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PLAYING WITH USABILITY: WHY TECHNICAL COMMUNICATORS SHOULD EXAMINE MOBILE GAMES

by

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for the degree Master of Arts
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ABSTRACT

This thesis examines how technical communicators can look to free, successful mobile games for mobile User Interface (UI) and User Assistance (UA) inspiration and design techniques. The purpose of this thesis is to provide an overview of major game studies theories and situate them within technical communication theory and practices.

Technical communicators can leverage game studies theories to augment existing technical communication theories and practices. Specifically, I examine cognitive learning theory in game design, game usability, playability, and user-centered design, and how these theories relate to technical communication, rhetorical, mobile UI/UA, and general usability theories and methods. Additionally, I also note technical communicators can provide depth and fill in existing gaps in game design theory relating to language and textual presentation within games. I demonstrate this value by synthesizing and applying these methods to two successful free mobile games: Supercell's *Clash of Clans* and Blizzard Entertainment's *Hearthstone.*

In a highly competitive and lucrative environment, top free mobile games provide effective user experiences to engage and retain users. Examining mobile game design provides a creative way for technical communicators to improve their own approaches for user engagement and mobile design.

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- Chris Meloy, for always pushing me to pursue the hard and unknown route, instead of the easy one.
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LIST OF ACRONYMS

CCG	Collectible Card Game (Where cards cannot be traded with other players)
CoC	*Clash of Clans*
DLC	Downloadable content (Usually refers to new game experiences or items that the player has to pay for. The term “Patches” are used to denote software updates for maintenance or bug fixes.)
FPS	First Person Shooter game
FTP	Free-to-play
GAP	Game Approachability Principles
GDD	Game Design Document
HCI	Human-computer Interaction
HEP	Heuristics to Evaluate Playability
HS	*Hearthstone*
MMO	Massive-multiplayer online game
MMORPG	Massive-multiplayer online role playing game
PLAY	Heuristics of Playability
PTR	Player test realm
PvP	Player versus Player
RPG	Role playing game
UA	User assistance
UCD	User-centered design
UI	User interface
UX	User experience (As an acronym, usually refers to the field and technical application of the UI design)
WoW	*World of Warcraft*

CHAPTER 1: INTRODUCTION

Mobile applications are becoming prominent in technical communication as the field begins to shift towards delivering complex information for the smartphone/mobile on-demand market. Developing the User Assistance (UA) in a mobile application can be difficult, because, as Joe Welinske describes, mobile "represents a significant break from decades of software design" (11). He encourages using unorthodox examples and approaching UA design in different ways. One effective approach is to examine popular mobile games.

Mobile games represent effective and ineffective UA holistically; popular apps rise to the top and garner thousands of downloads, while sub-par or unpopular apps sink to the bottom of the app stores. Popular mobile games are excellent examples of well-designed mobile interfaces communicating complex information while allowing users to intuitively explore and learn within the app. By examining mobile game UA strategies, technical communicators can learn how to convey complex information to the user in a fun, exploratory, and useful manner.

In this thesis, titled *Playing with Usability: Why Technical Communicators should Examine Mobile Games*, I use Welinske's 4 C's for designing mobile UA as a heuristic framework, supported by current mobile usability and game design. I then apply these strategies against two popular mobile games, *Hearthstone* and *Clash of Clans* as examples of these strategies in use.

Scope

This thesis only examines selected free-to-play smartphone games with the goal of showcasing how UA/UI theories apply to the mobile game environment. Examining games with

poor usability or sampling a variety of games and noting usability trends is not within the scope of this thesis.

The mobile platform used for the research is Android 6.0.1 on the LG G5, since that is my personal phone and I do not have access to an iPhone. I specifically chose *Clash of Clans* (CoC) and *Hearthstone* (HS) because both of these mobile games are successful and their designers have strong commitments to creating a positive player experience. *Clash of Clans*, from studio Supercell is a strategy game that has over 100 million downloads. Supercell centers their development and design process around two core pillars: "The two core pillars around which we wanted to build [the game's] longevity would be game play and social. We believed in the power of simple, fun game play" (Supercell). *Hearthstone*, from studio Blizzard Entertainment, is a collectible card game (CCG) with over 10 million downloads. As the famed studio for the massively-multiplayer online game (MMO) *World of Warcraft* (WoW), Blizzard has a long history of quality and creating excellent user experiences. HS is notably marked by a communicative development team who routinely inform their players on certain design decisions, including specific decisions made for the mobile platform.

Terminology

I want to clarify some of the terminology I use in this thesis. Specifically, I would like to explain how I am talking about users. When referring to technical communication theories, methods, and practices, I will use the term "user." If I am referring to game design/studies theories, methods, and practices, I will use the term "player" because game studies typically refers to their audience in this manner. Both terms, "user" and "player," are associated with the intended audience for the game or product. For a list of acronyms and abbreviations, see Appendix A.

Research Significance

As mobile becomes increasingly important for businesses, technical communicators can benefit from having concrete examples of mobile app design; the Android and Apple app stores are overwhelming to search aimlessly. My thesis will help technical communicators by suggesting free mobile games and UA techniques to look for as they play through the game. Using mobile games provides a fun, alternative way to examine usability and user interactions in addition to being cost beneficial as there are many high quality mobile games that are free to play. Downloading successful free games allows technical communicators to quickly experience effective or ineffective app design.

I also assert there are many aspects of game design theory that technical communicators can learn from to augment existing technical communication theories and methods, such as integrating elements of fun and learning into existing rhetorical strategies or pulling from mobile game Heads-Up Display (HUD) structures to create visually informative and effective mobile app navigational structures. By reviewing and detailing those methods and theories, technical communicators will be able to leverage those ideas and apply them to their own apps.

This topic is important to me because as an avid gamer I see the cross-sections of design and usability in mobile games and how these can benefit technical communication work. Game studies is a field that has not received a lot of attention, but as video gaming becomes normalized in society the multimodal anecdotes of gaming will become more prevalent. An example of this is how technical communicators draw on game techniques to engage users in eLearning and training, also known as gamification. The idea of incentivizing and rewarding users for completing tasks is directly borrowed from video game goals and concepts. Using mobile games as examples of effective and ineffective mobile app UA/UI design is another way technical

communicators can draw from video games and game studies. With this thesis, I aim to answer the following research questions:

- How can technical communicators leverage games and game studies to engage users to create a fun, interactive, and useful user experience?
- How can technical communicators use other digital media to enhance their own work and provide new perspectives on mobile UA and design?
- What can Technical Communication as a field offer to video game design?

By using a developmental methodology approaching for my research and findings, I will use Welinske's 4 C's from *Developing User Assistance for Mobile Apps 2nd ed.* as a heuristic guideline for evaluating and applying the methods and theories to *Clash of Clans* and *Hearthstone*. Welinske provides an excellent foundation for grounding game studies in technical communication for two reasons. The first because Welinske directly states, "Games. . . are relevant to what we do. . . Games generally follow the 4 C's very closely" (366-367). The second is that his book expands on the 4 C's and details the components that contribute towards the 4 C's, such as tutorial experiences, navigation structures, embedded help, and coach marks. Welinske's 4 C's provide a framework that is familiar and approachable to technical communicators, while easily being applied to mobile games.

Intended Audience

There are a few audiences discussed in this thesis. The primary audience is technical communicators, and I specifically attempt to connect technical communication theory and methods to game studies. Additionally, I attempt to demonstrate technical communication practitioners also gain value for their own mobile apps by examining mobile games. The secondary audience for this thesis is those interested in game studies because I also take the time

to point out where game studies literature is lacking and how technical communication can support those gaps.

But a more subtle audience in this thesis consists of the users and players themselves. Technical communication has a rhetorical history of focusing on identifying their target audience and meeting that audience's needs, but this has not been as thoroughly examined within game studies. While game design texts do address players, the perceived player demographics are changing, especially with the prominence of mobile gaming. Mobile app users have similar profiles to that of general web users but with reduced attention spans; however, the varying levels of players are different.

Here, I would like to take the time to discuss differences between hardcore and causal players, since the mobile game environment caters towards casual gamers. While one can look at hours played or level of investment, the difference between casual and hardcore players lies in the way casual games are designed. Juul defines the five core components in casual game design:

1. **Fiction:** Games are set in emotionally positive fictional environments, such as a farm rather than a war zone.
2. **Usability:** Games are user friendly and do not require a unique skill set or learned behavior to play, such as understanding how to use a Xbox controller.
3. **Interruptibility:** Games are designed to be played in short bursts—they are easy to stop and pick back up at another time.
4. **Difficulty and punishment:** Games do not punish players heavily for failure. While games may be challenging, failing an objective does not result in restarting multiple levels or large chunks of progress.

5. **Juiciness:** Games excessively provide positive feedback for completing levels, goals, and accomplishments. There is more of a positive emphasis on successful actions, rather than emphasizing failure. (50)

When examining Juul's criteria, it's clear that causal games have changed approaches to game design because casual games are designed for *everyone*. Initially, casual gamers were internet users, and discovered games by browsing the internet (Fortugno 147). Thus, many early casual games used mechanics that were similar to web browsing, such as using the left mouse click for the main control (148). These games capitalized on already learned behaviors from the real-world which made them intuitive. A good example of this is Guitar Hero, which used a plastic guitar with colored buttons for the players to hold and play the game (151). The simulation of holding a real guitar as if one was at an actual concert connected successfully with players and the franchise enjoyed huge success as a result.

