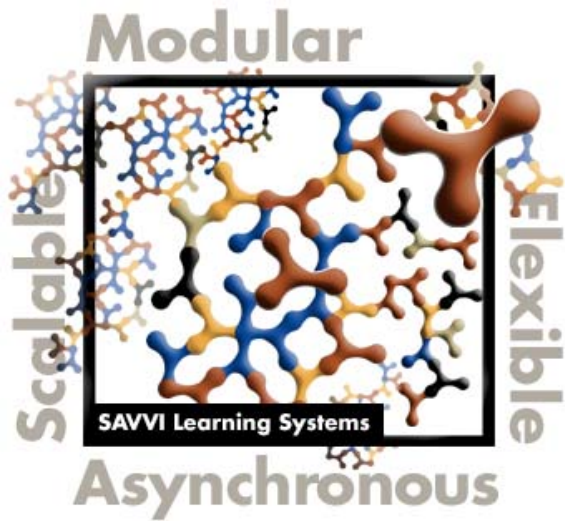


The Compelling Nature of the Savvi Learning Modality



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SAVVI | *International*

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Abstract

This paper explores the changing landscape of Six Sigma and e-learning, with a focus on Asynchronous Learning Networks as the preferred mode of knowledge transfer. Specific attention is given to the rapid growth and stronghold of e-learning options for technical and professional business audiences, the productivity of “blended learning,” the disadvantages of a purely traditional classroom-based strategy and the advantages of asynchronous learning. A general recommendation is made to leverage a globally proven model for achieving the objectives of Six Sigma knowledge transfer.

About the Authors

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Mr. Williams has more than 25 years of professional experience in a broad range of businesses, including training, software, technology and aerospace systems. He has been a scientist, engineer, technical manager, consultant, sales director, executive and entrepreneur. Most recently, Mr. Williams co-founded the Six Sigma Management Institute (SSMI) and was the executive liaison between SSMI and the University of Phoenix Online during the R&D initiative that migrated Six Sigma training content into an asynchronous online learning system. Mr. Williams was also in the aerospace business for many years and was a member of the technical team that developed and launched the Hubble Telescope. A graduate of the University of Colorado and Johns Hopkins University, Mr. Williams holds a dual Master of Engineering Management and Computer Science. He also has a BS in Physics and Astrophysics from the University of Colorado. He serves on the advisory boards of the Arizona State University School of Management and of StudyLog, a biotech information systems company.

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With more than 15 years of experience in the development of business improvement initiatives, and in authoring related books, papers and articles, Mr. DeCarlo is responsible for the ongoing R&D activities that populate Savvi’s new product and service pipeline. Most recently, Mr. DeCarlo has collaborated on a Six Sigma field guide with DuPont corporation, and is co-author of *Six Sigma for Dummies*, to be published in the Spring of 2005. Mr. DeCarlo has published more than 100 articles and five books in the areas of Six Sigma, TQM, technology, knowledge management, change management and other disciplines. He was speechwriter for several Florida Power & Light executives, including the CEO, during its successful pursuit of the Deming Prize for quality. A graduate of Harding University, Mr. DeCarlo holds a BA in Psychology and has completed specialized graduate studies in business and economics.

About Savvi International

Savvi International is a business performance improvement solutions company, specializing in the delivery of management systems, six sigma, process management, software tools and Lean techniques for improving business performance. Savvi develops and applies expert business and technical knowledge, application software tools, e-learning and classroom training solutions within all types of businesses.

Savvi and its combined companies have been providing consulting, training and software tools to organizations ranging from small to Fortune 500 for more than six years. Savvi International is recognized as one of the business-performance industry leaders by the International Society of Six Sigma Professionals.

Contact Savvi at 480.515.2850 or visit us on the web at www.savvi.com.

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Times Have Changed

For the past decade, Six Sigma has been installed in corporations by consultancies that rely on subject matter experts with superior stand-up delivery skills. Known as master Black Belts, these expert trainers leverage their Six Sigma know-how in a traditional classroom environment to create white belts, Green Belts, Black Belts, master Black Belts and Champions.

