



DP20559

21st-Century Training and Performance Support for Today's Consumer-Driven Learners

Matt Murphy
4D Technologies/CADLearning

Learning Objectives

Discover the challenges of training today's Autodesk product users

Discover current trends and directions for learning and training

Learn how to identify the limitations of current training options and alternatives

Develop a plan and strategy for delivering effective personalized training for improved productivity

Description

Today, with easy web search tools and streaming content, access to knowledge is becoming ubiquitous. But are people learning and becoming more productive? We are in the middle of a significant shift in instructional methods and delivery vehicles. Today's learners are not only driving where and when they want to learn, but also what they want to learn. Traditional books and instructor-led classroom training are making way for flipped classrooms using interactive eBooks, web-based synchronous and asynchronous videos, discussion forums, and even social media. How do we drive true performance support and improved productivity? Content needs to be adaptive based on your current knowledge, skills, and practices to incrementally improve productivity. If you are an innovator; corporate training manager; trainer; industry consultant; or simply an Autodesk, Inc., product user—join us in exploring the common trends and the less obvious directions of today's consumer-driven learners.

Your AU Expert:

Matt Murphy is the senior director of product strategy for all CADLearning products from 4D Technologies. Murphy leads all content strategy, helping to create widely available and incredibly affordable training for Autodesk, Inc., products. Since 1985, Autodesk has recognized Murphy as a leader in providing professional training. He has served as an advisor and a consultant to the training industry on the Autodesk Training Center Advisory Board (ATCAB) and Executive Committee (ATCEC), and he is currently a member of the Autodesk University Advisory Council driving the future of Autodesk product learning. Murphy is a widely acclaimed top trainer and AutoCAD Mentor All-Star. He is a former featured columnist for Cadalyst and AUGIWorld magazines, as well as for the AutoCAD Exchange's Ask the Expert Series. As a 23-year veteran speaker at Autodesk University with over 120 classes taught, he has been rated the top Autodesk University speaker 7 times and holds the honor of Autodesk Distinguished Speaker.



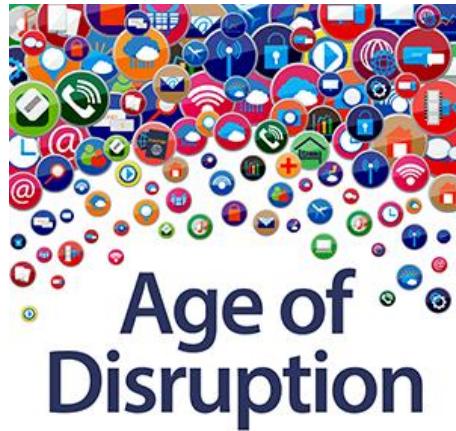
Introduction

We are on the brink of a new revolution. Just as the industrial revolution changed the way we bring products to market, there is now a paradigm shift in the way mass industrialized education is moving to mass personalized education. As with most revolutions, this change is taking place not because of technology changes but because of society changes. This occurred as we moved out of the industrial age and into the information age.

The information age makes knowledge readily available from the “great white box of hope” (also known as Google!). This just-in-time (JIT), just-enough (JE), just-for-me (JFM) information, in parallel with virtual learning environments (VLE) and adaptive learning environments, recognizes the learning needs of individuals.

Our Current Age is One of Disruption!

You don't have to look much further than the current political landscape and the vast array of choices we have to make each day. Provide too few choices, and consumers revolt. Provide too many choices, and no choice will be made. But, provide just the right number of choices and options, and you ensure engagement and participation.



This Learning Panorama can lead to distracted and unengaged learners, limited outcomes and the reduction of true performance support. So how do we sift through the options and ensure the choices we make produce the best outcomes for today's learners?

In this session, we will look at the keys to success in the 21st century. We will examine the need to fundamentally redesign our educational system to ensure that the systemic problems of the current education and training methods are abolished, and meaningful knowledge and skills carry us forward to the next generation of increased productivity.

