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15 Learning and Role-Playing Games

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This chapter explores the relationship between role-playing games (RPGs) and learning[1], broadly construed. We include both formal educational settings, such as schools; informal educational settings, like museums and libraries; professional training, including medical or police simulations; hobbyist and leisure-time learning; and incidental learning, which happens while people are taking part in other activities. The common theme between these settings is that they are places where people learn and, as this chapter proposes, places where RPGs offer key strengths to support educational goals.

To make sense of the complexity of the interaction between the domains of role-playing games and education, we must first understand what is meant by learning.

To do this, we turn to four critical families of learning theories: behaviorism, cognitivism, constructivism, and sociocultural theory. While some might argue that these are mutually exclusive theories, we instead take these theories as *lenses* that allow us to understand different types of learning experiences people may have. Rather than attempting to establish which of these approaches best applies to learning through role-playing, we consider that role-playing games may be productive for learning in ways that align with any or all of these approaches.

As our next step, we will examine how games – not just role-playing games – work for learning. Contemporary research on this topic attempts to uncover the underlying mechanisms of learning through games, to evaluate the effectiveness of game-based learning interventions, and to inform the design of games for more effective learning. Because role-playing games are games, this research helps provide a foundation for our understanding of education and RPGs.

Next, we will dig into prior understandings of role-playing, particularly its role in development. In this context, role-playing is understood as *the act of taking on a social role*, without the game-like aspects of RPGs.

Finally, we will bring together these three elements – learning, games, and role-playing – to provide a deeper understanding of the relationship between education and role-playing games. To do so, we will consider the history of educational role-playing games; examine five affordances of role-playing games that are driving RPG-based education in the present; and consider additional aspects of role-playing games that are ripe for educational adaptation in the future.

Prior Work

Overview of Learning Theories

Education research, or the study of education and learning processes, is broadly informed by four different approaches to learning: behaviorism, cognitivism, constructivism, and sociocultural theory (Egenfeldt-Nielsen 2006). Each approach encapsulates different ideas about what learning *is* and how it is best *accomplished*.

Behaviorism treats learning as *the accomplishment of observable learning outcomes*. For example, looking at multiplication, a behaviorist would emphasize the ability to produce correct answers, not achieving an internal understanding of how multiplication takes place. Behaviorist theories hold that learning occurs

through conditioning and reinforcement: the learner responds to stimuli with behaviors, which then are *reinforced* with rewards or punishment to shape future behavior (Skinner 1965).

Cognitivism developed as a response to behaviorism, which largely treated the mind as a "black box" – inaccessible and to some degree irrelevant. Cognitivists counter that the mind is central to learning, in fact, that learning can be understood as *changes in information processing in the mind*. The ability to perform a particular skill is not necessarily evidence of learning, absent evidence of changes in the learner's thinking; conversely, learners who change their cognitive strategies – how they go about trying to solve a problem – without producing the correct answer have still learned something. Cognitivist theories focus on integrating knowledge about the world into mental models and other cognitive representations, which people use to reason differently in the future (Schank and Ableson 1981). For cognitivists, important mechanisms for learning include targeting information at known misconceptions in a given area, breaking down information so that it can be more easily processed, and helping students become aware of their own learning strategies (Ertmer and Newby 2013).

The four main approaches to learning are behaviorism, cognitivism, constructivism, and sociocultural theory. Each approach has a different view of what learning is and how it can best accomplished

Callout 15.1: Learning theories

Constructivism aligns with cognitivism in that it emphasizes the development of models and the integration of information into knowledge. However, constructivists argues that mental models are *idiosyncratic* rather than universal. Each learner must construct their own understanding based on their prior attitudes, beliefs, and experiences; people build new knowledge by connecting it to knowledge they already have (Wadsworth 2004). A closely related theory, *constructionism*, argues that such construction of individual internal models works best through confronting physical or digital models and accomplishing real-world tasks (Papert 1980). Learning emerges through exploration of an authentic task, often aimed at producing an artifact. Working with ideas alone, without the ability to implement them in a real context, is not sufficient for learning – because learning is the ability to reconstruct rather than transmit knowledge (Papert and Harel 1991). Consequently, constructionists emphasize learning *through making and doing*, which is sometimes known as *project-based learning*.

Finally, the *sociocultural approach* argues that learning cannot occur in a vacuum. Experts in a field define how knowledge is structured in the field, what work is appropriate for the field, and even what is considered knowledge in the first place. Learning, therefore, is always social - even when those experts are not personally present, their points of view are encoded in everything from the organization of knowledge to best practices. Moreover, people are always learning from others by observing, modeling, testing behavior, and internalizing feedback (Bandura 1986). Learning can therefore best be understood as *developing shared mental models with other learners that are appropriate for a given context*. Important learning mechanisms in sociocultural theory include collaboration between peer learners, observation and imitation of experts, and participating in a field as an apprentice (Lave and Wegner 1991).

In practice, role-playing games are primarily understood through the *constructionist* and *sociocultural* lenses, as role-playing games emphasize the shared creation of a fictional reality and the ability to adopt a new role. Later in this chapter, we will show how specific features of RPGs relate to these approaches to learning theory.

Overview of Game-Based Learning

Before we tackle the topic of role-playing games in education, we must consider a broader question: how do educational games in general help players learn, and are they effective at doing so?

Egenfeldt-Nielsen argues that there are four approaches to educational games, corresponding to the four approaches to education detailed above; as with other educational activities, a given game may embody one or more of these approaches (2007). A behaviorist approach to educational games sees games as opportunities for "drill and practice" – what one might call the *Math Blaster* approach to games for learning. A cognitivist approach treats games as places where players' existing mental models can be challenged, and as cognitive supports, which can help players develop expertise. A constructionist approach emphasizes games as simulation spaces, where players can learn through hands-on experimentation. Finally, the sociocultural approach considers games as affinity spaces that produce collaboration, community, and conversation.