Now there are many reasons to adopt Six Sigma in a more robust, streamlined and cost-effective manner.

- ✚ Most of the largest corporations have already deployed Six Sigma, and now it's time for smaller companies – with \$2 billion or less in revenue – to benefit from Six Sigma. But these companies don't have the same economies of scale. Even if you are a supplier to a large corporation, you simply can't afford to install, deploy and implement Six Sigma in the old, heavy-handed, expensive manner.
- ✚ Six Sigma has fully transitioned from a high-risk, leading-edge and high-priced initiative to a lower-risk, mainstream solution no longer shrouded in mystery and mystique. Through the nineties, all the technical and managerial early-stage risk of Six Sigma has been systematically rooted out.
- ✚ Today, with no technical or managerial Six Sigma secrets left, the next logical step is an accompanying downward pricing adjustment. Six Sigma is at a stage in its life that simply doesn't justify the high cost of training, deployment and implementation.
- ✚ Enabled by information technology, e-learning as the preferred modality for knowledge transfer is rapidly moving toward its tipping point.

According to the University of Phoenix Online, the overall e-learning market will grow from \$10.3 billion in 2002 to \$83.1 billion by 2006, eventually hitting \$212 billion in 2011. A similar report published by International Data Corporation predicts that web-based training will clip along at an annual compound growth rate of 147 percent through 2005.¹

Learning and training in one form or another via the Internet is the fastest-growing web application since email – and soon to be as pervasive in the corporate space as email.

Currently, close to half of e-learners are technical or licensed professionals, while another 30 percent are middle managers.

A study by the American Society for Training and Development says that up to 60 percent of American companies, and not just large ones, use some form of e-learning.

Association Management says that more than 75 percent of colleges and 90 percent of Global 2000 companies have invested in online learning, and more than 2 million courses are now online and accessible to students of all occupations.

When Peter Senge wrote *The Fifth Discipline* in 1990, and spawned the era of the learning organization, he foreshadowed the current tsunami of technology-enabled learning. Senge used the term "microworld" to describe how "personal computers are making it possible to integrate learning about complex team interactions with learning about complex business interactions."² Now the PC microworld has been charged with knowledge and content delivered via the Internet, and many corporations are shifting their training functions into high virtual gear. As with other subjects, technology has enabled Six Sigma training

¹ Bullet points excerpted from Brainware, TV VOD E-learning News.

² Senge, peter, *The Fifth Discipline*, Doubleday/Currency, 1990, p. 315.

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to be much less expensive, much more convenient and downright innovative – especially for corporations, who have dynamic pressures and both geographically and temporally dispersed workforces.


A Brave New World

The forces of change are converging to create an important shift: more people can become proficient in applying the Define-Measure-Analyze-Improve-Control cycle at a radically lower cost across cultural, geographical, organizational and even company boundaries. In short, the current convergence of Six Sigma with e-learning enables any business of any size or type in any industry to avail itself – and its supply chain – of the full power of Six Sigma.

Instead of setting aside full-time Black Belts, Six Sigma companies in the emerging era will make many of their Black Belts and Champions part time – so they can remain integrally connected to the operations and P&L of their respective organizations. They may have a very small number of full-time master Black Belts, but they engage in knowledge transfer, project selection, project execution, training, coaching and mentoring – during the normal course of business and often from behind their computers. Traveling, face-to-face meetings and classrooms are reserved for only specialized business challenges, problems, processes and circumstances.

In the emerging space of Six Sigma, the cost of training any one Black Belt, Green Belt or white belt will be reduced by an order of magnitude below historical prices. This shift will enable any company to train everyone as a white belt, and to have many more Green Belts and Black Belts than has ever been possible before – making the Six Sigma initiative one of pervasive rather than selective culture change.³

Further, openly-oriented Six Sigma trainers will have the ability to clearly communicate with their “belt candidates” in a language they understand – because they will have the ability to customize curricula and course content down to the line-item level, thereby making it connect much better with intended audiences in different industries and functional areas.



