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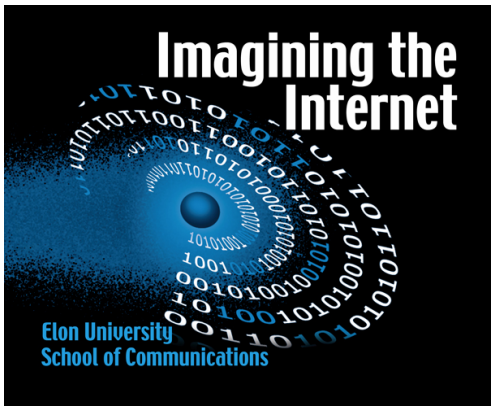


# Gamification: Experts expect 'game layers' to expand in the future, with positive and negative results

Tech stakeholders, analysts generally believe the use of game mechanics, feedback loops, and rewards will become more embedded in daily life by 2020, but they are split about how widely the trend will extend. Some say the move to implement more game elements in networked communications will be mostly positive, aiding education, health, business, and training. Some warn it can take the form of invisible, insidious behavioral manipulation

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THE FUTURE OF THE INTERNET

**This publication is part of a Pew Research Center series that captures people's expectations for the future of the Internet, in the process presenting a snapshot of current attitudes. Find out more at: http://www.pewinternet.org/topics/Future-of-the-internet.aspx and http://www.imaginingtheinternet.org.**

## Overview

The word "gamification" has emerged in recent years as a way to describe interactive online design that plays on people's competitive instincts and often incorporates the use of rewards to drive action—these include virtual rewards such as points, payments, badges, discounts, and "free" gifts; and status indicators such as friend counts, retweets, leader boards, achievement data, progress bars, and the ability to "level up."

While some people dismiss gamification as a fad, neuroscientists are discovering more and more about the ways in which humans react to such interactive design elements. They say such elements can cause feel-good chemical reactions, alter human responses to stimuli—increasing reaction times, for instance—and in certain situations can improve learning, participation, and motivation.

Technology consultancy Gartner has projected 50% of corporate innovation will be "gamified" by 2015. Another consulting firm, Deloitte, cited gamification as one of its *Top 10 Technology Trends for 2012*, predicting: "Serious gaming simulations and game mechanics such as leaderboards, achievements, and skill-based learning are becoming embedded in day-to-day business processes, driving adoption, performance, and engagement." Elements of game mechanics are being employed nowadays in training, marketing, education, and wellness initiatives.

Gameplay has long been a popular pursuit, from the simplest moves of Go, first played in China 3,000 years ago, to the massively multiplayer online games of today. Digital games generated $25 billion in sales in 2010, and their popularity is considered to be a driver of the adoption of elements of gamification in many Internet pursuits.

Another primary driver is the rapid uptake of social networks, now used by 70% of American Internet users, where reward and status elements are embedded in implicit and explicit forms in people's interactions in their engagement in online communities. Game elements and competition are interspersed throughout the platforms that have made social networks like Facebook and Twitter popular.

Marketers, businesses, and other organizations have come to depend upon the competitive metrics they derive from analysis and implementation of social networks to measure and drive consumer behavior.

Gamification is not, however, just about status, community building, and marketing. Game-like approaches to education and problem-solving are rolling out in new ways. To cite one prominent example, when researchers at the University of Washington made headlines in 2011 with their game *Foldit*. It generated a crowd-sourced discovery of the mystery of how a key protein may help cure HIV. The game drew 46,000 participants whose gameplay took just 10 days to solve a problem scientists had been working on for 15 years. Non-digital and digital real-world games based on scenarios and problem-solving have been around for a while, but it wasn't until recent years that the label "serious game" was applied to this type of activity.

Some scholars and educators, too, have become interested in harnessing the potential of gaming mechanics and sensibilities as tools for advancing learning. A "serious gaming" movement has arisen to apply gaming techniques to such realms as military and corporate and first-responder training programs, civilization and environmental ecology simulations, K-12

educational programs on subjects like math and history and the sciences, news events and public policy campaigns, problem-solving strategies in the natural sciences, and even physical exercise programs.

Will the use of gamification, game mechanics, feedback loops, and rewards to spur interaction and boost engagement, buy-in, loyalty, fun, and/or learning continue to gain ground and be implemented in many new ways in people's digital lives between now and 2020?

A highly engaged, diverse set of respondents were asked by the Pew Research Center's Internet & American Life Project and Elon University's Imagining the Internet Center to answer this question in an online, opt-in survey. Some 1,021 technology stakeholders and critics responded in a more or less split verdict. Some 53% said yes that gamification will be widespread, but a number of them qualified this by saying the evolving adoption of gamification will continue to have some limits. Some 42% chose a more modest scenario that predicted gamification will not evolve to be a larger trend except in specific realms. Here are the details:

42% agreed with the statement:

> *By 2020, gamification (the use of game mechanics, feedback loops, and rewards to spur interaction and boost engagement, loyalty, fun and/or learning) will not be implemented in most everyday digital activities for most people. While game use and game-like structures will remain an important segment of the communications scene and will have been adopted in new ways, the gamification of other aspects of communications will not really have advanced much beyond being an interesting development implemented occasionally by some segments of the population in some circumstances.*

53% agreed with the opposite statement, which posited:

> *By 2020, there will have been significant advances in the adoption and use of gamification. It will be making waves on the communications scene and will have been implemented in many new ways for education, health, work, and other aspects of human connection and it will play a role in the everyday activities of many of the people who are actively using communications networks in their daily lives.*

Respondents were asked to select the one statement of the two scenarios above with which they mostly agreed; the question was framed this way in order to encourage a spirited and deeply considered written elaboration about the potential future.

Here is a sampling of their predictions and arguments:

***Playing beats working. So, if the enjoyment and challenge of playing can be embedded in learning, work, and commerce then gamification will take off. It will help if the personal rewards of the social side of game playing spread to other realms.***

One of the most affirming arguments came from an anonymous survey respondent:

"Gaming functionality will continue to grow and be used in more and more facets of our lives. People will receive training on the job, be exposed through education and development programs, have the ability to learn about areas that are important to them using this technology and social strategy. It will allow people to understand complex topics faster and with more

nuances, and make the learning process more anticipated and less to be feared or avoided. New ideas will spread faster as the ability to educate more people becomes easier and quicker."

Others made the case this way:

- "The development of 'serious games' applied productively to a wide scope of human activities will accelerate simply because playing is more fun than working." – **Mike Liebhold**, senior researcher and distinguished fellow at The Institute for the Future

- "Playbor (play plus labor) and weisure (work plus leisure) will be ubiquitous." – **P.J. Rey**, managing editor of the Cyborgology blog

- "Gamification may be the most important social and commercial development of the next fifty years. Commercially, we may be seeing the end of the marketing orientation, possibly marking the beginning of the 'game orientation.' This will touch all aspects of the organization as it is applied to sales, production, management, and other areas of commercial practice. Socially, gamified technology will evolve and humanize many of the artificial interactions we currently endure—check-in's, like's, shares, and their kin will all 'just work' and drive new waves of innovation in our technology." – **Ross Rader**, general manager at Hover and board member of the Canadian Internet Registration Authority

- "People will increasingly expect game elements in a wide range of activities. Game-development tools will enable most people to gamify many aspects of life and work, in digital, physical, and blended environments." – **Cathy Cavanaugh**, associate professor of educational technology, University of Florida

- "Game mechanics and leveling up have been used in the military, the orchestra, schools, and in general professions since the beginning of human civilization…. The idea of game mechanics will simply blend into the idea of experience design or motivation design and marketing, making it easier for users to stick with a new experience."— **Amber Case**, sociologist and popular speaker, and CEO of Geoloqi

- "As more and more 'intelligence' is injected into a 'gamed' response, it gains more and more ability to impact whatever it is applied to…With the sophistication that can be inserted into interactive responses, game-like approaches will be applied across an increasingly wide sphere of human endeavors." – **Charles Perrottet**, partner at the Futures Strategy Group

- "Movements like the Quantified Self will make everything we do into our own game of self-improvement, learning, and real-time advances uniquely crafted to how we learn and what we want to learn or become proficient at. People's ability to advance in any field will be self-controlled, automatically recorded, and unique skill sets will emerge as needed." – **Alan Bachers**, director of the Neurofeedback Foundation