Gee claims that well-designed games can *illuminate* principles of good learning, particularly from a sociocultural approach (2007). For example, games provide a space of "psychosocial moratorium" where real-world consequences are lowered. Gee argues that good learning, too, requires a psychosocial moratorium, which can be provided either in educational games or in other learning activities. While Gee's approach is driven by broad principles of learning, games can also incorporate specific instructional strategies, such as embedded assessment. Embedded assessment means evaluating players' learning within the game itself. Digital games can track player behavior to provide evidence of learning, as well as to show areas where players are still struggling (Loh, Sheng and Ifenthaler 2015). Non-digital games can accomplish similar goals using live observation combined with game artifacts (Flatt 2014). Combining educational theory, game design theory, and instructional strategies can create games that *ought* to support learning – but do they? Are games for learning effective?

The impact of educational games is often characterized as either *cognitive* or *motivational* (Wouters 2013). Cognitive effects of educational games include teaching content, providing an opportunity to practice skills, improving a mental model, or linking knowledge with performance. An example of a *cognitive* effect would be learning facts about history from a game of *Civilization*. Motivational

effects instead focus on the intensity, persistence, and quality of player engagement. For example, voluntarily choosing to read about history after playing *Civilization* would be a motivational effect – though we note that increased motivation does not always lead to increased learning outcomes (Iten and Petko 2014).

Systematic reviews of learning outcomes find mixed results (e.g. Wouters 2013; Clark et al. 2016). Compared to other active learning activities, educational games typically provide better cognitive outcomes, but only some studies found differences in motivational outcomes. These meta-analyses are unanimous, though, in finding that games *can* produce learning under the right circumstances.

Creating the right circumstances for game-based learning involves designing the learning experience as carefully as the games. For example, games and learning activities must be *aligned* with one another (Aleven et al. 2010). If players spend most of their time on activities that are not relevant to the learning content, they are not likely to learn very much. When games become *mandatory*, they are less motivating and less engaging – qualities on which many educational games depend (Heeter et al. 2013). Finally, learners must be supported in *transferring*

their knowledge from the context of the game to other contexts where the knowledge may be useful (Hammer and Black 2009). Game-based learning experiences are often accompanied by a debrief, which is a post-game reflective process in which participants discuss and make sense of their experiences (Atwater 2016; Crookall 2014). Debriefs are typically facilitated by a teacher or trainer, but participant-driven debriefing can also be employed in informal learning contexts, such as players discussing their play experiences together (Fanning and Gaba 2007).

What this research suggests is that games *can* have an impact on learning – but only when they are well-designed experiences that are well-aligned with the desired learning, and executed in an appropriate context (Clark et. al 2016). However, we are far more likely to understand games and learning when examined with a narrower lens, such as by looking specifically at a single genre of games - in this case, role-playing games.

Overview of Role-Play and Learning

We have now considered both theories of learning and theories of educational games. However, to understand role-playing games specifically, we must also consider the importance of role-play for cognitive and social development. While

role-playing games have accrued a wide variety of game design features over the years **(see Chapter 2)**, the core act of *playing a role* has its own set of implications for learning. It is particularly central to the sociocultural framework, in which people learn from others by observing, modeling, testing behavior, and responding to feedback (Bandura 1986). Although learners may or may not experience it as playful, this process of testing and adopting a new role is highly similar to role-play.

Cognitive and developmental psychologists identify *pretend play* as a core developmental experience in early childhood (Pinkham and Smith 2011). In pretend play, young children take on the role of an imaginary character. This character may be archetypal (e.g. mommy, baby, teacher) or specific to the child's media landscape (e.g. Elsa, Dora, Elmo). In either case, the child imagines themselves into the role, then acts out scenes as if they were the character. This activity is parallel to what role-players do.

Pretend play is a critical part of child development, and has been linked to cognitive competence (Bergen 2002). Pinkham and Smith (2011) emphasize the social aspects of pretend play, identifying five key benefits: *social referencing* -

developing responses by using others' reactions to ambiguous situations as a guide; *interpretation of underlying intentions* - translating pretense actions into intentions; *quarantining of a pretend world* - separating the pretend from the real; *symbolic understandings* - making the connection between pretense and real life counterparts; and *understanding alternative representations of the world and social cognition* - developing social competencies such as decentration, negotiation, role-taking, and empathy.

Role-play is a natural part of human development. This includes both pretend play by children and identity experimentation by adolescents.

Callout 15.2: Role-play and development

In the normal course of child development, children mature into adolescents who have mastered these capacities. They can, for example, reliably separate the pretend from the real. However, role-play takes on a new significance for adolescents, who struggle to establish a distinct identity and find their place in the social order. The adolescent period is often accompanied by role confusion and a search for the peer groups and preferences that make the adolescent feel most stable and "authentic" in their identity, also called a psychosocial moratorium

(Erikson 1968). While normal adolescent social environments can feel constraining, with an emphasis on cliques and even bullying, adolescents can use role-play to navigate social identities like “artist” or “jock” without committing to that identity for life.

The prevalence of learning through role-play suggests that, depending on their stage of development, many people already have role-play-based learning experiences that RPGs can draw on.

Approaches to Role-Play in Education

Role-playing activities in education have been used for decades - longer than role-playing games, as a genre, have existed. Situational Language Teaching theory, developed in the 1950s and 1960s, posits that learners must practice language in real-world situations. This is accomplished by having students engage in conversations and pretend scenarios (Frisby 1957). At about the same time, simulated patients were introduced to medical education (Barrows 1964). An actor would role-play as a patient, and the medical student’s ability to address their fictional problem would be evaluated. These approaches are now educationally mainstream. Simulations are also regularly used for military

training, as well as to train emergency personnel such as police and firefighters; role-play is nearly universal in introductory language classes; and patient simulation is part of the medical licensing requirements for the United States and Canada, as well as a common medical education practice in many other countries.

Despite the popularity of these precursor forms, early analog role-playing *games* were not commonly used in education. In the 1980s, a few influential voices successfully framed role-playing games as addictive, violent experiences that could serve as gateways to occult practices (Lieberoth and Trier-Knudsen 2016). Despite a counter-discourse that pointed out possible educational benefits, such as improved communication skills, role-playing games remained at the periphery of educational institutions (Holmes 1981).

