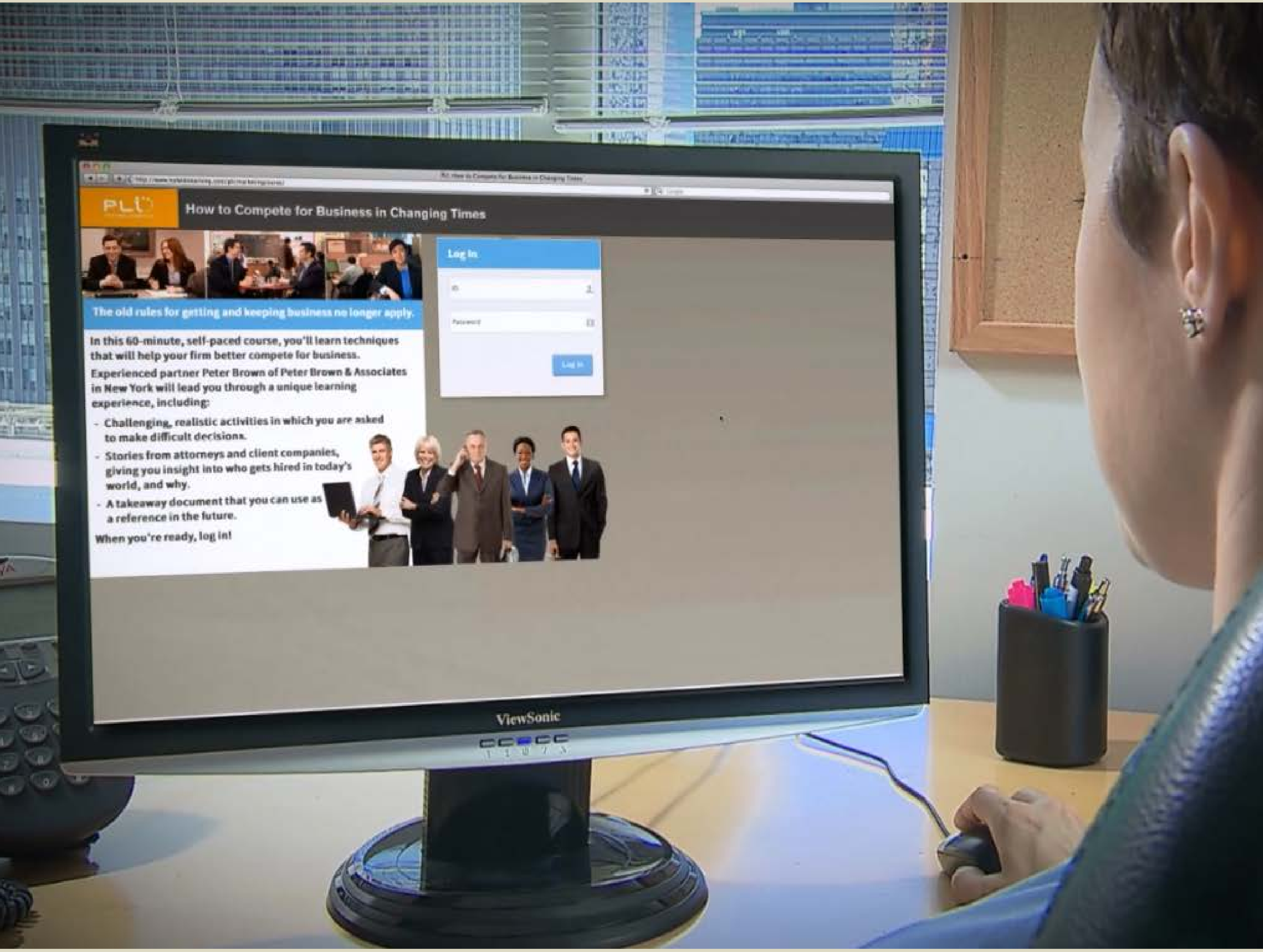

Will eLearning Work in Legal Education? What the Scientific Research Says

Research Compiled by Will Thalheimer, PhD

Commentary by JC Kinnamon, PhD

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Will Thalheimer is a learning expert, researcher, instructional designer, consultant, speaker, and writer. Dr. Thalheimer has worked in the learning-and-performance field since 1985.

He was the project manager for the first commercially-viable computer-based leadership simulation, The Complete Manager. He led the Strategic Management Group's product line, Leading for Business Results, increasing revenues fourfold. He has trained managers to be leaders at numerous Fortune 500 companies, teaching such topics as leadership, persuasion, change management, and business strategy.

In 1998, Dr. Thalheimer founded Work-Learning Research to bridge the gap between research and practice, to compile research on learning, and disseminate research findings to help chief learning officers, instructional designers, trainers, elearning developers, performance consultants, and learning executives build more effective learning-and-performance interventions and environments. He is one of the authors of the *Serious eLearning Manifesto* and the founder of The Debunker Club. Recently, Will published the book *Performance-Focused Smile Sheets: A Radical Rethinking of a Dangerous Art Form*.

His clients have included giant multinationals, elearning companies, government agencies, and institutions of higher learning. Short list: Naval Special Warfare Center (Navy Seals), Liberty Mutual, McKinsey, Allen Interactions, Walgreens, NexLearn, Society of Actuaries, Practising Law Institute, Monitor Group, Pfizer, ADP, Questionmark, Midi Compliance Solutions, The eLearning Guild, Novartis, HCSC BlueCross BlueShield, SIOP, Defense Intelligence Agency (DIA), Johnsonville Sausage, Intermountain Health, Tufts University, MIT, Microsoft, Genentech, Bloomberg. His research and writings have led the field in providing practical research-based recommendations through his online publications (www.work-learning.com/catalog.html), published articles, his industry-leading blog (www.willatworklearning.com) and Twitter (@WillWorkLearn).

