

# **Learning Micro-Learning**

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MobiEdge Technologies Inc.

***Bring on the learning revolution!***

*- Sir Ken Robinson, TED2010*

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# 1. A Tale of Two Learners

## Aiden's got a Problem

It was a dark and stormy night.

Aiden, a 5-year old hockey player, started his home arithmetic lessons. The tutor was his father, Jason.

Within the first week, Jason noticed something.

"Aiden is a happy boy, nice and cooperative. He can sit and study for 20 minutes straight. But it seems that he only concentrates for a short time before getting distracted."

"Only the first couple of minutes count." The father concluded.

Talked to other parents and did some googling, Jason found that the problem of short attention span is a norm for today's kids. He determined to find a way to deal with it. He wants the boy to enjoy learning, not just endure it.

## A New Way to Learn

While doing his research on the Internet, Jason stumbled upon a new buzzword "micro-learning".

The concept is simple: split up the learning materials into small pieces, or "knowledge nuggets", which can be learned or taught in a very short time.

Jason thought this was just what he needs.

He re-organized the stuff so that Aiden would finish his learning in 2 to 10 minutes. "The size of a piece is so small that he gets no time to be distracted." Jason said, "Moreover, size shrinking brings on flexibility. These tiny units are much more easily to adapt to his daily schedule. I can even teach him a unit by just talking to him during a short driving."

"I believe this is a better way for kids to learn."

Three Years later, little Aiden finished the entire primary school curriculum, as well lots of extra contents. He got accepted in gifted program, took some good ranks in international math contests.

Father is happy, "the best thing is not that how quickly he learned, but that he enjoyed the whole thing and never got bored."

### **Father's got a Problem, Too**

Jason turned 35.

As a veteran software engineer, Jason understands that the key to stay relevant in this fast evolving career is to keep learning.

But he was facing a problem similar to Aiden's.

His daily schedule always keeps him overwhelmed and interrupted. He can't always find dedicated "study time". When he can, it's very hard for him to focus on and retain materials as good as when he was younger.

He knows that the situation is only getting worse as he aging.

This is a problem most knowledge workers have to deal with.

### **Micro-Learning to the Rescue**

Jason's got an idea.

He decided to try micro-learning on his own training.

He cut his learning materials into "chunks", tried working on them using 10-minute or so time blocks along the day. He also applied a new learning method that he learned off the Internet, "Spaced Repetition", that is, to review each chunk in increasing intervals to help learners memorize.

As it turned out, learning tasks are not that intimidating now. And it's easy to interweave the learning tasks into his busy schedule.

In this way Jason has finished 2 new programming languages, a dozen of training courses, and even some theoretical books.

“Micro-learning helped,” Jason’s excited, “you know, I’ve learned much more stuff while enjoying peace of mind.”

So is micro-learning going to be huge?

## 2. What is Micro-Learning?

### Micro-Learning Defined

Micro-learning is a way of teaching and delivering contents to learners in small, very specific bursts.

Bite-sized pieces of content are easy to consume, the meaning can be grasped quickly.

“Microlearning deals with relatively small learning units and short-term learning activities. Generally, the term “microlearning” refers to micro-perspectives in the context of learning, education and training.” – [Wikipedia](#)

### Micro-Learning Examples

- Reading a paragraph of text, e-mail or short message
- Listening to an informational podcast or an educational video-clip
- Viewing a flashcard
- Memorizing a word, vocabulary, definition or formula
- Answering questions in quizzes

### 3. Why Micro-Learning?

#### A Solution to Shorten Attention Span

The length of a typical micro-learning session is between a couple of seconds and 15 minutes. It hits the sweet spot of human attention span.

When people talk about attention span for learning or working, they refer to the span of “selective sustained attention”, or “focused attention”, which is approximately between 5 and 20 minutes. Abreena Tompkins, instruction specialist, explains this more clearly: “Physiologically, your neurons are keen and alert for no more than 20 consecutive minutes. At the end of those 20 minutes, your neurons have gone from full-fledged alert to total collapse.”

For a micro-learning session no longer than 15 minutes, people can easily keep focused and alert all the way through.

#### Better Psychological Engagement

Micro-Learning offers a promising antidote to boredom by primarily increasing a learner’s psychological engagement. People will be motivated to consume short, snappy yet meaningful content instead of spending 90 or more minutes on a single lecture.

“Nothing is particularly hard if you divide it into small jobs.” -- Henry Ford

This psychological benefit has long been underestimated.

#### Instant Gratification

As another psychological benefit, micro-learning works because it gives people what they want — instant gratification.

Instant gratification is the desire to experience pleasure or fulfillment without delay or deferment. Basically, it’s when you want it; and you want it now. Instant gratification is the opposite of what we’ve been taught and try too hard to practice — delayed gratification.

To delay gratification is hard because it’s unnatural. All good things are hard and unnatural.

Micro-learning is an exception. It provides instant and continuous pleasure of fulfillment. It works with, not against, people's innate desire.

