

# Review of *Minds Online: Teaching Effectively with Technology*

Angela S. Wagner

**Abstract**—This article reviews Michelle Miller’s book, *Minds Online: Teaching Effectively with Technology* with a brief introduction, review of the its contents, and practical suggestions for professionals to utilize this work. This 2014 release includes 9 chapters, 296 pages, sample syllabus, notes, and suggestions. It is published by Harvard University Press: Cambridge, MA. <http://www.hup.harvard.edu>, ISBN: 9780674660021.

**Index Terms**— blended learning, online learning, psychology, teaching, technology.

## I. INTRODUCTION

THE dynamic changes to education in the digital age propel instructors into new teaching environments: blended and online classrooms. Despite the push to critically examine new technologies and their potential to impact learning, Miller’s book uniquely focuses on the cognitive aspects of learning. She elucidates how technologies can complement psychology through course design and strategy to produce success for students in online and blended classrooms. In *Minds Online*, Miller posits supportive ways to make online learning successful through thoughtful course design and formatting. As a Redesign Scholar for the National Center for Academic Transformation and co-creator of the First Year Learning Initiative at Northern Arizona University, Miller informs and encourages teachers in incorporating learning techniques supported by cognitive research when structuring courses utilizing technology to capitalize on learning opportunities given that technology allows us to “amplify and expand the repertoire of techniques that effective teachers use to elicit the attention, effort, and engagement that are the basis for learning” [xii].

## II. BOOK CONTENTS

### A. *Online Learning’s Durability, Effectiveness, & Psychology*

Chapters 1 through 3 address three majors concerns in regards to online learning: Is it here to stay? Does it work? How do computing aspects change our learning?

Chapter one explores the four factors promoting the growth of online learning: economics, student demand, measureable evidence, and new technologies. Given the growth of technology in education for these reasons, it is prudent to learn to harness its power.

Miller undertakes the major concern of performance in online learning in chapter two. Here, the quality of identical best practices in traditional classrooms versus online courses are compared, and research is presented to support similar outcomes despite modalities. She refocuses our attention to maximizing the quality of instruction [41].

The third chapter examines the ways computing changes us and dispels three myths related to negative changes of technology use by presenting the facts surrounding each idea; Miller then critically analyzes how each change truly affects teaching.

### B. *Attention, Memory, & Thinking*

Chapters 4 through 6 delve more deeply into the cognitive and brain science behind quality, effective learning. Miller defines each area of focus, explains its processes, and supports its implications for online learning with helpful strategies to make learning advantageous, especially by understanding how the frameworks of cognitive psychology impact learning.

The focus of chapter four presents the mental processes of attention, a necessary ingredient to learn material. It investigates the impact of working memory, automaticity, and voluntary control at work in classroom learning, and furthermore, observation is given to situations when attention works in a differing manner (ADHD). Miller provides four strategies to harness the processes of attention to translate learning into a digital environment.

Chapter five tackles the center of teaching and learning: memory, and it thoroughly delineates memory theories, old and new, while also exploring how and when memory is affected during learning. The testing, spacing, and interleaving effects are illustrated and applied to online courses along with useful techniques to apply to course design, making activities and content more memorable.

Miller focuses on thinking in chapter 6, primarily noting the basic differences in novice and expert thinking, which is the use of effective thinking strategies. By reviewing the structural elements of problems and utilizing analogical reasoning, she proposes how novices become expert thinkers and then addresses ways to teach metacognition and critical thinking via online course activities.

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### C. Incorporation, Motivation, & Design

The final three chapters of Miller's book combine the research behind cognition and learning with application to online learning.

Chapter seven targets effective incorporation of multimedia into coursework, expounding upon ways to gain "educational mileage" [149] from materials we create. Sensory modes, multimedia theory, animations, and simulations comprise the main support behind the helpful accommodations suggested to increase learning for all students.

