



## Solving the training dilemma with game-based learning

Corporations and not-for-profits have long struggled with how to effectively train their employees, while showing a solid return on investment (ROI). The rising costs associated with instructor-led training have added to the dilemma. Imagine that you need to train 500 employees a year. You need to pay your trainers' travel expenses, their salary, and administrative costs associated with training guides and materials. And then there are the productivity costs related to taking employees away from their jobs. It all adds up to a lot of time and money. And how effective is your training, really? According to research performed originally by Edgar Dale and proven by the National Training Laboratory Institute, learners only retain 5% of information taught through instructor-led training. Now, compare that with a 75% knowledge retention rate using the practice by doing approach<sup>1</sup>.



Teaching Method	Knowledge Retention
See / Hear - Lecture	5%
Reading	10%
Audio Visual / Video	20%
Demonstration	30%
Discussion Group	50%
Practice by Doing	75%
Teaching Others	90%
Immediate application of learning in a real situation	90%

This leads to the next challenge training and education directors face – the traditional approach to learning is dry, passive and disengaging for today's learners. Simple slide shows, presentations and videos allow the learner to simply “lean back.” The Next Gen learner needs more than a “talking head” and a projector to keep their attention and get them engaged. This generation thrives in connected, interactive, and social settings; they excel in competitive, strategic situations.

Workers today are also easily distracted and often not allowed to focus on any one thing, creating an even greater need for an immersive experience that requires the learner to “lean forward.” The New York Times recently reported that a third of people polled said they

<sup>1</sup>Dale, Edgar, and American Council on Education. (2010, March 18). *Motion Pictures in Education*. Retrieved July 16, 2010 from Archive. org: <http://www.archive.org/details/motionpicturesin00americh>

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frequently check e-mail during business meetings – imagine what they do during a training seminar<sup>2</sup>. Another year long study conducted by Basex, Inc. found that workers not only switch tasks every three minutes during the workday, but nearly half the time they interrupt themselves. It takes them about 28 minutes on average to resume their original task<sup>3</sup>. With all these distractions and ineffective teaching methods, paired with ever-rising costs, it is no wonder that some educators are not seeing a positive return on their training investment. Thankfully, there is a better way to execute training initiatives.

### Game-based learning for today’s workforce

Game-based learning (or immersive simulation) overcomes the problems associated with instructor-led training and fulfills the unmet needs of the Next Gen learner. Through the use of immersive simulation, *learners are greeted with active, engaging and complex problem-solving tasks that reinforce strategy and comprehension*. Well-designed game-based simulation engines and games are able to cut through distractions and engage this audience in a way that few other methods can. According to Richard Van Eck, Graduate Director of the Instructional Design & Technology program at the University of North Dakota, “Next Gen learners require multiple streams of information, prefer inductive reasoning, want frequent and quick interactions with content and have exceptional visual literacy skills – characteristics that are all matched well with game-based learning<sup>4</sup>.”

The New Media Institute uses this chart to compare the three approaches to learning: passive training methods such as classroom lectures and online “page-turners;” hands-on training such as apprenticeship programs; and game-based learning.

	Traditional Training (lectures, online tutorials)	Hands-on Training	Game-based Learning
Cost-effective	●		●
Low physical risk/liability	●		●
Standardized assessments allowing student-to-student comparisons	●		●
Highly engaging		●	●
Learning pace tailored to individual student		●	●
Immediate feedback in response to student mistakes		●	●
Student can easily transfer learning to real-world environment		●	●
Learner is actively engaged		●	●

<sup>2</sup> Williams, A. (2009, June 21). *Mind Your Blackberry or Mind Your Manners*. Retrieved July 16, 2010, from New York Times: <http://www.nytimes.com/2009/06/22/us/22smartphones.html>

<sup>3</sup> Jackson, M. (2009). *Distraction: The Erosion of Attention and the Coming Dark Age* (p. 17). Amherst: Prometheus Books.

<sup>4</sup> Van Eck, R. (2006). *Digital Game-Based Learning: It's Not Just the Digital Natives Who Are Restless*. *Educause Review*, vol. 41, no. 2 (March/April 2006) (p.16-30)

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Game-based learning also defies the traditional confines of the classroom, allowing learners to apply the learning, interacting in virtual worlds or simulated environments. This makes it possible for learners to achieve a sense of “flow” - total immersion and focus on a task, while offering the opportunity to stop, start, replay on their schedule.

Flexibility and accessibility combined with an interactive experience for the learner make game-based learning the ideal solution for corporate training today. According to a 2008 eLearning Guild Immersive Learning Simulations survey, 93% of the organizations using game-based learning rated the approach as better than other forms of rich-skill practice and 76% reported a positive ROI<sup>5</sup>. For example, the Montreal Public Transit System saw a 50% reduction in training time and a 32% increase in overall employee performance after implementing an immersive learning solution<sup>5</sup>.