- "The US military has been one of the largest developers and users of videogaming and simulation for training. Companies have developed more than just flight simulators for learning. The Disney's, EAS's, and others are, or will be, seeing more commercial

opportunity to create better products for multiple subjects at multiple grade levels. To me, it is just a matter of time before public schools purchase and partner to use these tools, or get replaced in a vouchered world brought about by these companies wanting into the market and being big enough to counteract the political power of school unions and the boards they control." **—Ed Lyell,** professor at Adams State College

***Games can be compelling and that can easily lead to behavioral manipulation.***

- "It's a modern-day form of manipulation. And like all cognitive manipulation, it can help people and it can hurt people. And we will see both."– **danah boyd**, researcher, Microsoft and Harvard's Berkman Center

- "Game mechanics will indeed be part of the lingua franca, but it will be seen as what it is—another tool of commerce trying a little too hard to wring personalized interactions out of mass behavior." – **Mack Reed**, principal at Factoid Labs

- "Companies should take responsibility for the tremendous power they wield in society. I fear they won't, but I hope they do. Then of course, you can also say I hope consumers—people experiencing gamification on the ground—are also aware (as best they can be) of the games they are engaging with, what are their purposes, who developed them, why, and so on. We've all got to be very critical when fun can mask trouble." – **David Kirschner**, research assistant at Nanyang Technological University, Singapore

- "I'm all for feedback loops in our complex world. Emergence is how everything works. But for some reason, I'm resisting their explicit disruptive role in education and health. There are too many entrenched reasons (some of them good reasons) not to run things this way. If everything was a game, no one would have a reason to invent; any metric corrupts, as people shape their behavior to ensure that they come out on top. There have to be other routes to excellence in work, health, and education; there have to be ways to explore, invent, create, and avoid—it can't be that we'll be adding up points for every salient element of our lives…. Excuse me, now, while I check whether I've been mentioned on Twitter." – **Susan Crawford**, founder of OneWebDay and former Obama White House technology policy expert

***The real energy in social innovation will come in software that privileges cooperation.***

- "Gamification has little use in cooperation, and that is the area of social software that is least realized at this time, and which I predict will be the highest-growth area in the future." – **Stowe Boyd**, consultant and author

***The infatuation with gamification is today's fad and will fade.***

- "For all of the reasons that critics of game theory have identified over the years regarding its inability to capture the full range of human motivations, perceptions, cognitions, and practices, I believe there will be efforts to gamify much of what we do, but that much of that will just come and go as fads." – **Sandra Braman**, professor at the University of Wisconsin-Milwaukee and an expert on information policy.

***The term "gamification" itself could use an upgrade.***

- "By 2020, anyone who ever used the term 'gamification' will be embarrassed to admit it." – **Alex Halavais**, associate professor, Quinnipiac University

- "Like 'Web 2.0', the term 'gamification' will fade away as the enormity of its success sweeps across the globe." – **Bryan Alexander**, senior fellow at the National Institute for Technology in Liberal Education

- "Gamification is a horrible made-up word. Just say games. Just say gaming interfaces. Just say game-design thinking." – **Vicki Suter**, director of the California Virtual Campus

***Further points they made:***

- While it has some drawbacks, gamification offers advantages in encouraging behaviors and generating measureable feedback.

- Game-style engagement can bring an element of enjoyment to otherwise dull or challenging tasks, thus it will become a vital aspect of training, personal health, business, and education.

- People are often not aware of corporations' and governments' surreptitious use of gamification data and patterns to gain intelligence.

- Game-like approaches are generally a pandering to people's already overmet desire to be entertained.

- Some people could be "lost" to game-style approaches, causing an overall loss in productivity and other negative outcomes.

- It is not wise to make everything into a competition or to force people into a situation in which they are expected to have to collect points for every human move.

**Barry Chudakov**, principal at Metalife Consulting and a visiting research fellow in the McLuhan Program in Culture and Technology at the University of Toronto, shared a comprehensive view: "Play, it seems, may not only be an end in itself, it may be a better way to view and understand the world. The brilliant game designer and thinker Jane McGonigal has been saying for a few years, 'Reality is broken. Why aren't game designers trying to fix it?' Recently gamers deciphered the structure of an enzyme of an AIDS-like virus that had thwarted scientists for a decade. We will soon realize that games generate alternative realities. Because we view them as fictional worlds that are made-up, invented to entertain, we miss their astonishing utility. By 2020 we will see that these games and virtual worlds provide alternative ways of seeing and thinking, which is the essence of innovation. Games are like the apple falling in front of Newton's eyes. Seeing the apple fall, Newton understood something else, namely gravity. Our view of gaming may be a legacy of the live-to-work ethos of the Industrial Revolution; this view may keep us from seeing the powerful uses of gaming. By 2020 we will realize that gaming's ready-made (albeit carefully crafted) metalife is one of the best ways ever devised to see, understand, and improve upon reality."

Another comprehensive insight came from futurist **John Smart**, founder of the Acceleration Studies Foundation. "By 2020, gamification will have made more advances in entertainment and

more inroads in education and mass consumption," he predicted, "but it will remain niche even for most retail businesses, as well as for health, work, self-help, personal productivity, self quantification, and other domains. People want to be increasingly entertained, and *The Entertainment Economy* and *The Experience Economy* are two good books describing how the best businesses will continue to drive us in that direction. But we simply don't have the artificial intelligence necessary to build really good versions of this yet, and educational software remains pitifully poor at creating games that improve, rather than distract from learning. By 2030, once we have a real valuecosm, and our artificial intelligence agents (our cyber twins) have good models of the values, history, and learning goals of their biological twins (us), we'll have an environment where gamification could move significantly beyond entertainment. Until then, notwithstanding great visionary works like Jane McGonigal's *Reality is Broken*, don't expect gamification to move us much beyond increasingly better entertainment games, and more serious games titles. Serious games will continue to remain mostly in the long tail rather than the fat head of the game market until serious artificial intelligence emerges."

## Survey Method:
## 'Tension pairs' were designed to provoke detailed elaborations

This material was gathered in the fifth "Future of the Internet" survey conducted by the Pew Research Center's Internet & American Life Project and Elon University's Imagining the Internet Center. The surveys are conducted through an online questionnaire sent to selected experts who are encouraged to share the link with informed friends, thus also involving the highly engaged Internet public. The surveys present potential-future scenarios to which respondents react with their expectations based on current knowledge and attitudes. You can view detailed results from the 2004, 2006, 2008 and 2010 surveys here: http://www.pewInternet.org/topics/Future-of-the-Internet.aspx and http://www.elon.edu/e-web/predictions/expertsurveys/default.xhtml. Expanded results are also published in the "Future of the Internet" book series published by Cambria Press.

The surveys are conducted to help accurately identify current attitudes about the potential future for networked communications and are not meant to imply any type of futures forecast.

Respondents to the Future of the Internet V survey, fielded from August 28 to Oct. 31, 2011, were asked to consider the future of the Internet-connected world between now and 2020. They were asked to assess eight different "tension pairs" – each pair offering two different 2020 scenarios with the same overall theme and opposite outcomes – and they were asked to select the one most likely choice of two statements. The tension pairs and their alternative outcomes were constructed to reflect previous statements about the likely evolution of the Internet. They were reviewed and edited by the Pew Internet Advisory Board. Results are being released in eight separate reports over the course of 2012. This is the fourth of the reports.

**About the survey and the participants**

Please note that this survey is primarily aimed at eliciting focused observations on the likely impact and influence of the Internet – not on the respondents' choices from the pairs of predictive statements. Many times when respondents "voted" for one scenario over another, they responded in their elaboration that both outcomes are likely to a degree or that an outcome not offered would be their true choice. Survey participants were informed that "it is likely you will struggle with most or

all of the choices and some may be impossible to decide; we hope that will inspire you to write responses that will explain your answer and illuminate important issues."

Experts were located in three ways. First, several thousand were identified in an extensive canvassing of scholarly, government, and business documents from the period 1990-1995 to see who had ventured predictions about the future impact of the Internet. Second several hundred of them have participated in the first four surveys conducted by Pew Internet and Elon University, and they were recontacted for this survey. Third, expert participants were selected due to their positions as stakeholders in the development of the Internet. The experts were invited to encourage people they know to also participate. Participants were allowed to remain anonymous; 57% shared their name in response to at least one question

Here are some of the respondents: danah boyd, Clay Shirky, Bob Frankston, Glenn Edens, Charlie Firestone, Amber Case, Paul Jones, Dave Crocker, Susan Crawford, Jonathan Grudin, Danny Sullivan, Patrick Tucker, Rob Atkinson, Raimundo Beca, Hal Varian, Richard Forno, Jeff Jarvis, David Weinberger, Geoff Livingstone, Stowe Boyd, Link Hoewing, Christian Huitema, Steve Jones, Rebecca MacKinnon, Mike Leibhold, Sandra Braman, Ian Peter, Mack Reed, Seth Finkelstein, Jim Warren, Tiffany Shlain, Robert Cannon and Bill Woodcock.