The rise of computer-based RPGs coincided with a wave of interest in preparing students for a digital future. MORPGs were seen as laboratories both for teaching disciplinary knowledge and for practicing "21st century skills," the more general abilities needed to succeed in a technological age (Galarneau and Zibit 2007). Early educational efforts with MORPGs included having students role-play as ethnographers in *Everquest* to learn how to conduct social science research

(Delwiche 2003), experience military leadership in *Full Spectrum Command* (De Freitas and Griffiths 2007), and explore a public health problem in *River City* (Dede et al. 2005).

More recently, educators have begun to apply role-playing principles to the design of curricula and educational institutions. *The Multiplayer Classroom* (Sheldon 2012) reports on ways to incorporate role-playing concepts into course design, which are now being disseminated by companies such as Classcraft (*Make Learning an Adventure*). Sheldon's approach attaches RPG elements to the framework of the classroom, such as treating points earned on assignments as "experience points." While this transformation may seem superficial, it invokes a different model of learning from the traditional classroom. In an RPG, characters often begin as weak or ignorant, and then improve their abilities over time by tackling challenging tasks, which is modeled mechanically through experience points. In contrast, the standard classroom model treats learning not as work that leads to improvement, but rather as deviations from perfection. When grades are assigned, students are marked by the points they have lost; losing the fewest points results in the highest grade. This model emphasizes performance at the expense of learning; in contrast, role-playing games provide transparent assessment systems based on effort and improvement.

A larp primarily designed for educational purposes and often used in formal and informal learning environments. Edu-larps are the primary pedagogical tool at the Danish boarding school Østerskov Efterskole.

Callout 15.3 Edu-larp

Another approach is *practomime,* which emphasizes the collaborative pretend play that occurs both in fiction and in games (Travis 2010). The practomimetic tradition adopts not just the mechanics of role-playing games, but also assigns altered identities to members of the class. The classroom might be reframed as a secluded Roman villa, in which players are a group of young cousins and the instructor is their wicked uncle whose plots they must defeat (*Transforming Learning through the Power of Imagination*). The classroom already has differentiated roles for participants, such as student and teacher - but rewriting the roles that people use in the classroom can help change the way they relate to each other, because the roles come with embedded assumptions about how people treat each other. A teacher whose role has been reframed into "wicked uncle" may find it easier to be the "guide on the side," while a student who thinks of themselves as not very good at Latin might find new ways of relating to it in their new identity. This approach can be extended beyond individual classrooms, as with Østerskov

Efterskole, a Danish school where everything is taught through live-action role-playing games (Hyltoft 2008).

Like practomime, *epistemic games* emphasize role-taking and pretending over RPG mechanics. However, while practomime generally incorporates elements of fantasy, epistemic games ask players to take on the role of a real-world identity such as scientist or zookeeper (Shaffer 2006). Game elements support the player in taking on the role, but the ultimate goal is for the player to understand what it means to inhabit the role in question. Whether they are engaging with the domain or learning how to participate in a community of practice, role-playing serves as a way to engage possible futures. For example, epistemic game techniques can be applied to professional development, such as virtual internships for engineers (Shaffer 2006).

At the time of this writing, RPGs have been successfully used to teach or augment the teaching of a wide range of topics such as history, language learning, political science, science, and math. They have been used in primary, secondary, undergraduate and graduate curricula, in vocational training, in professional training, and in teacher training, including being used to redesign the structures of

classrooms (Sheldon 2012) and entire schools (Hyltoft 2008). But all this tells us what *has* been done – not what *can* be done. For that, we must understand *how* and *why* educational role-playing games function as learning experiences. We therefore next turn to this topic.

Educational Features of Role-Playing Games

Based on the analysis of role-playing games in this volume **(see Chapter 2)**, we identify five key features of role-playing games. These features include both aspects of role-playing as an activity, like portraying a character, and game design decisions, such as those that make role-playing games easy to modify and construct in the classroom. For each feature, we explore the underlying educational theories that make it relevant for learning, and identify examples of how it is already being used in education. We recognize that in practice, these features rarely break down as neatly as they are presented here. However, we believe that clear analysis and understanding of these features permits two important things. First, it allows us to use these features analytically, to understand how and why educational role-playing games affect players. Not only can this help us as scholars, it can help teachers and learners select role-play activities that align with their educational goals. Second, we can use our understanding of these features to enhance future educational role-playing games,

including both designing games to be used in educational settings and redesigning educational interventions to take advantage of key features of role-playing games.

Portraying a Character

Several bodies of work have shown that character adoption can be a learning experience. In particular, the taking on of another person's role gives individuals the chance to live different lives and have experiences unlike the ones they might have in their own. This is useful from a variety of learning perspectives.

Perspective-taking. One effect of role-taking is known as *perspective-taking*, or the appreciation for and understanding of others' unique psychological points of view. Perspective-taking is built through imagining the experiences of others (Galinsky & Moskowitz, 2000) - and in most role-playing games, this is precisely what players are asked to do with respect to their characters. In the vast majority of role-playing games, players must adopt the perspective of someone who is *not them*. For example, in *Ars Magica* players are asked to imagine themselves as characters who have different capacities from themselves (wizards), who live in a different time (the thirteenth century), and who may have different social relationships and personality traits (Tweet and Rein-Hagen 2004). Role-playing games have a number of strategies for supporting perspective-taking, from

creating a high-fidelity environment in which you really feel like you are your character (*Magischola*) to providing rewards for acting according to your character's perspective (Nixon 2004). Either way, perspective-taking allows players to practice SEL (social-emotional learning) skills. Perspective-taking increases empathy (Vescio et al. 2003) and altruism (Batson 2008), and it decreases reliance on stereotypes in understanding others (Galinsky and Moskowitz 2000). Perspective-taking can be used to deepen people's understanding of specific educational topics. In the *War Birds* larp scenarios, players are asked to broaden their perspectives on World War II by taking on the perspectives of women, including women whose perspectives are often marginalized for reasons of race or religion (Turkington 2016). This experience can change players' stereotypes and assumptions about whose perspectives are valuable when thinking about history.

