



Screenshots from [LOVE](#), an MMO by Quel Solaar

Listen to anyone talk about schools today: classical education just can't keep up. In the digital generation's world of constant change, most schooling is profoundly boring. But what else is possible?

Douglas Thomas and John Seely Brown on games and education.

Highlighted by Christian Sarkar

Imagine an environment where the participants are building a massive network databases, wikis and websites, and thousands of message forums, creating a large-scale knowledge economy. Imagine an environment where participants constantly measure and evaluate their own performance, even if that requires them to build new tools to do so. Imagine an environment where user interface dashboards are constructed by the users themselves to make sense of the world and their own performance in it. Imagine an environment where evaluation is based on after-action reviews to continually enhance performance; an environment where learning happens on a continuous basis, because the participants are internally motivated to find, share, and filter new information on a near-constant basis.

Finding an environment like that sounds difficult, but it isn't. It already exists, in the form of massively multiplayer online games. These large-scale social communities provide a case study in how players absorb tacit knowledge, process it into a series of increasingly sophisticated questions, and engage collectives to make the experience personally meaningful. **What they teach us about learning is not found in the game at all, but is instead embedded in these collectives, which form in, around, and through the game.** In essence, the game provides the impetus for collectives to take root.

In our view, the cultures created around MMOs are almost perfect illustrations of a new learning environment. On one hand, online games produce massive information economies, composed of thousands of message forums, wikis, databases, player guilds, and communities. In that sense, they are paragons of an almost unlimited information network. On the other hand, they constitute a bounded environment within which players have near absolute agency, enjoying virtually unlimited experimentation and exploration—more of a petri dish.

MMOs draw in players from every walk of life, of every age, and across gender, class, and socioeconomic divides. They require an immense amount of learning in order to play them and are grounded in participation. Most important, the engine that drives learning is a blend of questioning, imagination, and—best of all—play.



UNDERSTANDING THE NEW CONTEXT

In examining the world of MMOs, we have found that guilds constitute the most significant learning environment within the game. The amount of learning that goes on in even the smallest guilds is amazing, as is the amount of data that gets processed, filtered, and integrated into play and game practices. The game's forums alone produce more than 15,000 new pieces of information each night. Yet guilds have found ways to avoid being overwhelmed by this mountain of data and instead manage it with surprising efficiency, using techniques that may be evocative for other institutions that face similar problems. Guilds like the Garden Gnome Liberation Army (GLA), a collection of more than 100 players who twice-weekly engage in complex raids, sit at the intersection of the two elements that make up the new culture of learning. They are intensive and complex learning collectives that are deeply invested in constructing, utilizing, and managing large-scale knowledge economies (the information network). In

order to succeed, every single member of the guild must take an active, constant, and enthusiastic role in learning information about the game, his or her character class, and the battles, fights, and challenges they will face. At the same time, the space of the world itself is fluid, changing, and dynamic. It presents players with boundaries within which they search for success through trial and error, finding idiosyncratic solutions to complicated problems. Solutions are not discovered so much as they are organically grown (the petri dish). Gamers bring these two elements together through play. They combine the knowledge gained from outside the game with an evolving set of practices that occur inside the game, both of which feed each other. As players create new solutions within the game space, they return verbal characterizations, analyses, and videos to the knowledge economy surrounding the game, thus disseminating them to a wider group of players, who then use that information to create even newer solutions, and so on. In short, they engage in precisely the activities that we have been describing as inquiry. Within the new culture of learning, we can see networked information as providing nutrients for the petri dish, allowing exploration, play, and experimentation to continually cultivate new questions.

But perhaps the deepest level of play and, for our purposes, the most significant aspect of it, has to do with a sense of collective indwelling. When playing "massively," one moves beyond a sense of just playing with others. In order to succeed, players immerse themselves in the game, creating and constructing identities, relationships, and practices that constitute deep and profound acts of imagination. And that act of immersion is itself, at base, an act of imagination and collaboration. Very few challenges in World of Warcraft can be solved alone, and none of them occur at advanced levels of the game. A guild's success depends on how well its members can synchronize their efforts to solve problems.

GLA members, for example, would spend months advancing through a particular raid with only incremental success each week. Eventually, the guild would have a breakthrough and suddenly be able to succeed at something that it had been failing to accomplish for months. At that point, a major shift occurred, and in everyone's mind, the goal became achievable. And shortly thereafter, usually, the raid succeeded, seemingly without effort. So what changes? Not the gear the players possessed or their own skill levels and talents. Instead, there is a collective shift in imagination. As the fight unfolded one last time, the players—though dispersed all over the globe—had managed to completely synchronize their endeavors. Yet no one could articulate why they could do so on that day and not before. The knowledge acquired to defeat the boss and complete the challenge was principally tacit. As we have seen, tacit learning functions most effectively when students discover their own learning objectives. Games, which allow learners to play, explore, and experience, also allow them to discover what is important to them, what it is they actually want to learn—and that keeps them playing. When people stop learning in a game, they lose interest and quit. When understood properly, therefore, games may in fact be one of the best models for learning and knowing in the twenty-first century. Why? Because if a game is good, you never play it the same way twice.



THE VIRTUAL SPACE OF COLLECTIVE INDWELLING

Members of a raiding guild have read plenty of information about what the fight would entail before they set foot into the dungeon, as gleaned from the information network. Yet there is no one "right" way to succeed. Each fight requires countless minor adjustments, which shape the events that follow them, making it impossible to predict what would come next. Knowing how the fight works, therefore, is necessary but insufficient for success. Information alone is just not enough.