## Better Results

Smaller knowledge pieces can be digested effectively.

It is a well-known fact that humans have limited capacity to process information. Lynne Millward, in his book *Understanding Occupational & Organizational Psychology*, states that information is most likely to be meaningfully processed when it is presented in chunks. Bite sized courses are perfectly "tailored" to human brains, which are more effective in comprehending morsels of information compared to mountains of data.

## More Flexibility

Micro-learning is a great fit for the modern age, when everybody has a mobile phone, tight daily schedules, and plenty of dead time. Today's learners are overwhelmed, distracted, and impatient. This include the millennial generation grows up in the vast sea of information. Flexibility in where and how they learn is increasingly important.

- The short duration of each micro-learning session makes it easy to be interweaved into everybody's schedule.
- The bite-sized contents perfectly fit small screens of mobile devices.

Even better, people can make good use of "time pockets" doing micro-learning. Time pockets are the gaps between tasks. Generally, the expression equals to "time drains". The wasted time pieces can be added up to quite large a proportion of a workday.

## Personalization

Microlearning puts learners in the driver's seat and allows them to lead their own education, which may be a major motivator for some independent learners.

When the learning content is divided into several bite sized modules, learners can access the parts of the content that are relevant to their work and skip the ones that they do not need. This makes learning more “individual”.

### **Easier for Instruction Designing & Reusing**

For many companies, bite-sized learning is also about getting maximum benefits through minimal input. It's about developing short yet relevant chunks of information based on the needs of learners and of the business model.

Chunks are also economical for instruction design. Micro-learning courses are born modularized. These modules are more independent, and easier to be reused.

## 4. When It Doesn't Work

### Problem #1: Lacking of Content

Lacking of content is one of the worst obstacles that micro-learning has to overcome.

Micro-learning is new. It has always been labeled as an “informal setting”. That means it's hard to find carefully designed courses for micro-learning. People usually treat micro-learning as a brush-up or complementary of the traditional courses. Therefore not much effort has been put in dedicated micro-learning contents. Without much good contents, micro-learning continues to be “informal”. See the vicious cycle?

### Problem #2: Lacking of Holistic View

In general, micro-learning is unsuited when there's a large body of material that needs to be studied and comprehended in detail.

With its emphasis on small isolated chunks of learning, micro-learning is not so great when it's essential to have a holistic view of the training material, and be able to connect disparate elements of it into one coherent picture. Sometimes you just have to soldier through an extensive body of material and understand it thoroughly, and micro-learning might be unsuited for that use case.

### Problem #3: Low Commitment

Because smaller, quick lessons require less dedication when compared to a longer, classroom-based training session, some learners may have a low commitment to the method. Some may start lessons and never get around to finishing.

High dropout rate is a problem not only for micro-learning. Numbers between 20% and 80% are reported in all kinds of e-learning.

### Problem #4: Hidden Cost of Process

There are instances where too much fragmenting may lead to over-complicating things, which otherwise are quite simple.

Shrinking the size of units inevitably increases the total unit number. These units are for the learner to manage. No matter how simple the procedure is, the cost of time, energy, space, etc. will quickly add up.

Unfortunately, there are not much learning management system dedicated for micro-learning for now.

### **Problem #5: Psychological Burden**

Besides the hidden cost for process management, there are also emotional and psychological facts that can be easily overlooked when applying micro-learning approach.

A person's willpower is like a muscle. And similar to the muscles in body, willpower can get fatigued when being used over and over again. Researchers often refer to this phenomenon as "decision fatigue". It is one of the root causes of demotivation and procrastination.

Learning process management comprises of choices and decision makings. The count of this kind of actions is directly correlative to the number of units. This is a bad news especially to those who want convert traditional lengthy courses into micro-learning ones. Learners may be scared by the large quantity of chunks at the beginning.

### **What Now**

Micro-learning sounds like a perfect solution to the fast evolving education world. But can all aforementioned issues been dealt with? Can people make better use of micro-learning?

The answers would be yes. Learners just need a little help.