Experience-taking. Beyond imagining what someone else might feel like, people can also feel as though experiences in a role-playing game happened to *them*. This is known as *experience-taking*, the process of simulating a character's subjective experience (e.g. thoughts, emotions, goals, behaviors, and traits) while immersed in a story or game (Kaufman and Libby 2012). Role-playing discourse often describes this as "immersion" (Harding 2007). Research on this phenomenon has

shown that the more individuals immerse themselves in the role of a character, the more likely they are to adjust their own behavior to align with the character's and to (at least temporarily) internalize the character's personality traits, after emerging from the world of the narrative. In addition, when experience-taking occurs with characters who belong to other social groups (such as protagonists of a different race or sexual orientation), individuals report lower levels of prejudice and stereotyping toward those groups. In other words, as a consequence of having simulated the experience of a character, readers come to see the world, other people, and themselves, quite differently. These results suggest that experience-taking can be directed to instill in readers particular values, beliefs, mindsets, and behaviors that are conducive to processing and understanding others' subjective experiences - and other contexts (for example, historical events) -- in a more open and receptive, and less biased or presumptive, fashion. For example, the larp *Autonomy* helps players experience being discriminated against based on gender (Kreider 2016). This experience can help players confront flaws in their mental models, by actually experiencing situations where those models do not fit the real world. This can be understood from both a *cognitivist* perspective, because reshaping mental models is critical to that theory, and from a *socio-cultural* perspective, because the learning happens as players experience different social positions.

Vicarious experience. The experiences people feel they have had in role-playing games do not need to align with the experiences that are available to them in real life (Carnes 2014). For example, most students have not experienced life in a concentration camp, but the larp KAPO puts players into a fictional one (*Kapo*). Experiences that are understood as part of a game are qualitatively different from those that are not; for example, players of KAPO are allowed to go home at the end of the game, and they know they are not going to be killed by the guards. At the same time, the player has genuinely had those experiences. They do not disappear simply because they are experienced within the frame of a game (Gee 2007). Game experiences therefore become part of the player's intellectual and emotional history, which future educational experiences can build on to construct new meanings. This "preparation for future learning" approach is not limited to role-playing games. For example, Hammer & Black showed that *Civilization* prepares players for future learning about history, because it provides experiences to which they can tie abstract concepts (2009). However, role-playing games are unique because they put the player *inside* the experience, such as asking them to experience the Battle of Lexington during the American Revolution through a character they are playing (Schrier 2014b). "It happened to me" is a powerful tool for *constructivist* learning approaches.

Manipulating a Fictional World

Role-playing involves participants taking actions that change the game world, and then taking the changed world as a premise for future action **(See chapter 28).**

In order to affect the game world, participants must develop theories about how the game world works, identify actions that are available for them to affect it, predict the impact on the game world, and then evaluate their model using the actual results of their actions. This process, which may remind the reader of the scientific method, generates several applications for learning.

Theorycrafting and experimentation. As explained earlier, constructivist learning theories suggest that learners must build their own mental models of a new domain in order to truly understand it. They accomplish this by constructing theories and then testing them against the domain. This process is precisely what role-players must learn to do if they hope to successfully manipulate the game's fictional world. For example, Steinkuehler & Duncan (2008) found that *World of Warcraft* players were using the game forums to reverse-engineer information about the game itself. In order to understand what kind of loot they could expect to earn by defeating particular enemies, players collaborated to create a dataset of

which enemy had dropped what item. The entire game community could then use the data to make better decisions about how to accomplish their in-game goals. This example illustrates that role-playing games can be used to practice the process of experimentation and theorycrafting; while Steinkuehler's work focuses on independent learners, role-playing games can also be adapted for students to learn and practice this skill in classroom settings.

Authentic simulation. While the abstract process of theorycrafting is important, players are also learning concrete things about the game as they conduct their experiments. If the game world simulates a particular learning domain, then players are learning about that domain while they are learning to play the game (Shaffer 2006). This approach can emphasize practicing real-world skills, such as in role-play-based training exercises for emergency responders. Trainees are thrown into a complex situation, such as a disaster scenario, and must rely both on their expertise and their analysis of the situation to probe for the best outcome (*Center for Domestic Preparedness*). By manipulating the fictional disaster scenario, they can practice the same skills they would use in a real one. Another approach is to help players understand the behavior of the game world as a complex system. For example, the *Reacting to the Past* larp curriculum includes games that are not strictly realistic; for example, they sometimes compress

months of political negotiation into just a few hours, and reduce the complex options available to the real-world participants (*Reacting to the Past* 2016). However, they allow players to experiment with alternate histories, and to understand what kinds of actions might have gotten the world there. In both types of learning, the key is the *authenticity* - not the realism - of what and how the game world simulates. The player has the opportunity to learn what actions they can take, what effect they have on the game world, and how the game world reacts to those choices, developing better mental models of how the real world works and how they can affect it. Practicing the skills they would use in an authentic situation has benefits from a behaviorist lens, but developing models that let them judge *how* and *when* to deploy those skills requires a cognitivist understanding.

Situated motivational affordances. Much of the pleasure of playing a role-playing game is in affecting the game world. Designing players' opportunities for to affect the world can provide a *situated motivational affordance* - a good reason, within the frame of the game, for them to engage in learning behaviors (Deterding 2011). For example, Hammer & Heller studied a group playing *Ars Magica*, a historical tabletop game set in an alternate thirteenth century where magic is real (2012). The group developed a rule that historical evidence could override game rules,

and allow players to succeed in their goals even if they technically should have failed. As a result, most of the players in the group spent significant out-of-game time learning about thirteenth-century history so that they could be more effective in play. This included both self-described history enthusiasts, and players who claimed not to be interested in history. After all, they weren't *doing* history. They were simply getting better at playing the game (Hammer and Heller, 2012). This effect is not limited to *Ars Magica* or to historical games; for example, online freeform role-players work to improve their writing in order to get into high-quality games **(see Chapter 8)**. Understood socioculturally, these situated motivational affordances help enculturate players into a particular social context, and reward them with power and/or recognition if they succeed.

Altered Sense of Reality

Role-playing games are particularly useful for educational techniques that rely on changing the stakes of a problem, or on altering a learner's emotional state. For example, the phenomenon of "bleed" refers to the blurring of the line between character and player, when the player's thoughts and feelings influence the character or vice versa **(see Chapter 13)**. Role-playing games can also promote deep immersion, in which the player is transported into the fictional environment of the game.