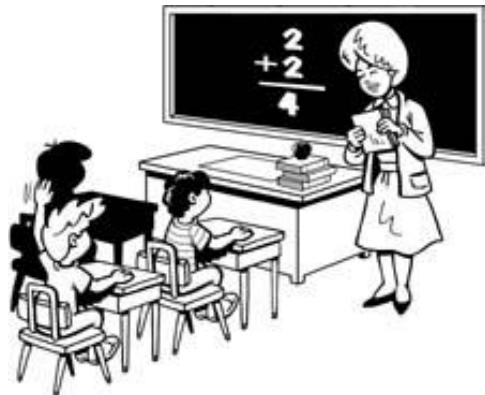
I will outline the 5 critical areas where we need to abolish old methods and provide the disruptive solution for adopting new approaches. I will also cover 5 current trends that are driving learning disruption to better and more successful outcomes.



1 – Industrialized Education vs Personalized Education

We are born into this world with the greatest personalized instruction model: our parents. Then at the age of six, we are whisked away from them and forced to learn in a rigid, structured educational environment.

In 1892, this country adopted industrialized or assembly-line education. This is the traditional model of government schooling. It works this way: no matter what a class is discussing and no matter how engaged the students are, a bell rings and the subject is dropped immediately as all of the students get up and move on to the next class. Students move sequentially through the education system by grades and age in this regimented system. The system was designed to weed out the weak who would become the labor pool and keep in the system those who fit in as conformists and would be labeled as successful. Those students who didn't get it or didn't fit into the system were removed from the system as if they were defective. We still use this system today and have even institutionalized standardized testing for the "one size fits everyone" model.



Characteristics of Industrialized Education

The curriculum is uniform throughout the district and is narrowly focused on the knowledge and skills that are tested on the high-stakes standardized tests.

Teachers teach to the test.

Principals (as instructional leaders), instructional coaches and "teacher mentors" conduct "Learning Walks" to make sure that the teachers are adhering to the teaching of core curriculum with utmost fidelity.

Characteristics of Personalized Education

An Adaptive Education Program (AEP) and personalized education was designed to provide special support services to students who have difficulty functioning in the standard curriculum due to an identified learning disability or a significant learning discrepancy. Students in this type of program learn strategies through a tutorial approach to developing learning and study skills that can be applied in academic and real-life situations.



A true adaptive learning or educational approach is where the instructional content responds and adjusts to the learners as individuals. Free market reformers wish to move their children out of the industrialized education model and allow teachers, parents and students to choose the educational models that work best for them. Isn't that how education worked in the United States prior to 1892?

A few of the many student-centered models advocated by reformers are home schooling, virtual schooling, charters, vouchers and tax credits to allow students and parents to choose private and parochial schools, and, yes, traditional public schools if they are reformed in ways to achieve greater accountability and improved results.

Some are advocating more standardized testing and making instructors and educators more accountable. But the problem is not with the educators, instructors or students. The problem is with the system!

It's not a system of "one size fits everyone" but "one size fits one"!

LINK: Personalized Learning

<http://www.engineeringchallenges.org/cms/8996/9127.aspx>

<https://www.youtube.com/watch?v=2E3JDtqHaVM>

<https://www.youtube.com/watch?v=dqTTojTja8>

#2 – Formal vs informal learning

How do People Really Learn?

Formal learning consists of planned learning activities within a structured learning setting. This is traditional classroom training that follows a program of study, attending lectures, preparing coursework, and engaging in seminar/tutorial discussions.





Informal learning is learning that derives from activities external to a structured learning context. Sometimes informal learning is referred to as on-the-job training or unstructured learning within a structured learning environment. This learning takes many forms, including social activities and interaction with others. But the key is that it is unstructured and unscheduled. Isn't this how we learn most of all in the first place?

#3 – Training by Immersion vs Training by Vignette

Training by Immersion

Who said that the best way to get training is to do it in two or three consecutive days? Consecutive days is the least likely way for people to retain and apply new knowledge! Yet this is still the way the majority of training is delivered. Why? Is it because it's the optimum way to learn, or is it because it's for optimum scheduling?



If you're like me, by the end of the first day of training, you need to start to practice and apply what you just learned. By the second day, you're on overload. The mind can more easily absorb and digest small segments of learning with personal practice and review time between new episodes of learning.