The respondents' remarks reflect their personal positions on the issues and are not the positions of their employers, however their leadership roles in key organizations help identify them as experts. Following is a representative list of some of the institutions at which respondents work or have affiliations or previous work experience: Google, the World Bank, Microsoft. Cisco Systems, Yahoo!, Intel, IBM, Hewlett-Packard, Ericsson Research, Nokia, O'Reilly Media, Verizon Communications, Institute for the Future, Federal Communications Commission, British OfCom, World Wide Web Consortium, National Geographic Society, Benton Foundation, Linux Foundation, Association of Internet Researchers, Internet2, Internet Society, Institute for the Future, Santa Fe Institute, Yankee Group, Harvard University, MIT, Yale University, Georgetown University, Oxford Internet Institute, Princeton University, Carnegie-Mellon University, University of Pennsylvania, University of California-Berkeley, Columbia University, University of Southern California, Cornell University, University of North Carolina, Purdue University, Duke University , Syracuse University, New York University, Northwestern University, Ohio University, Georgia Institute of Technology, Florida State University, University of Kentucky, University of Texas, University of Maryland, University of Kansas, University of Illinois, Boston College.

While many respondents are at the pinnacle of Internet leadership, some of the survey respondents are "working in the trenches" of building the web. Most of the people in this latter segment of responders came to the survey by invitation because they are on the email list of the Pew Internet & American Life Project, they responded to notices about the survey on social media sites or they were invited by the expert invitees. They are not necessarily opinion leaders for their industries or well-known futurists, but it is striking how much their views are distributed in ways that parallel those who are celebrated in the technology field.

While a wide range of opinion from experts, organizations, and interested institutions was sought, this survey should not be taken as a representative canvassing of Internet experts. By design, this survey was an "opt in," self-selecting effort. That process does not yield a random, representative sample. The quantitative results are based on a non-random online sample of 1,021 Internet experts and other Internet users, recruited by email invitation, Twitter, Google+ or Facebook. Since the data

are based on a non-random sample, a margin of error cannot be computed, and results are not projectable to any population other than the respondents in this sample.

When asked about their primary workplace, 40% of the survey participants identified themselves as a research scientist or as employed by a college or university; 12% said they were employed by a company whose focus is on information technology; 11% said they work at a non-profit organization; 8% said they work at a consulting business, 10% said they work at a company that uses information technology extensively; 5 percent noted they work for a government agency; 2% said they work for a publication or media company.

When asked about their "primary area of Internet interest," 15% identified themselves as research scientists; 11% said they were futurists or consultants; 11% said they were entrepreneurs or business leaders; 11% as authors, editors or journalists; 10% as technology developers or administrators; 6% as advocates or activist users; 5% as legislators, politicians or lawyers; 3% as pioneers or originators; and 28% specified their primary area of interest as "other."

## Main Findings: Getting into the gamification?

| | TOTAL RESPONSES | Tension pair on future of gamification |
|---|---|---|
| % | 42 | By 2020, gamification (the use of game mechanics, feedback loops, and rewards to spur interaction and boost engagement, loyalty, fun and/or learning) will not be implemented in most everyday digital activities for most people. While game use and game-like structures will remain an important segment of the communications scene and will have been adopted in new ways, the gamification of other aspects of communications will not really have advanced much beyond being an interesting development implemented occasionally by some segments of the population in some circumstances. |
| | 53 | By 2020, there will have been significant advances in the adoption and use of gamification. It will be making waves on the communications scene and will have been implemented in many new ways for education, health, work, and other aspects of human connection and it will play a role in the everyday activities of many of the people who are actively using communications networks in their daily lives. |
| | 5 | Did not respond |

**PLEASE ELABORATE:** Explain your choice and share your view of gamification and implications for the future. What new approaches to information sharing do you anticipate will be finding their footing by 2020? What are the positives, negatives, and shades of grey in the likely future you anticipate? *(If you want your answer cited to you, please begin your elaboration by typing your name and professional identity. Otherwise your comment will be anonymous.)*

***Note:*** The survey results are based on a non-random online sample of 1,021 Internet experts and other Internet users, recruited via email invitation, conference invitation, or link shared on Twitter, Google Plus or Facebook from the Pew Research Center's Internet & American Life Project and Elon University. Since the data are based on a non-random sample, a margin of error cannot be computed, and the results are not projectable to any population other than the people participating in this sample. The "predictive" scenarios used in this tension pair were composed based on current popular speculation. They were created to elicit thoughtful responses to commonly found speculative futures thinking on this topic in 2011; this is not a formal forecast.

## Respondents' thoughts

There was a split verdict among experts about the scope and power of the gamification trend. Some 53% of the respondents to this survey said the use of game mechanics, feedback loops, and rewards to spur interaction and boost engagement, loyalty, fun, and/or learning will continue to gain ground between now and 2020. A number of survey participants qualified this by saying the adoption of gamification will continue to have some limits. Moreover, 42% said it generally the trend will not advance except in specific realms. One anonymous survey respondent spoke for many, writing, "I expect more use of gaming-inspired ideas where that makes sense, but I don't expect it to become a pervasive feature of many or most everyday activities for people using communications networks."

Overall, a modest majority of the top tech experts participating in this survey believe game elements in some form will continue to play a role of gathering importance in the everyday activities of many of the people who are actively using communications networks. "The development of 'serious games' applied productively to a wide scope of human activities will accelerate simply because playing is more fun than working," observed **Mike Liebhold**, senior researcher and distinguished fellow at The Institute for the Future.

Survey respondents framed their conception of "gamification" in highly varied ways, ranging—in game-name terms—from massively multiplayer online games such as *Star Wars: The Old Republic* to *World of Warcraft* (a "virtual world") to *Farmville* (social networks-based game) to *Angry Birds* (popular smartphone app) to *Foldit,* a game that researchers used to crowdsource a scientific solution to an AIDS question, to training simulations, to the "points" (sometimes only in terms of social currency) one gathers for action in social interactions online, including having the most Twitter or Facebook connections or mentions.

Some people said it's "too soon" for highly interactive elements to enhance effectively online interactions for most people while others said we're already there and we have been for a while. One anonymous respondent wrote, "Gamification is the same thing as an 'incentive plan' which was well documented (but not invented) by Mark Twain in *Tom Sawyer*. Our only innovation is to use technology to loosely affiliate more and more gaming metrics, tools, and interfaces with our day-to-day activities while simultaneously allowing us to review our progress and compete with our friends in just about everything… *I win*." Another wrote, "We are already well on our way to a fully engaged gamification world. Our buying patterns, our health care, our communications, and our recreating and entertainment all have built-in gamification already—whether people recognize it or not! As the sophistication of the approach, and the improved access emerges, we'll all be reaching for the next level and the most points."

The people who expressed the most positive feelings about the likely use of game-like approaches in future interactivity see it as a design approach that will facilitate life experiences—one that is purposefully created not to feel like a game. For instance, **Laura Lee Dooley**, online engagement architect and strategist for the World Resources Institute, wrote: "Gamification will be a seamless function of our daily life—in other words, we won't notice it as such. Perhaps the SAT/GRE and other tests will be changed from a paper-based tool to an online resource. To help doctors with diagnosing illness, users will be able to answer a series of questions about symptoms online. This will be mashed up with their digital medical records so doctors can be more effective in their treatments."

After being asked to choose one of the two 2020 scenarios presented in this survey question, respondents were also asked, "Explain your choice and share your view of gamification and implications for the future. What new approaches to information sharing do you anticipate will be finding their footing by 2020? What are the positives, negatives, and shades of grey in the likely future you anticipate?"

**Following is a selection from the hundreds of written responses survey participants shared when answering this question. About half of the expert survey respondents elected to remain anonymous, not taking credit for their remarks. Because people's expertise is an important element of their participation in the conversation, the formal report primarily includes the comments of those who took credit for what they said. The full set of expert responses, anonymous and not, can be found online at http://www.elon.edu/predictions. The selected**

**statements that follow here are grouped under headings that indicate some of the major themes emerging from the overall responses. The varied and conflicting headings indicate the wide range of opinions found in respondents' reflective replies**.