Narrative immersion. Established theories of narrative immersion within psychology and communication suggest that when people are highly transported into a fictional or simulated world, their pre-existing associations (e.g., aspects of their personal or social identity, beliefs, attitudes, knowledge structures, etc.) become temporarily deactivated (e.g. Green and Brock 2000). Thus, the potential for individuals' experiences in the world of stories to alter their schemas and representations is amplified, given that simulations, especially highly absorbing ones, place individuals in a mindset that is amenable to considering, and often internalizing, the beliefs or knowledge they reveal. This "de-activation" of schemas should make players of RPGs more amenable to taking on the mindset, as well as the cognitive and behavioral tendencies and strategies, of characters depicted in the narrative, as well as preclude the interference of learning impediments such as functional fixedness that might preclude the acquisition and deployment of novel, unpracticed learning strategies and problem-solving techniques. From a cognitivist perspective, this is valuable because it helps challenge and deconstruct faulty mental models, which is a necessary step for learners to construct models that are more accurate.

Ethical thinking. Ethical thinking is a critical skill for addressing complex social problems that require learners to weigh multiple perspectives and make value judgments (Schrier 2014a). Role-playing games can make fictional ethical decisions highly engaging. For example, Simkins and Steinkuehler (2008) found four main themes for ethical engagement with single-player role-playing games: effecting change, mirroring, social context, and significant decisions. Players experience ethically significant moments when they know their choices have consequences, when other characters in the game respond to their choices, when they are making their choices in a well-understood social context rather than in a vacuum, and when those choices are experienced as important. All four of these factors are based on taking the game world seriously. For example, one player reported an ethically significant decision about whether to kill an NPC in order to be invited to join an assassin's guild. For the decision to be significant, the player needed to experience the NPC as real enough to be reluctant to kill them, to have a genuine desire to join the assassin's guild, and to believe that their choice would have real consequences in the long term. All these elements involve taking the game seriously and choosing to be immersed in the game as a frame of reference.

Safe high-pressure situations. While role-playing games for ethical thinking *increase* the stakes in order to help players be more ethically engaged, other fields

use immersion in role-playing games to *decrease* the stakes of failure by providing a psychosocial moratorium (Gee 2007). For example, live simulations are a common training method in emergency response and disaster management. These immersive simulations allow participants to practice responding to infrequent events, such as a disease outbreak or natural disaster. Many of these simulations ask players to play as themselves, using their own judgment and resources (*Homeland Security and Emergency Services*). In all cases, players get to respond to potentially serious situations in a way that is high-pressure and low-pressure at the same time. Within the frame of the game, the stakes are high, which helps participants practice making decisions under stress. At the same time, the external stakes are low; no one's lives are on the line. That gives participants the opportunity to practice, take risks, and learn effectively without the distraction of potential disaster.

Shared Imagination

The experience of a role-playing game is usually a social one. Tabletop, live-action, MMORPG, and online freeform role-playing games are by default multi-player games, and many CRPGs also allow play with friends. The primary mode of engagement with tabletop, live-action, and online freeform is not just engagement with a fictional world, but *collaborative* engagement with it. Players can *jointly* affect their shared environment, and must respond to one another's

participation in the game world. This can happen through pre-scripted actions, such as coordinating attacks in an MMO to do the maximum damage to an opponent. In other games, the game itself exists only in a collective agreement about a fictional reality that all players participate in creating.

Role-playing games have a shared design language about how this collaborative participation is structured **(see Chapter 18)**. For example, a common design pattern is to give characters interdependent combat skills: one type of character deals out damage, one absorbs damage, while a third heals the others. This pushes players to have their characters work together. Another approach is to focus on structuring collaboration between players directly. For example, players may take turns contributing to the game. Either way, these collaborative elements of RPGs have learning implications.

Social learning skills. The ability to collaborate effectively is sometimes understood as *collective intelligence*, which predicts general group effectiveness (Woolley et al. 2010). Collective intelligence, in turn, is predicted by group members' individual ability to understand and predict the cognitive and emotional states of others (i.e., their ability to perspective-take and exhibit theory-of-mind)

(Granic, Lobel and Engel 2014). When learning is understood as *collaborative and social*, these types of skills, sometimes referred to as SEL, come to the fore. Many types of constructivist and constructionist learning are collaborative, such as project-based learning, and entire disciplines such as design rely heavily on students' ability to work in teams. Developing social learning skills, therefore, is important for education. Role-players describe their games as opportunities to practice everything from making eye contact to reading body language to handling difficult conversations (e.g. Schrier and Shaenfield 2015). This is not accidental, but rather a feature of how role-playing games work. For example, if two players both want to contribute to the same game world, they must listen carefully to understand how the other person's contribution should affect their own.

Role-switching. Role-playing games do not just structure roles in the sense of *playing a character*. They also ask participants to adopt a social role within the group of *players*. For example, the guildmaster of an MORPG guild serves as a group leader, coordinating players for raids and distributing group resources. Character abilities can also structure social roles, such as whether a character has access to lore (e.g. knows a lot about the setting, and hence can serve as an in-game expert). Sociocultural theory points out that learning is always linked to

one's social role within a community (Bandura 1986; Gee 2007; Lave and Wegner 1991). Role-playing games can allow players to try on roles that are more conducive to learning. For example, the class clown might become a domain expert, or a quiet person might become the group leader.

Communities of practice. Role-players develop social norms about what kinds of contributions to the game are acceptable **(see Chapter 28)**. When suggested contributions do not meet these norms, they are rejected. Often the norms relate to genre (for example, a laser pistol might be rejected in a fantasy game) or to the game rules (for example, a fighter trying to cast a fireball, in a game where only wizards can cast spells). However, groups can also adopt norms that parallel those of *communities of practice*, or groups of people who are core participants in a discipline/area (Gee 2007). Acceptable contributions to the game become acceptable contributions to the discipline - and group participants can learn about those norms from participating in the game. When these disciplines align with academic learning areas, this can be a highly productive way of engaging with education, closely aligned with the way working practitioners behave. For example, Hammer & Heller observed *Ars Magica* players who adopted the norms and practices of *social history*. They operated far more like historians than like history students, working with primary sources and debating the

meaning/application of historical material (2012). This type of learning can be particularly powerful when experts are playing with novices - the game can serve as a form of legitimate peripheral participation in the discipline - but the game rules can also encapsulate the insights of disciplinary experts and help individual groups enforce appropriate norms. For example, *San Tilapian Studies* has been adapted to help students learn the techniques of material history for early American history (*San Tilapian Studies*, 2012). Participating in the game teaches players to value the same behaviors and activities that historians do.