Training by Vignettes

With today's hectic schedules, doesn't it make more sense to learn in smaller increments? How about one day of training or multiple half-days, followed by a few days between sessions – or even smaller vignettes using virtual classroom training?

How about granularizing or atomizing content down to 2-3 minute YouTube-style lengths that can be easily resequenced and consumed in the smallest and easiest digestible form? We've all had to sit through training on topics that we already know in order to find the smallest nugget of new information. Why do we have to sift through all that content? Make it granular and searchable. Are Tweets knowledge? They are only 140 characters long! How small is too small? How about micro learning?

LINK: Micro Learning and Twitter

<http://c4lpt.co.uk/how-to-use-twitter-for-social-learning/micro-learning-with-twitter/>

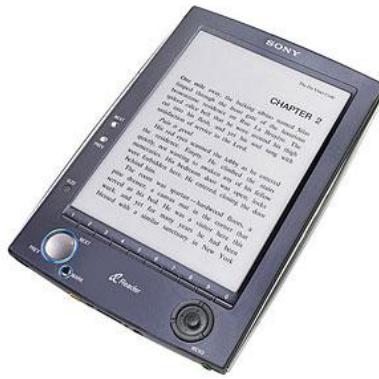


Books or eBooks?

What is an eBook? Is it simply a printed book with text and images in an electronic form, such as a PDF?



When the first car was made, it was called a horseless buggy, as its predecessor was the horse and buggy. Since the gasoline engine replaced the horse and the power source, there was essentially no difference in the design, structure and benefits of the buggy itself.



Just as with the first major innovation of the horse and buggy to a horseless buggy, we are now in the same phase of moving from books to eBooks. There is no difference.

What we really need to do is examine all that we could do in making an eBook. What does the "e" actually stand for? Electronic? Or should it be enhanced, engaging, efficient, effective, energizing or evolving?

LINK: Blowing Up the Book – eBook Future

<http://online.wsj.com/news/articles/SB10001424052970204468004577169001135659954>

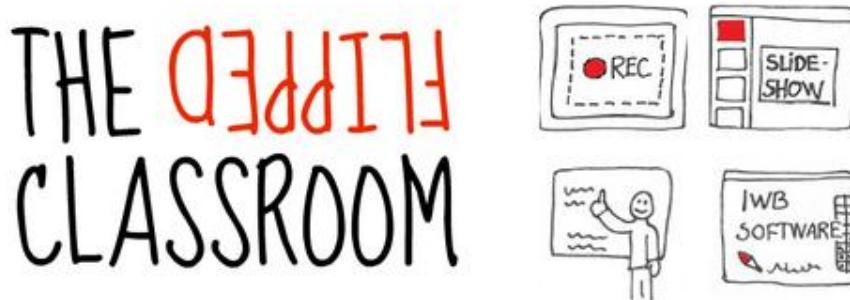
<https://www.theguardian.com/books/video/2016/sep/29/george-rr-martin-game-of-thrones-apple>

<https://www.theguardian.com/books/2016/sep/29/george-rr-martin-and-apple-announce-collaboration-on-interactive-game-of-thrones-books>



#4 – Traditional Classroom vs Flipped Classroom

Instructor-led training with traditional stand-up lectures is finally going away. Instructor-led training needs to change to instructor mentoring. Faced with the diversity of learners and the need for more flexible and adaptive training, what is the real solution? The term “blended learning” is used to describe a solution that combines several different delivery methods, such as collaboration software, web-based courses, and knowledge management practices. But in application, most “blended” solutions are simply tampering with the instructor-led model.



People need to have a variety of choices to move at their own pace. The instructor no longer lectures. If a lecture is needed, it can be recorded and played back as needed. The flipped classroom moves all these activities outside the classroom where homework and activities are done in the classroom with the instructor as mentor.

LINK: Flipped Classroom

<https://www.knewton.com/infographics/flipped-classroom/>

<http://instructionalservices.blog.gustavus.edu/2013/03/05/the-flipped-class-myth-vs-reality/>

<http://educationnext.org/the-flipped-classroom/>



#5 – Blended Learning vs Adaptive Learning

Although the term “blended” learning is popular, it represents only minor changes regarding the systemic issues around current classroom training. If we had a true “blended” solution, an individual would have a choice in learning methods based on style and need. They don’t.