## Those who see gamification advancing note that fun is compelling; some project a merger of play + labor ("playbor"), work + leisure ("weisure")

Feedback loops, fun, and functionality are a few of the primary reasons many survey respondents said they expect gaming to be woven more into everyday Internet interaction even more by 2020. One anonymous respondent noted, "We need to think of gaming as part entertainment, part learning, part training. In this context, gaming will only continue to expand. It already is much more widely used than is commonly acknowledged. It may not enter everyone's lives in the form of entertainment but they will almost certainly encounter it in education and in training programs."

"Learning and working will be a game," said **Marcel Bullinga**, a futurist and author of *Welcome to the Future Cloud*. "Schools and offices, hospitals and factories, and even your own home—they will all become gaming zones." **Christian Huitema**, distinguished engineer at Microsoft, commented, "Forms of gamification will definitely appear in many common tasks. Some of the practices under gamification may sound like gimmicks, but gamification is part of a trend towards making user interfaces interesting and engaging."

"Who's going to argue against making things more fun?" asked **David Weinberger**, senior researcher at Harvard University's Berkman Center for Internet & Society.

**P.J. Rey**, managing editor of the Cyborgology blog and a lead organizer of the *Theorizing the Web* conferences, invoked some new terminology that Internet sociologists have used to describe the evolving scene – "playbor" and "weisure." "Gamification is not appropriate for all applications and may even limit the range of possibilities or potential for customization of certain platforms," he wrote. "Nevertheless, the interfaces of many of the tools we use will be made more effective through gamification. Playbor (play plus labor) and weisure (work plus leisure) will be ubiquitous."

**Sabeen Ahmad**, new media director at Brodie Collins Consulting, noted that online information designers are already implementing game elements, writing: "Gamification is already happening on a daily basis and is being utilized more and more on the ground, such as in the nonprofit arena. In order to attract more attention to certain issues, to educate kids (and adults), and to keep things interesting, this concept will become more important throughout the years, particularly as mobile technology plays an increasing role in our day-to-day lives."

**Cathy Cavanaugh**, an associate professor of educational technology at the University of Florida, commented, "As games become ubiquitous, people will increasingly expect game elements in a wide range of activities. Game-development tools will enable most people to gamify many aspects of life and work, in digital, physical, and blended environments."

**Caroline Haythornthwaite**, director and professor at the School of Library, Archival, and Information Studies of the University of British Columbia, argued: "The logic of games is entering many areas of endeavor and will continue to do so. Game strategies look ready to take great effect in crowdsourced arenas where no authority or reward system (e.g., grades) are

immediately present. As Eric Raymond noted [in his work *The Cathedral and the Bazaar*] about open-source development, engagement is the mechanism that keeps people coming back and it leads to success."

**Ross Rader**, general manager at Hover and a board member of the Canadian Internet Registration Authority, said elements of game mechanics are transforming marketing and other aspects of business. "Gamification may be the most important social and commercial development of the next fifty years," he said. "Commercially, we may be seeing the end of the marketing orientation, possibly marking the beginning of the 'game orientation.' This will touch all aspects of the organization as it is applied to sales, production, management, and other areas of commercial practice. Socially, gamified technology will evolve and humanize many of the artificial interactions we currently endure—check-in's, like's, shares, and their kin will all 'just work' and drive new waves of innovation in our technology."

**Jeffrey Alexander**, senior science and technology policy analyst at the Center for Science, Technology & Economic Development at SRI International, said, "The introduction of games in 'invisible' means (such as those developed by researchers like Luis von Ahn) will make gamification a relatively unnoticed but pervasive influence on how we interact with online resources."

## Young people's interests in gaming will drive the trend to gamifying other aspects of life

A number of survey participants said young people now and in the future enjoy digital, social gaming, so applying game mechanics across all elements of their lives fits their communication orientation.

"We have an ever-increasing number of individuals (mostly younger than 35 years old) who have grown up with videogames and have been conditioned to pursue online rewards," said **Marcia Richards Suelzer**, senior writer and analyst at Wolters Kluwer, echoing the sentiments of many survey participants. "There's no doubt that companies will find ways to cash in on these factors."

## Game elements enhance and grow social networks, increase participation, speed up self-organized learning. Simulations are especially compelling

**Glenn Omura**, an associate professor of marketing at Michigan State University, said game elements can create valuable connections. "Digital technology is facilitating a traditional process by speeding the cycling of contacts and information and in a more targeted way."

**John Jackson**, a leader in Police Futurists International and officer with the Houston Police Department, agreed. "Gamification will become ubiquitous," he said. "It provides a means to gain feedback in distributed communities of interest. It is present in forums where contributors acquire reputation in the form of points awarded for the quantity and quality of contributions. Gamification will become a means of reducing management in favor of self-organization."

**Charles Perrottet**, a partner at the Futures Strategy Group, responded, "Gaming is really just a form of interaction. As more and more 'intelligence' is injected into a 'gamed' response, it gains more and more ability to impact whatever it is applied to. Games have always opened learning

possibilities. With the sophistication that can be inserted into interactive responses, game-like approaches will be applied across an increasingly wide sphere of human endeavors."

**Alexandra Samuel**, director of the Social + Interactive Media Centre at Emily Carr University of Art + Design said game-style approaches are being leveraged to benefit positive participation in online communities. "The permeation of game mechanics into everyday life and work will be a byproduct of social media," she explained. "Already, game-like elements have become routine parts of our online interactions: collecting points and badges, competing on leader boards, answering quizzes. While these kinds of tactics often feel a bit tedious or predictable, they are in widespread use because they help solve one of the key dilemmas in social media and online communities: how to generate participation. As that participatory medium takes over more and more of our working life and culture—both directly, by seeing us spend more or our time on social websites and using social web apps at work, and indirectly, by seeing participatory norms embodied into our offline interactions—we will come to rely on game-like techniques for generating participation in virtually any group interaction, and many of our private interactions."

**Matthew Allen**, professor of Internet Studies, Curtin University, Australia "Gaming—a specifically understood form of play—is one of the most dramatic developments in contemporary culture, stretching back into the 1950s at least. Games are part and parcel of consumer-oriented leisure society, with its overwhelming desire for 'entertainment.' Games are a codified form of the inherent playfulness of humanity—it makes us human to play, and we learn to be human through play. Thus gamification naturally fits with the human condition."

**Marjory S. Blumenthal**, associate provost at Georgetown University, reasoned: "Games will continue to have impacts and motivate novel applications. They may be at least as important in research and in decision-support—they will provide accessible forms of modeling and simulation of new or potential situations. But the way the scenario is worded suggests a risk of faddism; games are likely to go only so far."

**Jeniece Lusk**, assistant research director with a PhD in applied sociology at an Atlanta, Georgia, information technology company, described her recent experience with a simulation: "I did a major surgery last week on my Nintendo DS! Seriously, I would love to see this type of virtual simulation expand beyond the military and drivers' ed! I anticipate a greater adoption of these products if we adopt the 'if you can't beat 'em, join 'em attitude' and put this technology to good use."

## Gaming is double-edged: It can be fun, useful, increasing engagement and personal improvement; it can also be manipulative, insidious

A number of survey participants see vivid positive/negative potential. "People are generally a game-playing species who have always 'gamified' their activities," said **Richard Holeton**, author of *Cyberspace: Identity, Community, and Knowledge in the Electronic Age*. "Making learning more fun by building in game elements can only be a good thing. Manipulating people in the workplace (say, to make them more loyal or productive) or the political sphere, and 'monetizing' our every gamified interaction, would be the bad things."

**David Kirschner**, research assistant at Nanyang Technological University in Singapore, agreed. "Positive aspects of gamification will be used to get people to improve their health, motivate rehabilitation after accidents, think about, simulate, get people motivated, and teach people

about solving real-life problems," he wrote. "Negative outcomes are mainly in advertising. It's insidious really, using game elements to get people to buy more [things] they don't need. It's especially bad when gamification-fueled consumer culture targets kids. Companies that use games in whatever it is that they're doing really need to be reflective and think about what they're doing past themselves. Nike or McDonald's, for example, couldn't care less about the effects of making buying their products fun. They just want to sell more things to people. Companies should take responsibility for the tremendous power they wield in society. I fear they won't, but I hope they do. Then of course, you can also say I hope consumers—people experiencing gamification on the ground—are also aware (as best they can be) of the games they are engaging with, what are their purposes, who developed them, why, and so on. We've all got to be very critical when fun can mask trouble."