Thomas L. Russell compiled and published more than 355 research reports, summaries and papers from the past 25 years that show “no significant differences” between classroom and distance learning on a wide variety of learning dimensions.

<http://teleeducation.nb.ca/nosignificantdifference>

If It's Broke, Fix It

We are in the midst of this transformation today. Two categories of e-learning have developed, but neither is optimal for the rigorous nature of Six Sigma training. The first category is self-paced, self-directed systems. Whether interaction rich or interaction poor, these are little more than individual learning tools that are not scalable beyond the single user. At best, they function as mini tutorials on the subject matter.

The second and larger category includes the synchronous online systems that attempt to duplicate the classroom environment to the greatest extent possible through high bandwidth connections, streaming video, live tools like Blackboard, chat rooms and other “different places at one time” technologies.

A third modality has emerged. It's the path of higher evolution, because it integrates the transformation of just Six Sigma and the transformation of learning. It's a modality that is neither self-directed nor synchronous. It's a learning mode that transcends approximation of the classroom. It has been proven to work as well or better than the classroom.

³ New-generation companies can raise classic percentages of ‘belt’ training significantly, while maintaining improved cost-efficiencies.

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This new way of training is based on a non-proprietary technology platform with which any company can configure and operate its training function across the entire expanse of a global enterprise. Its benefits and "asynchronous" functionality represent a robust answer to the questions, limitations and frustrations that have arisen out of the closed-generation paradigm. Additionally, it operates within the confines of the most basic desktop computer and dial-up access to the Internet or a network.

The Sloan Consortium – the preeminent alliance for research in education, publishes its Journal of Asynchronous Learning Networks (JALN), in which they have labeled synchronous e-learning as an attempt to "recreate the classroom experience" rather than figure out what works best in non-classroom learning situations.⁴ One JALN author has labelled synchronous online learning an exercise in transforming the "sage on the stage" into the "sage in the box."⁵

This new "asynchronous" modality of e-learning, developed through research by academic and business members of the Sloan Consortium, has been implemented and proven undeniably effective in the largest on-line education forum in the world – the University of Phoenix Online, pioneer in the internet-enabled distance learning space.

Through more than 10 years of wildly rapid growth, the University of Phoenix (UoP) now boasts nearly 80,000 enrolled students, which makes it the tour de force in the knowledge transfer business. Along the way, UoP Online has accrued an impressive breadth of experience in the burgeoning modality of asynchronous learning. The university's full accreditation status, and the performance of its students, has been an established fact for many years now – which in no small part is responsible for its long-running love affair with Wall Street.

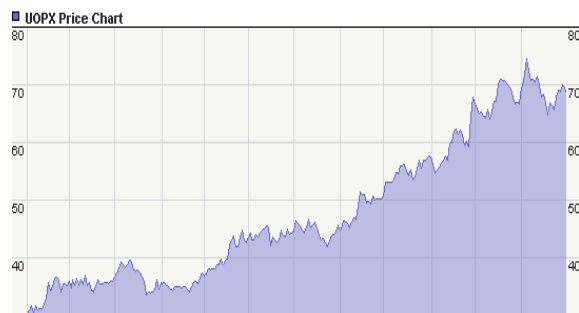
The model of asynchronous learning that has been serving University of Phoenix Online and its students so well for the past 10 years is highly transferable into the business space. We are entering an age in which this innovative academic knowledge-transfer model is ready to become leveraged by so many corporations that heretofore have not had a viable way to train more rather than fewer people in the ways of Six Sigma.

Cornell University Study

Solid State Physics, a 400-level course, was taught in stand-up fashion for 30 years by a professor. The same professor taught the course with no face-to-face contact through syllabus, reading, assignments, homework, computer simulation and work on problem sets. The professor used an email- and web-based delivery and knowledge transfer system.

The professor's assessment: the asynchronous group learned as much and as well as other classes he taught.

