

The Future of Work is Play: Global Shifts Suggest Rise in Productivity Games

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Abstract—Life in ancient Egypt, Greece, Rome and Colonial America included a natural integration of play and work. There were no scheduled work hours, time clocks, or hourly wages. For adults, work and play were combined in the greater quest for survival. The Industrial Revolution brought great advances in labor, transforming effort from human to machine. There was no time for play – playing at work was considered counterproductive. Play and recreation were now completely detached from work and labor. As a result, the Industrial Age bore witness to monumental advances in leisure as well – from the circus and YMCA to the first urban playground and the U.S. National Park Service. As the 21st century shift to knowledge and information work becomes more pervasive, a return to the integration of games and play as part of work is a logical progression. Shifts and advances in global, societal, technological, economic, and socio-political trends will shape the future of work. These changes will lead to an increased use of game mechanics in the workplace of the future. Over the last several years, the deployment of “productivity games” to improve business processes through the application of game elements have been gaining momentum. The use of crowdsourcing and productivity games as a business process have been on the rise. These lessons support the notion that games can – and will – be an important component of the workplace of the future.

Keywords-- productivity games, gamification, future trends, global shifts, crowdsourcing

I. INTRODUCTION

Throughout much of human history, leisure activities typically reflected tasks performed as labor or necessary for survival. The ancient Hebrews, Greeks, and Romans all used activities like hunting, fishing, and athletics for both sustenance and recreation. In American Colonial times, life on the farm allowed for a natural interplay of fun and labor. Children often played games as they did their chores. Native American tribal games prepared warriors for battle, helped to settle disagreements, and entertained. [1]

There were great advances in labor and social change during the Gilded Age – the latter half of the Industrial Revolution from around 1850 to the early 1900’s. For most work-related tasks, machines took over and dictated, controlled, and monitored the pace of work. Urbanization, industry, and the rise of “the boss” brought mechanization and structure. The concept of an eight hour day, the invention of the time clock, and efficient production processes changed the way work was done. Daniel McCallum created the first org chart. There was no time for play at work, the machines and bosses with stopwatches did not allow it. Surprisingly, though, work that was not mechanized did not change as quickly.

As Gary Cross describes, “artisans like tailors, woodworkers, shoemakers, and many other traditional craftsmen experienced little mechanization before 1850. Especially in skilled trades, workers were able to retain old leisure traditions (like workplace play and drinking breaks).[2] As work progressed in to the 20th century, technological advances shifted the nature of work from manual labor to knowledge-based work. In his 1959 book, “Landmarks of Tomorrow”, noted management theorist Peter Drucker observed, ““Productive work in today's society and economy is work that applies vision, knowledge and concepts -- work that is based on the mind rather than the hand.” [3]

With the emergence of the digital workplace in the late 1990’s, a new set of freedoms began to influence how and where work got done. Geographic and time-based boundaries began to disappear. The Partnership for 21st Century Skills highlights the four Cs - Critical thinking and problem solving, Communication, Collaboration, and Creativity and innovation. [4] As we move further in to the 21st century, the shift to knowledge and information work should commence a return to the integration of games and play as part of work – just as they were on the farm. There are sweeping social, economic, demographic and technological changes happening around the globe. From the redistribution of wealth across emerging markets, radical shifts in population demographics, and a revolutionary level of technological advances, it’s clear that our world is in the midst of dramatic change. The culmination of these shifts across multiple facets of societal and technological advancement will help lead to an increased use of game mechanics and play in the workplace of the future.

Play is an activity enjoyed for its own sake...voluntary – it’s when you want, where you want, and for as long as you want. It is our brain's favorite way of learning, maneuvering, and relaxing. Because we think of play as the opposite of seriousness, we don't notice that it governs most of society—political games, in-law games, money games, love games, advertising games, to list only a few spheres where gamesmanship is rampant. The Latin words for ‘leisure’ is *otium* and for ‘business’ is *negotium*. Enjoy is *occupo* – not far from occupation. Work and play have obviously been closely related forever. Physical work can cause one to become physically tired or exhausted, requiring rest, leisure, and relaxation. Knowledge work can lead to one becoming mentally tired or exhausted, requiring a mental break where gaming and play can be as replenishing as a nap for the physically tired.