Microsoft and Harvard Internet researcher **danah boyd** said behavioral manipulation is positive and negative. "Gamification is the new public relations or the new advertising and marketing," she responded. "It will seep into many aspects of life without us even acknowledging it. It'll become a central part of neoliberal ideology without folks even noticing it. Why? Because it's a modern-day form of manipulation. And like all cognitive manipulation, it can help people and it can hurt people. And we will see both."

**Vicki Suter**, director of the California Virtual Campus, noted, "Games *are* social networks, even single-player games (there are communities of people who play them who interact a lot with each other online—outside the gaming environment). It makes all kinds of sense that as social networking has emerged, so have gaming interfaces to social networking activities (which, when you think about it, pretty much sums up human behavior). I still wonder about children and young adults confusing games with reality. The research about this is mixed. And gaming itself can be a terrible addiction—I'm not sure what the proliferation of gaming interfaces in non-game settings will mean to those with the addiction."

**Paul Jones**, clinical associate professor at the University of North Carolina-Chapel Hill, added: "I, too, had a Cocoa Marsh Captain Midnight Decoder—but I hated Cocoa Marsh. Gamification in marketing has a long history longer and more enduring than Cocoa Marsh or even Captain Midnight. It's as inescapable as coupons or bottle top collecting or the lotteries. Gamification is an overblown term for old-school marketing. Yes it works. Yes we use it. No, it's no game changer (pun intended)."

## Some are concerned about making everything a competition. Others note compelling game design can lead to exploitable information disclosures

Among the respondents who agreed that game elements will become more prevalent in online interaction were many who pointed out dangers that may lie ahead. "Some aspects of games, e.g., competition and narrative, are powerful factors in human behavior," said **Larry Lannom**, vice president at the Corporation for National Research Initiatives. "Whether or not the increased ability to manipulate people is an overall benefit is an open question."

**Susan Crawford**, a Harvard professor and former technology policy assistant in the Obama White House, said requiring people to implement the mechanics of reward-based gaming as a common expectation is not optimal. "If everything was a game, no one would have a reason to invent; any metric corrupts, as people shape their behavior to ensure that they come out on top. There have to be other routes to excellence in work, health, and education; there have to be

ways to explore, invent, create, and avoid—it can't be that we'll be adding up points for every salient element of our lives."

She added: "Excuse me, now, while I check whether I've been mentioned on Twitter."

**Brian Harvey**, a lecturer at the University of California-Berkeley said the embedding of game elements in Internet activity is often aimed at extracting something of value, often from people who are not aware of this invisible, permissionless transaction. "This is a matter for intervention, not prediction," he declared. "It should be illegal, with serious penalties (life in prison, for example), to use information ostensibly gathered for one purpose for something else without an explicit, competent, well-informed opt-in by the person who legitimately owns the information—not third parties, such as pharmacies or search engines or ISPs. Someone who puts up a game-like thing in order to coax people into providing free labor, or in order to collect information for any commercial purpose, is committing a profound violation of human rights."

**David Cohn**, founder and director of journalism organization Spot.Us, wrote, "Games are great, but there are other motivating factors. If everything is a game, then no game is fun." An anonymous respondent noted, "You don't want your online driver's license application to play games with you. Most usage of the Web is goal-driven and practical. Gamifying that sort of thing is just annoying." An anonymous respondent said, "For high-functioning knowledge workers, gamification is likely to be perceived as an insult to intelligence." Another anonymous respondent sarcastically wrote of the prospect of more game-like approaches in interactions, "I think I'll go have a tooth pulled."

**Lisa E. Phillips**, senior research analyst at eMarketer, Inc., responded, "By 2020, gamification techniques will still work well for marketers and will have some educational applications. But turning everything into a 'game,' like 'checking in' via Foursquare, has proved to be of passing interest, at best. There will have to be strong rewards or feedback loops to sustain consumer interest in a game that seeks to educate or change health behaviors, for example."

**Peter Mitchell**, chief creative officer at Salter-Mitchell, a company that builds behavior-change programs, wrote, "Gamification will grow, but people will still want straightforward ways to accomplish many tasks. There is a point where too many feedback loops and rewards programs is just clutter."

## Cooperation trumps collaboration, gamification is hype, gaming fads come and go and they will not be transformative

Many survey participants remarked that gamification is a "passing fad," including technology consultant **Stowe Boyd**, who went on to explain that it is only "of interest to a small segment of the social tools developer community." Boyd predicted: "In some segments it will have a long-term impact, but only in circumstances where it is integral, and not as a gloss or veneer. Much of what gamification seeks to do—to increase involvement, and foster certain collective behaviors in groups of people—actually runs counter to the fragmentation of user experience online. The rise of apps means that users are spreading their time out over a larger number of more specialized tools, and tool developers try to counter that through inducements to stay, or return frequently, and to align activities with others: a forced viralization. A much more profitable set of ideas? As people are made more autonomous, they naturally move away from collaboration, where users share the same aims and reward systems—toward cooperation—

where users do not necessarily share long-term goals or values. Gamification has little use in cooperation, and that is the area of social software that is least realized at this time, and which I predict will be the highest-growth area in the future."

Buzzmachine blogger **Jeff Jarvis**, director of the entrepreneurial journalism program at City University of New York, wrote, "Gamification is overblown, but that could simply be because I am not a gamer. *Angry Birds* was fun while it lasted, but it didn't change my life." Freelance writer and editor **Glyn Moody** agreed, "As its absurd name suggests, 'gamification' is little more than the buzzword du jour: It's the 'push technology' of 2011."

**Sandra Braman**, a professor at the University of Wisconsin-Milwaukee and an expert on information policy, said a lot of energy will be invested in embedding game principles across more human activities between now and 2020, but she expects uneven results. "For all of the reasons that critics of game theory have identified over the years regarding its inability to capture the full range of human motivations, perceptions, cognitions, and practices, I believe there will be efforts to gamify much of what we do, but that much of that will just come and go as fads," she wrote.

An anonymous respondent agreed, writing, "Gamification and social structures will be seen as a 'fad,' experience, burn out, and then fall out of favor in the next ten years, except with certain segments of the population. I doubt it will make huge inroads with 'serious' fields like K-12 education, work and career, or the health industry."

**Rich Osborne**, senior IT innovator at the University of Exeter, expects that gamified approaches, while getting a fair amount of publicity today, are likely to be contained to about the same level of engagement as they have had in the past in different forms. "'Gamification' is little more than a fad," he said. "There may be areas where virtual simulation can add an extra dimension that can enhance a human experience in otherwise impossible ways, and this may indeed be linked to 'gamification' concepts, but games and gaming have been part of the bigger human experience for far too long to expect some sort of (relatively speaking) immediate and radical change."

**Barry Parr**, owner and analyst for MediaSavvy, asked, "Remember back in the 2010s when we thought gamification was going to change everything? What were we thinking?"

## Interactive gaming elements are simply tools for engagement; it's really all about designing pleasing, effective online experiences

**Duane Degler**, principal consultant at Design for Context, creators of interactive applications, said all the talk about gamification is emerging from a need for better design. "There is always a role in some human activities for collaboration and competition, as well as fun," he said. "At one level, the current fad for gamification seeks to increase engagement in software/tasks where the online/computing experience is far weaker and more rigid than its non-online human experiences. However, that is a rallying call to designers to enrich current experience. If past experiences with other media and social change are any guide, it seems unlikely that there will be dramatic increases in gaming models into environments where they do not currently exist socially, professionally, or societally."

Sociologist and popular speaker **Amber Case**, CEO of Geoloqi, noted that game design has always been woven into human interaction but the digital age is upping the ante. "Game mechanics and leveling up have been used in the military, the orchestra, schools, and in general professions since the beginning of human civilization," she observed. "Before that, tribes and groups had ways of earning reputation by leveling up. The levels were often visually displayed or added to the human body or dwelling. Game mechanics are simply a visual quantification of what has traditionally been a qualitative feature of everyday life. Game mechanics have simply highlighted this idea and brought it to the minds of designers and developers. The reason it is a big deal right now is that there is are a great number of new systems being developed right now, similar to what humans likely experienced in the first tribes and cities. The idea of game mechanics will simply blend into the idea of experience design or motivation design and marketing, making it easier for users to stick with a new experience."

An anonymous survey participant said, "Gamification is a natural approach to design, given it is a maturing paradigm of a type of engagement with interactive devices. As it is one of the more successful and popular ones, it's natural that its more-exuberant practitioners push it as something of a panacea approach. The old saying of 'if you have a hammer, every problem looks like a nail' may apply. It's exceedingly useful for education and training using applications like simulations and possibly useful and experimental when applied elsewhere."