Dr. Thalheimer speaks regularly at national and international conferences. His conference presentations always receive numerous evaluation-sheet comments like the following: "This was one of the best presentations I attended—solid information delivered in a style that helped me learn."

Will holds a BA from Pennsylvania State University, an MBA from Drexel University, and a PhD in Educational Psychology: Human Learning and Cognition from Columbia University.

JC Kinnamon, PhD
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JC Kinnamon has been involved with elearning product management and development for more than two decades. At PLI, he heads the R&D activity focusing on learning innovation; this includes improving synchronous, face-to-face experiences as well as developing new, asynchronous online offerings. He serves as executive producer for innovative R&D projects, including MOOCs, a long-form (10-week) course, elearning titles, simulations and serious games.

Previously, as a vice-president of product development for an elearning company specializing in ethics and compliance training, he shaped its online learning product line. He incorporated stories and research-based learning principles in “storytorials” to deliver compulsory training to “reluctant learners”—coining both terms.

Dr. Kinnamon earned his Ph.D. from Columbia University in Educational Psychology. He also holds a B.A. degree in Psychology from Salisbury University, an M.A. in Psychology from Teachers College, Columbia University, and an M.A. in Computing in Education, also from Columbia.

Executive Summary

We began with the question, “Does elearning work?” We wanted to know specifically what scientific research can tell us about elearning. Obviously, in real-world applications, elearning is thought to work, as millions of people use elearning every day.

eLearning involves a constellation of digital technologies that enable learners to engage in learning activities via various modalities—primarily on computers, tablets, and smartphones.

Will Thalheimer—an expert in synthesizing practical recommendations from scientific research on learning—reviewed and summarized five meta-analyses, which compared elearning to traditional classroom practice. (A meta-analysis is a statistical approach to combining data from multiple studies.) Overall, these meta-analyses found that elearning tends to outperform classroom instruction—and blended learning (using both online learning and classroom instruction) creates the largest benefits.

Looking more deeply at the results, the research evidence clearly suggested that it is *not* the elearning modality that improves learning; instead, it’s the learning methods used in elearning—and used more often than in classroom instruction—that create elearning’s benefits. These learning methods include providing learners with realistic practice, spaced repetitions, meaningful scenarios, and feedback.

Looking at these meta-analyses pointed to another important truth—typical elearning designs may *not* be as effective as they might be. By utilizing research-based best practices, elearning programs *can* be made more effective.

Will Thalheimer also reviewed six research articles that examined such varied learning methods as the flipped classroom, online role playing, supplemental instruction for difficult topics, instructor-facilitated elearning, mobile learning, and learning-based behavior change.

These studies produced varied results—elearning was not *always* better than classroom instruction—reinforcing the findings of the meta-analyses, which showed a wide variability in results owing to the influence of different learning methods.

Dr. JC Kinnamon, a learning practitioner working in the legal education field, documented the experience of one continuing legal education provider, Practising Law Institute (PLI). He concluded that elearning that is created with strong instructional design elements serves as a worthy method for educating practicing attorneys. In PLI’s experience, attorneys have accepted elearning and endorsed its more interactive approach. He cited PLI’s challenges and successes in getting elearning programs accredited under current CLE rules and suggested that legal education providers and accrediting agencies work together to create standards for evaluating elearning products. To this end, Kinnamon and Thalheimer have drafted a proposed checklist—a starting point for the creation of a tool to assist providers who develop elearning and CLE regulators who evaluate the elearning for credit.

Conclusions from the eLearning Research

In terms of learning effectiveness, it is NOT whether the modality is elearning or classroom instruction; the learning methods are what make the difference. Realistic decision-making, spaced repetitions, real-world contexts, and feedback produce better learning than straight information presentation. When learning methods are held constant between elearning and classroom instruction, both will tend to produce equal results.

The research findings also showed that when elearning and classroom instruction were blended (used together), learning results were better than if elearning or classroom learning were utilized alone. On average, despite some variability, elearning tended to outperform traditional classroom instruction—likely owing to the differing learning methods used.

The bottom line is that, when more effective learning methods are used, better learning outcomes are achieved.

Adoption of eLearning for Continuing Legal Education

1. Well-designed elearning provides effective continuing legal education.
2. Lawyers say they enjoy and value effective elearning.
3. The research shows that elearning is likely to be more effective than classroom instruction—so there is every reason to make elearning available in an accredited form.
4. eLearning accreditation can expand on established continuing legal-education standards, adding standards for effective elearning design.
5. Accreditation for elearning in continuing legal education is important to spur innovation, meet the needs of today's lawyers, and encourage investments in learning technologies.

Background on eLearning

For the purposes of this paper, "elearning" is defined broadly to mean the use of electronic technologies to deliver an educational experience distinct from the traditional face-to-face classroom experience. More specifically, elearning is delivered online via the Internet, not via a DVD or CD-ROM, video tape or over a television channel. eLearning experiences are interactive—though the degree of interactivity can vary widely across products. To be clear, we are not including recorded or streamed lectures in our definition of elearning.

eLearning is ubiquitous in workplace learning and higher education. The trade group Association for Talent Development reports that technology-enabled learning in the workforce has grown over 150% from 2000 through 2015, being used in 16% of training situations in 2000 and 41% in 2015 (Ho, 2015; Sugrue & Rivera, 2005). The United States National Center for Education Statistics reported a 105% rise in the number of college students taking online courses between 2004 and 2012—from 15.6% to 32%. eLearning is clearly on the rise (NCES, 2017).