Causal games also have a different sense of failure and rewards than hardcore games, and as a result casual games have their own methods for indicating player failure through the use of micro-rewards as encouragement and an emphasis of clear in-game player feedback (152). Casual games provide feedback when the player does something right, rather than wrong, such as showing points earned: "The game's focus is clearly on rewarding the player for success and not on punishing the player for failure" (152). In causal games, each step is rewarded and reinforced as a positive experience while minimizing failure, thus encouraging the player to try again. Casual games are also clear in gameplay instructions and mobile games typically have a tutorial walkthrough that eases the player into learning the gameplay. The clarity in goals and mechanics allows enough simplicity that causal players are able to pick up the game quickly, and then build on top of existing mechanics with more complexity.

Understanding the casual gamer in this context helps situate technical communication rhetorical knowledge. While technical communication audiences vary, the inexperienced, non-technical user is a familiar audience that the field frequently addresses. Casual players are marked by their application of real-world experiences to gameplay mechanics, much like how technical communication users form habits and expectations based on their experiences. Clarifying the type of player within the context of this argument, will help technical communicators understand why these methods are effective.

Thesis Organization

The goal of this thesis is to show how technical communicators can look to popular mobile games for examples of effective mobile usability.

Chapter 2 is the literature review where I reemphasize the role of technical communicators, game studies, and technical communication literature on games. The literature review will provide an overview of the sources used as the basis of my research, as well as provide a comprehensive list of game design, game studies, and mobile usability in this environment.

Chapter 3 reviews core game design theories on cognitive learning theory, user experience, language, and values to demonstrate what technical communicators have to gain from examining these theories and methods.

In Chapter 4, I apply the 4 C's to CoC and HS to showcase how mobile UA fits into mobile gaming, the practical applications of what technical communicators can learn from mobile games, and how the theories and methods described in the previous chapter fit into mobile UA. I will specifically look to answer these questions as I walk through each of the 4 C's:

- Contextual: What information is easily accessible through workflows and why?

- Conforming: How does the UI display contextual information while keeping the user engaged?
- Conditional: Does the game proactively provide additional instruction in certain areas of gameplay to assist the user? Why or why not? How does this information conform to the game's ethos?
- Concise: How does word choice and language used within the game environment and affect the user's gameplay?

Chapter 5 is the thesis conclusion where I will reemphasize my conclusions drawn from earlier chapters and provide suggested topics for further research.

With the goals, value, scope, and audience of my thesis defined, I will now transition to the literature review where I synthesize and examine important works in technical communication, game studies, and intersections of both.

CHAPTER 2: LITERATURE REVIEW

As video games become normalized forms of entertainment, it is important to review game studies theory and how technical communication fits within game studies. For mobile, this is especially important since users are far fickler on mobile than on the web, and users have slightly different expectations for navigation and behavior structures on mobile. Within this literature review, I aim to synthesize technical communication theory on usability and mobile UI/UA design with game studies theory.

In the first section I show how technical communicators are rhetorically poised to address usability, UI/UA design, and ethics. Then I review mobile specific usability and design challenges that I aim to address in this thesis. In the second section, I focus on highlighting significant game studies theories and methods. First, I begin with general game design theory and then provide an overview of mobile gaming specifically. Then I discuss game usability and UX, and lastly I touch on values and ethics within games. In the final section, I discuss how technical communicators fit within game studies and how technical communication theory is currently being applied to video games.

Throughout this review, I aim to show how these theories supports my thesis research, as well as showcase game design theories to technical communicators to show how both theories can intersect.

Role of the Technical Communicator

Despite mobile platforms revolutionizing the ways we communicate, the rhetorical fundamentals of how we approach usability and user-centered design remain the same. These ideas provide a familiar foundation for technical communicators to build upon. In this section I

want to highlight how technical communicators function as rhetoricians, understand general principles of usability, and acknowledge ethics in technology.

Rhetoric and Audience

Technical communication is a human process that focuses on users and how technology facilitates communication with people. As Rutter states, "Technical writing[communication], he said, is one-third writing proficiency, one-third problem-solving skill, and one-third ability to work with other people" (21). The focus of technical communication is not so much the technology itself, but rather "the primacy of knowing and being over willing and doing. It insists that the person thinking is more important than the tools used or the system acted upon" (22). In this view, understanding users as audiences of technology and involving them in the communicative process is important, also known as the "involved audience": "the *involved* audience brings the audience literally into the open, making the intended audience a visible, physical, collaborative process" (Johnson 93). The notion of an involved audience promotes user feedback in the design process and incorporates methods that allow for iterative user feedback during design and testing. This also shifts the focus of work from the technical communicator as someone who documents the work at the end of the process, to someone who is impacting work and making sure the technology meets users' needs from the beginning.

Engaging users in the digital space involves conceptualizing how information is conveyed. Knowing how to effectively use visual elements is important to communication success. "Aristotle believed that being 'graphic' was essential for producing 'liveliness.' He believed that being 'graphic' aided communication" (Dubinsky 7). Rhetorical decisions regarding how to present information are just as important as determining which information to present (8).

Digital rhetoric is key for technical communicators as they work with involved audiences and meet users' needs. According to Hocks, "Digital rhetoric describes a systems ongoing dialogue and negotiations among writers, audiences, and institutional contexts, but it focuses on the multiple modalities available for making meaning using new communication and information technologies" (632). Digital rhetoric is a combination of traditional and nontraditional narrative methods with a blending of traditional text and images to create a new, interactive space. This new rhetorical environment is unique because the technical communicator's ethos not only functions as the owner of the space, but also as a member of the audience. Additionally, the audience can also function as the author in this interactive environment. This is accomplished through the elements of audience stance (involved audience), transparency, and hybridity that culminate in hypermediation, or the dissonance of the traditional structures becoming deconstructed to experience the narrative, or workflow, in a new way.

Digital rhetoric and related rhetorical theories can be implemented through usability methods and techniques. Knowing Krug's Three Laws of Usability is an important foundation for understanding and implementing usability. The first law, "Don't Make Me Think!" describes how if the user has to think about where to click or find something, the website or app is not usable. The second law is "It doesn't matter how many times I have to click, as long as each click is a mindless, unambiguous choice" (Krug 43). The third law is "Get rid of half the words on each page, then get rid of half of what's left" (49). When applying these laws to mobile, "Most of the challenges in creating good mobile usability boil down to making good tradeoffs" (147). These tradeoffs and compromises are due to the limited screen space. Additionally, in mobile design users search for answers themselves (Redish 3). Designing for mobile first makes the

process of trimming and chunking information easier, and “Every use of your web site [or app] is a conversation started by your site visitor” (15).

Ethics

Ethics in technology and technical communication affects decision making as well as ensures information is accurately displayed. When discussing ethics and technology, "We should not expect such technologies to substitute for personal judgement and responsibility" (Dombrowski 146). Technical communicators are responsible for making sure images and text represent their products and companies ethically. Thinking about how the technology will affect its users and making sure all angles are covered is important in avoiding ethical lapses: “the very human act of conceptualizing and interpreting data is the crux of ethical responsibility" (147). Additionally, good quality images and content increase the credibility of an argument, as well as leaving a positive impression on the user (Buehl 187).

Mobile Usability and Design

Technical communicators must redefine the way they view and approach mobile devices due to the limited screen size and the way users behave with their devices. As of 2010, users downloaded around 10 apps per month but rarely opened the apps for long, and “the average user never launches an app more than 20 times before abandoning it” (Clark 10). While users are “impatient, distracted, clumsy, fickle, incurious, and uneducated” (13), they simply want apps that are simple and easy to use. In addition to understanding users, it is also important to remember that every app belongs to a social community with the user’s contacts and photos, as well as other apps and information (9). Once designers understand how apps interact with users and other apps, the design process can begin.

When planning mobile content and design, taking an *adaptive content* approach allows designers to get their "content into a format so [they] can share and distribute it to any platform [they] want" (McGrane 47). This is accomplished through single sourcing content onto multiple publishing channels and handling information as Content as a Service (CaaS). This structure allows for multi-app support such as allowing articles from one app to be viewable from Twitter's app. CaaS is supported by content reuse, structured content (like DITA), presentation-independent content, meaningful metadata, and an usable Content Management System (CMS) interface.

One way to view mobile design is through patterns and building blocks. Object-oriented software development came from this idea, as well as user-centered design. Within these patterns, "There is room to design the specific solution, and to modify it to meet the needs of the specific system, but they are still very plug-and-play" (Hoober and Berkman xx). This allows designers to have a foundation for extrapolating ideas, while maintaining the flexibility to meet the needs of the app and the app's users. These tweaks are accomplished through understanding the composition of an app and how it organizes various components within that space (56). Users form habits and conforming to those habits within the app's design ultimately serves the user and provides an enriching, satisfying, and interactive experience.

When technical communicators specifically review mobile User Assistance (UA), the challenges and differences between web usability become greater. Meeting these challenges effectively and strategically is important since apps with high aesthetics and usable content organization impart a higher perceived usability and positive experience by the user (Welch and Kim 742). There are two main challenges to creating effective mobile UA. The first challenge is coming up with a method for providing the appropriate assistance for the app's users (Welinske

33). Designers need to focus on the goals and requirements of the app to determine the best way to assist the user while staying within the app's ethos and theme. The second UA challenge is creating the content within the parameters set for the project (Welinske 33). This is challenging because the mobile space is small and designers do not want to crowd the app with messaging, since that will overwhelm users. Finding the balance of just the right amount of assistance is crucial to the success of an app.

To meet these challenges, designers can use a set of heuristic guidelines called the 4 C's to help create appropriate assistance: Contextual, Conforming, Conditional, and Concise. Contextual refers to information that is part of the users' workflow, and Conforming is how that contextual information blends with the overall theme of the app. Conditional UA is when the app anticipates the needs of the user and offers more contextual information in certain areas of the app to assist the user, and Concise is about specific language and word choice that fit the small real estate while conveying the correct information to the user. The 4 C's are excellent foundational guidelines for creating mobile UA and working within the smaller confines of the mobile space (41).

Game Studies

I examine four areas of game studies in the thesis: general game design, mobile gaming, user-centered design, and values within games.

