

# MICROLEARNING

Important Trend, or Flashy Fad?  
What the Science Says



And How to Spot Vendors Selling You with Junk Science



# Executive Summary:

Microlearning as an idea has been around for a while. Now that the term has been made popular, vendors are falling over each other to convince companies that they have the best microlearning. But few vendors actually understand the science justifying the use of microlearning, let alone how it bears on instructional design. We present some of that objective research here, making the argument that microlearning is extremely effective, if it is done correctly.

So, the title here is a little misleading. By asking whether microlearning is a trend or a fad, the question implicitly assumes that, either way, microlearning is a recent thing. If that were really the case, it would be natural to ask if it's here to stay, or just a flashy fad that is likely to go away.

The truth is that microlearning has been around for a long time. From short pamphlets printed on a press to short infomercials

to TED talks, the idea of using bite-sized bits of standalone content that people can remember and immediately use has been around for hundreds of years. It formed the core of our instructional approach here at ej4 since our founding back in 2004, and we've been providing top-notch microlearning ever since.

So why the recent interest? What changed is that this short-form content has been

given the name "microlearning."

When something gets a short, clever label, it becomes easier to talk about—and measure.

That measurement has led to a growing stream of research showing that microlearning really is a more effective way to engage employees, make the most of their divided attention, and guarantee that the information gained is retained and used.

When something gets a short, clever label, it becomes easier to talk about, and measure.

Before jumping on the bandwagon, though, it helps to get clear on the actual science. Rather than trust any old microlearning vendor that comes along, you should make yourself aware of what objective, scientific findings have had to say about it. If you do so, you'll discover not only that microlearning is great, but how to do it correctly so that you can actually achieve your learning outcomes.

Microlearning is the process of delivering bite-sized content to learners that they can consume all at once and apply the knowledge immediately.

# Constant Interruption Means the Learning Window is Small



Independent studies have shown that microlearning videos are the ideal way to present training content to your people:

Microlearning is often contrasted with “long-form” learning, the kind of learning we typically think of when we think of corporate training: Hour-long talks and seminars, off-campus retreats, long compliance videos provided by HR, and so on.

These bits of long-form content are not particularly well suited to today’s modern workplace. Research by Gloria Mark, professor in the Department of Informatics at the University of California, Irvine, makes this case really well.

In one study, Mark and colleagues shadowed 36 managers, financial analysts, software developers, engineers, and project leaders for three days. The researchers took meticulous notes, timing every event that occurred, down to the second.

What they found will sound all-too-familiar to over-burdened employees, but it’s shocking to see the numbers nonetheless: Each employee spent only 11 minutes on any given project before being interrupted with some demand on their attention, unrelated to the task at hand.



**60-minute video could, in reality, take over three hours to digest—and only if the employee somehow manages to stick with it.**

What’s more, each 11-minute project was itself fragmented into even shorter three-minute tasks, like answering email messages, reading a web-page, or working on a spreadsheet.