Over the last several years, there have been several experiments designed to improve software engineering processes through the application of game mechanics. Other examples across technology and academic fields have illustrated the value of using games to get real work done. Looking beyond the meteoric rise in social games, the work in Serious Games, Games for Change, and Games in Education have all advanced at rapid rates. All of these efforts go well beyond simple “gamification”, instead focusing on using deep game design techniques to direct effort, attention, and motivation. As Ben Sawyer, founder of the Serious Games Initiative, astutely noted, game play in productivity games results in immediate change happening – the act of playing the game gets actual work done. Other serious games require education through game play for change to happen. Productivity games offer synthesized play and work. Augmenting a business process with game mechanics has and will continue to lead to significant productivity improvements. These lessons support the notion that games can – and will – be an important component of the workplace of the future.

II. WORK AND PLAY IN HISTORY

A. Pre-Industrial Era

The history of games and play goes back thousands of years. Ancient Egyptians played a variety of games. While there were indoor games, outdoor games, athletic competitions and games of chance, many games throughout history built on the theme of “things that are done in daily life” – hunting, fishing, training for war, strength and agility, and athletic competition. Sticks, the javelin, and swords were all used in play as they were in hunting or war. This theme is consistent all the way through the Colonial Period in America, and began to change in the Industrial Era. The other theme that’s consistent across generations is the limited leisure time for adults. While we like to think modern conveniences give back more time from work, almost the opposite has occurred. Children, however, have always used games and play as a way to practice, experiment, and learn. Games and play for adults must take place as part of work or survival-related activities.

In ancient Greece, activities such as running, leaping, dancing (as a military drill), wrestling, javelin and discus throwing, boxing, swimming, and ball games were all part of life. The Greeks believed the gods desired strong and healthy bodies, particularly for men, and athletic competition was common. The word *agon*, the Greek root of the English word agony, was used to describe a contest, conflict, fight, or competition.

In ancient Rome, the old drill ground for soldiers was called the “*Campus*” and became a gathering spot for exercise, archery, wrestling, boxing, and track and field competitions. Across the Roman Empire, men practiced fencing, throwing, swimming, hunting, and fishing. Another recreational activity in ancient Rome involved Gladiators fighting against one other, wild animals, and slaves, sometimes to the death, for the entertainment of spectators. The word gladiator comes from *gladius*, the Latin word for a short sword used by legionaries and some gladiators. *Ludus*, the Latin word for “semantic field

of play, game, sport and training” was also the name for a primary school for children under the age of 11. [5]

In colonial America, fishing and hunting were popular as recreational activities. “These sports helped to stock the family larders but more often became ends in themselves, created to break the dullness of daily routines.” [6]

Colonial children played games. Games helped teach children skills required later in life as colonists – as parents, as farmers, and as good citizens. Children learned how to follow rules, solve problems, and use their hands and feet to move through the games they played. Games helped develop their imaginations and practice collaboration and fairness. William Penn said, “the best recreation is to do good.”

A great example of how games were used to teach and prepare children for life in the community is the game of Graces, also known as 'French Hoops' or 'The Flying Circle.' Graces was an outdoor game brought from France designed to develop feminine grace. Young ladies were encouraged to play the game and to keep score – catching the hoop on a pair of dowels. Young gentlemen were encouraged to play this game simply as a "lark." [7]

The Puritans had a strong reputation for being against frivolity and mirth. As with previous societies, their hard life did not leave much free time, but that didn’t mean that the Puritans didn’t play games. They had a strong belief that “recreation” should be purposeful. That meant that hunting and fishing, swimming, running, and other leisure activities would serve a more important goal, aligned with worship, religion, and survival. Some leisure activities were viewed as a necessary replenishment that allowed people to return to work rested, rejuvenated and re-invigorated. Children were given a little more leeway, obviously, as games were a way to learn and grow to adulthood, just as all young animals instinctively use play as a way to learn.

Native Americans played a game known as “Little Brother of War” – what we now know as lacrosse – during the colonial period:

The most common of the games played by the natives was a game involving the use of a small ball and sticks equipped with small leather nets. The Cherokee called their version of the game “the little brother of war” because it involved hundreds of players engaged over several miles of rugged terrain. Some games could last for days. Because of the vast numbers of players it was difficult for many of them even to get close to the ball, so they contented themselves with attempts to injure their opponents with their sticks. In what is now upper New York and Ontario, early French explorers witnessed a similar game being played by the Iroquois, although typical sides numbered about 20 with two goals set up about 120 feet apart. The French thought that the sticks resembled a bishop’s crozier, spelled *la crosse* in French, so the name of the game that remains yet today an important sport in the Eastern United States carries the name given to it by the French. [8]

While all societies had toys, board and ball games, music, dancing, and literature, they also shared recreational activities aligned closely to work – survival skills such as hunting and fishing, athletics, festivals, and learning activities for children.