Making Role-Playing Games

Constructionist learning theory says we learn by making. Role-playing games are a good fit for this because their creation involves many different skills and domains, they can draw on broad *communities of practice* of RPG fans/designers, and tabletop and live action RPGs require very little specialized expertise and materials to start making: paper, pen, dice, and bodies are all that is needed.

Modding. One approach to using role-playing games for project-based learning is for learners to design modifications, or mods, to existing games. The framework of the existing game can help learners see the results of their projects more quickly, and it can also provide authentic context for the project to be meaningful

to the learner. Consider the case of *Skyrim*, where available mods showcase a range of skills. For example, mods that introduce new hairstyles for the characters involve 3D modeling, while mods that introduce new quests rely both on programming and writing. While learning these skills can be challenging, the effort is in no way comparable to the effort of creating *Skyrim* itself. The potential rewards, on the other hand, are proportional to *Skyrim*'s success as a game, and to the size of the fan community around it. This helps motivate players to complete Skyrim mod projects, even outside formal learning contexts; as of 2016, there were over 40,000 mods available (Dey, Massengill and Mockus 2016).

Production skills. Rather than modding existing role-playing games, projects can involve making a new role-playing game from scratch. Developing new role-playing games allows learners more creative freedom than modifying existing games, and requires learners to make planning and production decisions. It also incorporates a wide variety of skills. Creating a role-playing game involves writing (for rules and game fiction), mathematics (for evaluating rulesets), scientific reasoning (for playtesting and iteration), and visual design (for art and layout). Additional domains can be integrated through setting or material constraints, such as using literary analysis to create games that address specific fictional settings (Klimick, Bettocchi and Rezende 2016). Even within the

constraints of formal learning environments, where time is limited, role-playing games can support productive project-based learning.

Making as critical practice. As described above, role-playing games function as simulations of an imaginary world. The design of the simulation encapsulates an argument about how the world works. For example, in *The Sims*, characters are made happy by purchasing items for them, which implies that happiness comes from consumption (Bogost 2010). When learners are asked to make role-playing games, they are also being asked to take a critical position on the issues addressed by their game world. For example, early essays on *Dungeons & Dragons* proposed gendered bonuses and penalties to attributes like Strength (Trammel 2014), while *Dream Askew* requires players to select from gender options such as "raven," "gargoyle," and "transgressing" (Mcdaldno 2013). These rulesets respectively reify and undermine conventional gender roles. In the process of designing role-playing games, players can be prompted to think critically about what they are expressing with their game, and what changes might more accurately express their ideas. While role-playing games are not the only game genre that can be used for critical making, they can easily be used to reflect on identity and social roles, on social systems, and on ways to change the world.

Summary

Role-playing games can, under the right circumstances, help players learn new skills, motivate them to engage with academic or non-academic content, support collaboration, and much more. So what are the "right circumstances?" Effective learning with role-playing games happens when learning theories are aligned with the strengths of role-play, and are appropriately supported by the learning environment. Role-playing games are deeply related to constructivism, in which learning happens through hands-on experimentation with new situations, and to socio-cultural learning theories, in which learning takes place through the adoption of new social roles. Key features of role-playing games that relate to these learning theories include: portraying a character; manipulating a fictional world; experiencing an altered sense of reality, which can either heighten the stakes of fictional decisions or lower the stakes of realistic ones; supporting collaboration through shared imaginative spaces; and learning through making role-playing games. Additionally, common role-playing game practices such as debriefs can help learners transfer their knowledge from game contexts to other contexts such as work, school, or practice.

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Further Reading

Gee, James Paul. *What Video Games Have to Teach Us About Learning and Literacy*. 2007. A classic analysis of educational principles in digital games.

K. Schrier, *Learning, Education & Games: Curricular and Design Considerations (Volumes One and Two)*. Pittsburgh, PA: Carnegie Mellon. A collection of essays on topics related to games and learning, including role-playing games.

References

Aleven, Vincent, Eben Myers, Matthew Easterday, and Amy Ogan. "Toward a framework for the analysis and design of educational games." 69-76. Proceedings of Digital Game and Intelligent Toy Enhanced Learning (DIGITEL), 2010 Third IEEE International Conference. 2010.

Atwater, Brodie. "We Need to Talk: A Literature Review of Debrief." *International Journal of Role-Playing* , no. 6 (2016): 7-11.

Bandura, Albert. *Social foundations of thought and action: a social cognitive theory*. EnglewoodCliffs, NJ: Prentice-Hall, 1986.

Barrows, Howard S., and Stephen Abrahamson. "The Programmed Patient: a Technique for Appraising Student Performance in Clinical Neurology." *Journal of Medical Education* 39, no. 8 (1964): 802-05.

Baston, Daniel C. "Empathy-Induced Altruistic Motivation." Inaugural Herzliya Symposium on "Prosocial Motives, Emotions, and Behavior, March 24, 2008.

Bergen, Doris. "The Role of Pretend Play in Children's Cognitive Development." *Early Childhood Research and Practice* 4, no. 1 (2002).

Bogost, Ian. *Persuasive games*. Cambridge, MA: MIT Press Ltd, 2010.

Carnes, Mark C. *Minds on fire: how role-immersion games transform college*. Cambridge, MA:Harvard University Press, 2014.

"Center for Domestic Preparedness." Role Players Offer Real-World Training Experience – Center for Domestic Preparedness. Accessed January 19, 2017. https://cdp.dhs.gov/news-media/articles/role-players-offer-real-world-training-experience/.

Clark, D. B., E. E. Tanner-Smith, and S. S. Killingsworth. "Digital Games, Design, and Learning: A Systematic Review and Meta-Analysis." *Review of Educational Research* 86, no. 1 (2016): 79-122.