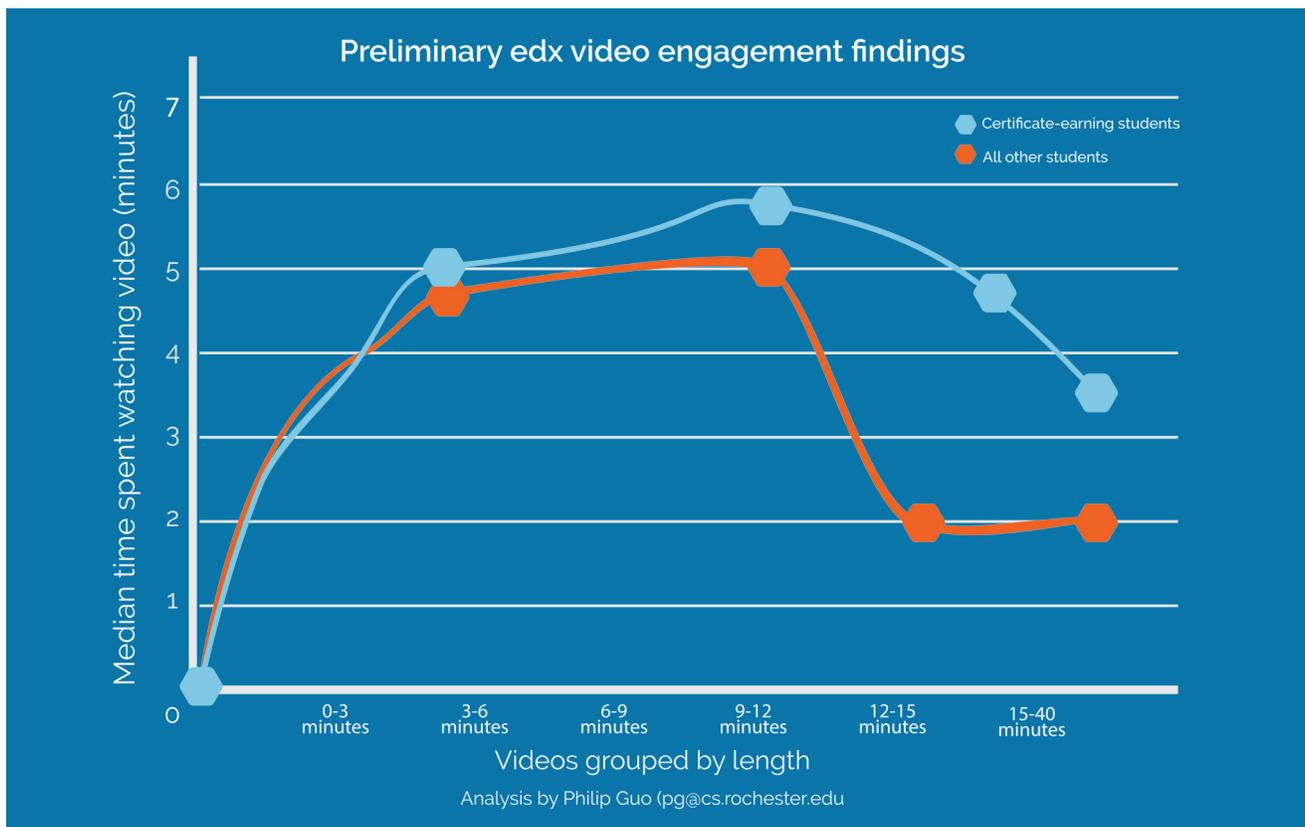
And each time a worker was distracted from a task, it would take, on average, 25 minutes to return to that task—not even counting the time it takes to shift attention and get back into the proper mindset for the task.

This is bad news for the 60-minute training video. Simple math tells us that, when viewing a video of that length, an employee can be expected to be interrupted at least five times. Factoring the time it takes to get back to viewing, that **60-minute video could, in reality, take over three hours to digest—and only if the employee somehow manages to stick with it.**

# Content Length Itself Matters

Even if interruptions didn't happen, there's good research showing that employees can only tolerate content presented in 7-to-11-minute bursts anyway. Philip Guo, an assistant professor of Computer Science at the University of Rochester at the time, looked at usage statistics for an on-line learning

-platform to see how students were engaging with the material. Guo grouped the learning videos by length (0 to 3 minutes, 3 to 6 minutes, 6 to 9 minutes, etc.) and then plotted the median time students spent watching these videos.



The results are shown in Figure 1. When videos are 6 to 9 minutes in length, that's when we see a peak in students' viewing time—students are viewing all or almost all of the videos at that length. That trend begins to fall dramatically afterward: Even students trying to earn a certificate in the program will spend only five minutes watching a 12-to-15-minute video, and even less time watching a longer video.

Guo found that, when videos were longer, students were much more likely to start skipping ahead. It also appears as if very short videos were not enough to engage students' attention. With videos in the magic 6-to-9-minute window, students either did not get antsy and restless, or if they did, they were willing to "stick out" the video because they knew there was not much more content until the video was finished and they could feel a sense of accomplishment.