While elearning predates the Internet—with such earlier technologies as stand-alone computer-based training and interactive video—it has exploded in power, reach, and relevance since the Internet revolution. In the early days of elearning, it too often comprised poorly-designed interactions where simulated page-turning was the most common mode of learning. eLearning deficits were obvious. Learners were bored, disengaged, and left unable to remember even the basics of what they'd seen.

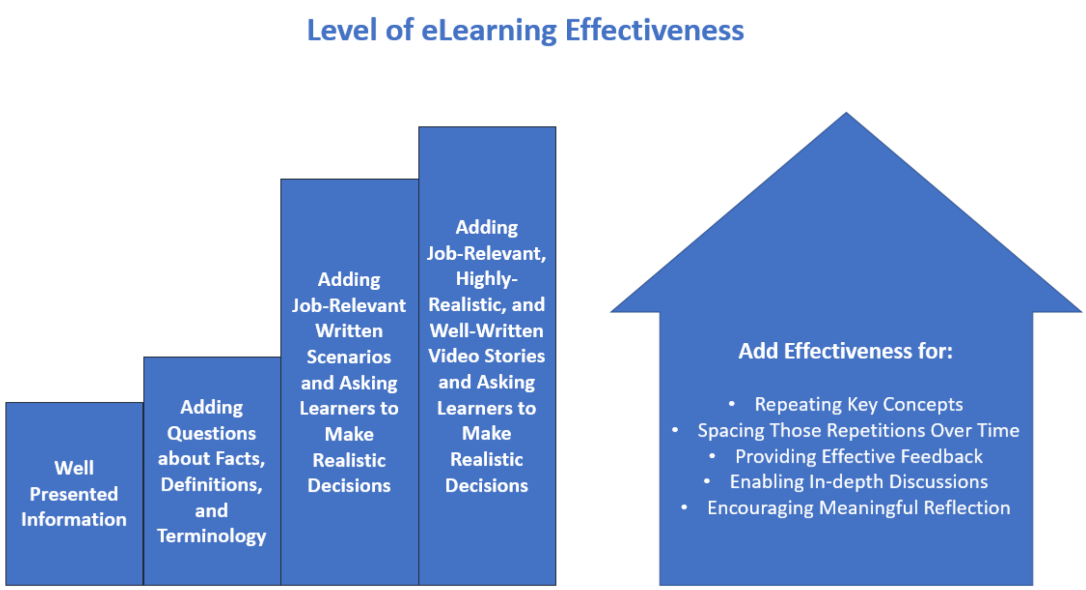

Figure 1. eLearning Effectiveness Diagrammed

But is this stereotype of poorly-designed elearning still relevant today? In this paper, we'll attempt to answer that question by looking at the scientific research to determine if elearning can be effective if well designed and delivered. By looking at research from scientific refereed journals, we can look beyond marketing claims by vendors and overzealous elearning evangelists. We can determine whether elearning is an approach worth utilizing. We can decide whether elearning works.

To explore this question, we'll look first at research reviews and meta-analyses combining wisdom from many scientific studies. After this synopsis, we'll look to rigorously-designed experiments on elearning—to see what we might learn from specific examples of elearning. Finally, we'll review what these findings portend for legal education.

By examining these different sources of data, we will gain a broad and deeply nuanced perspective on whether elearning is likely to be effective—and on what design elements maximize its effectiveness.

In today's context, elearning involves a constellation of digital technologies that enable learners to engage in learning activities via various modalities—primarily on computers, tablets, and smartphones. eLearning can be used in conjunction with classroom instruction—a practice commonly referred to as "blended learning."

While elearning was once delivered almost entirely via computer in relatively long learning sessions of 30 minutes or more, today's elearning can be directed to a number of different devices and can include brief "micro-learning" segments of 5 minutes or less. Where elearning was once only about information dissemination, more and more it can involve meaningful tasks, socially-supported learning, and facilitation of on-the-job learning.

SECTION 1—Research Compiled and Reviewed by Will Thalheimer, PhD

Meta-Analyses Comparing eLearning to Traditional Classroom Instruction

Looking at one research study can provide useful insights, but skepticism is required when examining a single experimental study. For example, one experiment could produce results by chance or could be unrepresentative of what's normally expected. For this reason, researchers compile wisdom from multiple studies, either reviewing a wide array of research articles or utilizing statistical meta-analytic techniques to make sense of multiple experimental studies. In this section, we'll look specifically at meta-analyses—compilations of many other scientific studies that use statistical techniques to make sense of the data.

Have researchers tackled elearning using such meta-analyses? Yes, they have! I present here the most relevant recent meta-analyses. In this paper, we will put the technical and statistical aspects of the research in the footnotes for those who are interested. [1]

Tamim and Colleagues 2011—Second-Order Meta-Analysis

In 2011, Tamim, Bernard, Borokhovski, Abrami, and Schmid did a second-order meta-analysis (a meta-analysis of meta-analyses) and found 25 meta-analyses focused on the potential of learning technologies in educational settings, covering a range of topics including engineering, language learning, mathematics, science and health, etc. These meta-analyses examined 1,055 research studies and more than 100,000 learners and found that, in general, learners who were provided with learning technologies learned more than learners who did not utilize learning technologies.[2] Tamim and colleagues examined meta-analyses beginning in 1985, so many of the technologies examined predated Internet-enabled learning.