Crookall, D. "Engaging (in) Gameplay and (in) Debriefing." *Simulation & Gaming* 45, no. 4-5 (2014): 416-27.

De Freitas, Sara, and Mark Griffiths. "Online gaming as an educational tool in learning and training." *British Journal of Educational Technology* 38, no. 3 (2007): 535-37.

Dede, Chris, Jody Clarke, Diane Ketelhut, Brian Nelson, and Cassie Bowman. "Motivation, Learning, and Transfer in Multi-User Virtual Environments." *Harvard Graduate School of Education*, 2005. Accessed July 23, 2008.

Delwiche, Aaron. *MMORPG's in the College Classroom The State of Play: Law, Games and Virtual Worlds*. Technical paper. New York Law School. 2003.

Desmet, Ann, Dimitri Van Ryckeghem, Sofie Compernolle, Tom Baranowski, Debbe Thompson, Geert Crombez, Karolien Poels, Wendy Van Lippevelde, Sara Bastiaensens, Katrien Van Cleemput, Heidi Vandebosch, and Ilse De Bourdeaudhuij. "A meta-analysis of serious digital games for healthy lifestyle promotion." *Preventive Medicine* 69 (2014): 95-107.

Deterding, Sebastian. "Situated motivational affordances of game elements: A conceptual model." Proceedings of CHI 2011, Vancouver. 2011.

Dey, Tapajit, Jacob Logan Massengill, and Audris Mockus. “Analysis of Popularity of Game Mods.” Proceedings of CHI PLAY, Texas, Austin. 2016. 133-39.

Egenfeldt-Nielsen, Simon. "Overview of Research on the Educational Use of Video Games." *Digital kompetanse* 1, no. 3 (2006): 184-213.

Egenfeldt-Nielsen, Simon. "Third Generation Educational Use of Computer Games." *Journal of Educational Multimedia and Hypermedia* 16, no. 3 (2007): 263.

Erikson, Erik H. *Identity, youth, and crisis*. New York: W.W. Norton, 1968.

Ertmer, Peggy A., and Timothy J. Newby. "Behaviorism, Cognitivism, Constructivism: Comparing Critical Features From an Instructional Design Perspective." *Performance Improvement Quarterly* 26, no. 2 (2013): 43-71.

Fanning, Ruth M., and David M. Gaba. "The Role of Debriefing in Simulation-Based Learning." *Society for Simulation in Healthcare* 2, no. 2 (2007).

Flatt, C. Ross. "How a Classroom Game Becomes an Embedded Assessment." Edutopia. May 13, 2014. Accessed January 19, 2017. https://www.edutopia.org/blog/classroom-game-becomes-embedded-assessment-ross-flatt.

Frisby, A. W. *Teaching English Notes and Comments on Teaching English Overseas*. London: Longman, 1957.

Galarneau, Lisa, and Melanie Zibit. "Online Games for 21st Century Skills." In *Games and Simulations in Online Learning: Research and Development Frameworks*, 59-88. Hershey, PA: Information Science Publishing, 2007.

Galinsky, Adam D., and Gordon B. Moskowitz. "Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism." *Journal of Personality and Social Psychology* 78, no. 4 (2000): 708-24.

Gee, James Paul. *What Video Games Have to Teach Us About Learning and Literacy*. 2007.

Girard, C., J. Ecalle, and A. Magnan. "Serious games as new educational tools: how effective are they? A meta-analysis of recent studies." *Journal of Computer Assisted Learning* 29, no. 3 (2012): 207-19.

Granic, Isabela, Adam Lobel, and Rutger CME Engels. "The Benefits of Playing Video Games." *American Psychologist* 69, no. 1 (2014): 66.

Green, Melanie C., and Timothy C. Brock. "The role of transportation in the persuasiveness of public narratives." *Journal of Personality and Social Psychology* 79, no. 5 (2000): 701-21.

Hammer, Jessica, and John Black. "Games and (Preparation for Future) Learning." *Educational Technology* 49, no. 2 (March & April 2009): 29-34.

Hammer, Jessica, and Kaitlin Heller. "Playing History: How Ars Magica Players Develop Historical Literacy." Proceedings of Meaningful Play 2012. 2012.

Harding, Tobias. "Immersion Revisited: Role-playing as Interpretation and Narrative." Copenhaguen: Dansk Ungdoms Fællesråd , 2007. 25-33.

Heeter, Carrie, Yu-Hao Lee, Brian Magerko, and Ben Medler. "Impacts of Forced Serious Game Play on Vulnerable Subgroups." In *Design, Utilization, and Analysis of Simulations and Game-Based Educational Worlds*, 158-76. Information Science Reference, 2013.

Holmes, John Eric. *Fantasy role playing games*. New York: Hippocrene Books, 1981.

"Homeland Security and Emergency Services." DHSES - OEM Exercises. Accessed January 24, 2017. http://www.dhses.ny.gov/oem/exercise/.

Malik Hyltoft. "The Role-Players' School: Østerskov Efterskole." In *Playground worlds: creating and evaluating experiences of role-playing games*, ed. Markus Montola and Jaakko Stenros (Helsinki: Ropecon ry, 2008), 12-25.

Iten, Nina, and Dominik Petko. "Learning with serious games: Is fun playing the game a predictor of learning success?" *British Journal of Educational Technology* 47, no. 1 (2014): 151-63.

"Kapo." Kapo. Accessed January 23, 2017. http://www.kapo.nu/experience.html.

Kaufman, Geoff F., and Lisa K. Libby. "Changing beliefs and behavior through experience-taking." *Journal of Personality and Social Psychology* 103, no. 1 (2012): 1-19.

Klimick, Carlos, Eliane Bettocchi, and Rian Rezende. "The Incorporeal Project: Teaching through Tabletop RPGs in Brazil." Analog Game Studies. November 13, 2016. Accessed January 24, 2017. http://analoggamestudies.org/2016/11/the-incorporeal-project-teaching-through-tabletop-rpgs-in-brazil/.

Kreider, Anna. *Autonomy*. 2016. Game.

Larsen McClarty, Katie, Aline Orr, Peter M. Frey, Robert P. Dolan, Victoria Vassileva, and Aaron McVay. *A Literature Review of Gaming in Education*. Report. 2012. Accessed January 19, 2017. Pearson.