Given the emphasis on student motivation in contemporary teaching complaints, in chapter 8 Miller enumerates the varying components (and hindrances) to student motivation, a major component in both traditional and digital classrooms. Common roadblocks to student performance are often rooted in motivational factors, which are met in this chapter along with practical suggestions to allay these issues. Again, research meets practice as theories and trends are applied to the online format. Self-determination theory, intrinsic/extrinsic motivation, and growth mindsets are explored along with self-efficacy, anxiety, and procrastination.

Closing this work, chapter nine culminates all of the theories, research, and classroom experiences Miller presented in previous chapters, recapping it all in a clean, bulleted Q&A format. Areas crucial to all courses such as objectives, activities, assessments, peer interaction, and grades connect to guiding principles and instructor questions; additionally, a short list of mentioned resources from each driving cognitive principle is compiled for quick reference; this simplifies design elements for teachers looking to create success in online courses.

### III. SUMMARY & CRITICAL REMARKS

Though *Minds Online* targets online courses in higher education, it addresses topics K-12 educators and instructional professionals would value as well. With the steady growth of virtual courses, Miller's psychology-based approach to leverage technology's benefits offers a foundation for the construction of knowledge for beginners new to course design. Concomitantly, it also while gives a convincing take on the tools and resources available to enhance current coursework for seasoned professionals. The author's suggestions for instructional design even denote points one may consider when evaluating current coursework and activities. Designers and instructors need to continually manipulate the online environment in unique, memorable ways to capture student attention and foster creative thinking

The book's conversational tone and thoroughly explicated aspects of psychology and pedagogy make it accessible to a wide audience seeking to understand the basics of teaching and learning virtually. Miller alternates between cognitive theories and their applications in a classroom, but she successfully explains such concepts without relying heavily upon technical jargon. She follows each concept with a clear classroom connection, an actionable step aligned with the way the mind works. This readability is helpful and appealing to educators who might lack the time to sift through the formidable stacks of educational psychology research

currently available. The centered exploration of the underlying cognitive influences on student learning makes it relevant to teachers of all levels and content areas incorporating technology into the classroom, traditionally or otherwise, because we cognitively learn various content in a similar fashion.

The perceived competition between traditional and distance courses has created a myopic view of online instructional design with worry surrounding emerging technologies' capability to shorten attention spans or produce lackluster results. Despite cautionary examples of the drawbacks of technology found in works such as Nicholas Carr's book *The Shallows*, which attributes emergent technologies with *rewiring* our brains, Miller warns we must avoid misinterpretation of such works and confidently redirects this sentiment by denoting that "technically speaking, computing experience does alter our brains at a neural level, but so does just about anything else that we remember" [45]. In this work, she explains how minds learn differently online and reminds readers that technology is a powerful tool when integrated effectively. Miller clearly juxtaposes misconceptions of online learning with best practices to elucidate ways one can utilize and manage resources to enhance learning. The thorough research behind each element and suggested applications leave readers with sound, duplicable strategies, ideas, and online tools to try in the classroom to improve student learning for all.

Given the variety of learners, new technologies and tools, and instructors, it is imperative not to view this book as a quick fix for any one online classroom issue but rather an opportunity to seek out the science behind learning to examine ways to strengthen online and blended instruction. Readers finish with a clear understanding of how cognitive research enhances the decision-making processes and critical thinking put into course design and learning opportunities. All in all, this book's practicality and solid theoretical supports make it a valuable addition to any education professional's reading repertoire, one of which Miller hopes "inspires you to use future technologies-tools we can't even envision yet-to serve, inform, and inspire students, all with an eye to the cognitive process that drive learning" [196].

### REFERENCES

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- [2] M. Miller, *Minds Online: Teaching Effectively with Technology*. Cambridge, MA: Harvard University Press, 2014, pp. xii, 41, 45, 149, 196.

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Angela Wagner is a member of Association for Educational Communications & Technologies, the International Association for K12 Online Learning, and the Online Learning Consortium. She is also a member of Delta Kappa Gamma.