Sitzmann and Colleagues 2006—Meta-Analysis

In 2006, Sitzmann, Kraiger, Stewart, and Wisher examined 96 scientific studies focusing on adult learners. They utilized a rigorous methodology to ensure they were comparing Web-based instruction to classroom training in a way that didn't confuse learning methods (e.g., lecture, testing, reflection) with learning media (online vs. classroom).

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[1] In addition, I will use the Morris & Fritz (2013) findings on memory research to compare the relative levels of effect size findings. This is necessary because different effect sizes are not inherently comparable, especially given the recent tendency of research to report partial eta squared findings, which cannot utilize Cohen's classic (1988) estimates of small, medium, and large effects associated with Cohen's *d* and Hedge's *g* effect sizes. Morris and Fritz recommend comparing effect-size findings to other research in the area studied. They compiled data on memory research (which has a strong overlap to learning research), and their findings will be used to estimate percentile rankings. So, for example, an effect size in the 10th percentile is a comparably weak result. One in the 90th percentile is a comparably strong result.

[2] They found Cohen's *d* effect-size improvements averaging $d = .35$, a significant finding, and one that, when compared to other memory-research findings, produced results at roughly the 34th percentile of findings (with a partial eta squared, that is, η_p^2, of 0.34).

What Sitzmann and her colleagues found was the following:

- eLearning produced slightly better learning results than classroom instruction for declarative knowledge—that is, knowledge of facts and principles.[3]
- eLearning and classroom learning were equally effective for procedural knowledge—that is, knowledge on how to perform a skill, task, or action.
- Learners were equally satisfied with both elearning and classroom instruction.
- Blended learning (using both classroom and online learning) outperformed classroom instruction on declarative knowledge by 13%[4] and procedural knowledge by 20%.[5] As the authors pointed out, an earlier meta-analysis of distance learning research found similar benefits to blended learning (Zhao, Lei, Lai, & Tan, 2005).
- Learners were 6% less satisfied with blended learning than they were with classroom learning; but, as the researchers point out, this might have to do with increasing time demands in using blended learning over classroom learning alone.[6]

Overall, this meta-analysis found that elearning was at least as effective as classroom learning (perhaps even better for declarative knowledge), and adding online components to classroom instruction—in other words, using blended learning—may produce significant additional advantages.

Means and Colleagues 2013—Meta-Analysis

Means, Toyama, Murphy, Bakia (2013) reanalyzed data from an earlier meta-analysis they had conducted in 2009 while working for The Center for Technology in Learning at the U.S. Department of Education (Means, Toyama, Murphy, Bakia, & Jones, 2009). Their meta-analysis was exceptionally rigorous, utilizing only experimental designs and quasi-experimental designs that utilized statistical controls ensuring that experimental groups were comparable. About half of their studies involved students in college or younger, while half were in workplace learning situations or graduate school. The most common content

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[3] The Cohen's *d* effect size reported of 0.15 indicates a result at about the 9th percentile of all memory-research studies. There are some complicating factors regarding this finding. First, when learning methods were held the same between online and classroom, no difference was found. When learning methods were allowed to differ, elearning outperformed classroom instruction by 11% (Cohen's d = .29, at about the 19th percentile). Second, when experimental methods (e.g., random assignments) were used, classroom instruction outperformed elearning (Cohen's d = -0.26, at about the 17th percentile); compared with the much larger cohort of studies where quasi-experimental methods were used, when elearning tended to slightly outperform classroom instruction (probably because of logistical difficulties inherent in assigning learners to experimental groups in typical adult-learning situations).

[4] Cohen's d = .34, at about the 24th percentile.

[5] Cohen's d = .52, at about the 40th percentile.

[6] The absolute value of Cohen's *d* effect size was 0.15, at about the 8th percentile.

areas provided to learners were medicine and health care, but other topics included "*computer science, teacher education, social science, mathematics, languages, science, and business*." They found the following:

- *"The overall finding of the meta-analysis is that online learning (the combination of studies of purely online and of blended learning) on average produces stronger student learning outcomes than learning solely through face-to-face instruction."* (p. 29).[7]

- eLearning-only situations produced an equal amount of learning compared with classroom-only situations.[8]

- Blended learning (a combination of both classroom and online learning) produced better results than classroom-only instruction.[9]

Overall, this meta-analysis found that elearning was at least as effective as classroom learning—and blended learning may produce significant additional advantages. Where the Sitzmann and colleagues' meta-analysis showed a small advantage for elearning overall compared to classroom instruction, this meta-analysis showed that elearning produced results that equaled classroom instruction.

Schmid and Colleagues 2014—Meta-Analysis

In an exhaustive meta-analysis of multiple learning technologies used in postsecondary education—but excluding Internet-enabled elearning—Schmid and his colleagues found a small but reliable advantage for learning contexts where technologies were used.[10] To reiterate, this meta-analysis looked largely at how non-Internet computer-assisted instruction compared with classroom instruction and found an advantage for computer-assisted instruction.

