosystem will collect, will provide essential information for driving business results.
- Successful learning managers will create a change-aware culture across the enterprise¹ in 2016. Employee profiles will include certifications, micro-badges, or other similar indications of competencies - not only for the use of technologies in which the organization has invested, but for aptitude for learning new technologies and creatively applying them.



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→ EXECUTIVE SUMMARY

The management of generational change is a key success factor, as organizations prepare for the time when digital natives outnumber digital immigrants in positions of senior management and leadership.

E-LEARNING AND THE DIGITAL BUSINESS:



Successful managers of change



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ф

ABOUT

SOURCES

E-LEARNING AND THE DIGITAL BUSINESS

- Digital natives make up 48% of the US population, according to Nielsen.^{vii}
- Each day, according to Pew Research, around 10,000 Baby Boomers reach the retirement age of 65. This suggests that Boomers could retire at a rate of around 4 million per year.^{viii}
- The speed of this change will mean that organizations focused on providing tools and means for creative problemsolving and discovery will succeed; organizations that focus on knowledge transfer between generations will not.
- Dealing with the divide between digital natives and digital immigrants will be a recurring task until digital natives are mostly managing digital natives. Successful organizations will begin early to address generational change as a mandate, using training and other initiatives that create a change-aware culture to maintain competitiveness.
- Digital natives made up of Millennials (people born between the early 1980s and the early 2000s) and Generation Z (born after the early 2000s) have had access to networked technologies for all or most of their lives. They have developed "second-nature" skills for using these technologies^{ix}, proclivities toward embracing new technologies as they emerge, and the ability to quickly vet these technologies for their value in helping them remain connected.
- Successful learning strategies in the era of digital natives will emphasize connection over content as a means to the discovery and creation of content.^{ix}
- As digital natives age into positions of management and leadership, it will be critical for organizations to use training to manage the expectations of both digital natives and the organization and to understand where cultural mismatches lie^x. (Examples include executive mentors vs. bosses; collaborative vs. competitive work culture; flexible work schedules vs. fixed hours; and work-life-integration vs. work-life-balance^{xi}).
- In 2016, learning departments will face the concurrent tasks of building a change-aware culture, managing the generational divide, and competing for and preparing tomorrow's leaders.

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THE NEW LEARNING ECOSYSTEM

Opportunities for learning are increasing at the fastest rate ever, thanks to expanding learning ecosystems that include our everyday devices, our preferred types of online environments, our new content habits, and the technologies that string them together.





Designing learning content for all device types will become less challenging, allowing any device type to be a key point of entry to an increasing array of learning interactions.

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ABOUT

HOMF

SOURCES

THE NEW LEARNING ECOSYSTEM DEVICES

- Because of their hyper-portability, people are using tablets and smartphones more often and in more places than PCs.ⁱ Mobile usage of the Internet exceeded PC usage for the first time in 2014.ⁱⁱ According to Gartner, 40% of workers are using their own devices (smartphones, tablets, desktops, and laptops) for work.ⁱⁱⁱ – and that number is most likely to grow.
- In 2016, there will be an increase in training initiatives designed with the assumption of mobile audiences. When training is also mobile, organizations can more easily deliver the right content to the learner at the right time, increasing business productivity.
- Organizations will develop learning content so that it adapts to each device in a contextualized manner. The amount of learning content that organizations generate separately, creating new content for each specific device type and operating system, will decline with the maturing of responsive design tools and cloud-based, adaptive learning platforms and environments.
- The near term focus of cloud computing is on the development of device-agnostic content. Authoring tool manufacturers and others will design learning content applications that simultaneously support multiple device types, including wearable technologies (wearables).
- Wearables clothing and accessories that contain computer and advanced electronic technologies^{iv} will require greater consumer market penetration before organizations adopt them in the workplace. In 2016, manufacturers of wearables will lay significant groundwork for their introduction to workplace training, as organizations further refine connectivity and content strategies for device-agnostic content.
- Smartwatches, and other wearables, like the retail industry's Theatro, will provide the potential for accountability, feedback, employee performance tracking, and data analysis for activities and behaviors that companies have not been able to broadly track in the past."