**70%**  
of major employers  
utilize interactive  
software and games  
to train.  
(Entertainment Software  
Association, 2010)

### Who is the Next Gen Learner and why do they require immersive learning?

The Next Gen Learner was born in the early 1980s — they have grown up in a world where digital games have always been an important part of their lives. They first began using computers at the age of five and grew up playing *Reader Rabbit*, *Math Blaster* and later *Oregon Trail*. Those born only a decade later, in the early 1990s have never lived in a world without a global network.

This generation of workers has never known a world without videogames, cell phones and the internet. Recently, Carnegie Mellon University released a statistic stating that the average American spends 10,000 hours gaming by the age of 21<sup>6</sup>. Interestingly, in Malcolm Gladwell’s book *Outliers*, he repeatedly mentions the “10,000-Hour Rule.” He states that if we can invest 10,000 hours of effortful study at anything by the age of 21, we will be as good at whatever we do as the greatest people in the world<sup>7</sup>. This all equates to the fact that ***we now have an entire generation of workers who are virtuoso gamers.*** This emerging workforce has evolved to expect this level of engagement. According to the New Media Institute, in the four years between 2010 and 2014, nearly 1 in 5 US workers is expected to retire, to be replaced primarily by 18-40 year olds who grew up with videogames<sup>8</sup>.

<sup>5</sup> Wexler, S., Corti, K., Derryberry, A., Quinn, C., & van Barneveld, A. (2008). *Immersive Learning Simulations 2008*. Santa Rosa: The eLearning Guild Research

<sup>6</sup> Von Ahn, L., Dabbish, L. (2008). *Designing Games With A Purpose*. Communications of the ACM, vol. 51, no. 8 (August 2008) (p.1-10)

<sup>7</sup> Nielsen, M. (2008, November 18). *Malcolm Gladwell’s New Book, “Outliers”, And The 10,000 Hour Rule*. Retrieved July 16, 2010, from <http://michaelnielsen.org/blog/malcolm-gladwell%E2%80%99s-new-book-outliers-and-the-10000-hour-rule/>

<sup>8</sup> New Media Institute. (2009). *Game-Based Learning: What It Is, Why It Works, and Where It’s Going*. Retrieved July 16, 2010, from Internet Facts, Statistics, Research and Analysis: <http://www.newmedia.org/game-based-learning--what-it-is-why-it-works-and-where-its-going.html>

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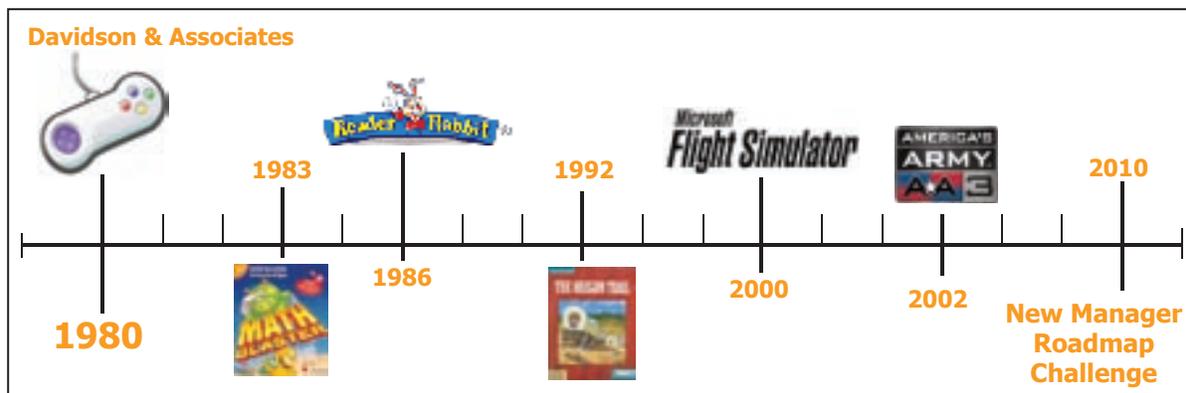
The Next Gen Learner needs an experience that will engage them. Marc Prensky, author of *Digital Game-based Learning*, noted these generational differences in the way we learn:

Baby Boomer	Next Gen
“Normal” Speed	Twitch Speed (fast)
Linear Access	Random Access
Text first	Graphics first (visual learners)
Singular processing	Parallel processing
Passive “lean back”	Active “learn forward”
Solitary learning	Connected learning
Work	Play

### How did we get to this age of games and what does the future of game-based learning look like?

Beginning in the early 1980’s Davidson & Associates, an education software company, began developing *Math Blaster*; what would be the first of many educational computer games. *Math Blaster* has since led the way for subsequent serious games like *Reader Rabbit*, *Oregon Trail*, *Microsoft Flight Simulator*, *America’s Army* and the *New Manager Roadmap Challenge*.