B. Industrial Age

The Industrial Revolution changed life in America and Europe in dramatic ways. Urbanization, mechanization, and the rise of the machine as a part of work changed everything. People moved to cities, they worked together in factories, and the pace of their work was dictated by a machine. The time clock and organizational chart, and even the phrase “on time” originated in the 19th century. Perhaps the most fascinating trend that took place during the Industrial Age was the sheer number of simultaneous advances in recreation and leisure during the era. The amount of change might even suggest that the very concept of leisure didn’t exist prior to the Industrial Age. As Peter Burke notes,

Implicitly or explicitly, most recent work has been based on one central hypothesis, that of a fundamental discontinuity or great divide between pre-industrial and industrial society.[9] According to this view, in medieval and early modern Europe, as in other pre-industrial societies, the modern idea of leisure was lacking.[10] The modern distinction between the ideas of work and leisure, like the regular alternation of work and leisure, was a product of industrial capitalism. Pre-industrial societies had festivals (together with informal and irregular breaks from work), while industrial societies have leisure, weekends and vacations. The emergence of leisure is therefore part of the process of modernization.[11]

Table 1 – Examples of Industrial Age Advances

Advances in Work
1827 - First workers' union - Mechanics Trade Union formed in Phila
1854 - Daniel McCallum creates the first org chart of American business
1855 - Bessemer steel process patented
1867 - First assembly line in Chicago meatpacking
1868 - Congress passes law on 8 hour day
1874 - Mass enacts first work limit law for women and children
1888 - Nikola Tesla invents the alternating-current electric motor.
1888 - Willard Bundy invents the Time Clock
1892 - Homestead Strike at US Steel

Leisure and Recreation
1826 - Joseph Nicéphore Nicépce - first photograph
1845 - First baseball game played under modern rules
1851 - YMCA established
1864 - First state parks and forest preserves
1866 - YWCA established
1872 – First national park opens – Yellowstone
1875 - P.T. Barnum's first circus
1880-1900 - more than 80 city park systems established
1885 - Boston Sand Garden opens
1885 - First use of powered chainlift roller coaster: Coney Island
1888 - George Eastman designs the hand-held Kodak camera.
1889 - Hull House founded
1892 - Sierra Club was founded
1905 - US Forest Service and National Park Service established

While it’s fascinating to note the 20th century accomplishments in both work-related and recreational activity, it’s also easy to see how separated the two became during this period. Unlike the ancient Egyptians, Hebrews, Romans and Greeks -and even the Pilgrims – Industrial Age society began to make a clear distinction between work and play, separating the two in ways that stand to this day. Industrial age society was defined by efficiency and process and these new constructs made it difficult for play to remain integrated with work, as it was deemed unnecessary, frivolous, and even counterproductive. The pace of work for most was now ordained by a machine. The velocity at which an urban factory worker turned out poured steel, for example, was determined not by the whim of the worker, but by the amount of time the steel had to be heated in the furnace. Any variance in time or process resulted in useless or wasteful output - there was no time for human-ness; for play or games - every day and every worker, had to follow the same schedule in order to maximize production.

III. PLAY IS THE NEW WORK-GOVERNED BY MACHINE

Today’s knowledge worker faces new challenges. Unlike 150 years ago, the production of useful output now begins in the mind – whether it’s a service industry host or hostess, a web programmer, or a manufacturer, most jobs today require human-ness – anything else has been automated, delegated to robots, or, at least temporarily, off-shored. This mechanization which began with the processes of work has now spread to the domain of play. The rise in social games, the pervasiveness of technology, and the connectedness has allowed for machines to dictate the pace of game play much in the same way they took over the pace of work in the Industrial Era.

In 1920, Luther Halsey Gulick wrote “The Philosophy of Play”, in which he compared play and recreation: *“There is a real difference also between play and recreation. The function of play in the life of the individual, and the function of recreation, are problems that must be solved before undertaking public provision for these needs. The boy who is playing football with intensity needs recreation as much as does the inventor who is working intensely at his invention. Play may be more exhausting than work, because one can play much harder than one can work. No one would dream of pushing a boy in school as hard as he pushes himself in a football game. If there is any difference of intensity between play and work, the difference is in favor of play. Play is the result of desire; for that reason it is often carried on with more vigor than is work.”* [12]

If we were to apply Gulick’s comments to playing Farmville or Angry Birds today, then these ‘players’ ironically need a break - some leisure time and recreation – away from the game. There are several health-related blogs that offer ways to cure Farmville addiction. [13] This is not leisurely or recreational.