General Game Design

Game design is similar to software to development and practices. Fundamentally, game "design principles will come from everywhere because design is everywhere, and **design is the same everywhere**" (Schell xli-xlii). Game design encompasses many skills and functions, such as animation, business, communication, writing, engineering, and music to name a few. The goal

of these many functions are to ultimately create an experience: “When people play games, they have an experience. It is this experience that the designer cares about. Without the experience, the game is worthless” (10). In order to realize these experiences, looking “closely at games as designed systems, [and] discovering patterns within their complexity brings the challenges of game design into full view” (Salen and Zimmerman 2).

When we examine games as patterns, three main schemas develop to categorize and understand these patterns called “Rules,” “Play,” and “Culture.” The Rules schema discusses games based on their logical and mathematical structures and organization. The Play schema focuses on the human experience of the game from a social and experimental view, and the Culture schema examines contextual design that investigates larger cultural contexts and ideas. In the Rules schema, there are two ways of examining information. When looking at Information Theory Systems, information “relates not so much to what you *do say*, as to what you *could say"* (193). In this view, information relates more to the mathematical or logical data, such as what is unknown and other potential possibilities. When examining games as Systems of Information, games become "interactive systems that put knowledge or information at play" (204); information is the same as knowledge and both are presented in the game for the player. Understanding these distinctions affects the way knowledge vs game data is discussed.

Mobile Gaming

As of 2009, 78.6 million people played mobile games in the US, generating $1.5 billion in revenue (Soh and Tan 35). As mobile becomes the prevalent form of every-day communication, an "increasing percentage of users of mobile devices use them to play games" (35). This exploding growth in mobile games are driven by an "increase in mobile device penetration rates, the ability of mobile devices to deliver quality video and audio, and improving

[the] ability of wireless networks to improve broadband transmissions" (Soh and Tan 35). As of 2014, projections for 2017 estimate for 8.5 billion mobile devices in use worldwide (Prato et.al. 19). Additionally, “Tablets and smart phones are now being adopted as gaming devices for causal game players, driving demand for wireless games” (Prato et al 20-21). Most significantly, the mobile app market in 2013 was expected to be worth $27 billion and “the largest contributor toward this growth will be the in-app enabled commerce, with revenue from downloads, in-app advertising, and virtual goods.” (21).

The free-to-pay, also known as freemium, model for mobile apps is popular because the free content attracts users quickly, the opportunities for generating revenue through advertising, and freemium environments create multiple opportunities for revenue through microtransactions (Shi et al 187). However, there are differences between buyers. Most players contribute less than 15% to game revenue, while high spending players account for 50% of the revenue, but are less than 15% of the player base (178). Games are able to transform players from low spenders to high spenders through loyalty and perceived value. Perceived value is the “consumer's overall assessment of the utility of a product or service, determined by a consumer's perception of what is received and given" (Hsiao and Chen 19). The emotional and social values of this perception are the main motivators for in-app purchases. Hsiao and Chen state, “Players are motivated to play and recommend mobile games because they perceive such games as offering not only emotional value (playfulness) and value for the cost (reward) but also social value (connectedness) and performance value (access flexibility)" (27). Keeping these motivations and values in mind, as well as understanding why the freemium model is so successful, is significant when designing an app, especially if the app will be based on the freemium model.

Game Usability and User-Centered Design

When examining user-centered behavior, we should note the "theory of human learning is built into good video games" (Gee 4). Video games offer learning theory a new perspective on how learning is a social act, rather than a solitary one, and the theory of learning in video games are the best theories of cognitive science (4). Three principles of learning derive from three key areas of research: "situated cognition," New Literary Studies, and "so-called connectionism." Situated cognition examines thinking in relation to bodily experiences; New Literary Studies focuses on writing and reading as mental, social, and cultural practices; and connectionism is how humans learn best through real life experiences that contain learned patterns. Being aware of the cognitive science behind learning theories are important because games are increasingly moving towards interactive design and development.

Similarly to technical communication, user experience (UX) is a major focus in game studies. In general, the "User experience (UX) has become one of the most central concepts in the research of interactive design" (Desurvire and Wilberg 131). As Ermi and Mäyrä state, "Involving players more in the design processes of games is also important for the future of the games industry and for the diversity of game cultures in general… A move into player-centered game design is also an important step in the development of more systematic and evaluated game design processes." Like technical communication, game design is moving towards user-centered design (UCD) to improve their products. When examining UCD in gaming, player experiences are grounded in engagement, immersion, presence, and perceived realism (Caroux et al 368). When looking specifically at usability, game studies theory and literature move away from the word "usability" because it implies task-based goals, closer aligned with technical communication, rather than entertainment-based goals. User-centered design or "playability" are

terms used instead to denote “the degree to which users can achieve goals efficiently, effectively, and, most importantly, with satisfaction and fun with a playful context of use” (374).

Playability focuses on how easily the player interacts with the game and is able to accomplish goals within the game. Playability ties into the concept of Game Approachability: “The game needs to unfold for the user in a way that he or she understands well enough to continue to explore the game, without giving away too much, while also motivating the player to investigate and continue play" (Desurvire and Wilberg 132). This involves understanding casual gamer experiences and prioritizing UX development at the beginning of the design process, rather than the end. The Heuristics of Playability (PLAY) were developed specifically to help game designers throughout the game design process and are based on current and past research on usability and design principles. PLAY focuses on the three main categories of Game Play, Coolness/Entertainment/Humor/Emotional Immersion, and Usability & Game Mechanics. The Usability & Game Mechanics section includes the following: Documentation/Tutorial, status and Score, Game Provides Feedback, Terminology, Burden on Player, Screen Layout, Navigation, Error Prevention, and Game Story Immersion (Desurvire and Wilberg 562-564).

Because of the nature of this thesis, it is worth mentioning technical writers are included in game development. However, “physical manuals have mostly become a thing of that past; the content is either included in the in-game tutorial system or made available digitally” (Rogers 24). Now, technical communication skills are more generally used as part of the UX design of the game, such as clarifying game elements through heads-up displays (HUDs). HUDs are overlays on the main screen to provide contextual information to the user through textual and visual elements. Typically, they are “opaque and have no real association with the part of the screen on which they are superimposed” (Caroux and Ibister 65). For example, this can be a health and

magic meter in the top corner of the screen, which communicates the life total and how much magic can be used before those resources are used.

Values and Ethics in Games

Understanding values in video games is interesting in context to this thesis and is more closely aligned with technical communication views on ethics. Values in video games are based on three main critiques: societies have common values; technology embodies ethical and political values; and game designers are able to influence those values. In particular to technology, "values expressed in technical systems are a function of their users as well as their features and design. Privacy is once such value" (Flanagan and Nissenbaum 8). Additionally, "Creators in all media have a social obligation to be responsible with their creations" (Koster 174). The user experience is intrinsically tied to perceptions of values and ethics through design decisions, such as the presentation of content and the goals within games. Values and ethics between game design and technical communication are closely aligned, and will continue to intersect as the mobile space becomes more dominant in users' lives.

Technical Communication and Video Games

As video games become normalized and AAA game budgets expand significantly, technical communication scholars are beginning to explore intersection between the two fields. Technical communication is well poised to situate itself within game design because game design is specifically centered around the players' experiences. deWinter and Moeller explain that, first, we are in the "casual revolution" where video games are accessible and easy to pick up for a majority of people (3). deWinter and Moeller then assert that the core development of video (computer) games are centered around technical communication principles:

> Further, computer games are symbolically communicative, relying on written, verbal, algorithmic, audio, and kinesthetic procedures to convey information. Professional and technical communication scholars are uniquely poised to investigate this intersection between the technical and symbolic aspects of the computer game complex. (3)

This statement and view on technical communication in game studies supports DeAnda and Kocurek's assertion that game design can be viewed as a field within technical communication itself: "the fundamental processes and practices of game design are technical practices, such as iterative design, testing, and even the production of algorithmic rule systems that structure player experience" (203). They back up this assertion by demonstrating how, through game design textbooks, game design focuses on player experiences, how designers function as advocates for players' needs, and how information dissemination evolves based on player behavior and feedback.

From a functional perspective, technical communicators are able provide support for internal and external documentation. Internal documentation begins with the concept proposal, which then leads to a full concept document. From there, the Technical Design Document and the Game Design Document (GDD) detail the core technical and design aspects of the game. Of these, GDD is at the core of the design process and is responsible for "'communicating a vision for a game. . . mapping out as much information as possible about how that game will function, what players will experience, and how players will interact with the game world'" (Greene and Palmer 21). Technical communicators can also work with internal developer documentation and API writing specifically for games. External documentation includes player-focused documentation and client-side documentation, which is a document based off the GDD and geared towards major internal stakeholders once an Alpha of the game is available (23). Player-

facing documentation has changed throughout the years as developers are moving away from physical manuals, since much like technical communication audiences, players do not read them (deWinter 73). Instead, technical communicators are able to provide knowledge and expertise as in-game tutorials are developed, in addition to other UI elements.

There are clear indicators that approaching game studies from a technical communication lens and asserting game design as a technical communication process is appropriate. Not only are technical communication goals aligned with game design goals, but technical communicators are also able to provide professional knowledge and application to game design processes. Further studies, such as this thesis, will continue to demonstrate the value and need for technical communication within game design.

Throughout this literature review I attempted to synthesize and discuss key works within technical communication and game studies. First I reviewed technical communication theory that demonstrates why technical communications have the foundation and knowledge base to use and enhance game studies by reviewing technical communication rhetoric, ethics, and specifically mobile usability and design. Then I discuss core game studies theory by reviewing two core game design textbooks, discuss mobile gaming specifically, game usability, and UCD theories within games, and ethics and values within games. Lastly, I discuss core literature on technical communication studies specifically on video games to further emphasize that technical communication has a place within game studies and game design.