The Journal of Asynchronous Learning



12 Month University of Phoenix Online Stock Performance

UoP Study

Currently, close to half of e-learners (44 percent) are technical or licensed professionals, while another 30 percent are middle managers.

University of Phoenix Online

⁴ Mayadas, Frank, Asynchronous Learning Networks: A Sloan Foundation Perspective, The Journal Of Asynchronous Learning, Volume 1, Issue 1 – March 1997.

⁵ McDonald, Jeannette, Ph.D., Is "AS Good as Face-to-Face" as Good as it Gets?, The Journal Of Asynchronous Learning, Volume 6, Issue 2 – August 2002.

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Benefits of the asynchronous on-line training modality feature in Savvi Learning include:

- ✚ Whereas the average content retention rate for an instructor-led class is only 58 percent, the more intensive e-learning experience enhances the retention rate by 25 – 60 percent. Higher retention of the material puts a higher value on every dollar spent on training. *Source: WR Hambrecht & Co.*
- ✚ Computer-based training and online training can reduce training costs over instructor-led training. A congressionally mandated review of 47 comparisons of multimedia instruction with more conventional approaches to instruction found time savings of 30 percent improved achievement and cost savings of 30 – 40 percent. *Source: Merrill Lynch, the Book of Knowledge.*
- ✚ The e-training industry is expected to be a \$40 billion market by 2005 with a five-year growth rate of 42 percent, and despite the recession the market has expanded. Technology has made training more convenient, less expensive, fun, and innovative, especially for global corporations that have to train employees around the world. *Source: Technology Decisions.*
- ✚ E-learning solutions provided the greatest ROI for companies in 2002. Research shows that companies implementing these solutions have quickly recognized first-tier benefits, including reduced costs for travel, human resources overhead, regulatory compliance and customer support costs; and eventually received second-tier benefits, such as increased employee performance that directly impacts profitability. *Source: Nucleus Research.*

Considering that the e-Learning market was almost zero in the late nineties, these statistics are astounding. These data indicate that the learning and application associated with Six Sigma, and other business improvement initiatives, are best delivered through some combination of online instructional modalities.

Choosing the Right Modality

As a business decision-maker, the task at hand is how to make the migration and with which online knowledge transfer model. Specifically, in regards to Six Sigma, this decision must be characterized by a thought process that takes into account the core nature of the subject matter as an applied science with a clear ROI proposition.

In other words, the features and characteristics of an online training system that purveys knowledge and competencies are different from those of a system that purveys hard business ROI within a timeframe of four to six months. Each properly trained and certified Black Belt in a corporation completes between three and five projects per year, returning an average of \$250,000 to the corporation in the form of validated cost savings or revenue growth.

One modality forms the base for all modalities in the blended delivery model. The learning platform is a feeder mechanism for static, self-directed content, multimedia, synchronous classroom or asynchronous newsgroups. Within these modalities, mentoring and chat components can be attached, as can any number

Drexel University Study

An undergraduate Information System Design and Analysis course was taught over a computer network. Through a structured assessment of the homework and project grades of 250 students, asynchronous learning was found to be equivalent to classroom instruction.

- ✚ 100 percent of students felt seeing the ideas and assignments of others was useful.
- ✚ 97 percent of students felt ALN had more access to the instructor.
- ✚ 67 percent felt they had more communication with other students.
- ✚ 91 percent said they would take another ALN course.

