

# Preface

## INTRODUCTION

Electronic gaming and computer-mediated simulations have risen to the forefront of research and practice in many fields ranging from education to sociology and from computer science to business. Researchers and practitioners argue some very interesting and important points. First, there is research emerging that suggests games and simulations help audiences teach and learn. Inquiries have ranged from learning K-12 content to the impact of videogames on violent behaviors. Regardless of the positive or potential negative construct, there is evidence of a connection between the input of games and/or simulations and a desired or undesired output. If such evidence exists, it is important and critical to understand more about the connections and the constructs.

Second, there is a wealth of popular press—and some academic literature—that highlights the common occurrence of games and simulations in the lives of people essentially throughout the lifespan. Many young children play games daily; elderly audiences often use simulations for physical and mental rehabilitation. Again, if games and simulations have become so ubiquitous, researchers, practitioners, and even policymakers want to know more about how to harness their potential.

This book sets out to capture a snapshot of some important things we know about games and computer-mediated simulations. This is not meant to be a handbook of everything that has been written about games and simulations. On the contrary, this tome was created to highlight the work that has emerged through a year-long snapshot of articles published in a leading, peer-reviewed journal. This chapter begins with a brief background about the journal, and then provides an overview and summary of the 20 chapters in this book. In doing so, it describes the four main themes throughout this book and how the chapters have pushed the field related to that theme. The chapter concludes with some recommendations and goals for future research, policy, and practice.

## IJGCMS

The *International Journal of Games and Computer-Mediated Simulations* (IJGCMS) was launched in 2009 (<http://www.igi-global.com/ijgcms>). The journal is devoted to the theoretical and empirical understanding of electronic games and computer-mediated simulations. The journal is interdisciplinary in nature; it publishes research from fields and disciplines that share the goal of improving the foundational knowledge base of games and simulations. The journal publishes critical theoretical manuscripts as well as qualitative and quantitative research studies, meta-analyses, and methodologically-sound case studies.

The journal also includes book reviews to keep readers on the forefront of this continuously evolving field. Occasional special issues from the journal provide deeper investigation into areas of interest within either gaming or simulations.

One main goal of this peer-reviewed, international journal is to promote a deep conceptual and empirical understanding of the roles of electronic games and computer-mediated simulations across multiple disciplines. A second goal is to help build a significant bridge between research and practice on electronic gaming and simulations, supporting the work of researchers, practitioners, and policymakers.

There are at five guiding principles supporting this mission as well as the editorial policy of IJGCMS. The first important principle is quality and rigor. IJGCMS follows a double-blind review process to ensure anonymity and a fair review. Research articles that are published may contain either quantitative or qualitative data collection & analyses. However, articles using either method must present data to support and justify claims made within the article. Articles that simply summarize data without presenting it or the analytical techniques used, are not considered. Theoretical manuscripts are also published. However, these theoretical reviews must create new knowledge by synthesizing and critiquing past research. Simple summaries of existing literature without thoughtful and considerate analyses are not considered.

A second important principle is the notion of IJGCMS as an interdisciplinary journal. There are numerous fields and disciplines that undertake research related to games and simulations. Psychology, Education, History, Journalism, Literature, Computer Science, Engineering, Fine Arts, and Medicine are just a few of the areas where one could find gaming and simulation research. Unfortunately in academia, the notion of standing on the shoulders of giants has often meant taken a historical perspective on one's line of research. Gaining a historical backing is an important part of moving the field forward; however, failing to consider parallel work in other fields is failure to address and accept the complex natures of games and simulations. IJGCMS publishes articles from any discipline as long as the content of the work is related to games and simulations. Including multiple fields helps researchers recognize their similarities as well as introducing them to colleagues from distinctly different backgrounds.

In addition to having an interdisciplinary focus, a third principal of this journal is its international focus. There are over 18 countries represented on the Editorial Board of IJGCMS. There is no justifiable reason why our research should have disciplinary OR geographical boundaries. Drawing on work from international authors provides two interesting opportunities. First, readers are able to see one topic from multiple perspectives. For instance, how are researchers from various countries working on science simulations? Second, readers are able to see variations across countries. For instance, what are the current research topics and sets of expertise in various countries around the world?