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→ THE NEW LEARNING ECOSYSTEM

CONCLUSION

E-LEARNING AND THE DIGITAL BUSINESS

→ EXECUTIVE SUMMARY

LEARNING DATA YOU CAN BANK ON

Learning has become a part of practically every environment today's workers encounter, and the distinction between work environments and learning environments is vanishing.

THE NEW LEARNING ECOSYSTEM:



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THE NEW LEARNING ECOSYSTEM ENVIRONMENTS

- The organization's new learning ecosystem offers learners multiple access points to a seemingly endless array of learning opportunities.^{vi} Successful training will increasingly require a clear understanding of the learning audience's culture, their preferences for specific environments, the integration of these environments into existing learning infrastructures, and the analysis of learning behaviors (see "Technology that Strings It All Together" in this section).
- Because organizations can now track learner activity practically anywhere using the Experience API (xAPI), learning departments will begin augmenting learning strategies with resources and tools that support learning, but, until now, have failed to successfully report ROI. These resources and tools include blogs, wikis, intranets, micro-blogs, interactive videos, and certain communities of practice.
- Social media have enabled learners to evolve from passive media consumers to active contributors.^{vi} Successful learning programs will include environments and activity streams that take learners beyond passive absorption of content and provide them the tools necessary to turn them into pathfinders, curators, and collaborative co-creators of some of the content they need.
- In the organization's new learning ecosystem, learners will have unlimited access to the content they need. Structured, constantly-evolving learning environments will form to match the speed and degree of change happening in the daily lives of the organization's learners. These environments will present fresh learning challenges while allowing learners to experiment and create within safe boundaries.^{vii}
- As the interoperability between learning environments and work environments continues to improve, the lines between the two types of environments will continue to fade.
- Adaptive learning systems that contextualize content for the learner's environment, device, and moment of need will emerge. These systems will become the platforms from which new e-learning archetypes will grow.
- LMS manufacturers will face disruptive innovation^{viii} as more learning organizations demand technologies that can track and analyze learner behavior and activity occurring in formal, informal, experiential, and on-the-job environments (see "The need" in Section 3, "Learning data you can bank on").

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The combination of our mobility, our new content habits, and the accelerated rate of technological change requires organizations to purpose learning content for learners' preferred devices, environments, and contexts.

THE NEW LEARNING ECOSYSTEM:



THE NEW LEARNING ECOSYSTEM CONTENT

- The new content habits of consumers (for finding information they need when they need it) have followed them into the workplace. Learning departments face challenges in creating learning solutions that remain integrated with broader training and business initiatives while appealing to these content habits and the device and environment preferences of learners.
- Our new state of mobility has created a demand for personalized learning experiences, which requires learning content that fills gaps in the learning content continuum - gaps that form in learning initiatives between instructor-led training, module-based e-learning, and performance support.
- Organizations will divide learning content into shorter lengths and reassemble it in part or in whole based upon context and need. For learning content to be effective across a landscape of changing technologies and the new behaviors they produce, it must be easy to access and contextualized for the learner's environment, device, and moment of need.
- As new learning technologies allow us to tag specific pieces of content with an increasing taxonomy of metadata, those pieces of content will become discoverable within performance support and other learning systems, providing information to the learner as needed.
- Content that learners create through collaboration and curate in partnership with learning departments will build at increasing rates. The collection, categorization, tagging, governance, and dissemination of this learner-produced content will help determine L&D and organizational competitiveness.
- Increasingly, organizations are designing training initiatives with the assumption of mobile audiences. Learners are using mobile devices as key access points to an increasing array of learning interactions, giving them safe places to explore as well as on-the-job access to multiple sources of just-in-time information.
- Shorter content will not mean less content or lower cost of creation. Successful content strategies must take into account not only traditional formal modalities and SME-generated content, but also increased mobility, online collaboration, and the content that learners create and curate online. Shorter or smaller pieces of information will stand alone or combine to create the larger mosaic of learning that organizations often want for learners.
- Because learning ecosystems will continue to evolve and change, learning departments must maintain a content-first • approach to ensure the quality and effectiveness of their learning as well as the independence of the content relative to device types and online environments.