Bernard and Colleagues 2014—Meta-Analysis on Blended Learning

In a meta-analysis coordinated with the Schmid et al. (2014) meta-analysis, Bernard and colleagues (2014) looked specifically at blended learning in higher education, including both undergraduate and graduate education. For the purpose of their meta-analysis, blended learning was operationalized as *"instructional conditions in which at least 50% of total course time is face-to-face classroom instruction and students working online outside of the*

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[7] The average Hedges' *g+* effect size was .20, producing a comparative result at about the 14th percentile of memory studies, a well-below-average effect.

[8] The effect size was a non-significant .05, slightly favoring elearning-only over classroom-only.

[9] The effect size was .35, compared to other memory studies at the 25th percentile. A later meta-analysis focusing on blended learning found a similar advantage for blended learning over classroom instruction, with an effect size of .33 (Bernard, Borokhovski, Schmid, Tamim, Abrami, & Philip, 2014), comparable to the 23rd percentile of research studies on memory.

[10] With an effect size of .27 overall for achievement and .20 for learner satisfaction.

classroom spend the remainder of time, up to the additional 50%, online." Overall, the meta-analysis revealed that blended learning outperformed classroom instruction.[11] The researchers specifically did not look to compare the same learning methods utilized in both blended and classroom learning. Their findings therefore may reflect the benefits of different learning methods, not the advantage of blended learning per se. Of course, if blended-learning instruction tends to use more effective learning methods than those used in classroom training, then it will produce better results.

Summary of Meta-Analyses—eLearning Outperforms the Classroom

Overall, the meta-analyses found that elearning tends to outperform classroom instruction, and blended learning (using both online learning and classroom instruction) creates the largest benefits.[12]

When learning methods are held constant—for example, if learners get a lecture in a classroom compared with getting a lecture delivered in an online video—then elearning will create roughly the same benefits as classroom instruction. Clark's (1983) admonition is still true—it's not the media, it's the learning methods that matter! Clark's (2012) critique of elearning meta-analyses is prescient—most do not hold learning methods constant so we can't conclude that elearning is better independent of the learning methods used.

The bottom line is that elearning in the real world tends to outperform classroom instruction because elearning programs tend to utilize more effective learning methods than classroom instruction, which still tends to rely on relatively ineffective lectures as the prime instructional method. Indeed, the finding that blended learning outperforms classroom instruction alone is testament to this truth. When learning designers add technology-enabled capabilities, they tend to add learning methods that are different from—and more effective than—those typically used in the classroom.

What Learning Methods Are Most Effective?

In general, providing learners with realistic decision making and authentic tasks, providing feedback on these activities, and spreading repetitions of these activities over time produces large benefits. These general findings are well established, communicated in research-to-practice reports (Thalheimer, 2012), popular mainstream books written by researchers (Brown, Roediger, and McDaniel, 2014; Hattie, 2012), books written by thought leaders in the workplace learning field (Dirksen, 2015), and research reviews in top-tier scientific journals (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012). To be clear, the meta-analytic results, when they show benefits to elearning and blended learning, are not

[11] With a small-to-moderate effect size of .33, producing a comparative result at the 23rd percentile.

[12] Compared with the Morris-Fritz memory-research findings, these meta-analyses find eLearning benefits in the bottom quintile (up to the 20th percentile), whereas blended learning benefits tend to be in the next quintile (between the 20th and 40th percentiles).

due to the technology; the improved effectiveness is due to the learning methods utilized via the technology.

Of course, classroom instruction can utilize these beneficial learning methods too, but it usually doesn't. And it should be noted, elearning can fail to utilize the most effective learning methods, which, unfortunately, happens too often (Allen, Dirksen, Quinn, & Thalheimer, 2014).

eLearning Can Be Made Even More Effective

Overall, the research shows that elearning and blended learning tend to outperform classroom instruction, but the research hints at elearning's missed opportunities as well. We've seen that the advantages of elearning tend to be small to moderate. Why aren't elearning improvements more pronounced? The most likely cause is that many elearning programs don't fully utilize research-based learning factors in their designs. eLearning may outperform classroom instruction, but it may suffer from the same problems—a lack of proven learning methods.

To examine this possibility, let's take one learning factor proven to produce robust learning effects—retrieval practice. Retrieval practice prompts learners to retrieve information from memory, typically by asking learners questions or engaging them in decision making. Most often, prompting learners to retrieve information from memory produces strong memory gains, helping them remember what they've learned. Several recent research reviews provide testament to the power of retrieval practice (Roediger & Butler, 2011; Roediger & Karpicke, 2006; Bjork, 1988).

If elearning or classroom instruction utilize retrieval practice in ways that are fully effective, they should create improved learning. Let's look at elearning specifically and compare its results to the results from typical retrieval-practice interventions. Overall, the elearning meta-analyses produced weaker results than the retrieval-practice results.[13]

Take a look at the following table comparing elearning and blended learning results to typical retrieval-practice results.

[13] In a 2014 meta-analysis on retrieval practice, Rawson found that overall retrieval practice produced moderate effect size improvements, with an effect size of .50, which would place it at about the 38th percentile of typical memory-research findings. When retrieval practice was induced by stronger methods than multiple-choice questions, its effects were even stronger. For cued-recall the effect size benefits were .72 (54th percentile); free recall produced an effect size of .82 (62nd percentile). How does this compare to our eLearning findings? Using the Morris-Fritz (2013) research compilation of typical memory-research findings, we can make such a comparison.