Innovation is a fourth principle guiding the work of IJGCMS. Gaming and simulation researchers often create new concepts and technologies in their work. IJGCMS is a journal where authors who create new tools and techniques go to publish their findings; it is also a resource for readers who want to keep up with the latest and most cutting edge technologies. Special, focused issues with guest editors will also promote in-depth analyses at conceptual or technological innovations (proposals for special issues are welcomed at any time).

Finally, IJGCMS is focused on implications. Developing a strong research foundation for games and simulations is important, but only to the extent that the research impacts others. One of the main items reviewers are asked to consider when reviewing for IJGCMS is: "What are the implications of this work on other research, policy, and practice?" Each article author is asked to include direct implications for others working in similar areas, regardless of whether they be researchers, practitioners, or policy-makers.

Recommended topics for the journal include (but are not limited to) the following:

- Cognitive, social, and emotional impact of games and simulations
- Critical reviews and meta-analyses of existing game and simulation literature
- Current and future trends, technologies, and strategies related to game, simulation development, and implementation
- Electronic games and simulations in government, business, and the workforce
- Electronic games and simulations in teaching and learning
- Frameworks to understand the societal and cultural impacts of games and simulations
- Impact of game and simulation development use on race and gender game and simulation design
- Innovative and current research methods and methodologies to study electronic games and simulations
- Psychological aspects of gaming
- Teaching of games and simulations at multiple age and grade levels

During its inaugural year, IJGCMS had three ‘regular’ or general issues and one special issue. Some work in gaming and simulations gets published in journals like IJGCMS. However, a tremendous amount of cutting-edge research in this area is first presented at conferences. In an attempt to capture these findings, IJGCMS often partners with conferences and organizations to create special issues focused on the leading research from the conference. The special issue for 2009 was from a conference called *Meaningful Play* (<http://meaningfulplay.msu.edu/>) held at Michigan State University. According the website, Meaningful Play “is a conference about theory, research, and game design innovations, principles, and practices. Meaningful Play brings scholars and industry professionals together to understand and improve upon games to entertain, inform, educate, and persuade in meaningful ways.”

IJGCMS’ editorial board consists of four separate groups (<http://www.igi-global.com/ijgcms>).

1. The international advisory board consists of a panel of leading experts from around the world. The advisory board provides insight and helpful recommendations to the editor; they are also available for suggestions and recommendations of future journal goals and special issues.
2. IJGCMS has a panel of associate editors. Each submission goes to one associate editor. Having a smaller number of associate editors has provided a way to maintain consistency in reviews.
3. Submissions also then go to two editorial review board members. As such, each submission receives three double-blind, peer reviews. The associate editor and the editorial review board members are matched as closely as possible based on the topic of the submission and the expertise of the reviewer. However, the reviews are double-blind. In other words, the authors do not know the identity of the reviewers assigned to their paper, nor do the reviewers know the author.
4. Finally, IJGCMS publishes a book review with almost every issue. The fourth group is a panel of co-book review editors who help select books, solicit reviewers, and edit reviews.

Journal special issues are also peer-reviewed. This can be done in a number of different ways. Often, for conference special issues, submissions are reviewed once at the submission stage, where they are accepted or rejected for presentation. Accepted papers are then offered the chance to submit for journal submission, where they are again reviewed either by the conference review panel or IJGCMS’ own review board.

The four issues for 2009 produced a total of 20 peer-reviewed papers. In preparing this book, authors were given the opportunity to update their paper with new data, new findings, or related articles since

the original publication of their paper. The purpose and goal of this book is to highlight the work of those authors, presenting findings that will impact the field of gaming and simulations in multiple ways.

The book itself is divided into four sections, which represent the four main themes that emerged upon a closer analysis of the chapters. As with most categorization schemes, chapters can cut across multiple themes. However, these themes help present a coherent look at some of the cutting-edge research in this area.

- Section 1: Design of Games and Simulations
- Section 2: Learning Outcomes of Games and Simulations
- Section 3: New Theoretical Considerations of Games and Simulations
- Section 4: Creating and Living in Virtual Worlds

It should be noted that the purpose of this summary is to highlight the main ideas identified in each chapter. It is not intended to take away from the rich insights or deep conversations included in each chapter. For instance, one of the goals of IJGCMS is to publish articles that directly impact policy, research, and practice. Each chapter in this book contains a rich description of the ‘so what?’ for those working in various fields. A thorough reading of each chapter will provide such detailed information.