Bernard Suits, author of *The Grasshopper: Games, Life and Utopia*, suggests that games are a voluntary acceptance of unnecessary rules. "To play a game is to attempt to achieve a

specific state of affairs (prelusory goal), using only means permitted by rules (lusory means), where the rules prohibit use of more efficient in favour of less efficient means (constitutive rules), and where the rules are accepted just because they make possible such activity (lusory attitude)." [14]

Addiction suggests a compulsive need. One suggested treatment for Farmville addiction is to visit a real farm. Facebook has groups for both Farmville and Angry Birds addicts to connect.

So if game play is a voluntary activity, then a machine should not govern the pace of "play".

And as we return to think about how we work today, the pace of most work is now governed by humans, not by more efficient machines. The pursuit of innovation in most large corporations will only be achieved by creative output from the minds of the human employees. Knowledge workers across the globe sit at their desks and think about what task to do next – until the cell phone buzzes with a Farmville harvest notification.

From Xbox Kinect, Sony Playstation, and Nintendo Wii's - to cell phones and internet-based social games, most of what we call play today is done by machine. Yes, we still have amateur softball leagues and high school sports, but to Gulick's point, those look less and less like leisure activities.

High school ballplayers are entering professional leagues. The National Collegiate Athletic Association (NCAA) is one of the most profitable "businesses" on the planet. In 2010, they signed a \$10.4 **billion** contract with CBS and Turner broadcasting for coverage of just Men's Basketball. [15] Poker is another example of a game gone pro. ESPN regularly televises poker tournaments, and has a dedicated website for poker news. [16]

The spirit of deep play is central to the life of each person, and also to society, inspiring the visual, musical, and verbal arts; exploration and discovery; war; law; and other elements of culture we've come to cherish (or dread). Swept up by the deepest states of play, one feels balanced, creative, focused [17].

The incoming workforce is being shaped differently, and the statistics are notable:

- More young children know how to play a computer game (58%) than swim (20%) or ride a bike (52%)
- 69% of children aged 2-5 can operate a computer mouse, but only 11% can tie their own shoelaces
- According to the ESAA, 64% of parents believe games are a positive part of their children's lives [18].
- the number of US social gamers to grow to 68.7 million in 2012, 29% of the Internet population playing social games by 2012 [19].

One-fifth of the U.S. population has played a social game over the past three months, according to a new report issued by industry researcher The NPD Group. That translates to 56.8 million U.S. consumers. According to NPD, a significant portion of social gamers -- 35 percent -- are new to gaming.

Work and play were once intertwined. The efficiency and process mandated by the industrial age broke this linkage. Our available discretionary or leisure time has been boosted by the increase in mobile technology allowing both work and play during times that were previously dedicated to other activities (e.g: commuting). This increase, combined with the evolution from industrial workers to knowledge workers, has resulted in an explosion of games – social, mobile, and console games. Many games are now leveraging the technology developed to drive work processes and this is causing play to be mechanized in a way that can be compulsive and unhealthy. As work shifts to more human, more creative "knowledge work", the opportunity to reintroduce games, play, and fun back in to work continues to rise. Picture the tech startup geeks running around with their high powered water guns or skateboarding in the hallways. At the same time, some of the popular social games have made play and entertainment seem more like work – no longer voluntary - and hence, there is an opportunity to make work seem more like play. We can consciously leverage the increasing commonality in the technology used for both work and play to create gameful work environments.

So as we shift the conversation back to work in the 21st century, it seems quite natural that games and work become closely connected once again, just as they were in the pre-industrial era.

IV. HOW PRODUCTIVITY GAMES CAN BE SUCCESSFUL

Today, the global economy is in the midst of dramatic change. The information architecture and speed of transmission is radically transforming global society. Those who live in a rural village in an emerging market and now have internet access - or employees of a multi-national corporation, have felt the impact of the increased speed at which information now flows. 21st century organizations depend on the creativity in the minds of their employees to help them innovate.