Another anonymous respondent noted, "Humans are highly prone to addictive behavior. The science of understanding and exploiting this will increase over time."

**Bob Frankston**, computing pioneer, co-founder of Software Arts, and co-developer and marketer of VisiCalc, wrote, "It's really more about rich information than making everything play." **Valerie Bock**, technical services lead at Q2Learning, LLC and VCB Consulting, agreed. "The answer is not to make games of everything," she said, "but rather to pay attention to the reasons people are engaged by games, and incorporate features like rapid feedback, recognition for extraordinary performance, and prompt response to mastery at one level with additional, more complex responsibilities at the next, into jobs and learning activities. Gamification fans will figure this out before 2020."

An anonymous respondent wrote, "Our current society is not properly educated to make best use of the information at their fingertips. Game-oriented designs and user interfaces can help people access facts and better understand things that might be interesting or useful…Game theory can be used as a manipulation and so is a natural for the advertising/marketing industry. That industry has a lot of money to throw at this, and it seems inevitable."

**Vili Lehdonvirta**, visiting fellow at the London School of Economics, said as a wider audience begins to experience game mechanics in new settings participants will adapt to using them more often. "The idea that marketing messages, services, and situations need to be designed with human psychology in mind to best serve their purpose will continue to win acceptance," he explained, "not necessarily because of the efforts of gamification consultants, but because of the general desire of businesses and governments to understand and influence consumers and voters. The increasing popularity of online and mobile games means that consumers will become increasingly familiar with concepts and structures employed in games, and thus these will also be increasingly usable in marketing."

**Adrian Schofield**, manager of the applied research unit at the Johannesburg (Africa) Centre for Software Engineering, noted, "When Apple and Windows came on the scene, it was all about the graphical user interface and the fantastic advance from text input and output. Gamification is just the next step along the innovation path to making it easier and more intuitive for humans to interact with digital tools."

Lyrics to the song *A Spoon Full of Sugar* from the Disney film *Mary Poppins* were the only answer supplied by one respondent: "In every job that must be done, there is an element of fun—you find the fun and snap! The job's a game. And every task you undertake becomes a piece of cake—A lark! A spree! It's very clear to see that a spoonful of sugar helps the medicine go down—the medicine go down-wown, the medicine go down. Just a spoonful of sugar helps the medicine go down, in a most delightful way."

## People in interactive networks can be manipulated, and this is dangerous; could gamification lead to a *Hunger Games* world?

Many survey participants who expect game-like interactivity to be widespread online commented that it will often be an invisible function that drives transactions. "[Gamification] will be so pervasive, we won't even think of it as gamification; it will just 'be,'" wrote one anonymous respondent. Another wrote, "People are easily manipulated through gamification, so it is likely that this will play a signification role in shaping society. Humans are not solitary creatures and therefore the social feedback that they receive through 'games' gives can give them the motivation to do most anything. Throughout history society has tried to bypass the human connection with technology, but really we need both to survive."

As various aspects of science and technology evolve at an accelerating pace of change, there are concerns over the motivations of the organizations that have the money to do the type of research and development that best leverages the influences of networked interactivity. This becomes especially significant if motives are hidden so people are unaware of the potential consequences of their actions.

"The findings yielded by the emerging field of neuroscience provide powerful tools to understand and hence manipulate the human brain," said **Simon Gottschalk**, sociology professor at the University of Nevada-Las Vegas. "In light of advances in neuromarketing, there is no reason to believe that the most powerful economic entities are not going to use that knowledge (rewards, feedback loops) to spur interaction, boost loyalty (especially brand loyalty), and provide neural pleasures when consumers and customers do what they're told. I do not see any positive in this development and am concerned about the use of that knowledge not only by economic entities but by political ones as well.

"In addition, the ability to self-induce pleasure at the neural level through the use of computer programs will further eliminate the need [for] others and the pleasures they can spontaneously provide, hence further deskilling us in those social psychological skills necessary to experience pleasurable interaction with other people. The gamification of everyday life is not unlike teledildonics—at a neural level. Both enable users to experience pleasure without asking them to develop and deploy the social psychological skills typically required to enjoy those experiences."

An anonymous respondent wrote, “Interestingly, there are dozens and dozens of dystopian science fiction stories, from the recent *Hunger Games* to crusty old classics like *Rollerball* (the 1970s version) that are about how gamification leads to a society where we treat humans like disposable game avatars. I bring this up because successful pop culture fantasies generally reflect genuine public anxieties. There are very few models of a progressive, happy gamified future outside of sociological theory like Jane McGonigal’s. So if we are going to see strong gamification outside the circumscribed world of entertainment (and this is a huge world—video games are the dominant form of entertainment today), then it will be done in subtle or even sneaky ways. Given all our anxieties about gamification leading to a *Hunger Games* world, I think people will be suspicious of game mechanics being introduced into other areas of their lives—especially in work and government contexts. That’s just my hunch, based on what I’m seeing in pop culture.”

## People don’t like being gamed; some know and dislike it when they are being played

Social engineering, design, and business consultant **Mack Reed**, principal at Factoid Labs, expects many people will refuse to engage with game-based interactions. “Gamification is a fad in much the way that MySpace’s overly generous make-your-own-space stance seemed like the ultimate freedom but led to horribly unusable Web design and in part contributed to the company’s demise,” he explained. “Game mechanics will indeed be part of the lingua franca, but it will be seen as what it is—another tool of commerce trying a little too hard to wring personalized interactions out of mass behavior. Recognition of gamified interactions is growing—people know when they’re being played, and before too long they will tire of it en masse and refuse to engage with any but the most-personalized and meaningful gamified interactions.”

An anonymous respondent wrote, “Gamification shares the same root as gaming the system and hunting game. Even by 2020, I expect humans to learn the game well enough to know when they are being gamed by gamification. Sure, some will still buy the deodorant that the ads make most appealing, but they will generally do so knowingly. They will remain one step ahead of the gamification. They will spot the feedback loop before it loops again, and intentionally break it—keep it guessing. Sure, gamification will become a huge industry, but it will not be an advancement.”

**Sivasubramanian Muthusamy**, president of the Internet Society-India Chennai, said, “Users will grow tired of mechanized surveys and worthless rewards. Even if the social networks implement gamification in manner that makes the rewards appear valuable to the users, gamification in a wide variety of activities will cause behavioral fatigue.”

**Paul Gardner-Stephen**, humanitarian telecommunications fellow at Flinders University, said commercial interests that try to overcome consumer rejection by using game design in a veiled manner may be identified and asked to change their practices. “There is the strong possibility of a substantial fraction of the population choosing to ‘leave the game,’ as the controlling nature of the gamification becomes more overt and the complexity of playing the game increases,” he said. “Commercial interests will continue to attempt to sublimate the gamification, however their tendency is to form competing blocks which greatly reduces their effect, partly due to the thankful presence of anti-trust and consumer-protection regulation in most countries.

Nonetheless, I continue to be amazed at how readily many do accept some level of gamification, e.g., the prevalence of petrol discount vouchers in Australia, even though the discounts are typically less than 4% in real value, so perhaps I will be surprised."

**Rob Scott**, chief technology officer and intelligence liaison at Nokia, has a solution to the problem with the variability in consumer preferences. "While the technology will be widely used, it will not be intrinsic to common daily functions due to how quickly it irritates the consumer," he said. "Opt-in activities such as contesting, surveys, and even assisted search may offer the ability to control how much gamification is presented to the user."

## Some see it as a boon to problem-solving and a great way to deliver more-effective education

While some respondents don't see game-based learning and problem-solving through the use of "serious games" gaining much ground between now and 2020, others are more optimistic. "If the adaptive engine that makes a game more challenging and smarter can be applied to a learning environment, complete with rewards, it may help to make a much more immersive and tailored learning environment with dramatic results," said **Wesley George**, principal engineer for the Advanced Technology Group at Time Warner Cable

An anonymous survey respondent noted, "As an employee of a large training company, I already see this happening. Gamification makes an unpleasant task more pleasant and it is an effective way to teach." Another anonymous participant wrote, "Gaming functionality will continue to grow and be used in more and more facets of our lives. People will receive training on the job, be exposed through education and development programs, have the ability to learn about areas that are important to them using this technology and social strategy. It will allow people to understand complex topics faster and with more nuances, and make the learning process more anticipated and less to be feared or avoided. New ideas will spread faster as the ability to educate more people becomes easier and quicker."