Percentile of Meta-Analytic Findings eLearning and Blended Learning Compared with Retrieval Practice	
eLearning vs. Classroom	12th percentile[14]
Blended Learning vs. Classroom	24th percentile[15]
Retrieval Practice vs. Restudy (Overall)	38th percentile
Retrieval Practice vs. Restudy (Cued Recall)	54th percentile
Retrieval Practice vs. Restudy (Free Recall)	62nd percentile

As you can see, elearning meta-analyses (the first two rows in the table above) find lower levels of learning benefits compared with retrieval practice alone (the bottom three rows in the table)—providing evidence that many elearning programs are not as effective as they might be if they utilized research-validated learning factors like retrieval practice, spaced repetitions, realistic decision making, feedback, etc. And note that, in this comparison, we are comparing only one proven research-based learning factor—that is, retrieval practice—with the results of typical elearning programs. Using several research-based learning factors at once would certainly produce even better results!

To summarize, elearning produces advantages over classroom instruction because it tends to utilize more effective learning methods. However, at the same time, elearning itself can produce better outcomes if it too utilized more research-recommended learning methods.

[14] The percentile for elearning benefits compared with classroom benefits was estimated using the Morris & Fritz (2013) memory research findings to interpret the statistically-significant findings of Sitzmann et al. (2006) and Means et al. (2013).
[15] The percentile for blended learning was estimated using the Morris & Fritz (2013) findings to interpret the findings of Means et al. (2013) and Bernard et al. (2014).

SECTION 2—Research Compiled and Reviewed by Will Thalheimer, PhD
eLearning Research Examples—eLearning Compared

Section 1 looked at meta-analytic research reviews and concluded that elearning typically outperforms classroom instruction. In this section, individual research studies will be used to illustrate the types and varieties of elearning that have been studied in the scientific literature.

The research cited here will sample from the hundreds of scientific studies on elearning that have been conducted within the past 15 years. Studies were chosen because of their experimental rigor and their relevance to real-world learning. There was no attempt to select a representative sample of elearning types. Rather, these studies are offered to provide a ground-level view of elearning research—one not available from meta-analyses given that they compile many studies. Six studies are offered in no particular order—each compare elearning to other learning media (or to no instruction at all).

The Flipped Classroom Compared to other Modalities
Thai, De Wever, Valcke (2017)

The "flipped classroom" is a form of blended learning (elearning and classroom learning) where learners view lectures online and then engage in other learning-related activities in the classroom. In this study, a flipped-classroom condition was compared with a classroom-only condition, an online-only condition, and a reverse flipped classroom condition (where learners got lectures in the classroom and engaged in guided-question discussions online). To ensure comparisons between the different conditions were fair, the researchers provided only three learning modalities (1) lectures, (2) guiding questions, and (3) a textbook, and varied where the lectures and guiding questions were utilized (online or in the classroom). The guiding questions asked the learners to write short essays in response to questions related to the content. Learners received feedback during these activities and were able to incorporate improvements into their essays. The results on later tests of learning revealed that the flipped classroom outperformed elearning-only instruction[16] and the classroom-only instruction,[17] but only marginally outperformed the other blended-learning condition.[18]

[16] Cohen's *d* = 1.58, coming in at the 88th percentile.
[17] Cohen's *d* = 1.01, coming in at the 70th percentile.
[18] Cohen's *d* = .71, but only a marginal p-value (p = 0.088), indicating that there may not have been any difference between the flipped classroom and the reverse flipped classroom.

Role Playing: Online vs. Face-to-Face

Buchanan & Palmer (2017)

Role-playing activities used in learning have a long and robust history. Their benefits include prompting learners to be active in learning and enabling both emotional and intellectual engagement. For this reason, role playing is most often conducted in face-to-face settings. In this study, researchers wanted to find out whether role playing might work if utilized in an online environment. They specifically used a role-playing intervention that supports the teaching of history, called *Reacting to the Past*, which was developed by a Columbia University researcher/educator, and has been scientifically validated to outperform lecture-based classroom instruction. The findings were mixed. While most of the learning assessments found no difference between online and classroom role-playing, there was one comparison that created a learning advantage for the face-to-face role playing. Also, the classroom role playing was rated higher by learners. As the researchers point out, the minor benefits seen from classroom role-playing might disappear as learners get more comfortable with the technology and as learning-design tweaks are made based on feedback from additional teaching attempts.

Supplemental Instruction: Online vs. Face-to-Face

Hizer, Schultz, and Bray (2017)

Supplemental Instruction is a research-validated model used in universities, *"designed to help students in historically difficult classes master course content while they develop and integrate learning and study strategies using a peer-led discussion format."* Typically used in science, math, and technology courses, supplemental instruction has been shown to support students in being successful and persevering through difficult subject matter. Traditionally, supplemental instruction is conducted in face-to-face sessions. However, in this study, Hizer, Schultz, and Bray (2017) compared a traditional face-to-face supplemental-instruction program to an online supplemental-instruction program that used an online collaborative system that enabled whiteboard activities, text and audio chats, posting of classroom lectures, sharing of files, and collaborative work on documents.

Learners who signed up for supplemental instruction were randomly assigned to either the online or traditional method. Courses included Introduction to Cellular and Molecular Biology, Experimental Design and Statistical Analysis, Genetics, and Molecular and Cellular Biology. The results showed that the online supplemental instruction was just as effective as the traditional method and was rated as highly by learners. On the other hand, the drop-out rates were roughly three times as high for the online version—although there was some suggestion that, because this was a first-time effort, they might be able to lower that rate in subsequent efforts. For example, initially the online peer facilitators did not show their webcam images, but later added these as students asked to see those images.