Freedom to think on the job has replaced the mechanization of the industrial age. These changes in how work is done help to lay the groundwork for a future that involves – or perhaps even requires – the use of productivity games. Gaming, play, and fun offer a tremendous opportunity to engage the "gamer generation" as they enter the workforce. The spirit of play, fun, and creativity are key elements of a successful, innovative organization – and yet, they are getting lost in the high tech, high pressure, highly reactive world. The future looks to be a world where "playing at work" is not an oxymoron – or a demerit at performance review time.

Over the last nine years or so, Microsoft has employed dozens of games and game mechanics in its software development

process. Focusing either on expanding skills in role, or “organizational citizenship behaviors” - OCB’s - that require core skills – is the best way to ensure the success of a productivity game. Player motivation is a key component of the success of a productivity game.

Table 2. Successful Game Deployment

	CORE	UNIQUE	EXPANDING
IN ROLE BEHAVIOR	X	X	👍
ORGANIZAITONAL CITIZENSHIP BEHAVIOR	👍	X	X

Table 2 illustrates some key learnings we’ve had in deploying productivity games at Microsoft. The three columns are from Elizabeth A. Smith’s work on the types of skills employees utilize in the workplace. The C-U-E model describes core, unique, and expanding skills. [20]

Smith’s description of core skills suggests that they are basic, routine, repetitive tasks having low difficulty and low challenge levels – skills that many in an organization possess. From an employee perspective, these are the rote skills used every day, knowing how to type, or speak a language:

- Core work areas are simple, routine, and repetitive tasks (data entry, recording keeping)
- Group leaders and managers who monitor and supervise work are performing core activities
- Challenge levels are low if people do Core level work most of the time
- People who are overqualified or don’t like what they are doing are not motivated to do their best

While core activities and skills are sometimes not very appealing, attractive, or interesting, they are necessary and required – and when they are done well, on time, and in a cost-effective manner help to keep organizations functioning.

Unique skills consist of specialized knowledge, training, and experience- academic accomplishments and certifications – these tend to be the primary reason why any one individual is being employed over another:

- Unique work areas are a person’s prime areas of formal study and demonstrated competence
- Unique work activities require knowledge, expertise, or competence based on education, training, or experience
- People are competent to perform unique work activities; talents closely match job requirements

Expanding skills are things that an employee can learn to improve their work. These are high-level competencies

needing creativity and forefront knowledge – things that as an employee, I can develop in an effort to do better in my job:

- Expanding work areas include demanding, often complex and mentally stimulating work activities that are high in motivating potential
- Performing Expanding work satisfies Abraham Maslow’s three progressively higher level needs of belonging, self-esteem, and self-actualization
- Expanding work provides opportunities for growth, achievement, advancement, uniqueness, and self-sufficiency
- Work itself can be an intrinsic motivator

The C-U-E model is informative in determining where productivity games can be successful.

The two rows in Table 2 represent employee on-the-job behaviors. During the work day, there are actually three behaviors exhibited – work that’s part of the job (value-added), work that helps the organization, but is not part of the job (value enabling), and everything else - time spent unrelated to the job – socializing, lunch, etc. (non-value-added). Table 2 does not include a row for “not doing work”.

While there is evidence that non-work activities can help you hone your real-world skills (some companies are starting to consider guild leadership experience in World of Warcraft to be a good measure of core leadership ability [21].) that is beyond the scope of this article.

The two remaining rows are “in-role behaviors” – actions taken as part of day to day work, and organizational citizenship behaviors, or OCB. In 1988, Dennis Organ defined OCB as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization” [22]

Examples of OCBs include helping a co-worker, suggesting improvements, contributing discretionary time to company-related work, collaborating freely, speaking well of the organization, recruiting, etc. These behaviors are highly correlated with attributes of healthy and successful organizations.

Perhaps you can see the magic starting to build...

The combination of an abundance of rote core skills with the desire for OCB’s opens the door for the successful use of games and play in the enterprise.

As Gulick noted, “The way in which the spirit of man works when it is free from the shackles of compulsion is not accounted for by any of the present-day systems of psychology. In play we see the action of great desires, operating with indifference to consciousness or intelligence; the intellect is used as a tool with which to accomplish ends, rather than as a guide.” [23]

V. THE ESP GAME AND IMAGE LABELER

In 2006, Carnegie Mellon professor Luis von Ahn developed the ESP game, an online game to attract effort from players to help gather image metadata for pictures on the web. The ESP game is one of the earliest examples of web-based productivity games. Two players collaborate to earn points, while at the same time, producing searchable text-based description of images. As von Ahn describes, “our main contribution stems from the way in which we attack the labeling problem. Rather than developing a complicated algorithm, we have shown that it’s conceivable that a large-scale problem can be solved with a method that uses people playing on the Web. We’ve turned tedious work into something people want to do.” [24]