As I dive deeper into intersections between game design theory and technical communication, the role for technical communication in game studies is clear.

CHAPTER 3: INTERSECTIONS OF THEORY AND DESIGN

There are many intersections of theory and thought between technical communication and game studies. This chapter explores those intersections and also examines specific game study theories that benefit technical communicators. First, I will discuss cognitive learning theories and how games employ those theories to create effective tutorials and new user experiences. Next, I will discuss UCD theories in games and technical communication, and then I will examine language and meaning in games. Lastly, I will discuss values and ethics in games. To help situate these theories and ideas, I first discuss game studies and then apply these theories to technical communication. These four intersections reinforce current technical communication rhetorical and usability methods as well as explore new avenues for both fields.

Cognitive Learning in the New User Experience

The new user experience is extremely important in technical communication and game design. For technical communicators, users will only spend an average of three seconds deciding whether or not they like the app before moving on (Rauch), and the new player experience is equally important in games; if players cannot get through the game tutorial, then they will stop playing and likely will not go back. The tutorial experience is integral to how players interact with the game, as later demonstrated in Chapter 4, and does not just orient the player. Rather, a good tutorial provides basic instructions on game mechanics, has players apply these basic mechanics in an environment where it is "safe" to fail, and, most importantly, allows the player to expand on their basic knowledge through self-discovery and experimentation. This structure is successful because fundamentally games are patterns, and the real challenge of a game is to learn that pattern.

Cognitive Learning and Games

Games build upon our natural human behavior to create patterns and make assumptions and associations. Cognitive theory examines these behaviors to learn more about the way our brains think, or as Ralph Koster describes, "'how we think we know what we think we know'" (18). Most of what we know is "chunked," or grouped together by recognizing a set of patterns, and thinking is mostly memory based pattern-matching based on previous experiences (22). Games rely on a unique set of patterns because they are focused "chunks" which are easier for the brain to comprehend. Even with the narrow focus, we enjoy games because deciphering and mastering the focused chunks exercises our brains. But as we master patterns, the process of exercising our brains slows and eventually boredom appears: "The biggest [limitation] lies in in games' very nature as exercises for our brains. Games that fail to exercise the brain become boring" (Koster). Koster believes that this outcome is inevitable. For example, when one first learns to drive a car it is very exciting and one offers to run menial errands just to have an excuse to drive. As time goes on, the challenge and novelty wears off and driving becomes a normal routine task. While some people do enjoy "driving" it is not the mechanics of steering the car that they are referring to—instead they are talking about the enjoyment and fun they have while seeing new places and the scenery alongside the road.

But what exactly is fun? Endorphins are released when the brain feel good and endorphins can be released at various times, such as while listening to powerful music that give us a chill. Another time endorphins are released is when one learns or master a task. Koster offers that there are many ways to find fun in games, but it is learning that is the most significant: "Fun from games arises out of mastery. It arises out of comprehension. It is the act of solving puzzles that makes games fun. In other words, with games, learning is the drug" (40). It is

important to note that the brain's desire to learn does not necessarily equate to new experiences. Instead, the brain desires new data. Games are built on patterns and as the patterns become more complex, the brain has to learn and adapt to the new level of complexity.

But when the brain masters the patterns and is no longer receiving new data, boredom appears. Boredom is the result of the stoppage of the brain exercising, or learning, and, as mentioned above, the mastery of patterns within a game are one way that boredom creeps up, but there are others. If a game is considered too easy, like Tic-Tac-Toe, or if a player fails to see any patterns and considers the game to be too hard, these both incite boredom in the brain. Another way is that the level of complexity and mechanic nuances are not worth the effort, such as trying to earn more gold for little reward. Sometimes the pattern complexity adjusts too slowly and other times adjusts too quickly. Of course, each of these scenarios do have outliers. For example, the *Dark Souls* series is notoriously difficult and very punishing from the beginning, but this series also caters to a specific audience.

As mentioned in the Introduction, both mobile games and technical communication cater to a similar non-technical, or "casual," audience. Technical communicators help their users learn products and understand the product's patterns. Successful free mobile games design their game's patterns so anyone can easily begin the game. The sense of fun that one gets while playing a game is enhanced by other factors within the game, such as one's emotional reaction to the story and these factors create a sense of enjoyment. The definition of enjoyment varies but Koster offers four concise points:

- **Fun** is the act of mastering a problem mentally.
- **Aesthetic appreciation** isn't always fun, but it is certainly enjoyable.

- **Visceral reactions** are generally physical in nature and relate to physical mastery of a problem.
- **Social status signals** of various sorts are intrinsic to our self-image and our standing in a community. (90).

In technical communication, while we may not necessarily focus on fun for entertainment, we do value users experiences and try to design them so that they are engaging and enjoyable. Krug discusses good usability on mobile apps by focusing in delight, learnability, and memorability. Krug likens delight to fun, captivating, impressive, clever, and "even magical" experiences (155). He states "delightful apps usually come from marrying an idea about something people would rally enjoy being able to do, but don't imagine is possible" (156). Delight in apps are critical because the mobile space is highly competitive, and delight enhances the user experience positively to help an app stand out from the rest. But if apps are complex with more than a few features, they may not be easy to learn. Because of users' short attention span, making the app as easy to learn as possible is important in complex apps, and, as I will demonstrate later, is where complex mobile games excel. Lastly, Krug asserts that apps need to be memorable and defines memorability as the ability to remember how to use the app after a long period of time without usage. This is especially important with paid apps: "But if you have to invest the same effort [to relearn the app] the next time, it's unlikely to feel like a satisfying experience. …Life is cheap (99 cents) on mobile devices" (159).

While it may not seem like our users in technical communication are "having fun," I assert these fun moments are gleaned through smaller bites, such as the delight in successfully figuring out a complex task by recognizing and learning a pattern. Tasks can also be aesthetically appreciated through optimized workflows and well-implemented UI/UX, and completing a new

task provides a positive visceral reaction through a sense of accomplishment. The eventual mastery of a product provides a level of social status by becoming a SME or the "go-to person" if any issues arise. Cognitive learning has applications to game design, which also apply to technical communicators as we, like game designers, help our users learn and understand patterns. Unlike games, technical communication is arguably successful when users master these patterns and workflows become routine, and by designing an app with delight, learnability, and memorability in mind, users are able to settle in a routine positively. Patterns and workflows that are well developed for a positive user experience keep users engaged in the application and prevent boredom.

How Games Show and Tell Learning

How players recognize patterns is critical to successful gameplay. Within games, players are offered overt information and guidance as well as information provided through immersion and practice (Gee 117). Both of these types of relaying information help create challenging patterns for players.

Overt information and guidance are offered to players through character interactions and tutorials; it is literally the game telling players how to accomplish a task. This typically includes basic mechanics and gameplay interactions. Immersion and practice are behaviors picked up by players as they apply overt information and begin to innovate on their approaches. One example is when a player is told to do one thing, but the player disregards that instruction. For example, while playing *Uncharted 4*, I was navigating through an island with my character, Nate, and his brother, Sam. The dialogue exchange between Nate and Sam indicated I should go to a specific island, but as a seasoned player, I knew better. Instead, I circled the island and discovered two collectible treasures. From experience playing this game and others, I recognize the verbal cues

for when I am going in the right direction, but I also know that nothing is time based so I can take my time to explore other areas for in-game collectibles and achievements.

New players experience similar learning curves, especially on mobile where many games have the same general core mechanic but have a different themes or variations on the gameplay, such as *Marvel Avengers Academy* and *Disney Enchanted Tales*. The first time I downloaded and began to play *Marvel Avengers Academy* it was the first time I played a town simulation where characters must perform tasks, and these tasks are required to complete the overall game narrative. For example, I would send Black Widow to the library while Iron Man went to the practice range to complete the "studying" storyline. *Disney Enchanted Tales* uses the stories of *Frozen, Tangled,* and *Beauty and the Beast* to drive actions in the game. In the *Frozen* scenario, I had a quest for Anna and Hans to "Bump into a Stranger" and essentially meet like they do in the movie, which then unlocks Hans as a usable character. But due to my previous experience with the Marvel game, I already knew how to complete actions with characters, start completing the quests, and even ignore in-game prompts to accomplish tasks I thought to be a lower priority. Through my experiences with the Marvel game, I surpassed the overt information and guidance offered in the *Enchanted Tales* game, and through my immersion and practice I was able to make my own decisions and priorities.

The strategy of players learning from one game and applying those concepts to another is what learning theorists call "transfer" (Gee 126). As Gee states, "Getting transfer to happen typically requires making the learners overtly aware of how two different problems or domains share certain properties at a deeper level" (126). Good examples of the transfer strategy in games are First-Person-Shooter (FPS) games. Because I learned how to play a FPS through many hours of the *Borderlands* series, playing *Overwatch*, another hero-based FPS, is an easier transition. I

already know the basics of looking for cover, when to use my main power, and other combat basics. Transfer occurs a lot in games because the more one plays, the more one begins to recognize similar patterns. This, in turn, allows one to innovate on the transfer strategy. Innovation occurs when the player is stuck and "the player has to think of something new (new to the player, at least…) in the context of keeping what is useful from past experiences. This is a key moment for active and potentially critical learning" (127). When I was playing *Ratchet and Clank*, I kept dying against a difficult boss with three different stages. I had to experiment and strategically pick from other techniques I used current game techniques from other games. With a lot of trial and error, and a bit of luck, I finally succeeded in killing the boss. I first started with the basic techniques I learned. When those did not work I transferred techniques from other games, such as strafing and jump/cover maneuvers, and then I innovated on those techniques to come up with a unique routine for defeating the boss. I learned not only how to use the techniques taught to me within *Ratchet and Clank* but also how to improve upon them from experiences in other games, and how to adapt those to this specific environment.