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As the number of device types and environments for learning grow, to survive shifts in user preferences, the underlying technologies that allow interoperability must remain device- and platform-agnostic.

THE NEW LEARNING ECOSYSTEM:



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ABOUT

SOURCES

HOME

THE NEW LEARNING ECOSYSTEM

TECHNOLOGY THAT STRINGS IT ALL TOGETHER

- SCORM data limitations will push LMS manufacturers to adopt xAPI and other data gathering and tracking technologies. This will allow them to provide enterprises with actionable learner data so organizations can draw more complex associations between training and business performance and between training and employee retention.
- HTML5 and the browser remain the mainstream enterprise application development environment. Mobility continues to drive demand for learning that learners can access from any device and any location, a demand that a "write-once-run-anywhere" HTML5 methodology can most feasibly meet.
- Talent management systems will continue to evolve to meet the changing content habits of workers and the learning data needs of the organization. To accomplish long-term enterprise goals with respect to talent, or human capital,^{ix} these systems will provide workers with greater access to an increasing array of learning options, while providing the organization with more comprehensive insights into learner competencies.
- E-learning authoring tools will begin to offer easier integration with other technologies content aggregation, code libraries, GPS, etc. for better learning experiences and easier deployment of comprehensive courses and curricula.
- The xAPI is positioned to become the de facto technology for the collection of data about the wide range of experiences workers have online and offline. Due to its ability to capture data about a worker's or group's activities from many technologies^x in a consistent, simple, and powerful format, wider adoption of the xAPI in 2016 is likely.
- The xAPI's learning record store (LRS) is evolving from an end point for the collection of learner data to an analytics tool for identifying individual and organizational competencies (see "The need" in Section 3, "Learning data you can bank on").
- Over a longer term, learning technologies will integrate with the Internet of Things (IoT). As more data communications technologies are built into physical objects within the workplace^{xi}, organizations will more easily be able to associate performance data with training data (see "Internet of Things" in Section 3, "Learning Data You Can Bank On").

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NEXT >

→ EXECUTIVE SUMMARY
 → THE NEW LEARNING ECOSYSTEM
 → CONCLUSION
 → E-LEARNING AND THE DIGITAL BUSINESS
 → LEARNING DATA YOU CAN BANK ON

LEARNING DATA YOU CAN BANK ON

The potential value of big data across the enterprise represent both opportunities and challenges to the learning function, as organizations make transformational changes in the process of becoming digital businesses.



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SOURCES



→ THE NEW LEARNING ECOSYSTEM



NEXT >

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The learning function continues to trail the rest of the organization in its capability to produce data and provide metrics on learning's impact on overall business performance.

LEARNING DATA YOU CAN BANK ON:



The need for more and better data



Approaches to collecting learning data

Internet of things

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LEARNING DATA YOU CAN BANK ON THE NEED FOR MORE AND BETTER DATA

- Measurement in learning and development is falling farther behind other areas of the organization, with only 40% of CLOs reporting that their measurement programs are aligned with learning strategy, according to an IDC survey of 330 CLOs.ⁱ
- In 2016, organizations will establish key ranges of measurement areas for learning and begin to implement the right technologies, accountability model, and consistent means of collecting data for the array of training methods they useⁱ in order to competitively manage talent.
- Analytical skills will remain the biggest hurdle for learning measurement initiatives. The demand of other functions for data analysts will further limit the supply of analysts who also have familiarity with the learning function, so L&D will often have to hire recent graduates with these skills and then train them in areas of learning."
- Organizations may also have to address a lack of resources and support from management, along with the inability to aggregate data from different functions, for the learning function to provide metrics on learning's impact on employee performance and speed-to-proficiency, customer satisfaction, and improved sales numbers.¹
- As organizations become more digitally minded, they will focus on systems integration and interoperability to be able to analyze data from various functions for business results and ROI.^{III} Technologies like the xAPI will facilitate this integration and help to measure learning's impact on a larger set of business outcomes, including customer satisfaction and employee productivity and retention.