**David Lowe**, innovation and technology manager, National Telecommunications Cooperative Association, wrote, "Greater understanding of divergent cognitive approaches to problem solving could be more widely accepted through the involvement of teams of players from diverse cultural backgrounds. The 'winners' of those who play these games are, in part, winners because of improved communication skills facilitated within the context of the gaming experience. As the complexity of the game increases, teams who are better at problem solving and communication are the ones most likely to win the game. It is not difficult to extrapolate how these skills translate into solving complex problems outside of the gaming context."

**Mark J. Franklin**, director of computing services in the school of engineering at Dartmouth College pointed out that in 2011 online players used the game *Foldit* to discover the structure of a retrovirus enzyme after it had baffled scientists (http://1.usa.gov/yArxrV). "We have learned to use technology to capture people's attention and energy, and are now learning how to turn technology-based gaming to productive use," he said "Humans are clever and inventive, and we will find and exploit many more ways to use games to further our goals."

"Organizations will become more sophisticated in its implementation," responded **Perry Hewitt**, chief digital officer at Harvard University, "and schools and governments in particular will use it to drive preferred activities in ways that benefit society as a whole. As social networks spread

behaviors (and perhaps even moods and obesity) virally, the traditional public service announcement will be supplanted by gamification to drive 'nudge.'"

**Robert Renaud**, a vice president at Dickinson Collage and a member of the EDUCAUSE Advanced Core Technologies Initiative Design Group, said, "Considering gamification in this broad framework, it will by 2020 be a more powerful force as a means to incentivize users to participate in services, to measure outcomes, and to help build social networks."

**Alan Bachers**, director of the Neurofeedback Foundation, said the interface capabilities of advanced digital game approaches will allow people to self-actualize. "Movements like the Quantified Self will make everything we do into our own game of self-improvement, learning, and real-time advances uniquely crafted to how we learn and what we want to learn or become proficient at," he explained. "People's ability to advance in any field will be self-controlled, automatically recorded, and unique skill sets will emerge as needed. People will morph themselves into whatever they want at will creating an infinitely diverse skill packet for jobs that emerge by the day, the tiniest number of which exist today."

And **Frank Odasz**, president of Lone Eagle Consulting and an expert on 21st century workforce readiness, predicted, "As we mature toward meaningful applications the *game* will be how to make an exponential impact on real-world problems in collaboration with others. Serious games such as basic survival and making a real difference in the lives of others suffering desperate realities will become the measure of one's purpose in life, and value to the world. Self-actualization methodologies will replace much of the silly social fluff as people mature in their thinking about their responsibility to use well the power at their fingertips." An anonymous respondent wrote, "Humanity likes to be drawn into games as 'distraction.' If more of what is made available is presented in game-like environments, more people will be involved, possibly creating crowd-sourced solutions to social, economic, and ecological problems."

But some people in the trenches of education have their doubts. "The 'game theory' school is overblown," said **Ron Smith**, bridge coordinator at Helen Bernstein High School in the Los Angeles Unified School District, "It suggests that because students of a certain age like to play games, they will like to play instructional games, ones that are designed to be fun, yet filled with curricular goals. I am not convinced that there is a correlation between gaming and academic success in low-achieving students, and high achievers will thrive anywhere."

## Gamification isn't easy; costs and people's personal time constraints will limit its practicality. Expect "leaderboard fatigue"

Gardner-Stephen and others pointed out that the planning and implementation of gamification can be costly. "Many of these corporate games require the presentation of rewards that, if fully exploited, would be cost-negative for the enterprises," he said. "The growth of data sharing among citizens may produce coordinated mechanisms for exploiting these flaws in the games to the net detriment of the corporations, thus disrupting the games. For instance, if consumers in Australia coordinated to always purchase the maximum amount of fuel with their dockets, they would extract perhaps three times more discount from the game than if they continue to play individually. Combined with other game features that allow the discount to be doubled or tripled (e.g., spend $5 in store for another 4% off), resulting in total discounts that exceed the revenues used to fund them. Game theory can work both ways, a fact that corporations may come to regret."

**Kris Davis**, a user-experience designer for Webvisible, said it takes work to ramp up to gameplay and that will always limit participant buy-in. "Games still are time-consuming in that you have to learn the game, play the game to understand the game, and keep playing the game to keep up. Gaming just is not something that works in absolutely every scenario." An anonymous respondent said, "Most people will remain too overwhelmed by their schedules to have time or patience for many more games. The choice of games may change, but the amount of time people spend playing games probably will not. Attempts to interject gaming into many other daily activities would probably be seen by most people as an annoying intrusion."

"While gamification will continue to grow, there are limits to the amount of time and attention people will give to gamification systems," said **Steven Swimmer**, a consultant who previously worked in digital leadership roles for a major broadcast TV network and a major museum. "People will pick a few systems in which they are willing to 'play' but will ignore the rest. It will be difficult for people to enlist their friends to play along, except for a few of the most compelling services. People will have gaming fatigue and annoyance at being asked to jump through hoops for no real reason other than a 'badge.'"

An anonymous respondent wrote, "I expect scenario two, with only the note that it will not work nearly as well as people currently imagine it will, as the effects of novelty-seeking and leaderboard fatigue force gamified aspects of life into cycles of almost constant, short-term updating." Another said, "The challenge of gamification is that it requires opt-in, rule understanding, and active and continual engagement. That's a lot for the busy people of 2020 to take on in an every day, every activity, kind of way."

**Jon Lebkowsky**, Internet pioneer and principal at Polycot Associates LLC, said by 2020 the complexity and expense of game-type dynamics in online interactions will still be too high for gamification to become more prevalent. "Effective and engaging games are expensive and difficult to produce, and this will limit the broad applicability of gamification. If I'm wrong about this, it could be because so many minds have been shaped by game experiences that our thinking about the character of media will inevitably have gone there, in which case game structure may be so inherent that the cost and difficulty of production might be reduced. I don't think this will be the case; though I see intense game influence among some, I don't think it's pervasive. And I think there are whole populations that just don't 'get' games."

**Katrina Griffin**, e-marketing strategist for Medseek, said, "I don't believe companies will be willing to put the budget dollars in this area just yet. Instead, budget dollars will be allocated towards big data and apps. I see this occurring farther into the future." An anonymous respondent added, "It is much more difficult and expensive to 'gamify' things than most people realize. Besides, once someone builds a good system to game something we will by our natures become bored with it and want something different. It will take a long time."

## There's already too much pandering to people's passion to be entertained

**Naomi S. Baron**, director of the Center for Teaching, Research, and Learning at American University was highly critical of gamification as applied to education. "'Engagement' and 'fun' are not the same concepts," she wrote. "In education, clearly we want students—at all levels—to take pleasure in learning. However, our education system is increasingly privileging 'fun' at the expense of serious discourse. The same type of shift can be seen in presentation of the

news—networks are replacing straightforward newscasts with human-interest stories and sensationalism. More broadly, gamification (at least in the United States) may be narrowing our understanding of what it means to learn and our spectrum of experience."

An anonymous respondent wrote, "It is possible that people will fully buy into having their day-to-day behavior conditioned by electronic treats, like tall hamsters; no one who observes contemporary national politics could claim that Americans have too much native intelligence or innate dignity to submit to this sort of obedience training. But I cling to the hope that we are better than that." Another said, "I fear we may be so ready to dumb down to the lowest common denominator that anything requiring attention and thought will be bypassed for the 'feed me' option."

**Donald G. Barnes**, visiting professor at Guangxi University in China and former director of the Science Advisory Board at the US Environmental Protection Agency, agreed. "Games are, and will continue to be, primarily for entertainment," he said. "Certainly, gamification has a role in education, training, and work; but that role is limited, at best, and diversionary, at worst. Some people have learning and working styles that are positively affected by a limited amount of gaming. There are few, if any, examples of instances in which gaming—as the major mode of instruction and work—has produced sustained positive results over time."

An anonymous respondent noted that some people like reward systems, writing, "For better or worse, it's becoming expected for normal activities to be fun, and people (especially Generation Y, downward) are used to being rewarded for every little thing they do." Another anonymous survey participant predicted, "There will be a rush to implement these technologies, leading to a backlash because the manipulative aspects where participation provides actual value only to the provider will become apparent to the user. Further, among those who buy in, its use will exacerbate the psychology of narcissism already seen in the young."

**M.C. Liang** of the National University of Kaohsiung in Taiwan expressed concern that some people will lose themselves in the enticing online game world, writing, "Fewer distinctions between virtual reality and reality will be identifiable. It is likely that a significant group of people will be 'trapped' in the communication network, especially teens."