VI. CAPTCHA AND RECAPTCHA

A CAPTCHA - "Completely Automated Public Turing test to tell Computers and Humans Apart" is another great example from von Ahn. A CAPTCHA is a program designed to determine whether its user is a human or a computer. You've probably seen them — colorful images with distorted text at the bottom of Web registration forms. CAPTCHAs are used by many websites to prevent abuse from "bots," or automated programs usually written to generate spam. No computer program can read distorted text as well as humans can, so bots cannot navigate sites protected by CAPTCHAs.

About 200 million CAPTCHAs are solved by humans around the world every day. In each case, roughly ten seconds of human time are being spent. Individually, that's not a lot of time, but in aggregate these little puzzles consume more than 150,000 hours of work each day. The key shift from CAPTCHA to ReCAPTCHA – in the realm of productivity games is this...What if they could make positive use of this human effort? reCAPTCHA does exactly that by channeling the effort spent solving CAPTCHAs online into "reading" books.

To archive human knowledge and to make information more accessible to the world, multiple projects are currently digitizing physical books that were written before the computer age. The book pages are being photographically scanned, and then transformed into text using "Optical Character Recognition" (OCR). The transformation into text is useful because scanning a book produces images, which are difficult to store on small devices, expensive to download, and cannot be searched. The problem is that OCR is not perfect. [25] Re-CAPTCHA was designed to engage humans to review or replace the work the machines were not capable of. As part of the validation process, humans were presented two words. In most cases, one was a traditional CAPTCHA image, and the second was an unknown OCR scan. The validation process only used the first word, and the second was stored as an assessment or interpretation of the OCR scan. Data from multiple scans could be re-used in the evaluation process.

VII. “COMMUNICATE HOPE”

Microsoft Lync is a web conferencing, audio/video, instant message application designed to unify digital communications.

One of the big challenges in communication software quality is the diverse environments and usage patterns. The Lync 2010 beta program needed broad usage and coverage – tens of thousands of Microsoft employees – and yet, needed to get user feedback and create a favorable impression, despite the pre-release status of the software. These goals culminated in the “Communicate Hope” productivity game, using game play, support for ad-hoc feedback and a disaster-relief initiative to encourage the use of pre-release software quality during mission-critical communications.

One of the basic goals of a productivity game is to motivate and entice participants to complete productive work in order to participate in the game. With the emphasis on disaster relief, the specific goal of the Communicate Hope productivity game was to motivate participants to complete beta feedback tasks and earn points for completing those activities. Playing on behalf of a disaster relief agency, the points earned by all team members determined the final distribution of the available sponsored funds. The goal was to appeal to the humanity and altruism of players and for them to view their participation in the Microsoft Lync 2010 beta program as a win-win (and – win!) opportunity that provides a fun experience for participants, generates actionable feedback to improve Microsoft Lync 2010 - and helps disaster relief agencies with much-needed donations.

Here are a few comments from Communicate Hope game players:

“Because it is such a huge opportunity to be part of a more generous action that could give more than what we could ever give thru personal gifts... This is an amazing and what a nice idea! I would like to say thanks you for this opportunity to give thru communicate hope game what we could never give without that! This is an opportunity to get the feeling to be useful thru this program! Thanks again.”

“The game really made it interesting and feels like there was added purpose to the beta (program).”

“It's cool to help Microsoft improve products and also help other people in need. It feels good!”

“For a good cause and it seemed fun with teams competing against each other and being able to see to a degree your own contribution to that (points) - totally original and very cool.”

“It was an ingenious way to learn about the software and provided a fun environment to play in.”

“It is a way to reward the extra work of giving feedback and gives me a good feeling of having done something special - I love rewards like this and it seemed to me Microsoft in the past did not make a point of doing this. This is like a “thank you for your work”, but it comes from the heart and not just from your mouth.”

Participation in the Communicate Hope productivity game was voluntary. Not everyone participated and this provided the opportunity to contrast the productive work contributed by “gamers” versus “non-gamers”.

Analyzing the beta feedback provided by the “gamers” compared to the “non-gamers” demonstrated the impact of the Communicate Hope game and the potential of productivity games. 67% of the gamers send ad-hoc feedback versus just 3% of the non-gamers. Also, for “Send Us Feedback” and the directed scenario surveys, gamers were about 10 times more likely to participate than the non-gamers. For the most heavily promoted survey, gamers were 2.4 times more likely to participate than the non-gamers.