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→ CONCLUSION





- → EXECUTIVE SUMMARY
- E-LEARNING AND THE DIGITAL BUSINESS
 - -> LEARNING DATA YOU CAN BANK ON

→ THE NEW LEARNING ECOSYSTEM

Successful small-scale learning measurement initiatives will most effectively demonstrate the importance of learning data in the achievement of organizational priorities.

LEARNING DATA YOU CAN BANK ON:



The need for more and better data



Approaches to collecting learning data

Internet of things

LEARNING DATA YOU CAN BANK ON APPROACHES TO COLLECTING LEARNING DATA

- The primary obstacle to leadership buy-in for greater adoption of training measurement is the lack of ability to demonstrate (through analytics) the impact of training on a broader set of business outcomes. In 2016, organizations will increasingly find advantages in starting small – at the project or business unit levelⁱ – to establish measurement processes and identify technologies that will quantify training impact.
- To successfully associate learning outcomes with business outcomes through the collection and analysis of business data, the organization must establish key indicators to clarify its goals, contextualize requests with work performance, and enhance the learning process to align individual learning needs with the organization's^{iv} requirements.
- The learning function must set expectations with leadership on the commitment required (including alignment of support from other individuals and functions) and define what success looks like by establishing KPIs prior to training.^{iv}
- Building frameworks for gathering learning data in online and offline learning settings, as well as on-the-job settings, will become key business initiatives for large organizations in 2016.
- This year, organizations will integrate the xAPI into new and existing enterprise platforms and environments to help the learning function bring together data from different functions (see "Technology that strings it all together" in Section 2, "The new learning ecosystem"). With this data, they can measure process improvements, learning program effectiveness, and the impact of learning on business goals.
- In 2016, customer experience will continue to grow as a key differentiator in the fight for competitive advantage. Because employee engagement can lead to improved customer experience, more organizations will begin to evaluate training's impact not just on customer satisfaction but on employee engagement,^v productivity, and retention.^{vi}
- The acceptance and adoption of learner data collection, in all instances when learning occurs, will lead to increased demand for a robust learning data infrastructure, which will further lead to the rapid evolution of personalized learning platforms and methodologies.
- The personalized learning approach delivering content specific to the needs and learning styles of the individual learner will yield a sustainable learning strategy, one that facilitates the development of programs in which learners are trained in topic areas on a continual basis in order to become proficient and retain new skills.

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The Internet of Things (IoT), the connection between objects and the transfer of information between those objects and to analysis engines without human interaction, will lead to a smarter workplace.

LEARNING DATA YOU CAN BANK ON:



The need for more and better data



Approaches to collecting learning data



HOME

Internet of things

ф

ABOUT

SOURCES

learning data you can bank on INTERNET OF THINGS

- As IoT connects more people, assets, processes, and systems across the enterprise, and as organizations look to leverage IoT to improve the effectiveness of their employees and workplaces,^{vii} an increasing amount of customer and trend data will avail itself to the learning function, facilitating improvements in training (see "Content Delivery Architecture" below). This increase in data will expand the roles of data analysts and strategists within the learning function (see "The need" in this section).
- IoT will make its initial impact on learning with devices as objects whiteboards, large digital displays, mobile devices, and wearables. As context-aware computing improves learner experiences, and as standards build around the identification of learning content, a Context Delivery Architecture (CoDA) will emerge. The CoDA will integrate communications and collaboration capabilities, allowing for greater processing of contextual information for learners.^{vii}
- As the need for faster, automated decisions using real-time operational data continues to grow, new opportunities will
 emerge for organizations to leverage decisions and recommendations as a service to increase their competitiveness
 through training. Organizations and vendors will focus on becoming capable of providing a people-centered focus on
 how IoT can improve employee performance and promote new ways of working.^{vii}