While the game examples are very specific, people use the transfer strategy constantly. Consider someone saying, "Why doesn't this website have a phone number at the bottom of the page? All other websites have the contact information at the bottom!" This user expects contact information to display at the bottom of the page because that information was provided to them overtly before. Now, while on another website, the user is applying a previously a learned pattern and looking for the contact information. It may take some searching, but the user may also come to learn that the top of the screen is another likely place to find contact information. As technical communicators, we know that consistency is important in design—document, software, interface, for example—and the transfer strategy supports that methodology. Users develop

patterns and expectations of standard behavior, like where to login and how shopping cart functions, and deviations from those standard features cause confusion. Going back to a previous example, I actually stopped playing *Disney Enchanted Forest* after an hour or so because I could not leave the tutorial. I knew the mechanics, as I described, and I did not want or need to spend gems (the rare currency that costs real money) but was forced to anyway, and I could not even access the settings to change the audio settings. When I finally got through the tutorial, I had an unbelievably difficult time placing a building onto my map, which is a common mechanic in many different types of mobile games. The whole experience was frustrating and simply not fun because I could not get through the beginning quickly and the core mechanics behaved differently without any explanation. As a user and a player, this app was not worth my time because I was not allowed to learn and effectively utilize and innovate on the existing patterns I knew.

Cognitive learning theory is effectively ingrained in game design theory and is easily transferrable to technical communication to provide new insight on user behavior and product adoption.

User-Centered Design

User-Centered design (UCD) is familiar to technical communicators, but is a newer field of study within games. Many game usability studies center around specific interactions, such as players and controllers and screen size, and there are very few academic studies or articles discussing mobile approaches. Desurvire and others have developed a game usability heuristic, but it is unknown as to whether or not this heuristic is accepted and used. What does exist will help technical communicators since the field has a lot of documented usability research. In fact, most of current game UCD studies and research are based on Human-Computer

Interaction (HCI) research (Desurvire and Wilberg 132). Core game design books, all referenced in this thesis, promote games as experiences rather than objectives, which supports the term "user-centered design" over usability. Most importantly, however, is the overall player experience.

According to a literature review conducted in 2015 by Caroux et al., there are six main areas of empirical study conducted on player-video game interactions. These six areas are: player engagement; player enjoyment, flow, and emotion; input and output characteristics of game interfaces; game contents; multiplayer games; and global approaches to video-game interactions. The first of these, player engagement, empirically supports game design theories that situate games as experiences. These experiences are created through engagement, immersion, presence, and perceived realism. These four characteristics are prevalent in other HCI areas but something that is unique to games is the aspect of enjoyment. The literature review found that "enjoyment is related to positive player reactions during a gameplay session, and is linked to emotional experience" (Caroux et al. 369). This also supports why fun is important in games.

Usability in games is addressed under global approaches to interfaces. The literature review offers further definitions between usability, user-centered design, and playability. Usability consists of 3 main criteria to achieve goals: effectiveness, efficiency, and satisfaction (374). However, these criteria fail to support entertainment. "Efficiency and effectiveness are useful measures for task-based systems, but less so for systems that aim to create an entertaining moment-to-moment and overall experience… .User experience corresponds to the perceptions and responses resulting from the use of a product, system, or service" (374). Thus, studies are beginning to favor "user experiences (UX)" or "user-centered design" over "usability."

Another term stemming from usability is "playability," but the term itself has varying definitions. Similar to user experience, playability can refer to "the degree to which users can achieve goals effectively, efficiently, and most importantly with satisfaction and fun within a playful context of use" (374). Another definition supports playability as the central idea that combines game design and player preferences. A third definition relates specifically to players' values, especially in role-playing or massive-multiplayer-online-games (MMORPGS). Additionally, these studies promote the term "user-centered design" and "playability" over "usability" because "usability" has stronger connections to completing task-oriented goals, and more closely aligns with technical communication (Caroux et al. 374).

Interestingly, a study by Ermi and Mäyrä from 2005 discusses playability in a mobile context and uses the second distinction of playability as the combination of game design in relation to player preferences. They advocate involving players in the game design process because it is critical for "the future of the games industry and for the diversity of game cultures in general" (Ermi and Mäyrä). The study describes how communication between users and designers is poor, and that users' social contexts are critical to the design process: "Persistent communicative contacts are also important when developing persistent social networks, i.e., communities. Communication is thus an important component of social playability." I find this to be incredibly insightful, especially since their study was specifically on mobile games. To put into context, in 2005 websites were likely just starting to really understand and implement good web usability, advocated by Nielsen and Krug. The Motorola Razor was the most popular phone and the iPhone would not be released for another two years. In gaming, the widely popular MMO *World of Warcraft* is only a year old. *Wowhead*, the most prolific forum and resource for *WoW* launched only at the end of 2005. In short, both Ermi and Mäyrä were ahead of their time

for not just mobile, but understanding player-designer interactions. Today, there are forums where designers talk directly with players and some games have Player Test Realms (PTR). Designers release new updates to PTRs and players can access the new content to see the updates, as well as perform beta testing for the designers. As Ermi and Mäyrä advocated, the player-designer interaction helps support and build successful games.

While Caroux et al's literature review does not provide a heuristic for developing fun in games, Desurvire and Wilberg developed the Game Approachability Principles (GAP), which provide guidelines for tutorials and new player experiences. They define Game Approachability as how the game unfolds so the user knows enough to want to keep playing, while motivating the player to investigate and learn new aspects of the game (132). Their principles are based in cognitive learning, social learning, and self-efficacy theories and are applied to Heuristic evaluation and a Usability evaluation and review the following: Amount and type of practice; amount and type of demonstration; reinforcement; self-efficacy; scaffolding (failure prevention); Gee's theories—co-identity, manipulation, perception, and Sandbox; Heuristics to Evaluate Playability (HEP) and Heuristics of Playability (PLAY), both are created and advocated for by Desurvire; goals of game clear (finishing the game); information on demand in and in time, system thinking; and self-mastery (136-137). Overall, the heuristic evaluation provided more information about game approachability, whereas the usability test provided more information about the playability of games (playability referring to user experience). This is particularly useful to game designers, and similarly technical communicators who are especially interested in user experiences.

Caroux et al's literature review notes that though there are studies about video-games, many of them are not replicable and the field has a weakness of study methodology. In my own

research, I also found material on UCD in games to be holistically lacking. Game design books break down technical aspects and experiences of the player, but not always consistently and in specific terms. As games, and video/mobile games in particular become normalized, this gap will become problematic. Technical communicators can help fill this gap by using our existing knowledge and research on UX design and apply it to game situations and environments.

Language and Meaning

Technical communicators care a lot about language; words are at the core of our craft and as a field we have learned to incorporate visual and digital mediums to broaden our scopes of delivering documentation. Game design, however, does not formalize practices on implementing functional, or instructional, language in games. In Schell's *The Art of Game Design*, he discusses aesthetic language, which includes the story, script, and dialogue; however, he neglects functional text. In reference to game tutorials and manuals he states, "The text that goes in these is super important—if players cannot understand your game, how can they enjoy it?" (Schell 431). This statement, while seemingly in line with technical communication theory, is now outdated with current game tutorial and manual practices. Games do not ship with manuals in the plastic casing anymore—most of the time, the tutorials are presented in game[1]. Additionally, if the text was so important, why does not Schell dedicate any of his book to describing how to write functional text?

In another fundamental game design text, *Rules of Play*, Salen and Zimmerman discuss information as theory systems and games as systems of information, but not functional text

[1] Separately printed game guides are not part of this argument since they have to be bought separately from the game itself. I am specifically talking about the little booklets that used to come with the game and showed player the controls as well as provide an explanation of the story; now games typically come with promotions or extra content codes (deWinter 73).

specifically within these contexts. Information theory states that meaning is irrelevant and that information measures uncertainty; "information relates not so much to what *you do say*, as to what you *could say* (193). In this uncertainty, information is the measure of the player's freedom of choice (194). In games, players make decisions constantly based on what they know and what they do not know. This can be as simple as deciding whether or not to find more ammunition based on how much ammo players have left and the fact that player may or may not know where to find an ammunition cache, or choosing to side with one faction over another in a role-playing game (RPG) based on the player's impressions and personal feelings towards one group, despite not knowing if it was the "correct" choice. Information theory in games is about making decisions based on the combined knowledge of what the player does and does not know. Technical communicators can benefit from this view when examining how users search and browse for information. Users have a task they want to accomplish, but may not know how to find it. As technical communicators, we strive to fill that knowledge gap by providing structures that get users the information they need quickly while supporting self-exploration and self-learning.

Examining games as systems of information reveals how games communicate different types of information to players. There are perfect and imperfect forms of information. In perfect information systems, the player has complete knowledge about the game and the possible outcomes and moves, such as in chess (201). An imperfect system is when information is hidden to a player, such as in card games where players cannot see each other's hands (201). According to Pearce there are four typologies within perfect and imperfect structures: information is known to all players; information is known only to the player; information is known only to the game;

and information is randomly generated. In a Collectible Card Game (CCG) like *Hearthstone*, this amounts to:

- **Information is known to all players:** The player who goes second has the card called the Coin, which give the player an extra mana crystal for free.
- **Information is known only to the player:** What cards are in my hand and in my deck.
- **Information is known to the game only:** Which cards are drawn from each deck and in what order.
- **Information is randomly generated:** Cards that have random effects, such as Yogg-Saron who casts one random spell for every spell I previously played.

In technical communication, information is always imperfect. There is no way to train users on all aspects of the product immediately, which is why we provide online help or product manuals. Over time, some users may learn a lot of about the product, including how to troubleshoot issues, and these users become SMEs. Still, it can be said that information is imperfect because of edge cases where engineering support is required, such as an unexpected issue with a server or database which requires users to reach out to technical support; however, users mastering their products can be considered a form of perfect information—they know all the features and how to generally fix the product when an issue arises so they can continue to use the product.