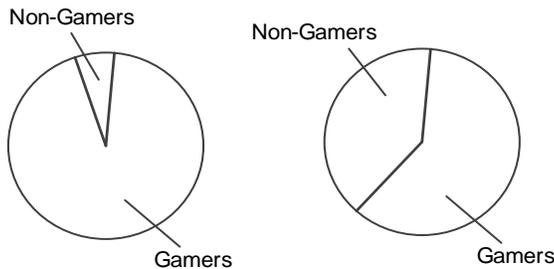


Figure 1 - Gamers vs. Non-Gamers Feedback Participation

Upon conclusion of the program, 97% of the participants said they would participate in another beta program. In previous beta programs, these numbers range from 50-75%.

VIII. THE LANGUAGE QUALITY GAME

The Windows Language Quality Game has been one of the more successful productivity games. It addresses organizational citizenship behaviors by calling on employees within Microsoft to apply their core native language skills to help assess the quality of Windows translation efforts.

The traditional business process uses specific language vendors to perform translation work, and then a secondary vendor to assess the quality. The business challenge has been that, for some languages and locales, finding two independent vendors can be difficult and costly. To address this problem, the Language Quality Game was developed to encourage native speaking populations to do a final qualitative review of the Windows user interface and help identify any remaining language issues.

The goal was to ensure a high quality language release using the diverse population of native language speakers within Microsoft. This approach has enabled the pre-release software to be validated in a fun and cost-effective way across 36 languages.

The goal of the game was to achieve reviews of screenshots and dialogs for translation accuracy and clarity. Native language speakers were encouraged to play from across Microsoft’s diverse, international population. The results shown in the table below demonstrate an immense amount of

effort applied to the game.

TABLE 3. Language Quality Game Statistics

Game Duration	One Month
Total Players	> 4,600
Total Screens Reviewed (Points Earned)	> 530,000
Average Screens per Player	119
Top Player Screen Reviews	> 9,300
Total Defect Reports	> 6,700

Success in the game was defined as the amount of human review coverage of screens and dialogs across the 36 languages tested. With the incredible response, most languages had several reviewers provide feedback per screen. Because of the latency in reviewing the feedback, defect reports were not included in players’ scores. But, for the Windows International Test Team, defect reports were the most valuable output of the game.

Logistically, the massive amounts of feedback were handled by an international localization team with tools specially designed to display aggregated feedback. The “Moderator” role was filled on a per-language basis from the ranks of the international team, and allowed the review of multiple pieces of feedback per screen quickly and easily. Where there was obvious consensus from the game players, a defect report would be created. Reviewed screens lacking consensus were quickly reviewed, but at a lower priority and more quickly, such that the screens with the highest likelihood of fixable defects were handled quickly and efficiently.

There are several world-changing social shifts and trends that point toward a future that includes games and play in the workplace. The formal boundaries between work and life are blurring. Our planet is getting smaller, work forces are more diverse, more social, and economic growth is spread across the globe. Technology is advancing at an incredible pace, connecting people and making them more social, and equalizing global markets. These trends are building fertile grounds for the growth of productivity games.

IX. BLURRED WORK AND LIFE

Global collaboration, mobile connectivity, alternative employment and benefit policies have unleashed the 24/7 productivity of broader pools of talent with a wider range of work/life contexts. Digitally augmented social connections, converging business/consumer devices and applications are fusing personal and work identities, fragmenting attention and communications, and complicating privacy and security

issues.

The rise in social gaming is unprecedented. The application of game mechanics for work-related activity is inevitable. From a gamer's perspective, the elimination of the boundary between work and non-work is insignificant. If the game mechanics are first-class, then playing a well-designed game for work is no different than playing a game for entertainment.

We've seen statistics suggesting that 47% of workers work beyond regular business hours. 32% of workers do personal activities at work.[26] It's just as likely for someone to check their Farmville crops at work as it is to play a "game for work" at home. In this context, games keep people connected across various life roles.