## **Section 1: Design of Games and Simulations**

As previously indicated, there are multiple fields that are interested in games and simulations. Design is an area of games and simulations that is often addressed regardless of whether the conversation originates in computer science or psychology. During 2009, there were six articles that focused prominently on design.

### **Lessons Learned about Designing Augmented Realities (O’ Shea, Mitchell, Johnston, & Dede)**

In this chapter, O’Shea and his colleagues discussed the design and development of an augmented reality curriculum. Their project, *Alien Contact!*, was created to teach math and literacy to middle and high school students. The technology enables students’ real world position to correlate with the virtual location in the simulation. Working in teams, students must explore the world and collect data to determine why the aliens have landed. Evaluation of the curriculum has provided evidence that students are more motivated during the implementation of the content, but there were significant logical limitations. Given these limitations, the authors then report on the development of *Gray Anatomy*, a subsequent augmented reality curriculum. This is really the core of what this chapter can offer educators and developers. Augmented reality presents important educational opportunities, but developers must consider cognitive overload, unintended competition, the need to have flexible roles, helping students find multiple answers vs. the ‘correct one’, the length of the curriculum, and how to get classroom teachers involved. The authors conclude that having educators recognize student-owned technologies will also help implementation.

### **Design Factors for Effective Science Simulations: Representation of Information (Plass, Homer, Milne, Jordan, Kalyuga, Kim, & Lee)**

Plass et al. proposed that the effectiveness of science education simulations depend on important design features. Using this hypothesis, they ran two experiments with high school chemistry students. They

did indeed find that design features can help scaffold student comprehension. They also noted this was particularly true for learners with low prior knowledge. The authors provide three important findings for our field. First, learner's prior knowledge needs to be considered in selecting representations in the simulation. Second, adding iconic representations can increase both comprehension and learner self-efficacy, particularly for students with low-prior knowledge. Third, iconic representations may be more suited than symbols to reducing cognitive load, due in part to the close relation to the referent they represent.

### Beyond Choices: A Typology of Ethical Computer Game Designs (Sicart)

Sicart explored a typology for classifying games designed to create ethical game-play. Ethical game-play, according to the author, is the experience in which the outcomes require moral reflection beyond statistics or probability. Sicart presents a typology that includes open ethical design where players can influence the game through their values, and closed design where they cannot. In open design, there are open systems where the game adapts to the player values and open world where the world adapts. In closed design, Sicart presents subtracting, where the player interprets the game as an ethical experience (cued by design) and mirroring, where the player is forced to adopt the values of the game character. Given this framework, Sicart demonstrates the need to understand the ethical player, the ethical multi-player, and the design methods around these complex issues.

### Game Design and the Challenge-Avoiding, Self-Validator Player Type (Heeter, Magerko, Medler & Fitzgerald)

Heeter et al. argued that there are well-recognized player types such as *achievers* and *explorers*. Achievers are those who are motivated by extrinsic reward. Explorers, conversely, play because of curiosity and learning. However, the authors argue that there is another player type that is often ignored—that of the *self-validator*. Self-validators like extrinsic rewards, but unlike achievers, they dislike losing so much that they would prefer an easy challenge. Using eight games as examples, the authors then discuss the design features that might appeal to the different types of players. One main outcome of their work includes the need for designers and producers to play off these types, while not discouraging them. A second is the need for more research on the role of adaptive games.

### Using Recommendation Systems to Adapt Game-Play (Medler)

In this chapter, Medler argued that most game systems are designed in a one-size fits all approach. Conversely, there are a number of Web-based adaption systems that many users are already used to (e.g. Amazon's recommendation function). These systems include content recommendations (what did you do before?), collaborative recommendations (what do your friends like?), and hybrid recommendations that do both. The challenge for game-play, according to the author, is game-play requires constant and continuous adaptation. Further, game-play adaptation is used to challenge users (rather than recommend), is created implicitly (rather than asking users), and gathers/filters data in real time. In the end, Medler argues that game-based models have yet to take seriously the possibility of memory-based and complex collaborative-based filters. Exploring these features will lead to improved adaptive game-play.

## Leveraging Open Source Technology in 3D Game Engine Development (Stowell, Scoresby, Coats, Capell & Shelton)

Stowell et al. informed readers about how game engines may be generated for educational projects. In the chapter, they discussed the ‘nuances’ of mixing core code with third party libraries to create fully functioning development environments. They conclude with a list of suggested practices for the use of open source libraries to develop 3D game engines. Their main findings suggest that using such libraries is a good practice, but it involves keeping abreast of updates and changes from other developers. Using the libraries can be important for budget considerations, but require learning throughout the process.