# Learners See the Value of Microlearning

A study by Jing Chang, Dong Liu, and Xiaoguang Deng, presented at the International Conference on Applied

Science and Engineering Innovation, looked at the use of microlearning in a flipped classroom with over 50 videos in use. They surveyed a sample of 200 learners to discover the extent to which they felt microlearning videos helped their education experience. And indeed they did: **71% of those 200 learners reported that microlearning videos “expanded their horizon[s] and played a leading role in in-depth learning.”**

**71%** of those 200 learners reported that microlearning videos “expanded their horizon[s] and played a leading role in in-depth learning.”



# Implications of the Research

These studies were objective scientific studies of learning, done by credentialed scientists and not by microlearning vendors. There are several things we can learn from this research:

**People have a small window of patience—roughly 9 to 11 minutes—and they seek to finish tasks in that time.** This makes sense, given that interruptions occur roughly every 11 minutes.



**Even if an employee can stay with a piece of training for more time, it's unlikely to happen.** The chances are great that they will be interrupted, and it might take awhile to get back to what they were doing—if they ever do. In short, few if any people are able to sit through a 60- or 30-minute video.



**Microlearning can be too short, too.** Students did not engage fully with instructional videos that were too short. Five minutes or less simply seems to be too little time to fully develop a topic in-depth and really grab the learner's attention.



**Microlearning content must be able to “stand alone.”** Taking a 60-minute video and carving it into 11-minute segments is akin to building those 11-minute interruptions right into the video design. The result is a fractured piece of content that demands too much in terms of employees' ability to pick up where they left off.



**When microlearning is done right, learners enjoy and appreciate it.** That not only means employee buy-in, but also better retention and, consequently, better learning outcomes.



# Neuromyths We Tell Ourselves

It might not be easy to tell which companies truly understand the science behind what they do, and which are just picking up random factoids to make a sales point. We've unearthed some "urban myths" that are not actually supported by the science so you can more easily spot the junk-science justifications.



## Myth #1

### Today's employees have an attention span shorter than that of goldfish.

Measuring attention span in people is hard enough. In goldfish, it's not only hard, but it's not even clear that attention is what's being measured. Furthermore, evidence seems to indicate that peoples' attention spans are increasing. But, in parallel with that, people are becoming better information filters—we simply spend less time on pointless tasks. (See [here](#) and [here](#).)



## Myth #2

### Short-term memory can absorb only 4 to 5 pieces of information at a time.

This is confusing short-term memory with something else psychologists call working memory. (It also gets the number wrong: The actual limit is seven items, give or take two.) This only measures what we can keep "in our head" while thinking through a problem. Our short-term memories can hold much more information—if it is grouped into [meaningful chunks](#).



## Myth #3

### There are "right-brain" learners and "left-brain" learners.

While it's true that the different sides of the brain have areas specialized for different tasks, there is no such thing as a "right-brained" or "left-brained" person. We all use both sides of our brains extensively. In fact, learning is better when we engage with material in all sorts of different ways. ([See here](#).)

# Microlearning is Good for Business, Too

Whenever companies have turned to true microlearning solutions, they've benefited. This is unsurprising, as microlearning is more effective, more conducive to employee productivity, and less costly:



As the research on page six shows, microlearning videos better fit the attention and scheduling demands of today's worker, making learning fast, easy, and convenient.



Training and learning are more personalized, as employees can select what they need to learn, when and where they want.



It's less disruptive: Employees can get the information they need and then get right back to work.



Microlearning makes it easier to present and reinforce information through repetition, quizzing, and feedback.



Employees also feel less fatigue and stress, because their training does not cause "cognitive overload."



Shorter videos are easier to stream and consume on mobile devices.



Completion rates are often higher with microlearning.



Microlearning videos can be produced in [300% less time, and at 50% less cost, than traditional courses.](#)

# From Research to Instructional Design and Training

While it is important to take a deep look at the science, it is more important to know that the science is actually being used to inform the design of training content.