Learning the Law as Undergraduates

Shelley, Swartz, Cole (2007, 2008)

In two separate research studies, these authors looked at undergraduate students learning the law. Overall, they found mixed results. In the 2008 study, they found learning results were better in the elearning condition. They also found that learners rated the elearning with the same level of satisfaction as they rated the classroom instruction, though they did rate the instructors and course organization less highly. In the 2007 study, they found no difference in learning or satisfaction between elearning and classroom instruction. These results should be considered with some caution as learners were not randomly assigned to conditions and the elearning technology back in the early-to-mid 2000s was not as well designed as it is now. Still, the results are interesting in that the same content was tested twice and different results were found.

Intrinsic Motivation in Blended Learning: Mobile App vs. Textbook

Jeno, Grytnes, Vandvik (2017)

In biology, an important task is to be able to identify species. In this study learners were given a classroom-based introduction to species identification and then were given the task of identifying different types of sedges. They were randomly assigned to two supports: either a mobile app specifically designed to support species identification or a textbook that supported a similar goal. The results showed that learners learned more, rated their competence more highly, and reported being more intrinsically motivated when they were in the mobile-app condition.[19]

Preventing Obesity Through eLearning

Nikolaou, Hankey, & Lean (2015)

Obesity is a debilitating issue in much of the developing world. In this study, researchers were interested in whether elearning might be able to prevent obesity in healthy young adults (not necessarily people already obese). They compared a control group that got no intervention with two elearning programs, with all participants randomly assigned to groups. One of the elearning programs simply provided learners with rational arguments about why and how to lose weight. The second program took an indirect approach, aiming *"to prevent obesity covertly, by raising discussion around social and political movements which are associated with more, or less, healthful diets and lifestyles."* People in the elearning groups logged into their respective programs on average about six times over 19 weeks. At the end of the nine-month study, the control group had gained 2 kilograms, while both elearning groups had lost about 1 kilogram.

[19] The Cohen's *d* effect size for learning was .54 (40th percentile); for self-perceptions of competence *d* = .82 (62nd percentile); and, for intrinsic motivation, *d* = 1.73 (91st percentile).

Summary of Research Validating the Effectiveness of eLearning

As was evidenced in the meta-analyses put forward earlier, there is a ton of research comparing elearning to classroom instruction. The six studies reviewed just above show the wide variety of comparisons that are made. We examined one study that compared a blended-learning flipped classroom to a classroom-only condition, an online-only condition, and a reverse flipped classroom condition. We looked at a study that compared online role playing with classroom role playing, another that looked at supplemental instruction sessions conducted online or face-to-face, a study that compared facilitated elearning to classroom instruction, another study that compared the benefits of mobile learning to using a textbook, and finally, we looked at whether two widely different approaches to elearning could prevent obesity.

We saw that varied results can occur: elearning can outperform the classroom, it can perform worse, or it can perform about the same. These studies reinforce the findings we saw in the meta-analyses—elearning can be more effective, but it doesn’t have to be. What makes elearning effective is its design elements—that is, the learning methods utilized. The next section will look at the findings discussed so far and reflect on the implications for continuing legal education.

SECTION 3—Reflections on the Research by JC Kinnamon, Ph.D.
What the eLearning Research Means for Legal Education

The technology that enables elearning is not unfamiliar to the legal education community; but, with few exceptions, technology has been brought to bear on distribution challenges and not improving learning. Technology has enabled us to expand our audiences beyond those individuals co-located with us in the room: "live" instruction now includes webinars originating in one location that stream content simultaneously to countless users elsewhere. Also, recording and storage technology enable later playback if presenter and learner schedules don't align. But the vast majority of our educational offerings—even when assisted by technology—are still lectures: Credible subject matter experts speak on legal topics while displaying slides via PowerPoint® or some other presentation software.

Generalizing from the scientific research on elearning in Sections 1 and 2, it's not a stretch for us to consider elearning as a viable alternative for legal education. But, as Dr. Thalheimer has pointed out, the success or failure of elearning—no matter the subject matter—is only partially related to the enabling technology. Instructional design also is a key factor in determining a program's effectiveness.

Rigorous instructional design—like technology—adds to development costs. Development costs for elearning are higher than those associated with PowerPoint presentations developed and presented by experts. eLearning creations are almost always designed and created by teams of specialists in instructional design, graphics, audio/video, and programming. Producers of online legal education content, not surprisingly, may hesitate to invest in advanced learning formats absent endorsements by accrediting agencies—because their customers want CLE credit.

Starting in 2012, Practising Law Institute (PLI) embarked on a mission to develop elearning programs built on principles of instructional design and learning science. Initial steps were part of a feasibility assessment: Can engaging elearning titles be developed for lawyers' professional education? Can elearning products be delivered within a mature delivery infrastructure? Will lawyers "play" a serious game that involves active participation? As far as PLI is concerned, the feasibility phase is over; customer feedback has been very positive and the technological challenges have been conquered. What we are trying to do now is catch up to what fields outside legal education have already done: embrace elearning as a viable option for delivering professional training and education.

At the moment, PLI's library includes 13 programs offered via its Interactive Learning Center (ILC). Five additional titles are under development and more are being planned. The "seat time" for these programs ranges from 45 minutes to 2.5 hours and are offered in a variety of formats, e.g., week-long MOOCs (Massively Open Online Course), serious games, simulations, and scenario-based learning. PLI has sought and received external validation of the quality of the programs from competitions both inside and outside the legal education industry. So far, five PLI courses have been recognized, including three ACLEA awards in three years.