Adaptive Learning

Adaptive learning technology makes recommendations at the instant you use the command or feature within the software. This is *push technology*. In contrast, when you search for the help file, video, information, etc., this is *pull technology*. If you've ever used Amazon or eBay, you know that these sites track what you've looked at and purchased, and then they make additional recommendations based on your previous actions. Adaptive learning technology provides instant access to JIT and JE learning and corrective action.

As recommendations systems continue to evolve, they will become better than Amazon by linking social feeds from people of similar interests, experience and skills to allow for highly productive collaboration.

The next step in adaptive technology is in augmented reality, which is the experience with Google Glass.

LINK: Adaptive Learning and Augmented Reality

<http://www.insidehighered.com/news/2013/04/04/gates-foundation-helps-colleges-keep-tabs-adaptive-learning-technology>

<http://techcrunch.com/2013/11/26/metaio-ceo-thomas-alt-discusses-augmented-reality-for-smartwatches-google-glass-and-more/>

So How Do We Get There?



#1 – Microlearning Performance Support

The first step in creating microlearning is to get electronic content into the smallest digestible piece so it can be consumed and applied within the shortest amount of time. Most of the current content is not created this way. Content is created as long, lengthy courses where its linear design prevents you from extracting a smaller piece. My best analogy is like taking a sledgehammer to a massive block of salt. In the end, you still have salt but only in smaller pieces. To truly have content that can be reusable and resequenced, it needs to be atomized so that each lesson can stand on its own, and thus be viewed in any order and any sequence. Because then, you have atomic lessons that can be reassembled into anything you need. Just like a playlist. Granular lessons (salt) is only salt... nothing more. It can only be assembled into larger blocks of salt.



A better analogy that works for this model is how music can be assembled into a playlist.

Performance Support Flips the Deliverables Based on the Moment of Need!

The *performance support* starts with an immediate *moment of need* where steps are provided to perform a task. There is an opportunity for a deep dive and additional practice. Learning resources are available to expand knowledge and skill or for reference.

LINK: Microlearning

<http://www.clomedia.com/2016/10/12/growing-role-microlearning/>

Link: Performance Support

<https://elearningindustry.com/performance-support-more-than-just-training>



#2 – Personalized Playlists

So what do today's music industry and today's classroom education have in common?

Today, we listen to music through streaming services where custom playlists can be made and shared in any grouping that you want and played on any device, providing you with just the music you want at your time of need and interest: *completely personalized*.



Today's classrooms and traditional instructor-led training is headed in the same direction that the music industry has progressed: *completely personalized*.

But what is more important is how music is viewed and consumed. You have artists, albums and songs. If you view a course, topics and lessons the same way and make them easily searchable, you can then assemble a playlist of lessons that could be grouped in completely new topics and courses. Each would be completely personalized based on an individual's needs. The need could be determined by choice, recommendation or assembled based on an assessment result, providing the assessment can automatically build a remedial course base on the incorrect responses of an assessment result.

Make the Content Relevant!

I can't tell you how many times I've heard this line: "We need project-based learning for students who learn Autodesk products." Well, of course you do. But you want *me* to define what type of project will motivate, engage and inspire your students? No. Only the educator in the classroom can provide the appropriate narrative to drive a project that will engage students. Every teacher, educator and administrator needs to realize that every student has different interests. Tap those interests and provide projects that will engage their students and be meaningful and relevant enough to inspire them.