## Section 2: Learning Outcomes of Games and Simulations

Although the word “learning” is often thought of as K-12 or post-secondary content, learning can also mean what happens in out-of-school contexts. Learning can also define outcomes beyond content, to focus on skills, attitudes, and behaviors. During 2009, there were five chapters that focused prominently on learning outcomes.

### Promoting Civic Thinking through Epistemic Game Play (Bagley & Shaffer)

Bagley and Shaffer wrote about their interest in games and civic thinking. According to the authors, developing civic thinking goes beyond merely disseminating facts and information. It includes being guided by civic, social, and ecological values while applying real world skills to learning problems and opportunities. They proposed games as a way to provide a context for learning civic thinking. Using a game called *UrbanScience*, the authors guided students through urban planning through a series of mentored activities including a site visit, a survey, meetings, plans, and final proposals. Results from a study of middle school-age players found that gaming can provide a way by which students engage with complex civic problems. The authors contend that students learned by understanding the concepts of *tool-as-obstacle* and *stakeholders-as-obstacle*. The resulting implications are that developers consider building non-player-characters with pro-social obstacles and then get teachers to engage such games to help students address an increasingly complex world.

### Learning as Becoming: Values, Identity, and Performance in the Enaction of Citizenship Education through Game Play (Chee, Loke & Nanyang)

Chee et al. addressed the topic of citizenship in their study. They share a model of game-based learning using Space Station Leonis to teach students about citizenship education. Leonis includes a game, curriculum materials, learning processes, and then formative and summative assessments. The research participants from a government secondary school played the game, used a wiki, and then completed the formative assessments. Students were also asked to create an end-of-program campaign artifact to advocate for a certain position on a ‘hot-topic.’ The findings revealed that the program contributed to shaping students’ values in educationally-preferred directions. Their work provides evidence of the use of games and simulations for dispositional shifts that are important for life in a globalized and multicultural world. Finally, they provided evidence of the possible positive outcomes of game-based learning in classroom contexts.



### Rule of Engagement: The Presence of a Co-Player Does not Hinder Gamers' Focus (Gajadhar, deKort, & Ijsselstein)

Recognizing the increasingly social aspect of digital gaming, Gajadhar et al. explored player experience, particularly as it related to enjoyment and involvement. Drawing on notions of flow, immersion, and engagement, the authors set out to study whether a player's focus was decreased with the involvement of others. Participants in this experience played *WoodPong*, and then completed a set of self-report measures around enjoyment, involvement, and social presence. The results indicated that additional players did not impact immersion, engagement, or flow. If anything, the authors argued that the increased social setting may have improved some outcomes. Their conclusion is that all models of game-play experience should take into account social play setting.

### Game-Based Representations as Cues for Collaboration and Learning (Sharritt & Suthers)

Sharritt and Suthers were interested in how high school students used commercial game interfaces in game settings. Their particular interest was how the visualizations and behaviors of the game interfaces impacted collaboration and activity to support learning. In their study, three video games were selected and then played by two students using a single computer. Their results demonstrated key features necessary for learning. Consistency in game behaviors was critical to success, as was participant scaffolding. Inconsistent behaviors led students away from problem-solving and goal achievement. Feedback was also important, triggering new strategies from players. Such feedback also reduced uncertainty for participants. Finally, game representations helped with cognitive offloading, helping players learn how to accomplish their goals.

### Designing Learning Activities for Sustained Engagement: Four Social Learning Theories Coded and Folded into Principals for Instructional Design through Phenomenological Interview and Discourse Analysis (Dubbels)

Dubbels used a qualitative approach to understand the experiences of an adolescent female as she learned about the video game "Dance Dance Revolution." His approach was to examine the game as an after school activity for helping teens become more physically active. Dubbels suggested the experience led to four main principles of play, including play as subjunctive mode, desirable activities, space, and desirable groups. In the end, the author argued that to sustain engagement, we must find a way to use these game experiences to help students turn play into meaningful experiences that resemble real-world rites of passage/initiation.