X. DIVERSE AND DISTRIBUTED WORKFORCE

The mosaic of diversity and a distributed workforce will create new forms of friction and synergy across a wide range of generational, cultural, behavioral, geographic, and language divides. Game play will open social connections across cultural and generational differences to improve productivity in new and innovative ways. If the world were a village of 100, "61 would be Asian (20 would be Chinese and 17 would be Indian), 14 would be African, 11 would be European, 9 would be Latin or South American, 5 would be North American, and none of the villagers would be from Australia, Oceania, or Antarctica."— and across all cultures, 60 - 70 people in this village would be gamers! [27] The Gamer Generation is entering the work force en masse, and collaborative play can neutralize cultural differences

XI. SOCIAL PLATFORMS

Interoperable social platforms, pervasive mobile broadband, maturing business models and deepened enterprise participation will continue to intensify the power of social networking. Enlightened organizations will redefine customer relationships to engage a "community" of employees, customers, and partners in cooperative processes to aggregate disparate resources to create new value. The impact of collaborative play on relationships – across geographic, language, cultural, and organizational boundaries – will help differentiate successful organizations from those who are stuck using antiquated, Industrial Age workplace methodologies and processes..

XII. SMART AND CONNECTED TECHNOLOGY

Connected and pervasive processing power will be woven into the physical fabric of human existence, offering the promise of smart and responsive objects, environments and processes. Digital information and social contexts will augment geo-physical reality. The fantastic growth of mobile gaming has illustrated that people can and will multi-task – to play while they are mobile. The ability to play games anywhere will help spur growth in productivity games.

XIII. ARRIVAL OF EMERGING ECONOMY\IES

Emerging economies' expansion in GDP growth will continue to drive a shift in wealth, trade and investment to countries like China, India, and Korea and bring new stakes and rules of the game to the global economy. Cross-boundary innovation activities will surge to capture the opportunities offered by the burgeoning consumption and talent markets, making highly diverse, networked, and distributed teams and operations a way of life. Games and game play will help develop unique connections to break through cultural barriers. As an example, hundreds of millions of Chinese are playing games to help them learn the English language. There are 66 million active gamers in China. Many of the larger universities in India are using games to help educate.

XIV. THE EFFICIENCY IMPERATIVE

As emerging countries take the center stage of the world's economic development and consume unprecedented levels natural resources to fuel their growth, resulting in further pressure on the energy, labor, and material cost structures for the rest of the world and persistent corporate practices in "doing more with less". Crowd sourcing through games can potentially save money, as companies are able to use game mechanics to encourage partners and customers to help get real work done. At a high level, the efficiency imperative is similar to the productivity and waste-elimination initiatives of the Industrial Era, but there is at least one distinct difference: the focus now is on making humans more productive – leveraging technology, social trends, and global economies to augment human skills – creativity, decision-making, innovation, and motivation – in new ways to drive down costs.

XV. THE DANGERS AND DOWNSIDE

We've all seen the addictive side of games - how leaderboards and gamification drive short term bursts of effort. Game elements trigger that wonderful brain chemical dopamine. Like rats pressing on a lever to deliver a reward, many of us are quite pleased by being first on leaderboard, getting praised, solving a puzzle, or beating our own high score. The danger with productivity games and games in the workplace is that these same feelings are triggered by existing processes at work – things like our paycheck, the performance evaluation system, sales bonuses, benefits, and praise from upper management. For productivity games to succeed, their deployment needs to acknowledge, respect, integrate, and coexist with today's recognition and reward systems. Table 2 highlights a few important distinctions for where productivity games can be successful. One could argue that knowledge workers have been prevalent since Peter Drucker coined the term in 1959, so productivity games should already be a part of work. However, the relationship between industrial era performance evaluation processes and pay for performance initiatives collide with the reward systems that games provide, and until careful study is done, it's safer to keep gaming elements targeted at OCB behaviors.

XVI. CONCLUSION

Our world is changing. Look around you at political events, technology, how you communicate, the weather, the faces in your neighborhood, skills of your co-workers, the things you buy, and the way you buy them. These global shifts are a clear indicator that the way we work is changing. The statistics on Farmville and Angry Birds show us that gaming is a part of this socio-economic change. The amalgamation of trends in social gaming, emerging economies, work/life, always-connected, and population trends lead to a conclusion that gaming will be an important part of the future workplace.

Society has seen some fairly remarkable changes in games, play, leisure, and recreation over the past 5000 years. The Industrial Age brought about great advances in work – and in play – and as we move to digitized knowledge work, it's inevitable that games and play will re-enter the world of work. Productivity games will be a transformative business process to engage, motivate, and direct 21st century employee core skills towards citizenship behaviors that will improve productivity, make work more enjoyable, and build healthy, engaged and fun organizations.

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