LINK: The Enable Community Foundation

www.enablecommunityfoundation.org

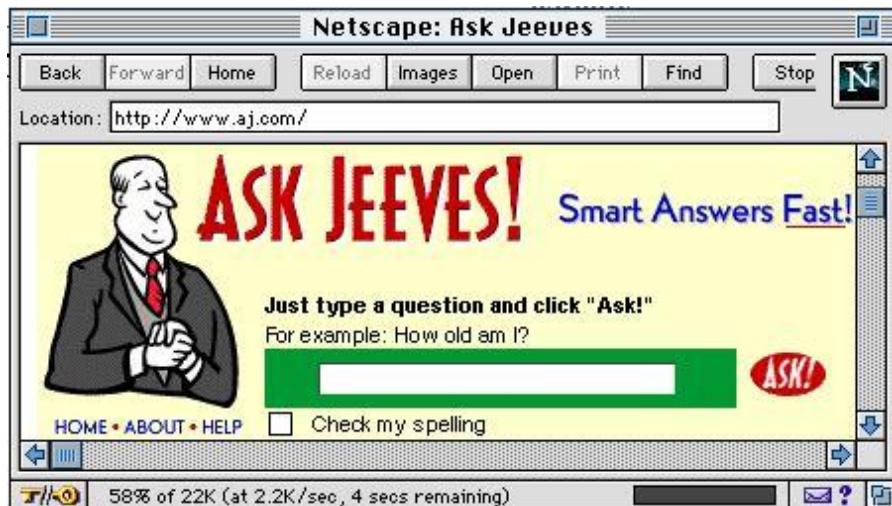


#3 – Advanced Recommendation Systems

In its simplest form, an advanced recommendation system would be a thumbs-up or thumbs-down or even a rating from 1-5 stars, like a YouTube or eBay seller rating. But how does this relate to your job and the skills you need for a task, assignment or workflow? Does the system know what knowledge and skills I have beyond the scope of a simple course structure? Can the system map my incidental knowledge to provide recommendations for what I need to do next before I do a Google search to look for it?



As recommendation systems evolve to be responsive to natural language, they will also have a greater understanding of me as an individual and provide personal recommendations based on data about me.



These new systems will be self-learning and will also anticipate what we will ask next and then provide an appropriate predictive recommendation.



Hi, I'm Cortana.

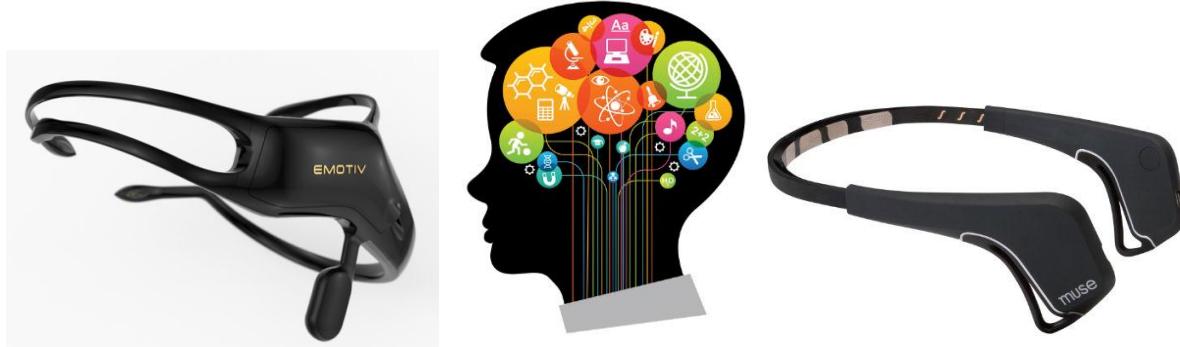


#4 – FitBit for the Brain!

Higher retention and application of knowledge can be measured through brain science. We are on the cusp of a radical shift in our understanding of the mind-brain interface and the mind-brain-behavior nexus. Brain mapping, wearable sensing, and remote integration of brain-body states are bio-feedback-based enhancements that are attempting to provide information regarding self-awareness. The causal understanding of one's environment make possible a whole new set of approaches to the enhancement of learning.



There are over 200 wearable devices on the markets today. These devices can provide feedback to machine learning systems to measure our engagement and attentiveness in learning activities. Content can then be recycled during lapses of engagements and assess directly the retention of content at the time of input. This analytical data will essentially eliminate the need for tests, quizzes and other question/assessments that don't actually measure retention, retrieval and the application of knowledge and skills. As we know, the retrieval of information over spaced practice and mastery of application is the only true measurement of retention. Wearable devices will soon provide this type of feedback.