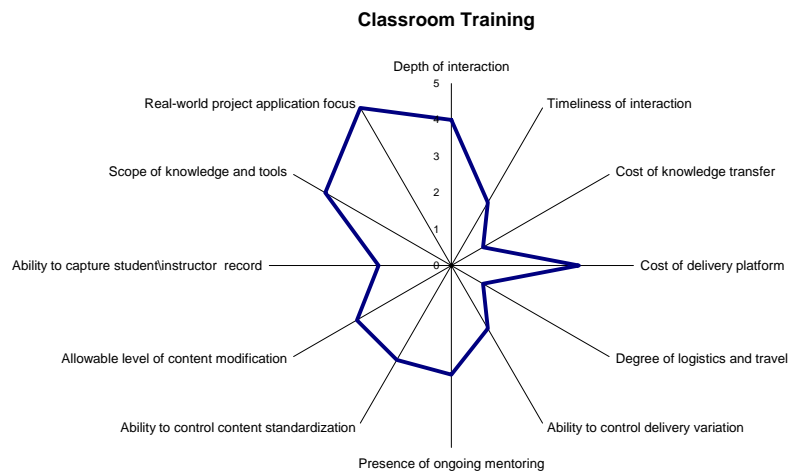
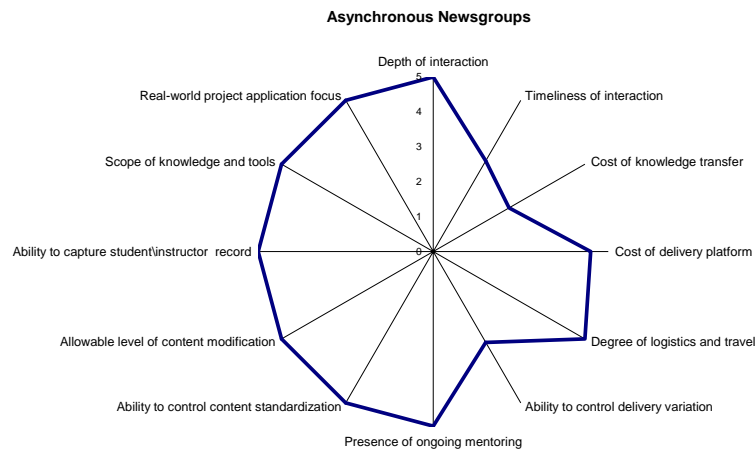
The Journal of Asynchronous Learning

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of other components, such as video files, individualized navigation, conversation threads, animation, flash, face-to-face instruction and so on.

The world of learning is now a multi-dimensional space with a set of options, and the choices for the knowledge-transfer designer are expanding. The focus is on which learning modality forms the best base for transferring *Six Sigma* knowledge in the context of a Six Sigma business initiative.

Each of the many pertinent dimensions or requirements for Six Sigma knowledge transfer can be scored and then compared with different learning modes along those dimensions for an objective evaluation. We can visualize the results of this analysis easily through "radar charts," which show the relative scoring of each value in standard e-learning modalities in transferring Six Sigma knowledge.



It's easy to visualize how asynchronous learning is superior to the class room mode, and how it best accommodates the intensive and multi-dimensional nature of Six Sigma training, with its project-centric focus and its extensive need for personalized instruction, interaction, coaching and mentoring on an ongoing basis.

The Advantages of Mentored Asynchronous Online Training

Student Advantage

- *Frees Student's Time.* Students fit coursework into their daily schedule whenever it has the least impact on professional and personal commitments. With this flexibility, they can continue their regular work schedules and contributions while enhancing their skills.
- *Personalizes Training.* Students absorb material at their pace, and instructors interact with students at all levels of acumen and assertiveness. Through extended discussions and exercises, instructors engage with each student one-on-one.
- *Fosters Intimacy.* In the online classroom, there's nowhere to hide. Unlike lecture classes where students can slip in and out quietly and get away with not engaging, they must interact extensively with the instructor and other students.

Instructor Advantage

- *Frees Instructor's Time.* Students fit coursework into their daily schedule whenever it has the least impact on their professional and personal commitments. With part-time commitment, they can continue their regular work schedules and contributions while enhancing their skills.
- *Promotes Thoughtfulness.* In conventional training, instructors field questions from students in real time and deliver answers "off the cuff", and often inadequately. In asynchronous mode, instructors have more time to assimilate questions and provide thorough and thoughtful answers.
- *Breeds Curriculum Autonomy.* In an asynchronous Six Sigma environment, the centralized training and curriculum developers can design a customized set of intellectual property. Instructors and experts can then control the thoughtful training and coaching of all Six Sigma personnel.
- *Reduces Variation.* Training curriculum is not as susceptible to "instructor variation" – because in an asynchronous learning environment, all "lecture" material is scripted, standardized and not subject to the individual interpretation and presentation from a "canned" PowerPoint slide.
- *Levels the Field.* In a classroom setting, instructors often are chosen for their presentation skills, where personal energy, humor and entertainment value are critical. In asynchronous modality, the people with the most expertise can be the teachers, regardless of their presentation skills.