## 5. All You Need Is LOVE

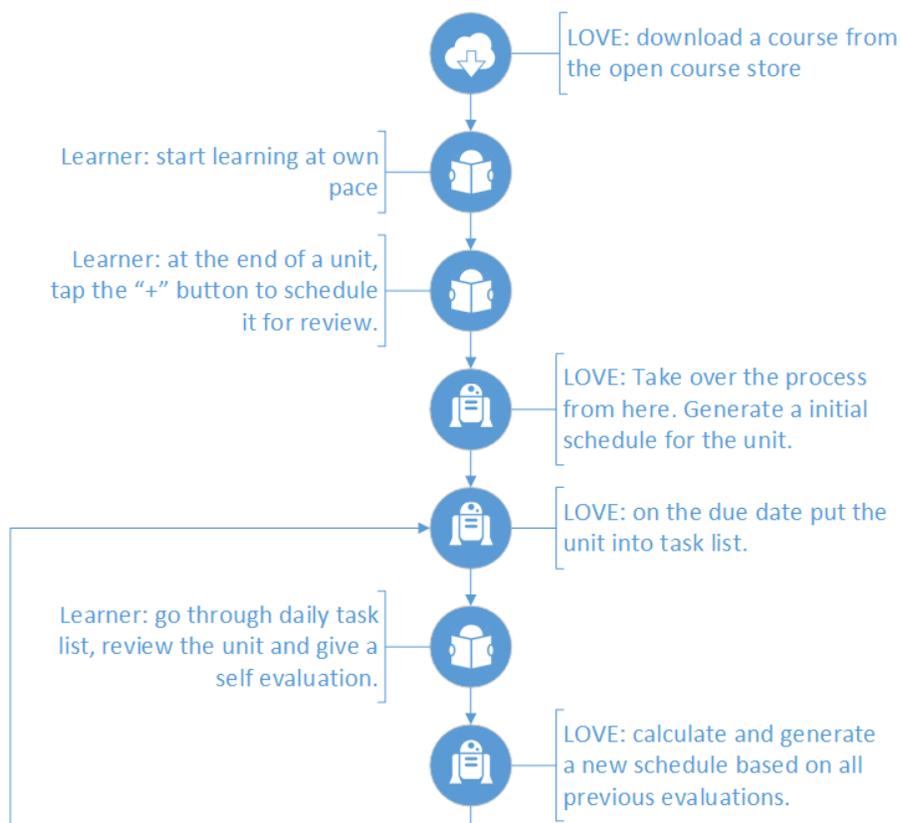
### LOVE, LOVE, LOVE

[Learning Optimization & Verification Environment](#), or “LOVE”, is a learning management framework. It’s a part of the project “[Mind Extension](#)” which aims at expanding human brainpower based on latest cognitive research findings.

The first product of the project is a micro-learning system, which comes with a course store and a learning management app.

### It's Easy

Using of the LOVE system is easy. As shown in the figure below, learners just need to learn units at own pace, and go over the flashcard-like review tasks that show out automatically every day.



## Content Is King

The open course store is an important part of the LOVE system. Hopefully, by bringing in expert instruction designers, there will be more and more high quality and “formal” courses dedicated for micro-learning.

This is going to be the solution to aforementioned problems of “lacking of content” and “low commitment”.

## Micromanagement

Micromanagement generally has a negative connotation. But it found a good position in the LOVE system. It’s the key to solve some major problems of micro-learning: complicated process, increased psychological burden, etc.

To deal with these issues, the LOVE system takes over all the detail works, include:

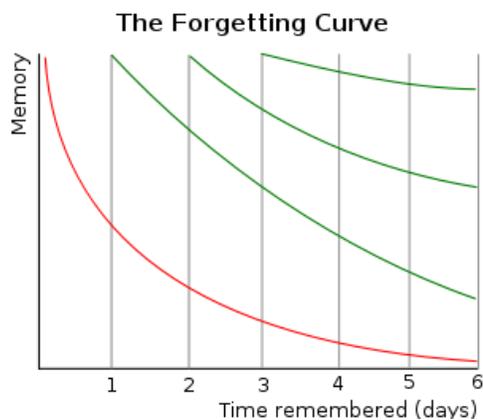
- It takes note on what the learner has learned;
- It automatically generates schedule for spaced repetition;
- It presents due content to learner on scheduled time;
- It automatically adjusts the schedule based on learner’s feedback (self-evaluation, quizzes, etc.);
- It automatically re-calculates schedules on unexpected events such as missing tasks, delay, etc. That means, if you missed a day’s learning, LOVE will adjust your schedule, defer tasks, roll back the progress record, and put it back into the queue. LOVE never complains.

Micro-Learning plus micromanagement is believed to be a perfect solution that people have been looking for.

## Spaced Repetition

The LOVE system schedule review tasks based on a famous theory of experimental psychology, the forgetting curve (Hermann Ebbinghaus).

The forgetting curve hypothesizes the decline of memory retention in time. This curve shows how information is lost over time when there is no attempt to retain it.



Based on the theory people developed a learning technique called Spaced Repetition. Spaced repetition incorporates increasing intervals of time between subsequent reviews of previously learned material in order to exploit the psychological spacing effect.

The LOVE system applies spaced repetition to schedule review tasks. The best thing is, it does it in a personalized, unit-by-unit manner so that the learner gets the best results with least efforts.

For example, if a unit were given good evaluation all the way, it would show up on the first day, the second day, the fifth day, and so on. For each step if the evaluation is not good, the interval would be adjusted to a shorter one. The worst situation is to show up every day (until the learner gets it).

This is also considered a solution to micro-learning's "big picture" problem. The key point of acquiring the holistic view of learning materials is to keep all the parts in memory simultaneously. This is where traditional micro-learning stumbles. It's very hard if not impossible for the learner to get big picture while struggling to recall details of each part. The LOVE system helps learner retain all the parts' details bite by bite into long-term memory. In this way, the big picture eventually comes to the learner. Or even better, it's not only understood, but also memorized.

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