Despite describing games as experiences and discussing how information works within games, this still leaves the question of how language is employed in game development. As of now, I do not think this can be answered from a game design perspective, simply because most text comes in the form of dialogue or story driven material—it is not something that designers or

developers have to consider because there are writers on the team for that purpose. This is a gap that technical communicators are well suited to fill.

Game designers can implement effective content design based on existing technical communication theory. Approaching content planning through adaptive content allows designers the flexibility to treat Content as a Service (CaaS). In this view, content can easily be published to console and PC, or phones and tablets—the content fits on all form factors. Additionally, a content strategy allows designers to align their content with their game's goals (Redish 37). In game design, Schell dedicates an entire chapter to writing game design document, which is similar to a requirements document. When examining text specifically, "There is no 'how to write for mobile.' There is only good writing. Period" (McGrane 95). For mobile, designers need to focus on the bare essentials, especially since mechanics and interactions can also be conveyed through imagery (amination, art, icons, etc.). Ginny Redish describes textual interactions as conversations, and advises to "give people only what *they* need" (126) and to cut down textual content as much as possible: "For mobile web and app, let go of words. Keep only the content that you really need. Present that content in short pieces, lists, and visuals with a little space around each piece" (57). Redish describes focusing on the essentials only, especially in the small space a phone provides. Game designers can question how much explanation they provide—does the player really need a description of the settings menu, or can the player figure out the screen based on previous experience and expectations? Does the player need information about the game mechanics or is the mechanic simple enough to pick up with minimal instruction? Knowing how much or how little textual content is necessary can dramatically change the player's experience.

Values and Ethics

Values and ethics are important to both technical communication and game design because, they provide a reflection on the designers' values. In *Values at Play in Digital Games*, Flanagan and Nissenbaum describe values as "properties of things and states of affair that we care about and strive to attain. They are similar to goals, purposes, and ends, but usually they possess a higher degree of gravitas and permanence, and they tend to be more abstract and general" (5). Flanagan and Nissenbaum specifically examine ethical and political values because these values contribute to our moral selves and how we treat each other (6). Ethical values include kindness, honesty, generosity, and integrity, and political values "define relationships between societies…political values are 'arrangements of power and authority'" (6). The authors assert that, in general, we as people hold biases towards a respect for human rights, rule of law, individual freedom, justice, and basic equality (7). Technical communication also reviews and considers the politics around products and technology, such as Selfe and Selfe's "The Politics of the Interface" discussing how computers are representations of modern capitalism and Western patriarchal values, which present barriers for people in lower socioeconomic classes and non-English speakers. Like Flanagan and Nissenbaum, Selfe and Selfe argue that "we have to educate them [students] to be technology critics as well as technology users" (432).

Flanagan and Nissenbaum encourage criticism and higher level thinking about how values and biases manifest themselves in games. Because games are a hybrid of art and technology, these are the two lenses values are viewed through. The artistic lens examines storylines, plot, game goals, rules, and other constructs around art and gameplay in similar ways that literature, music, art, and films are discussed. Examining technological constructs relates to the neutrality of technology and the technological systems that support games, such as code,

game engines, mechanics, and hardware (9). Technical communicators also examine the neutrality of technology, such as Dombrowski's "Can Ethics be Technologized? Lessons from Challenger, Philosophy, and Rhetoric." In relation to the Challenger crash, he discusses the technologizing of ethics as the process in which impersonal procedures are substituted for personal responsibility; processes, procedures, and machines are not able to construct and make arguments as to why something is problematic. Ethics is an area of human conduct, and that "We should not expect such technologies to substitute for personal judgement and responsibility" (146).

The cultural values and ethics of games are assessed through players, and there are four sources for examining player expectations in games: key actors, functional descriptions, societal input, and technical constraints. Key actors focuses on the demands of meeting player expectations through the gameplay, storytelling, and mechanics. Functional descriptions are written guides of the values the design team wants to express. Not all descriptions may incorporate values, but they focus on the general technological design, such as how information is conveyed to the player and how player privacy information is handled. Societal input is the cultural and political influence that affects the designers, and technical constraints relates to the choices made during development based on the development process and issues that appeared during development.

Technical communicators are similarly affected by these four sources. As user advocates, technical communicators ideally focus on key players who use their products and this drives the functional description and goals for the product. Societal input and technological constraints are where technical communicators see grey ethical areas. Ultimately, business goals and decisions drive products and conflicts can arise within a company based on differences in these goals. For

example, at my work the marketing and sales wanted to advertise and sell a small side product that was not approved or managed by engineering. As part of engineering, but cross-functionally reliant on marketing and sales decisions, this put me in a conundrum as to whether or not I should write the product manuals. I had many ethical reservations about associating myself with the product, and I did not want to be legally liable for anything that went wrong. However, my supervisor assured me that I would be protected and that if sales and marketing were pushing the product then we would not be stepping out of line for providing document support. I felt that technically I ethically could not support the system, but socially the product filled a niche market that the sales and marketing departments recognized.

As mediums of entertainment, games project certain values and ethics that reflect on the designers and the game's intentions. Technical communicators are able to relate this to business-driven decisions, the ethics and values of those decisions, and how those actions are implemented.

In this chapter I provided an overview of how game design uses cognitive learning theory to inform game designers on how players learn in games, and how technical communication can benefit from examining these theories. I also discussed UCD in both game studies and technical communication, and I introduced the concept of playability. Then I discussed language in games, how information are systems within games, and that there is a gap in this area in game design texts technical communication is well suited to fill. Lastly, I briefly discussed values and ethics in games. Much can be gained from game studies theory in technical communication and vice versa.

CHAPTER 4: APPLICATION

Understanding what technical communicators have to gain from mobile games are best shown through examination of actual games. Using Welinske's mobile UA "Four C's" as a heuristic provides direct insight into how technical communication can fit into the mobile sphere. Additionally, through the focus on application, technical communicators can begin to relate the game studies and design theories to their own practices and even improve upon areas where games studies are lacking.

Clash of Clans (CoC) is a defense strategy game where one builds a village with defenses, raise troops, and attack enemy villages. Enemy villages are either AI (computer) generated through the single-player mode, or players can attack other player villages independently or with the clan. Clans are groups of players that band together to form social bonds and assist each other in gameplay, and the clan can group together to attack other clans and gain rewards. *Hearthstone* (HS) is a Collectible Card Game (CCG) where players collect cards, build decks, and pit their decks against other players. The game is primarily Player versus Player (PvP), except for the Adventure card expansions, which are single player story modes where the player battles against the AI to earn new cards. Players have friends lists where they can spectate and watch friends play, as well as challenge and battle friends. Both of these games have complex interactions and require skill in order to be successful, which makes them good candidates for examination in this chapter. Both CoC and HS are effective at deploying effective mobile UA and UI strategies to engage players by leveraging text and visuals for engagement, UA, and action cues.

Contextual

Contextual UA is information provided to the user through the workflow. On mobile, workflows are ideally intuitive and the general workflow should require no assistance. Thus, tutorials are the best application for the Contextual idea. The user's first experience with an app is important and as Clark describes about the first screen a user sees, "Think of this specialized addition as a *welcome mat*, a layer you roll out to make your app's first screen more inviting and helpful" (228). While using instructions in apps is debated, both Welinske and Clark agree that for first-time usage specific instructions to accommodate the user to the app is helpful and necessary for keeping users engaged in the app.

The two predominant methods for providing first-time assistance are feature tours and overlays. Feature tours are panels that the user swipes through to read about the core features of the app and how to use them. Typically there are dot breadcrumbs to indicate what panel the user is on, which allows the user to swipe to rotate through the panels easily. Best practices with feature tours are to limit the tour to 3-4 panels, allow users to skip the tour or leave at any time, use breadcrumbs to indicate progress, and let users know they can access the tour again later at any time (Welinske 74). The downside of a feature tour is that it delays the user's interaction with the app and does not provide a way for the user to interact with the app or see the features in-app while they are being explained. This can be a detractor for some apps, but may better suit complex apps with various features. Overlays are translucent layers that highlight key features and functions of an app while allowing the main UI to display underneath. Overlays generally have minimal text and static images, which makes them easy to implement. Additionally, scribble-style fonts are popular in overlays because they are easily differentiated between UI text and the overlay instructions while giving the user a casual, friendly tone. A downside with

overlays is that they need to be triggered on or off by the user which pulls away from an organic experience; however, overlays provide quick, easy, and efficient first-time instructions which balances out the toggling on and off. Best practices with overlays are using brief instructions, allowing the user to close out of the overlay and toggle it on and off, and optimizing text so it contrasts with the UI, is visible but not overwhelming, and coordinating text and images.

In video games, there are four types of tutorials: tutorial levels, integrated stepped tutorials, integrated narrative tutorials, and adaptive messaging (deWinter 73-74). Tutorial levels are separate levels players enter before the main game to teach the player about the game's mechanics. Integrated stepped tutorials provide "just-in-time" instructions while the player is integrated into main gameplay. The player goes through the opening narrative but popup cues and visuals appear to instruct the player on what to do. Integrated narrative tutorials weave the narrative and basic game mechanics to create a diagetic game-space. Adaptive messaging are cues that appear to assist the player when the player needs them. deWinter notes that this is different than normal popups and cues during a tutorial process—experienced players may never see certain adaptive messages because they are able to transfer preexisting knowledge to the game they are playing. Less experienced players will see adaptive messaging to assist them when they struggle to meet the tutorial objective. In mobile games, players will commonly experience a mix of integrated stepped tutorials and adaptive messaging.