Company Advantage

- *Unites Geographies.* Students and instructors can be anywhere in the world, as long as they have Internet or network access. Freed from travel requirements, instructors can teach multiple classes simultaneously without any additional overhead.
- *Captures the Record.* All student interactions, including discussions, exercises and team project contributions, are recorded as a natural byproduct of the modality, at a detailed and granular level. This allows for better progress assessment and performance review.
- *Integrates the Tools.* The online nature of the modality makes it simple to include other technology and tools, such as web-links, statistical analysis software, file attachments and embedded applications.
- *Saves Money.* The Savvi solution has the most economic value-add. Students are trained at a dramatically lower cost than the traditional alternatives of on-site consultancy training or internal classroom training by company staff. As a result, training can be driven farther and faster, with a lower breakeven point, greater returns and a much higher ROI multiple.

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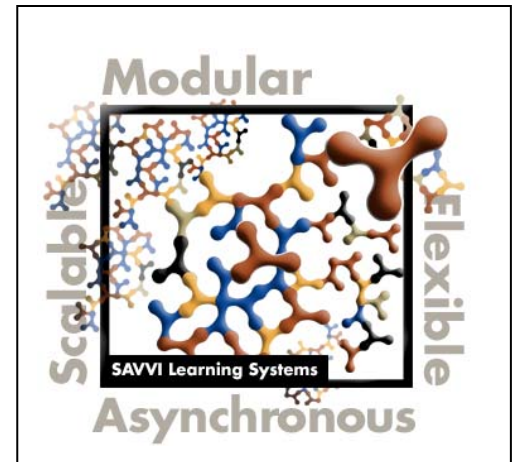
The Future is Now


The new learning pathway has been forged by the unstoppable forces of technology and progress, and now there is a clear and convincing way to learn and apply Six Sigma knowledge. It's on this new road that tens of thousands of mid-cap and small-cap companies can now make their journey and release their pent-up demand for a better way of achieving Six Sigma quality and business performance.

As good as it is that so many large companies have availed their shareholders and customers of Six Sigma, there is more to be done by many more corporations, businesses, and institutions of all sizes, types and locations.

As the convergence of technology and a new learning modality is enabling higher education, it's also enabling the process of how a company deploys Six Sigma and derives its associated benefits and business results. This new way more closely wires training content to both instructors and students, and it wires suppliers into their customers' Six Sigma initiatives more than was possible before.

This new modality is the great equalizer. With the power of Six Sigma now more available and affordable than ever, everyone has equal access to the same know-how, and deploying Six Sigma to full capacity becomes a straightforward process. Therefore, in the future, any company that tries to deploy Six Sigma in classic fashion will be at a disadvantage, because its competitors will have access to a more streamlined and effective methodology.



<i>The New Six Sigma Modality</i>	Traditional Six Sigma	
Context of initiative	Process and operational performance	Business management system
Focus of initiative	Cost and defect reductions	Total business performance improvement
Scope of projects	Selective	Pervasive
Source of change power	External consultants	Internal Champions
Resource commitment	Few full time	Many part time
Scope of application	Large corporations	Small and medium sized businesses
Nature of knowledge	Inflexible	Flexible
Corporate purveyors	Specialists	Everyone
Epicenter of training	Classroom	Individual
Cost of training	Expensive	Inexpensive
Role of consultants	Many - tactical execution	Few - strategic consulting
Emphasis on project process	Medium	High
Emphasis on project results	High	High