## Section 3: New Theoretical Considerations of Games and Simulations

Many of the articles published at IJGCMS focus on practical outcomes or empirical evidence to support hypotheses. There is an important need for articles that use both practice and data to push our theoretical beliefs about games and simulations. During 2009, there were four articles that aimed to push our theoretical beliefs and models of games and game-play.

## Computational Literacy in Online Games: The Social Life of Mods (Steinkuehler & Johnson)

In addition to research on playing games or developing games from scratch, Steinkuehler and Johnson argued for the importance of understanding user modding with existing games. Such an examination, they suggest, provides an important medium for studying computational literacy in the 21<sup>st</sup> century. As important, it helps move the research and practice field from computer to computational literacy. The authors provided two examples—*Auctioneer* and *Quark*—to highlight how modding can be done through an informal joint application-development model or through a single individual utilizing a reusable component model. Steinkuehler and Johnson end the piece by recommending that modding not only happens ‘in the wild’, it should happen in educational practice as a way of informing computational literacy, as a means of improving collaborative programming, and as a way to potentially bridge the digital divide.

## What Players Like about Video Games: Prediction of Video Game Playing through Quality Perceptions and Player Types (Weber & Shaw)

In this chapter, Weber and Shaw described a need to understand more about how people select, play, and evaluate video games. They used two different research studies to specifically explore a theoretical link between motivations of video game play and operational features of video games. They hypothesized that quality perceptions and player types would predict video game playing, and that the combination of the two would better predict than each of the predictors alone. In study one, they interviewed participants about their game-play experience and their quality perceptions of game-play. In study two, 422 students were surveyed about their experience and perceptions of game-play. Their studies reported small to medium evidence about the predictability of quality perceptions, player types, and game-play. The implications are that developers and designers should clarify player types and features related to those types. As important, there are specific quality perceptions that might be most important for specific player types.

## Play of Persuasion: Why “Serious” Isn’t the Opposite of Fun (Fortugno)

Fortugno asked an important question about whether games need to be fun. He argued that in traditional game design, the answer is always yes. However, in serious game design, people wanted to be serious by substituting compelling or engaging for fun. Using examples from both the past and present, Fortugno makes the case that serious games can be fun. The implications for designers is that they should understand their goals (e.g. persuasion vs. attracting players), and then examine what game players do.

## Researching and Developing Serious Games as Interactive Learning Instructions (Loh)

Loh strongly articulated a need for game developers to learn from tested procedures to avoid repeating mistakes of past developers. He includes a model that has been successfully tested and used in the production of serious games. That model includes a ten-step process focusing on the target audience, funding, writing game narratives, beta-testing, and efficacy assessment. Loh’s main argument is that researchers do need to apply learning theories to game development, but they also need to avoid media ‘no significant



difference' studies in the process. A final important recommendation is the need for collaboration not just between researchers, but also between game developers, designers, educators, and players.

## **Section 4: Creating and Living in Virtual Worlds**

One of the most popular areas of study in many fields relates to life online. The tremendous growth of online environments ranging from *Facebook* to immersive 3D worlds like *Second Life*, provide unique opportunities to explore how people represent themselves when given the opportunity to do so electronically. During 2009, there were five articles that focused prominently on life in virtual worlds.

### **Visual Analyses of the Creation of Avatars (Black, Ferdig, DiPietro, Liu & Whalen)**

There has been a well-documented increase in popularity of multi-player gaming known as MMORPGs. In these MMORPGs, the game players use avatar to traverse their virtual worlds. The authors of this chapter argued that little work has been done in the area of avatar research. In their study, they gave students four different scenarios, asking them to create a hero avatar, a villain avatar, an avatar that most looked like themselves, and then an avatar that represented their ideal self. The researchers then used visual analyses to examine photos of the real person compared with their avatar. The findings indicated participants created avatars that most looked like themselves when they were asked to create hero or villain representations. Conversely, participants looked most unlike themselves when they were told to create an ideal or actual self representation. Finally, in all cases, participants refused to change enduring traits, changing only temporal things like hair color. This work provides insight into future avatar research, suggesting we need to learn more about how people represent themselves online.