These applications helped “re-wire” the Next Gen learner’s mind to associate interaction with learning. When instead they receive a passive “expert-based” lecture, this experience fails to trigger as a learning experience and as engagement decreases, so too does retention.



Another new phenomenon that is changing the way we learn is the vast social network that we have at our fingertips. The idea of social learning, where learners share and compare information with their peers, is rapidly gaining momentum, especially in the game world. The social element of game-based learning is thus emerging as one of the most powerful elements in engaging and challenging the learner. Serious games of the future will most likely utilize even more social media tools for collaboration, communication and learning.

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## How are other organizations using game-based learning to engage their learners?

Recognizing the need to develop training programs that appeal to the Next Gen Learner, a leading biotechnology company recently teamed up with Digitec Interactive. The company was looking for an immersive simulation game that would educate new and existing managers about their job responsibilities. It was important that this game be fresh, fun and fiercely competitive – to get the managers excited about their onboarding training. Up for the challenge, Digitec went to work on the *New Managers Roadmap Challenge* game using the play-to-teach philosophy. Developed in Adobe Flash and Java with XML driven content, the game integrates with the company’s corporate Oracle database, so that new hires simply choose an avatar and screen name to start playing.



The *New Manager Roadmap Challenge* is an immersive simulation game, used to educate new and existing managers about company standards and policies, as well as encourage good time management skills in their professional work day. New managers are required or recommended to complete roughly 60 different onboarding resources and activities within their first year on the job. Four time periods or levels (30 days, 90 days, 6 months, 1 year) help prioritize what to focus on and when. The first “30-days” period starts when managers first log in to this tool. There are several milestones assigned to each level that players will need to complete within that time period while competing against other players. Along the route, managers earn points by completing recommended milestones. These milestones reinforce different categories of the player’s professional development, and include links to internal HR resources. At random intervals, milestones can reveal Bonus Rounds. These trivia-style micro-games test the player’s knowledge and their response time to earn better scores. The manager’s “challenge” is to complete as many milestones and Bonus Round questions as possible in each level, before time runs out.

Digitec developed the game around a metro-rail theme with each station being a milestone. The user selects a station from an overhead map and they are quickly transported to the station to being their milestone. The 4 levels are represented as four separate and distinct neighborhoods. The game is played in real time with each level only activating at the 30 day, 90 day, 6 month and 1 year point.

All players have their scores tracked and the top ten players see their username and score on the *New Manager Roadmap Challenge* Leader Board. Players can also view the top 50 scores for the game to see where they rank amongst their colleagues - increasing the sense of competition as players vie for the top score.

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The game-based approach is intended to make professional development continuous and fun, by creating a competitive environment, where managers can learn, develop and compete in a non-traditional way. In contrast to a passive, one-time, traditional instructor-led delivery approach, *the game provides an active, continuous, learner-centric approach.*

**75%**  
of business and non-profits already offering video game-based training plan to expand their usage in the next 3-5 years.  
(Entertainment Software Association, 2010)

The competitive factor is a strong component. When players register, the countdown clock for that level begins, and the milestones are assigned. Since each level of the game is time-based, the running clock provides a sense of urgency to complete those assigned tasks before the level expires. After completing a neighborhood, the player can refer back to their completed milestones for review and peek at future milestones in upcoming levels.

Since the *New Manager Roadmap Challenge* was launched in the Spring of 2010, the game has already reduced learning management system administration and overhead costs, while increasing learning support for managers<sup>9</sup>.

Feedback on the game has been overwhelmingly positive; recurring themes based on feedback from new managers highlighted the high level of engagement associated with the game and the benefit of being able to access the content from anywhere.

Feature or benefit	Before	After
Consolidated access of information & resources for new managers	No	Yes
Access new manager information online anywhere and anytime	No	Yes
Time savings (the time it takes to locate new manager content and start learning)	Determined by course dates (often days or weeks)	Minutes
Automatic tracking and recording completion of suggested/required onboarding tasks	No	Yes – via the technology developed as part of the New Manager Roadmap Challenge

<sup>9</sup>New Manager Roadmap: Onboarding Performance Support. (2010, January). South San Francisco, California, USA.

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This study is not meant to discount the value of all traditional instructor-led or workshop based learning delivery. These experiences can provide the highest degree of connection, mentorship and inspiration. Yet based on the ever-tightening training budgets and a fierce competition for a learner's attention, game-based learning can be a *serious* solution to a dilemma we will be facing from now on.

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*Digitec specializes in providing game-based learning tools to engage the Next Gen Learner. These tools include embedded, collaborative, game-based simulations and immersive learning environments.*

*To learn more about game-based learning and view online demonstrations, visit [www.playtoteach.com](http://www.playtoteach.com).*

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