While we can't speak for training programs generally, we can present, as an example, the principles we follow here at ej4 to create microlearning videos with maximal impact:

## Optimal viewing time.

Most of our videos are 7 to 10 minutes long, squarely in that ideal window for video length.

## Engaging visuals.

Let's be honest: Some training topics can be rather abstract, tedious, or downright dull. We include creative visuals that are interesting enough and clear enough to engage attention, but not so prominent or flashy as to be distracting.

## Lively presentations by trained speakers.

Non-verbal communication colors much of our interactions. We work hard to make sure our presenters are clear, enthusiastic, and engaging.

## Meaningful chunks of information.

Our videos can stand alone; each has a separate title with a beginning, middle, and end, covering a single topic in its entirety. You don't need to see the rest of the videos in the series to understand any one video. That said, you can watch a series of videos, in any order, and get a comprehensive, cohesive learning experience around a subject.

## Well-developed support materials.

Our student materials include course descriptions and notes in outline form to help support employees' own note-taking. They also include application questions for review or for facilitated group discussion. Many of these materials not only aid study—they encourage employees to explore a topic further.

## Training reinforcement tools.

Training reinforcement occurs immediately following the completion of a course by means of an interactive quiz. Learners then continue to receive a series of quizzes and video recaps to ensure that knowledge is transferred successfully from short-term to long-term memory.

## Mobile-first.

If employees are constantly distracted at work, who knows when or where they will pick up their training again? Our videos can be viewed on any device (tablet, phone, Mac, PC) and can be made accessible according to you and your employees' needs. This also makes re-watching and reviewing content a snap!

## Sign up for a free 15-day trial of Thinkzoom

If you are interested in seeing how the principles play out in some actual content, you can [sign up for a free 15-day trial of Thinkzoom](#), our Learning Management System. You'll have access to videos on a wide range of topics and can explore Thinkzoom's other features. [You can contact us for a demo as well](#). We'd love to hear from you!

Founded in 2004, ej4 is a trailblazer in on-line video solutions. We close the gap between potential and results with on-demand learning, including an extensive library of microlearning content. We believe that people grow your business. We grow people.



Contact us for a demo

# People Grow Business. We Grow People.

## Further reading:

Gloria Mark's report in the NYTimes:  
Clive Thompson, "Meet the Life Hackers"  
[www.nytimes.com/2005/10/16/magazine/meet-the-life-hackers.html?mcubz=1](http://www.nytimes.com/2005/10/16/magazine/meet-the-life-hackers.html?mcubz=1)

Interview with Gloria Mark in Fast Company:  
Kermit Pattison, "Worker, Interrupted: The Cost of Task Switching"  
[www.fastcompany.com/944128/worker-interrupted-cost-task-switching](http://www.fastcompany.com/944128/worker-interrupted-cost-task-switching)

Guo's blog post on his own research:  
Philip Guo, "Optimal Video Length for Student Engagement"  
<http://blog.edx.org/optimal-video-length-student-engagement>

Study of microlearning in the flipped classroom:  
Jing Chang, Dong Liu, Xiaoguang Deng, "Design and Application of Micro-learning Video in Flipped Classroom"

[www.atlantis-press.com/php/download\\_paper.php?id=25836662](http://www.atlantis-press.com/php/download_paper.php?id=25836662)

Our earlier article on "bite-sized" learning:  
Karen Marino, "Getting Training to Stick with Bite-Sized Learning"  
[www.ej4.com/getting-training-to-stick-with-bite-sized-learning/](http://www.ej4.com/getting-training-to-stick-with-bite-sized-learning/)

Our tips for unforgettable training content:  
Kathy Irish, "5 Simple Tips For Creating Unforgettable Training Content"  
[www.ej4.com/5-simple-tips-for-creating-unforgettable-training-content/](http://www.ej4.com/5-simple-tips-for-creating-unforgettable-training-content/)

Why we should avoid microlearning that is too short:  
Ryan Eudy, "Not All Microlearning is Created Equal"  
[www.ej4.com/not-all-micro-learning-is-created-equal/](http://www.ej4.com/not-all-micro-learning-is-created-equal/)