Customer testimonials have been very supportive of the elearning (non-lecture) approach. Here are a few:

- *"I think this was one of the best designed and presented programs I have ever attended (I've been practicing 35 years). I really like the method of presentation. I never got bored and I continually made 'mental notes' to apply in my practice."*
- *"The interactive format of this course worked great! It was much more engaging… I couldn't look away!"*
- *"I was absolutely shocked by how much I liked the format. It was great to have the interactive portions, the client/attorney videos, mixed with the lectures. I enjoyed this CLE more than any other I have done."*
- *"I appreciated the video scenarios of lawyer and client because it demonstrated the skills. That really made the advice sink in."*
- *"I didn't expect to have the general counsel ask me questions! That was good. I couldn't multi-task."*
- *"I'm doing anti-money-laundering training. I would prefer to do it this way."*
- *"Far better than usual instruction. It retained your attention better. Use this technique as a teaching tool."*

Unfortunately, few elearning programs to date have earned CLE accreditation. There seems to be a correlation at work: The closer an ILC program is to an existing, approved format, the more likely it is to receive accreditation. This often leaves the more progressive programs (e.g., serious games, simulations) in accreditation limbo.

We have had valuable conversations with accreditors about elearning products to get their thoughts, reactions, and guidance. We have concluded that the mold-breaking characteristics of, say, a serious game, work to its disadvantage: The accreditor might have a positive impression of a program, but not be sure how to evaluate it for accreditation purposes as the current rules don't accommodate it. Is it worthy of CLE? How many credits? Based on what?

The American Bar Association (ABA) has provided little information on the subject of elearning developments. The ABA's Standing Committee on Continuing Legal Education's (SCOCLE) recently revised Model Rule for Minimum Continuing Legal Education (MCLE) establishes "Non-Moderated Programming with *Interactivity as a Key Component"* as a recognized accredited online program format. However, it does not define "interactivity" or provide guidance on interactivity requirements. The ABA's Model Rule recognizes that all U.S. MCLE states currently calculate credits exclusively based on the number of minutes a program lasts while acknowledging that some states have "explored offering MCLE credit for self-guided educational programs, such as those offered using a computer simulation that is completed at the lawyer's individual pace." To date, there has been no expanded guidance or published opinion from the ABA on these new elearning programs, such as simulations, that depend on interactivity.

It appears to us that a set of criteria is needed to assist accreditors and program developers. These criteria can be applied by an accrediting agency in determining whether to approve an elearning program for CLE credit. The same criteria, of course, can guide CLE providers: If they want to be able to offer CLE credit, they should consider the criteria during program design and development. The criteria should combine what is known about creating effective elearning and the traditional requirements for accrediting Internet-based CLE products. To this end, PLI—in collaboration with Dr. Will Thalheimer—has created a draft checklist (see Section 4). This checklist incorporates important feedback that was received from various regulators who have reviewed PLI programs. We offer this as a starting point for individual accrediting agencies and volunteer to be involved as much (or as little) as the agency requests.

PLI's goal is to help move the legal education industry forward so all providers have the incentive to create advanced elearning products that will directly benefit the consumers of legal education content and, in the long run, benefit the legal profession.

SECTION 4—Proposed eLearning Accreditation Checklist

Checklist for Accrediting eLearning for Continuing Legal Education		
Traditional Accreditation Requirements	**Presence**	
1. **Faculty Biographies:** Up-to-date biographies of qualified faculty are provided that demonstrate expertise and experience relevant to the subject matter covered.	❑	
2. **Written Materials:** Relevant written materials are provided that supplement the program content.	❑	
3. **Ability to Ask Questions of Faculty:** Participants have a method for asking questions of faculty in the program.	❑	
4. **Evaluation:** The program contains a link that allows participants to evaluate the program.	❑	
5. **Course Learning Objectives:** The program includes a list of well-defined learning objectives.	❑	
6. **Timed Agenda:** The program includes a summary of the time required to complete the various parts and a total for all parts.	❑	
7. **Participation Verification:** The program uses techniques to ensure participants experience the program, blocking them from skipping material and requiring them to respond to program prompts along the way to completing the program.	❑	
8. **CLE Credit Calculation:** An appropriate rationale is included for the calculation of the CLE credit granted.	❑	
9. **Providing Relevant Valid Legal Content:** The program conveys legal content that is appropriate for lawyers and likely to increase professional competence and skills.	❑	
eLearning Effectiveness Guidelines	**Level of Effectiveness**	
10. **Ensuring Learners Have Learned:** The program employs mechanisms to ensure participants learn the material—specifically, by asking them questions or challenging them to make decisions.	Sufficient ❑	Superior ❑
11. **Presenting Content to Support Comprehension:** The program presents content using methods that convey information clearly, avoids overloading or distracting learners, and generally supports them in applying the content to the practice of law.	Sufficient ❑	Superior ❑
12. **Engaging the Learners to Maintain Interest:** The program uses motivational techniques to maintain attention (e.g., appropriate aural or visual media; gaming elements such as scoring, story or scenario aspects; meaningful interactivities).	Sufficient ❑	Superior ❑
13. **Spacing Repetitions of Key Points over Time:** The program provides participants multiple touchpoints on key concepts spaced over time, avoiding an approach of covering material once and never coming back to it.	Sufficient ❑	Superior ❑
14. **Provide Opportunities for Realistic Decision Making:** The program provides decision-making/practice opportunities to participants that are similar to the actions they will take while involved in real-world lawyering.	Sufficient ❑	Superior ❑

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