Lave, Jean, and Etienne Wenger. *Situated learning: legitimate peripheral participation*. Cambridge: Cambridge University Press, 1991.

Lieberman, Debra A. "What Can We Learn from Playing Interactive Games.*" Playing Video Games: Motives, Responses, and Consequences* , 2006, 379-97.

Lieberoth, A., and J. Trier-Knudson. "Psychological effects of fantasy games on their players: a discourse-based look at the evidence." In *The Role-Playing Society: Essays on the Cultural Influence of RPGs*, 46-71. 2016.

Loh, Christian Sebastian, Yanyan Sheng, and Dirk Ifenthaler. *Serious games analytics: Methodologies for performance measurement, assessment, and improvement*. Cham, Heidelberg, New York, Dordrecht, London: Springer, 2015.

"Magischola." Magischola. Accessed January 19, 2017. https://magischola.com/.

"Make learning an adventure." Classcraft. Accessed January 19, 2017. https://www.classcraft.com/.

Mcdaldno, Joe. *Dream Askew*. 2013. Game.

Peterson, Jon. *Playing the World*. Unreason Press, 2012.

Nixon, Clinton R. *The Shadow of Yesterday*. August 18, 2004. Game.

Papastergiou, Marina. "Exploring the potential of computer and video games for health and physical education: A literature review." *Computers & Education* 53, no. 3 (2009): 603-22.

Papert, Seymour. *Mindstorms: children, computers, and powerful ideas*. New York: Basic Books, 1980.

Papert, Seymour, and Idit Harel. "Situating Constructionism." *Constructionism* 36 (1991): 1-11.

Pinkham, Ashley M., and Eric Smith. "Pretend Play and Cognitive Development ." In *The Wiley-Blackwell Handbook of Childhood Cognitive Development*, by Angeline Lillard, 285-311. 2nd ed. Chichester: Wiley-Blackwell, 2011.

Primack, Brian, Mary Carroll, Megan Mcnamara, Mary Klem, Brandy King, Michael Rich, Chun W. Chan, and Smita Nayak. "Role of Video Games in

Improving Health-Related Outcomes." *American Journal of Preventive Medicine* 42, no. 6 (2012): 630-38.

"Reacting to the Past." Reacting to the Past. 2016. Accessed January 30, 2017. https://reacting.barnard.edu/about.

"San Tilapian Studies (a casual narrative entertainment for 30-40 players)." Emily Short's Interactive Storytelling. August 30, 2012. Accessed January 19, 2017. https://emshort.blog/2012/08/30/san-tilapian-studies-a-casual-narrative-entertainment-for-30-40-players/.

Schank, Roger C., and Robert P. Ableson. *Scripts, plans, goals, and understanding: An Inquiry into Human Knowledge Structures*. 1981.

Schrier, Karen. "Designing and using games to teach ethics and ethical thinking." In *Learning and Education Games Volume One: Curricular and Design Considerations*. Pittsburgh, PA: ETC Press, 2014.

Schrier, Karen. "Designing digital games to teach history." In *Learning and Education Games Volume One: Curricular and Design Considerations*. Pittsburgh, PA: ETC Press, 2014.

Schrier, Karen. *Learning, education and games*. Vol. 1. Pittsburgh, PA: ETC Press, 2014.

Schrier, Karen. *Learning, education and games*. Vol. 2. Pittsburgh, PA: ETC Press, 2014.

Schrier, Karen, and David Shaenfield. "Collaboration and Emotion in Way." *Emotions, Technology, and Digital Games*, 2015, 289-312.

Shaffer, David Williamson. *How computer games help children learn*. New York: Palgrave Macmillan, 2006.

Sheldon, Lee. *The multiplayer classroom: designing coursework as a game*. Austrailia: Course Technology/Cengage Learning, 2012.

Simkins, David W., and Constance Steinkuehler. "Critical Ethical Reasoning and Role-Play." *Games and Culture* 3, no. 3-4 (2008): 333-55.

Skinner, B. F. *Science and human behavior*. New York: Free Press, 1965.

Steinkuehler, Constance, and Sean Duncan. "Scientific Habits of Mind in Virtual Worlds." *Journal of Science Education and Technology* 17, no. 6 (2008): 530-43.

Trammel, Aaron. "Misogyny and the Female Body in Dungeons & Dragons." Analog Game Studies, October 6, 2014. Accessed March 20, 2016. http://analoggamestudies.org/2014/10/constructing-the-female-body-in-role-playing-games/.

"Transforming Learning through the Power of Imagination." TPG : The Pericles Group. Accessed January 23, 2017. http://practomime.com/index.php.

Travis, Roger. "A note on the word “practomime”." Play The Past. November 18, 2010. Accessed January 30, 2017. http://www.playthepast.org/?p=198.

Tweet, Jonathan, and Mark Rein-Hagen. *Ars Magica*. 2004. Game.

Turkington, Moyra. *War Birds*. 2016. Game.

Vescio, Theresa K., Gretchen B. Sechrist, and Matthew P. Paolucci. "Perspective taking and prejudice reduction: the mediational role of empathy arousal and situational attributions." *European Journal of Social Psychology* 33, no. 4 (2003): 455-72.

Wadsworth, Barry J. *Piaget's Theory of Cognitive and Affective Development*. 5th ed. 2004.

Woolley, A. W., C. F. Chabris, A. Pentland, N. Hashmi, and T. W. Malone. "Evidence for a Collective Intelligence Factor in the Performance of Human Groups." Science 330, no. 6004 (2010): 686-88.

Wouters, Pieter, Christof Van Nimwegen, Herre Van Oostendorp, and Erik D. Van Der Spek. "A meta-analysis of the cognitive and motivational effects of serious games." *Journal of Educational Psychology* 105, no. 2 (2013): 249-65.

List of keywords defined in callouts at the end of the document

Edu-larp

[1] We deliberately distinguish education from learning. Top education schools offer programs in education leadership, teacher training, education technology, special education, counseling, developmental science, and education policy. We

acknowledge the importance of these and other topics to educational theory, but they are outside the scope of this chapter.