Both of the games presented here use a combination of UA and game tutorial methods to create effective new player experiences. Both HS and CoC use a combination of feature tours and overlays to create effective in-game tutorials.

Clash of Clans Tutorial

Clash of Clans uses what I would call "guided overlay" UA, where first time instructions are provided through the overlay technique, but actions must be executed in order to move onto the next part of the tutorial. The UA is presented through the integrated stepped tutorial system, where a combination of textual instructions, presented by the Village Girl (she does not have an official name), and large, thick yellow arrows appear for anywhere the player is supposed to tap. While the tutorial is guided and some actions are prevented until the tutorial is complete, the player can easily access the game settings and move around the map at any time.

The game opens with the Village Girl welcoming players to their village. Village Girl's avatar is on the left corner of the screen with a text bubble to the right of her head. Interestingly, she covers a sizeable part of the screen, since she is not translucent, but she does not cover areas significant to the tutorial. Village Girl guides players through the tutorial while throwing the player right into the action from the beginning. Immediately after the welcome, goblins attack and Village Girl directs players to the Shop in the bottom right corner, which is marked by a large yellow arrow. The arrow directs players to a cannon and after purchasing and placing the cannon, Village Girl informs players that they can spend gems, the special currency players purchase with real money, to complete building the cannon immediately. If players do not want to spend the gems, the buildings complete in less than 10 seconds during the tutorial, so waiting does not pose significant problems. Once the cannon is complete, players can launch the defense. From there, Village Girl guides players through attacking the goblin village by accessing the Single Player attack mode, building up resources in the village, building barracks to train fighters, entering a name to the game, upgrading the town hall, and lastly, showing players where they can access their profile and list of achievements.

Throughout the tutorial, Village Girl is on the screen instructing players as if they really are a Village Chief, but she is never obtrusive despite her noticeable size. One excellent example of this is when players are upgrading the Town Hall. Village Girl tells players to upgrade the building and you can see in Figure 1 below that her text box does cover part of the Town Hall. However, because the arrow is extremely noticeable, players are easily able to see and tap on the Town Hall.

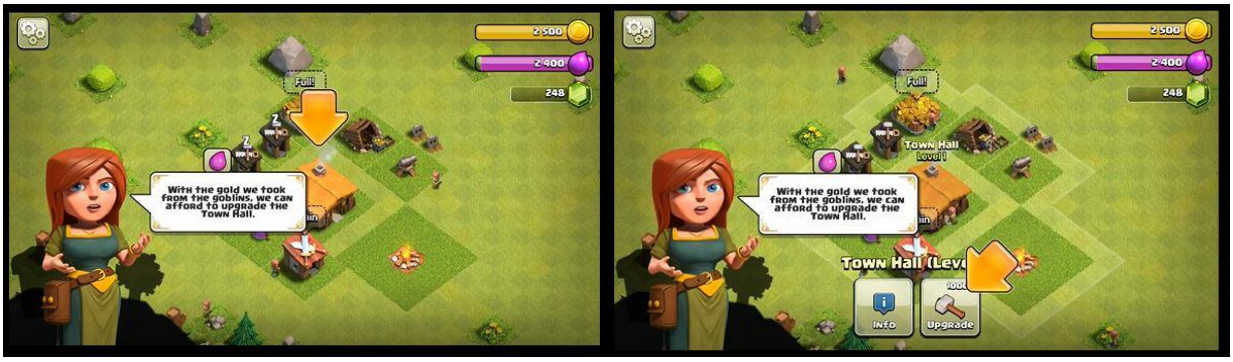

Figure 1: Updating the Town Hall
Source: Clash of Clans, Supercell

In this short tutorial, Village Girl provides players with the core mechanics of the game:

1. Attacks other enemy villages.
2. Defend the village against enemy attacks.
3. Use resources in the village to build up an army and upgrade buildings and defenses.

After these core mechanics are established, Village Girl leaves players to their own devices, allowing players to explore and get an army ready to attack another village. The CoC tutorial blends a mix of instructions and images to provide a streamlined new player experience. Additionally, with the use of Village Girl as the instructor, the player experiences her surprise at goblin attacks and satisfaction of victory, adding a fun and engaging role playing experience.

Overall, the tutorial, while short, is very effective in introducing the player to the core mechanics of the game while engaging them enough to keep playing once the tutorial concludes. As someone new to CoC, I found the game easy to pick up and far more entertaining than other village defense games I tried.

Hearthstone Tutorial

The *Hearthstone* (HS) tutorial deploys a standard game tutorial level that is influenced by the feature tour framework. Players are locked into the tutorial and must complete the tutorial before accessing the rest of the game's features, however this only occurs the first time players log into the server. While this can seem frustrating, HS does an excellent job of creating a loose narrative structure to keep players invested while they learn new mechanics. Through the use of the Innkeeper, HS combines tutorial level and integrated stepped tutorial methods, enhanced by adaptive messaging to create an engaging new player experience.

HS opens with players tapping a card pack and in an exuberant animation, the cards and the mage hero portrait, Jaina, explode out of the pack. The first match immediately begins at the Innkeeper acts as the MC of the event, declaring Hogger as Jaina's challenger. From there, the game walks players through the tutorial called "The Journey Begins," and introduces players slowly to each of the components of the game. During each match, there are three ways the game instructs the player through the integrated steeped tutorial. First, there are popups that provide traditional help instructions with small arrows pointing to the subject—for example, a small popup with arrows pointing at Jaina says, "If you run out of health, you lose" (*Hearthstone*). The second way consists of visual cues, such as arrows and glowing (highlighting) areas. For example, the first time a minion is placed, the player's side of the board highlights in green to indicate the placement area. The third way is from dialogue between Jaina and the opposing

hero. Jaina gives verbal cues, such as “I need some minions to fight for me” (*Hearthstone)* as players draw a minion card. Then, arrows provide visual directions for placing the minion. All three of these methods come together to provide a guided experience for the player while keeping them in control of the actions, which keeps the player engaged in the mechanics, as well as enjoying the banter between the heroes.

A good example of the integrated stepped method is when the game teaches players how to “trade” or destroy opponent minions, shown in Figure 2.

Figure 2: Tutorial Instructions and Cues for Teaching How to Trade Minions
Source: *Hearthstone,* Blizzard Entertainment

Jaina says, “I’ve got you right where I want you” while a popup states “Minions must wait a turn to attack.” Then the second minion glows green, indicating it can attack, and an arrow points towards the opposing minion with a popup “This one was played last turn.” From these combinations, it is clear to the player that:

1. **Razorfen Raptor** cannot attack because the card was just played.
2. **Murloc Raider** can attack because the card was played last turn.

3. From Jaina's dialogue and the red arrow, **Murloc Raider** should kill the opponent's minion.

Through these first three techniques, the game mechanics are easy to pick up and grasp.

The game also instructs players through the formalized representation of the tutorial level progress, shown through "The Journey Begins" progress screen. The progress screen resembles the structure of a feature tour through the large instructional board and the circular icons indicating players' progress. After each battle, a new instructional board appears, reminding the player about a core concept. These concepts include minion health and attack, how to trade minions, how to use mana, Taunt minions, and the Hero Power. These screens are only available in the tutorial, but allow the player to digest the information before launching the next match, as shown below in Figure 3.

Figure 3: Hero Power Instructional Screen
Source: *Hearthstone,* Blizzard Entertainment

Overall, the HS tutorial takes its time in introducing the player to the game while making the experience memorable and engaging through immersive gameplay and entertaining banter. Interestingly, when I first started HS over a year ago, this tutorial experience did not exist and I had a hard time grasping the concept of trading minions—I thought that since I was attacking on

my turn, my minions should not get hurt. It took some experience and help from other players to really grasp the game. Going through this tutorial was an interesting and enjoyable experience; the tutorial does an excellent job of explaining these complex mechanics in a simple manner. If I played through this tutorial when I first started, I know that I would have grasped the concepts far more quickly than I initially did.

Both CoC and HS provide informative and effective tutorial and contextual experiences through the implementation of the guided overlay, which uses traditional instructions, visuals, realized through an integrated stepped tutorial to guide, teach, and engage the player.

Conforming

Conforming UA examines the overall theme, palette, and interactions of the app and how the user gains information from following expected workflows (Welinske 38-39). This involves the UI layout, navigation, and organization. Typical UI navigation structures are flat pages, the tab bar, and tree structures. Flat pages are usually graphic intensive that do not require scrolling and players can swipe though the pages like a deck of cards (Clark 100). The tab bar is a set of buttons at the bottom of the screen in a row to navigate the app's main functions, and a tree structure is a hierarchy of content in an organized structure (100). On Android apps, the "hamburger icon" is also used to indicate a slide out navigation menu. Clark also discusses immersive apps that involve highly graphical custom layouts specifically designed for the app—he categorizes games as following this model, but there are trends and consistent designs within game UI as well.

Game UI and navigation are split into two components. The first is the Heads-Up-Display (HUD), which is a superimposed UI on the main action screen to provide information on the current situation, and generally does not relate to the part of the screen that it is superimposed on

(Caroux and Ibister 65). The second is the game menu, typically accessed by pressing **Start** or another button that allows the player to access more complex information. In RPGs, this typically includes character equipment, skills, options/settings, and saving the game. Combined, both of these components create the overall game UI.