### **A Test of the Law of Demand in a Virtual World: Exploring the Petri Dish Approach to Social Science (Castronova, Bell, Cummings, & Falk)**

Castronova et al. reported on an economics experiment in a fantasy-based virtual world. The authors tested the Law of Demand, or the idea that when prices go up (keeping all else equal), demand will go down. The authors argue that they have found skeptics who believe a fantasy context invalidates human behavioral theory. Their study provides evidence to the contrary. They found evidence that such a demand exists in the virtual world; as such, they provide justification for the importance of continued, greater, and more sustained economic and social experiments within a social world. Additionally, they provide substantial cause for the continuing use of massive virtual worlds for researching human behavior.

### **Virtual Worlds for Teaching: A Comparison of Traditional Methods and Virtual Worlds for Science Instruction (Norton-Barker, Corbit, & Bernstein)**

The goal of this study was to test the appeal and usability of gaming in four ninth-grade science classrooms. Groups of students were placed in an online world or in a traditional curricular environment; after a set period of time, the groups switched. The environment, called 'Jumping Genes', lets students master fundamental concepts while also needing to collaborate with others to succeed. The study found that students were enthusiastic about learning genetics in a virtual environment. Perhaps more importantly, students who were otherwise uninterested in school (and in science) were motivated to participate

and engage in learning activities. Finally, according to the authors, this study provides evidence that a significant amount of learning can occur in virtual worlds.

### **Playing Myself or Playing to Win? Gamers' Strategies of Avatar Creation in Terms of Gender and Sex (Trepte, Reinecke & Behr)**

Trepte et al. addressed the topic of avatars and gamers' strategies as they relate to gender and sex. The authors questioned why gamers select various attributes of their avatars, particularly relating to gender and sex. Their research provides an important look at both avatar choice and resulting enjoyment from game players. In their main study, participants received five game descriptions and were asked to create an avatar they wanted to play with using pre-tested attributes (e.g. leadership, beauty, etc.). They found players wanted characters they could identify with and yet were willing to manipulate those characters so they could achieve mastery of the game. The authors shed light on the fact that players want avatars like themselves as long as that does not prevent game success.

### **Investigating Perceptions of Avatar Creation for Use in Educational MUVES (DiPietro)**

DiPietro authored a study of the creation of avatars. DiPietro's early work examined what choices people will make when given the opportunity to create an avatar and when given a specific scenario. This new study followed that line of questioning and used qualitative inquiry to investigate the creation of avatars for interactions in virtual worlds. DiPietro found that users created avatars that mirrored their physical appearances and felt morally obliged to do so. There are obvious implications for teachers who may or may not ask participants to create realistic avatars, particularly for the first-world biases that might follow. A second major implication is the need for more research in understanding how avatar creation and use impacts online interactions.

## **Conclusion**

The work that has been published on games and simulations in IJGCMS is continuing to advance research, policy, and practice. In conclusion, one could ask, what can we learn about the current state of the field from these twenty publications? Listed below are some of the key findings from each of these studies (by chapter number).

1. Augmented reality is an important new and effective medium for designers.
2. Game and simulation designers could increase their outcomes by considering the ways in which representations occur.
3. Game play can and does involve opportunities for ethical considerations. Designers can use this to their advantage, but should not ignore it.
4. There are multiple game player types; designers should consider the ways in which they can adapt game-play for certain users.
5. Adaptive game-play is a promising new area, but to be effective, designers should consider what Web adaptation models have already discovered.
6. 3D open source technologies are not problem-free, but designers could improve budgets and time-to-production with their use.

7. Game developers can use non-player-characters and other design features to help students address and understand civic engagement.
8. Games can be used to positively influence the dispositions and values of students.
9. Multi-player gaming does not decrease participant focus or flow.
10. Consistency, feedback, and the appropriate use of representations through game interfaces can positively impact student learning and cognitive overload/offloading.
11. Games and game-play can be used as hooks to help students then help students understand and explore real-world rites of passage.
12. Computational--rather than just computer--literacy is an important goal for designers and educators. Modding can be an important way to understand computational literacy.
13. Player types and quality perceptions are, at least at some level, predictive of game-play.
14. Serious gaming can be fun.
15. Game design research needs to move past media comparison studies.
16. People generally create avatars that look like themselves when put into scenarios rather than when told to create avatars like themselves.
17. Participants have similar human behaviors in fantasy worlds as they do in real life.
18. Students who are unmotivated to participate and engage in learning often change their mind when presented with virtual worlds.
19. Players often want avatars to represent themselves, as long as that does not interfere with their chances of winning.
20. Players often feel morally obligated to create avatars that look like themselves.

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