LINK: Neuroscience

<https://biology.mit.edu/sites/default/files/COGNITIVE%20NEUROSCIENCE.pdf>

<https://www.sherbit.io/neuroelectronics-fitbit-for-your-brain/>

<https://www.emotiv.com/insight/>

<http://www.recode.net/2014/11/6/11632624/muse-headband-review-a-fitbit-for-your-brain>

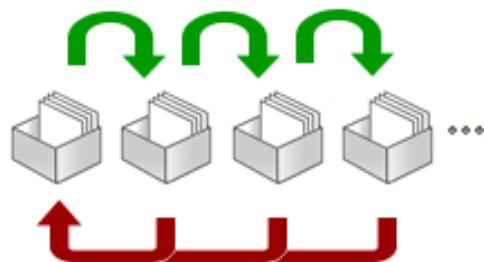


#5 – Distributed Learning and Distributed Practice

You could look at the hundreds of studies done over the years that have shown that students with spaced learning retain more than those in mass learning. But nothing reinforces this more than distributed practice. No two individuals will master anything at exactly the same time. It's good to hear that many teachers and educators are breaking the rules of forced standardized curriculum and traditional teaching practices, and are allowing students to progress at their own pace.



This IS the fundamental rule for learning and retention that is being reintroduced into today's classrooms. After all, it was Hermann Ebbinghaus who provided us the forgetting curve back in the 1800s! If you don't use it, you lose it when no attempt is made to retain it. Therefore, distributed practice must be followed by distributed practice tests, which are also proven to reduce anxiety and improve retention.



LINK: Distributed Practice:

<http://web.ics.purdue.edu/~ralrich/learn/dist.html>

https://en.wikipedia.org/wiki/Distributed_Practice

Finally...



Will Knowledge Become a Commodity, and Information Ubiquitous?

Ubiquitous and Implicit Learning

It's easier to learn, retain and apply complex information in an incidental manner, without being aware of what has been learned. Since *implicit learning* is done informally in non-traditional ways, it is difficult to measure. Implicit learning may require a certain minimal amount of attention and may depend on attentional and working memory mechanisms.



Examples from daily life, like learning how to ride a bicycle or how to swim, are cited as demonstrations of the nature of implicit learning and its mechanism. It has been claimed that implicit learning differs from explicit learning and has higher levels of immediacy and relevance.

An example of explicit learning would be to read and watch everything that you could on how to ride a bicycle or how to swim but never get on a bike or in the water. A dog does the dog paddle when placed in water implicitly. No dog ever taught another dog how to swim.

What I can tell you today is that what's in and what's out in terms of learning methodologies changes every day.

I invite you to join me at www.culturalist.com and create your own top 10 list of "what's in" with the best terms in learning today!

<https://www.culturalist.com/lists/best-terms-in-learning,2590>

And also "what's out" with the worst terms in learning today...

<https://www.culturalist.com/lists/worst-terms-in-learning,2590>

I realize this is an ever-changing and aggregated list, so let's see where we are by the first of the year and compare that to next year.



Summary

I hope this session has provided some insight into the challenges within the workplace and how to address the training needs of a diverse workforce. The need to make training that is personal, adaptive and predictive delivered in an engaging, interactive and motivational way will ensure high retention and future adoption.

I wish you success on your path to greater productivity with learning that addresses the growing needs of knowledge that is immediate and relevant.

Email me at:

matt.murphy@CADLearning.com

Sample our content:

CADLearning.com

Other References:

Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers
Paperback – July 25, 2006

by Geoffrey A. Moore

Inside the Tornado: Strategies for Developing, Leveraging, and Surviving Hypergrowth Markets
(Collins Business Essentials) Paperback – December 14, 2004

by Geoffrey A. Moore

America Needs Talent: Attracting, Educating & Deploying the 21st-Century Workforce Kindle Edition

by Jamie Merisotis

The Scientist in the Crib: What Early Learning Tells Us About the Mind Paperback – December 26, 2000

by Alison Gopnik (Author), Andrew N. Meltzoff (Author), Patricia K. Kuhl (Author)