Victory also requires a more organic notion of learning: experimentation. The three months of practice helped the guild steadily improve, and as the members made progress—however minor—each week, they set new incremental goals to advance through the fight. Practice made the players more aware of their individual roles and responsibilities and helped them understand both the mechanics of the fight and the possible combination of things they were likely to see.

Yet neither the first notion of the culture of learning (finding information) nor the second (practice, play, experience, and creating new knowledge constantly) **accounts for the leap from complete failure to easy success. Something clicked for the guild, something that had not been there before**—a key positioning or transition between stages of a fight, a well-timed spell casting, or perhaps a new series of moves that tipped the balance and cleared the path to victory. It's fascinating that no one in the guild could articulate exactly what had happened. In massively multiplayer games this is a frequent occurrence. Oftentimes triumph seems to occur without reason; battles are won that, by all rights, should have been lost. Players find themselves wondering, "How on earth did we do that?" What's more, once that shift happens, players find that it can happen again, and eventually it even becomes commonplace.

We believe that this provides a critical key to understanding what we mean by a sense of collective indwelling—the feeling and belief that group members share a tacit understanding of one another, their environment, and the practices necessary to complete their task. Collective indwelling evolves out of the fusion of the information network and petri dish cultures of learning, and it is almost entirely tacit. **It both resides in and provokes the imagination. It is at once personal and collective.** Though individual performance is vitally important—each and every player must execute the jobs flawlessly or the team doesn't succeed—it is inherently tied to the group itself. There is no way for a single player (or even a small handful of players) to succeed alone. The team relies on everyone to understand that their success as individuals creates something that amounts to more than the sum of its parts.



SHARED IMAGINATION

A massively multiplayer game may seem to be a strange representative of an environment in the new culture of learning, but in many ways it is also the most appropriate. Throughout this book, we have constantly returned to the ideas of change and flux. And we have found that **gamers embody the spirit of embracing change** as much as, if not more than, anyone.

Games have grown up, and playing with them is no longer reserved for children. In fact, the ability to play may be the single most important skill to develop for the twenty-first century. In this context, play involves what we think of as a **questing disposition**. Questing is an activity that is central to most large-scale online games, and it presumes a number of things. Chief among them is that the world **provides multiple resources and avenues for solving problems, and solutions are invented as much as they are implemented.** The key to questing is not typical problem solving. It is innovation.

As we have seen, the things that are learned through MMOs are fed back into the collective through a variety of sources and gradually become adopted throughout their standard practices. What begins as experimentation is replicated, tested, and incorporated into the stockpile of information that constitutes the knowledge economy surrounding the game.

This type of innovation is also a fusion of the two elements of learning, a pulling together of resources and experimenting with them to see what fits. Through questing one finds what works and what doesn't for a particular problem, but either way one also gets a feel for each object or item one encounters. At the explicit level, solutions succeed or fail. But at the tacit level, players gain information about the item at hand regardless of success or failure. That tacit knowledge is a key component of indwelling. Without it, players cannot understand the collective or their place in it. Each one develops a personal relationship with the world that, in turn, becomes shared and modified as he or she interacts with others.

Once players start to interact, they also develop a shared sense of imagination that is the means for, and the object of, collective indwelling. The multiplayer environment is made up of the acts of shared imagination among its inhabitants. And what makes that world particularly interesting and challenging is both constant change and the fact that the actions of the players in the world, as a collective, are driving that change. We look to gamers because they don't just embrace change, they demand it. Their world is in a state of constant flux, and it must continually be reinvented and reimagined through acts of collective imagination. That's what makes the game fun. But while players defeat bosses, kill monsters, coordinate raids, find new armor, and read blogs, wikis, and forums, learning happens, too.



WHAT REALLY COUNTS

From the perspective of learning, battling monsters and collecting treasure are the least interesting things going on in, and particularly around, games such as World of Warcraft and Lord of the Rings Online. These environments make it easy to see just how fun learning can be. They allow us to highlight the connections between knowing, making, and playing. They are places where we are permitted to let our imaginations run free.

That space of imagination is also scalable unlike anything we have seen previously. The information network culture and the bounded culture of experimentation get better, richer, stronger, and more innovative with each additional player, new idea, set of data, and bit of information. The multiple collectives that make up the space in and around a MMO process an astounding amount of information on a continual basis, seamlessly integrating new knowledge into play and action on a routine basis. Information flows and disseminates almost immediately. And as the game gets larger and more complicated, the new culture of learning works even better.

There are no answers online. There is only a progression of increasingly complicated and more difficult questions. And, more often than not, those questions are the result of players pushing against the boundaries that the game provides. Players quickly discover that when they encounter a problem they don't know how to solve, the fastest and easiest way to learn the solution is to tap into a collective that is already working on it. Maybe members of the new collective will provide an existing piece of information that makes the problem solvable. Or maybe they will inspire a player to find a new, unique solution to the problem and share it with the collective in turn.

The lessons we take from these games show us that the future of learning is not in lectures, memorization, and test taking, but in peer-based learning that challenges the imagination and makes questions (and questing) more important than answers. In many ways our games have always revealed deeper truths about who we are and how we interact, so it is not surprising that we see a new culture of learning unfolding through play.

We believe that where imaginations play, learning happens. Games like *A Tale in Desert*—a crafting and 'tradeskills' MMO set at the dawn of Civilization—demonstrate one more way that peer to peer learning, amplified by the collective, may hold the key to the future of learning in the digital age.

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