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→ EXECUTIVE SUMMARY

→ E-LEARNING AND THE DIGITAL BUSINESS

NESS → LEARNING DATA YOU CAN BANK ON

→ THE NEW LEARNING ECOSYSTEM

CONCLUSION

The accelerated rate of technological change is playing out positively in the world of e-learning. As organizations begin to sort through and understand the complexities of becoming digital businesses, learning departments will see a greater emphasis placed on the technologies supporting talent development. Content systems will become more adaptive to learner needs; learning data and analytics will help drive business results; and learning departments will be able to better prepare their organizations for managing rapid, large-scale technological change. The successful organization will be able to adapt quickly and intuitively, understanding and managing the cultural changes associated with this new modernity.



ABOUT IAN HUCKABEE

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ABOUT PRINCIPLED TECHNOLOGIES

Ian Huckabee is responsible for marketing at Principled Technologies, Inc. He is a digital strategist and technologist specializing in training and social strategy and has formed partnerships with leading technology companies in the learning and social media spaces. Ian has more than twenty years of operations and marketing experience within technologydriven industries. He serves on the board of directors at North Carolina's Museum of Life and Science.

Prior to PT, Ian was co-founder and CEO of Weejee Learning, LLC, an innovative learning services company acquired by PT; prior to that, he was vice president of audio operations and marketing for Sony Music Entertainment Inc. in New York. He served on the board of directors of CEA's TechHome division, representing the wired home and home networking products channel.



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ABOUT IAN HUCKABEE

ABOUT PRINCIPLED TECHNOLOGIES

Principled Technologies (PT) provides industry-leading technology assessment, fact-based marketing services, and learning content design and development services. PT has years of experience testing, marketing, and creating e-learning courses on the latest enterprise and consumer technologies. The unique PT approach answers a critical need in corporate training: a single partner with multiple teams of technical subject matter experts, writers, designers, and multi-media producers – all under one roof.



SOURCES

E-LEARNING AND THE DIGITAL BUSINESS

THE NEW LEARNING ECOSYSTEM

LEARNING DATA YOU CAN BANK ON

E-LEARNING AND THE DIGITAL BUSINESS

- ⁱThe National Bureau of Economic Research, "Technological Change and the Labor Market," http://www. nber.org/reporter/summer99/bartel.html
- "Lily Mok, Diane Berry, Janice Francis, "Creating Your Digital Edge Through a Competency-Based Talent System," Gartner
- "Gartner, "Gartner Identifies the Top 10 Strategic Technology Trends for 2015," http://www.gartner.com/ newsroom/id/2867917
- ^{iv} Christopher Pappas, "Big Data in eLearning: The Future of eLearning Industry," eLearning Industry, http:// elearningindustry.com/big-data-in-elearning-future-of-elearning-industry
- ^v Chris Osborn , "Next-generation Learning Content Strategies," Training Magazine, http://www. trainingmag.com/next-generation-learning-content-strategies
- ^{vi} Joseph Raudabaugh, Anshu Prasad, Khalid Khan, Christian Hagen, "Beyond Big: The Analytically Powered Organization," ATKearney, http://www.atkearney.com/analytics/featured-article/-/asset_publisher/ FNSUwH9BGQyt/content/beyond-big-the-analytically-powered-organization/10192
- ^{vii} Nielsen, "Millennials: Breaking the Myth," http://www.nielsen.com/us/en/insights/reports/2014/ millennials-breaking-the-myths.html
- viii Pew Research, "Baby Boomers Retire," http://www.pewresearch.org/daily-number/baby-boomers-retire/ is Wikipedia, http://en.wikipedia.org/wiki/Digital_native
- × Lancaster, Lynn C.; Stillman, David (2010), The M-factor: How the Millennial Generation is Rocking the Workplace. HarperCollins
- * Rob Asghar, "What Millennials Want In The Workplace (And Why You Should Start Giving It To Them)," Forbes, http://www.forbes.com/sites/robasghar/2014/01/13/what-millennials-want-in-the-workplaceand-why-you-should-start-giving-it-to-them/