"The more realistic virtual reality becomes," responded **Paul McFate**, an online communications specialist based in Provo, Utah, "the greater the toll on our real social connections, and the greater the impact on GDP through lost productivity. For some, assimilation will be inevitable."

An anonymous respondent made a reference to media theorist Neil Postman's well-known critique of popular culture's negative influences on people's information diets, citing his most famous work and writing, "We already are living in the world of *Amusing Ourselves to Death*." Another anonymous survey participant wrote, "Fun, rewards, etc., to spur engagement? I worry what that does to our brains. I'm sure there are addictive properties of games in terms of playing for reward, but what does that mean in terms of gratification? I will no longer be enough to learn something just to learn it? Or accomplish something just to accomplish it? I cringe a bit when I see that iPad commercial narrated by Peter Coyote, where we are told we can learn Chinese, watch TED videos, play piano, etc., all from our iPad. There is no need to touch or look at anything else. Should I have a bracket installed on my head, so that my iPad is in front of my face 24/7?"

**Ted Coopman**, a lecturer in the department of communication studies at San Jose State University and member of the executive committee of the Association of Internet Researchers, said game mechanics may be used effectively to flip "entertainment" to good use for serious purposes. "Gamification plays to some very basic aspects of human nature and therefore has 'stickiness,' that is, it works well on variety of levels both cognitively and economically," he wrote. "Common impulses such as community and identity—things we already know are effective in increasing and maintaining interest in many activities—fit well with game-style pursuits. Gamification works and it can be a productive way of approaching life and work. Perhaps this will turn the idea of 'infotainment' into a positive as opposed to a negative force."

## This trend is still in its early stages; 2020 is too soon to expect a massive embrace of game-centered activities

A number of respondents who said gamification will not be prevalent by 2020 see its potential but say the technology will not yet be up to the standards necessary for wider adoption. "I've been interested in this for five years now, and worked on it some," said Microsoft principal researcher **Jonathan Grudin**. "It's very slow going. It definitely won't be out there in 2020 for most people, most of the time."

**Jim Jansen**, an associate professor in the College of Information Sciences and Technology at Penn State University sits on the boards of eight international technology journals. He said, "I'm not sure this will happen by 2020, but the idea of work, learning, and training as entertainment will certainly increase in usage." One anonymous respondent was certain it's too soon, writing, "Current attempts at gamification are crude and not particularly effective. Game-like elements may be incorporated into an increasing number of daily activities, but gamification on the whole is too problematic to catch on in a big way."

**Kevin Novak**, co-chair of the eGov Working Group for the World Wide Web Consortium, commented, "Gamification has grown in use and in public knowledge over the past five years. Many have found success in specific applications in educational and other settings. Like medical research, a five-year span of findings and information, is not enough to judge whether it should become the predominant way of delivering, teaching, or digesting content available via the Web. The Web, although having changed in depth and capacity over the past ten years, still continues under the same basic premises. Options to display and interact with information and data have continued to evolve. Gamification will continue as an option where applicable but will not become the main connection point in 2020."

An anonymous respondent remarked, "Leaders' prejudice against fun will limit growth."

Another anonymous participant said the timing will depend upon the uptake of these approaches by common cultural organizations, writing, "How much gamification we get and how much it influences widespread cultural trends will depend on how well game design is taken up by hosts and organizers of social and cultural institutions and built into their rituals. If churches and service clubs like Rotary and Kiwanis decide they can better carry out their mission by moving some playful donation activities onto their members' smart phones, we will have crossed an important cultural barrier."

## “Gamification”?
## Can’t we come up with a better term for this?

Many people think the term gamification is awkward, misleading, or so difficult to define it obscures more than it describes.

“Gamification describes a structure with accurate feedback,” said **Pamela Rutledge**, director of the Media Psychology Research Center at Fielding Graduate University. “It transfers motivation back to the individual by engaging fundamental human drives: curiosity, connection, accomplishment, and social validation. This is not a new idea…It is not necessarily a gaming situation, but a transparent one, when you receive accurate feedback and rewards for your efforts and accomplishments, and it is more motivating and engaging (and effective) to give and get feedback sooner rather than later. I am grateful that gaming has reintroduced these concepts, but there will be significant advances when we quit referring to these basics of human motivation and transparent communication as ‘gamification.’”

“By 2020, anyone who ever used the term ‘gamification’ will be embarrassed to admit it,” wrote eminent Internet researcher **Alex Halavais** of Quinnipiac University. “But that does not change the fact that most of these systems are already games of one sort or another. What motivates people to attend to and participate in a particular group will be an essential question for people working in a very wide range of fields.”

An anonymous participant noted, “Gamification will be everywhere, but it won’t be called that. Perhaps “inferential sociology” or some other phrase. As computer power progresses, it makes sense this extra power will be used for inferential experiences, especially in education.”

**Daren C. Brabham**, a communications professor at the University of North Carolina-Chapel Hill, commented, “Though I can’t stand this buzzword, I do believe the concept of gamification will continue to penetrate every aspect of our lives. Gamification will even shape our interactions with government. Crowdsourcing and other incentivized models for engagement will drive public participation programs for public issues (policy design, the planning of public space, etc.).”

**Bryan Alexander**, senior fellow at the National Institute for Technology in Liberal Education, said, “Like ‘Web 2.0’, the term ‘gamification’ will fade away as the enormity of its success sweeps across the globe.” And **Vicki Suter**, director of the California Virtual Campus, said, “Gamification is a horrible made-up word. Just say games. Just say gaming interfaces. Just say game-design thinking.”

An anonymous respondent didn’t like the use of “game” in any form to represent finding the best way to design information interfaces to be highly effective, writing, “We are on the edge of using gaming—bad term—in personalizing learning.”

Another anonymous survey participant noted, “What we are beginning to call ‘gamification’ really isn’t new; we are just figuring out how to bring it into the realm of software more and more. It has been ‘making waves’ for centuries, at least. It isn’t clear to me that this really deserves a label. It is better thought of as part of the broader picture of making software more adaptable to motivate people.”

And another anonymous survey participant applied a more generalized term that may be more palatable than “gamification”—interaction—writing: “The one most easily drawn observation

from study after study after study of how the Internet, technology, and social media are affecting the way we communicate is that *people like interaction*. It's been counted as a benefit, metric, measurement, result, impact, and countless other Internet analytics results terms. Everyone sees interaction as a way of increasing communications, and therefore a way of increasing followers, loyalty, profit, etc. (whatever your specific goals are). Gamification is an easy way to spur interaction. This is an age driven by Facebook and blog comments, crowdsourcing, flash, participation, and more and more augmented reality, as we try to achieve the impossible."

## About the Pew Research Center's Internet & American Life Project

The Pew Research Center's Internet & American Life Project is one of seven projects that make up the Pew Research Center, a nonpartisan, nonprofit "fact tank" that provides information on the issues, attitudes and trends shaping America and the world. The Project produces reports exploring the impact of the Internet on families, communities, work and home, daily life, education, health care, and civic and political life. The Project aims to be an authoritative source on the evolution of the Internet through surveys that examine how Americans use the Internet and how their activities affect their lives.

The Pew Internet Project takes no positions on policy issues related to the Internet or other communications technologies. It does not endorse technologies, industry sectors, companies, nonprofit organizations, or individuals.

URL: http://www.pewInternet.org


## About the Imagining the Internet Center at Elon University

The Imagining the Internet Center's mission is to explore and provide insights into emerging network innovations, global development, dynamics, diffusion and governance. Its research holds a mirror to humanity's use of communications technologies, informs policy development, exposes potential futures and provides a historic record. It works to illuminate issues in order to serve the greater good, making its work public, free and open. The center is a network of Elon University faculty, students, staff, alumni, advisers, and friends working to identify, explore and engage with the challenges and opportunities of evolving communications forms and issues. They investigate the tangible and potential pros and cons of new-media channels through active research. Among the spectrum of issues addressed are power, politics, privacy, property, augmented and virtual reality, control, and the rapid changes spurred by accelerating technology.

The Imagining the Internet Center sponsors work that brings people together to share their visions for the future of communications and the future of the world.

URL: http://www.imaginingtheInternet.org

## Methodology

The survey results are based on a non-random, opt-in, online sample of 1,021 Internet experts and other Internet users, recruited via email invitation, Twitter or Facebook from the Pew Research Center's Internet & American Life Project and the Imagining the Internet Center at Elon University. Since the data are based on a non-random sample, a margin of error cannot be computed, and the results are not projectable to any population other than the experts in this sample.