SOURCES

E-LEARNING AND THE DIGITAL BUSINESS

THE NEW LEARNING ECOSYSTEM

LEARNING DATA YOU CAN BANK ON

THE NEW LEARNING ECOSYSTEM

ⁱ JP Gownder, "Tablets Hold Their Own – And Then Some – In Work-Related Application Usage," Forrester Research, http://blogs.forrester.com/jp_gownder/13-03-28-tablets_hold_their_own_and_ then_some_in_work_related_application_usage

ⁱⁱ Rebecca Murtagh, "Mobile Now Exceeds PC: The Biggest Shift Since the Internet Began," Search Engine Watch, http://searchenginewatch.com/sew/opinion/2353616/mobile-now-exceeds-pc-the-biggest-shift-since-the-internet-began#

ⁱⁱⁱ Gartner, "Gartner Says 40 Percent of U.S. Employees of Large Enterprises Use Personally Owned Devices for Work," http://www.gartner.com/newsroom/id/2881217

^{iv} Wikipedia, "Wearble technology," http://en.wikipedia.org/wiki/Wearable_technology ^v Steven Boller, "Is Wearable Tech a 2014 eLearning Trend to Watch?" Bottom-Line Performance, http://www.bottomlineperformance.com/wearable-tech-2014-elearning-trend-watch/

^{vi} The Aspen Institute, "The Learning Ecosystem," http://csreports.aspeninstitute.org/Task-Force-on-Learning-and-the-Internet/2014/report/details/0046/Task-Force-Introduction-and-Challenges

^{vii} Douglas Thomas, John Seely Brown (2011), A New Culture of Learning: Cultivating the Imagination for a World of Constant Change, Thomas and Brown

viii Clayton Christianson (1997), The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail, Harvard Business Review Press

- ^{ix} Wikipedia, https://en.wikipedia.org/wiki/Talent_management_system
- * Mike Rustici, Rustici Software, http://tincanapi.com/overview/

^{xi} James Manyika, Michael Chui, Jacques Bughin, Richard Dobbs, Peter Bisson, Alex Marrs (2013), "Disruptive technologies: Advances that will transform business and the global economy," McKinsey Global Institute



SOURCES

E-LEARNING AND THE DIGITAL BUSINESS

THE NEW LEARNING ECOSYSTEM

LEARNING DATA YOU CAN BANK ON

LEARNING DATA YOU CAN BANK ON

ⁱ Cushing Anderson, "Stagnant Outlook for Learning Measurement," Chief Learning Officer Magazine, http://www.clomedia.com/articles/6240-stagnant-outlook-for-learning-measurement
ⁱⁱ CLO Magazine, "A Learning Strategy for Big Data," http://www.clomedia.com/articles/5785-a-learning-strategy-for-big-data

"Gartner, "Gartner Identifies the Top 10 Strategic Technology Trends for 2015," http://www.gartner. com/newsroom/id/2867917

^{iv} Minhng Wang, Weijia Ran, Jian Liao, Stephen J.H. Yang, "A Performance Approach to E-learning in the Workplace," Journal of Educational Technology & Society, Vol. 13, No. 4, One-to-One Learning in the Mobile and Ubiquitous Computing Age (October 2010), pp. 167-179

^v Dale Carnegie Training, White Paper (2012), "What Drives Employee Engagement and Why It Matters," Dale Carnegie & Associates, Inc.

^{vi} Josh Bersin, "The Geeks Arrive In HR: People Analytics Is Here," Forbes, http://www.forbes.com/ sites/joshbersin/2015/02/01/geeks-arrive-in-hr-people-analytics-is-here

vii Alfonso Velosa, Hung LeHong, "Hype Cycle for the Internet of Things, 2014," Gartner, http:// www.gartner.com/technology/reprints.do?id=1-27LJLAK&ct=150119&st=sb