There are four core design types of game UI and navigation: diegetic, non-diegetic, spatial, and meta. Diegetic UIs are part of the physical space on the screen while being a component of the game itself (Scoiastici and Noite 150). A good example of this is the *Borderlands 2* HUD. The robot CL4P-TP, known as Claptrap, gives players an Echo communicator, which displays player's health, ammunition count, experience bar, a mini map, and skill ability bar. The Echo communicator is an in-game device that is referenced frequently by NPCs (non-player characters) while providing the information players need to technically play the game. A non-diegetic UI "is rendered outside of the game world and it is only available to the player, not to his character" (151). This, in theory, would be the Borderlands 2 HUD if Claptrap had not given players the Echo, and the Echo was not part of the NPC's knowledge of existence. Other tactical shooters, simulations, and RPGs tend to have this UI model. Spatial models include navigation elements that do not exist to the game characters but appear to the player in the game. An example is in *Uncharted 4*, where if players take too long to complete the next climbing objective, an image of the D-pad appears, reminding players that if they press "up" they can get a hint for how to solve the puzzle. Nathan Drake cannot see this and it does not exist within his world, but players are able to recognize the cue. The last model is meta which means that the UI exists within the game world, but not in the player's world, such as seeing Samus' face reflection in her helmet in *Metroid Prime* (154). This creates an immersive and consistent experience, allowing the player to further assume the identity of the character.

CoC and HS use non-diegetic HUDs, as do many mobile games. The HUD provides core information and access to game features but do not exist within either game's "story[2]"—the HUD is for me, as the player, to utilize in order to successfully navigate the game. Both games have a main screen with access to core features within the game, access to the game settings, and currency indicators. The four core UI elements to most mobile games are status, gameplay, purchasing, and social. Status refers to in-game resources such as gold. Gameplay refers to buttons or interactions that instigate gameplay. Purchases are in-game and out-of-game purchases, and Social includes all social interactions.

In HS, the elements are clearly visible on the main screen, shown in Figure 4. Status elements include the amount of gold players have, as well as a player profile detailing players current Play rank and longest Arena win, which is accessible from **Quests**. Gameplay includes all four game modes **Play**, **Solo Adventures**, **The Arena**, and **Tavern Brawl**, and also includes **My Collection** where players can access their card collections, collectible card backs, and alternate hero portraits. Purchases are made through the **Shop** where cards and hero portraits can be purchased. Players can buy card packs with in-game gold or use real money. Players can also spend real money to purchase access to the Arena, but the in-game gold purchase price is fair so players do not need to spend real money if they play enough. The small body icon in the top left is the Blizzard friends list, representing the Social aspect of HS. This list connects to all Blizzard games and even displays icons representing which game the player is in—WoW, *Overwatch*, *Diablo III*, etc.

[2] There are mobile games that structure their gameplay around a narrative, such as the recently published *Fire Emblem Heroes*, but neither CoC and HS have traditional narrative structures or plot-driven stories that are realized through gameplay. It could be argued either way that CoC and HS contain stories acted out through player, such as pretending to be in a *World of Warcraft* inn playing HS with other WoW players, but exploring narrative and story in games is a separate discussion from what I am trying to accomplish here.

Figure 4: HS Main Screen
Source: *Hearthstone*, Blizzard Entertainment

In CoC, shown in Figure 5, the main screen has far more buttons and options for the player to tap, but they all relate to the four core UI elements. CoC's Status indicators are the currency and resources in the top right, and the experience bar, personal trophies, and notifications in the top left. The gameplay elements are split into two sections. First is the village which allows players to build up their army and get resources that generate over real time by tapping on any of the buildings in the main screen. The second are the buttons in the bottom left which allow players to attack during Clan Wars, manage the army, and go into the **Attack!** game mode, where attack AI villages or player villages. Purchases for the game are in the bottom right and players can also purchase gems with real money from the **Shop** menu. The social aspects of the game are though the Clans. Players can tap on their clan tower in the main screen, or use the arrow in the middle-left side of the screen to pull out the Clan chat. The swords crossed icon just below the pullout arrow indicates a Clan War, so players are able to participate and attack other villages on behalf of the clan.

Figure 5: Example CoC Village
Source: Clash of Clans, Supercell

In both games, the core elements are displayed clearly in front of the player where they are easy to access. Technical communicators can learn from this UI design by looking at the goals of their own apps and determining what core elements are needed for the app's goals. The goals of these mobile games are similar in that core mechanics which consumes resources, use currency to boost gameplay, and allows for interacts with other players. Within these core elements, HS and CoC implement them in different ways to suit their game's needs. One of CoC's main core mechanic is through Clans and Clan Wars—social is critical to gameplay success and is emphasized through the many options for social interaction. HS, however, only uses the Battle.net friends list as a way to see who is playing other Blizzard games—social interaction is not critical to HS gameplay.

Much like the designers of these games, technical communicators can adapt their app's needs to their user needs and goals. Content planning and considering the business goals of the app and how those goals align with user's needs are critical in deciding what navigation system to use. If the app is focused on goal that can easily be chunked, a flat page system may be better over a tab menu layout. As part of my engineering department's Hack-a-thon, I am tasked with

designing the UI for the mobile app my team wants to develop. We want to allow our users, pharmacy technicians, to fill cassettes with medications without being tied to our PC software system. Our app requirements are:

1. Scan a bar code of the cassette they want to fill with medications.
2. Ability to adjust the pill quantity in the scanned cassette.
3. Notify users when cassettes on the machine are running low and need to be refilled.

Because of the simplicity of our goals, I am proposing we use a flat page system. Our users will be walking around, gathering medications, and will need the app to be small and simple in scope. I propose the landing page be the bar code scanner and users can swipe right to access cassette refill status. After scanning a bar code, a contextual page appears with that cassette's information. The user can then swipe right to go back to the "home" page with the scanner and swipe left to go back to the information screen. Much like the game core UI elements described above, I will need to place the settings option, as well as badge notification indicators for cassette refills on the home page to make sure that the core information the user needs is readily accessible. Of course, this is still being discussed with my Hack-a-thon team, but it also demonstrates why I picked a specific navigation structure and how it meets my user's goals. Technical communicators can turn to mobile games for ideas on how to display the core information necessary for their mobile applications within existing technical communication frameworks for mobile UI design.

Conditional

Conditional UA is when the app anticipates user needs and "knows" that certain features need explaining, or that the app needs to draw the user's attention to the feature. In mobile games this can be for announcing new events, or more complex features experienced for the first time. The UI communicates these changes and information through coach marks. Coach marks, also referred to as callouts, popups, or hints, provide brief help in a popup object. They are easy to customize as well as to view and dismiss (Welinske 82). HS and CoC apply these in very different, but effective ways.

In HS, coach marks are used inside and outside gameplay. Inside a match, messages appear if players try to perform an action that is not allowed. For example, a message appears if players try to attack twice with a minion that does not have the keyword **Windfury**, which is the only instance where a minion can attack twice in the same turn. Another example is trying to use the Hero Power more than once per turn (unless players use a card that allows this action).

Visual coach marks are an integral and main part of how HS communicates information in gameplay. When the game recognizes that players can no longer complete any actions in a turn, the **End Turn** button glows green and the audio cue "Job's Done!" plays. Another example of this for cards that are dependent on certain conditions to activate their affects. These cards glow yellow when conditions are met, indicating to the player that playing the card will be advantageous to play. In Figure 6 below, I show **Drakonid Crusher**, whose ability activates once the opponent's health is below 15. In this particular figure, you can also see the explanation of the keyword **Battlecry** shows, as well as the glow of the mana crystals indicating how much mana the card costs. Combined, all of these visual cues help the player make decisions and comprehend the information during the game both textually and visually.

Figure 6: Example of Visual Coach Marks in HS
Source: *Hearthstone*, Blizzard Entertainment

Outside of gameplay, HS uses popup notifications to advertise new expansions and display the daily quests upon initial log in. There are also popups after each season ends, showing players how far they went in ranked mode, how many stars they earned as a new season boost, and the rewards earned for reaching that particular rank. Overall, HS implements text and visual cues effectively to communicate information during gameplay and advertise new information to the player.

CoC heavily relies on notification systems to communicate new information to players. CoC predominantly uses badges to communicate there are new items available and how many. For example, in Figure 7a small **1** displays next to my level indicating I earned new achievement rewards, a 3 displays next to the notification envelope showing I have unread system messages, and the 43 indicates I have 43 unread Clan chat messages. The badge notifications are also used for new shop purchases, whether new items are available or if players can purchase more of the same item.

Figure 7: Badge Notifications
Source: *Clash of Clans*, Supercell

Like HS, CoC also has popups that appear when players log in. Typically, this occurs when other players have attacked the village. Village Girl appears dismayed and provides a synopsis of who attacked and how many trophy points players lost. After closing out of the popup, players can access detailed records of the attacks from the notifications, such as if the enemy player won or lost the attack.

Technical communicators can learn from both HS and CoC in how each of these games use variations of coach marks to effectively communicate information while staying in-line with the game's themes. HS predominantly uses glowing/highlight mechanics to indicate potential moves, as well as instructional text when the player tries to do something outside the rules. This is in line with HS's philosophy of learning mechanics through gameplay. CoC uses badges to indicate new information shop items and popups with instructions for new features, which support's the game's ethos of being fun, immersive in the village environment, and player friendly—Village Girl acts as a tour guide within the village to instruct players on gameplay mechanics. Both of these tailor their coach marks to fit within the theme of their games and how they want to communicate with players.

Concise

Concise relates to functional language, such as word choice and tailoring phrases and sentences for specific situations (Welinske 39). On mobile, it is especially important to keep the small screen size in mind and limit the amount of words. There are two types of content: general text in the app and help in the app.

Conversing with Users through Text

When writing concise functional text, both technical communicators and game designers can look at core usability experts Ginny Redish and Steve Krug. Krug's Third Law of Usability is "Get rid of half the words on each page, then get rid of what's left" (49). In order to accomplish these cuts, he suggests removing "happy talk," or introductory information focusing on how great the product is, and eliminating instructions. The instructions he refers to are ones that go into detail describing the procedure in paragraph form, such as explaining each field in a form. With these combined, only the information necessary is left for the user. On digital platforms, web and mobile, this is an effective method for getting the user information they need quickly and efficiently.

But knowing what content to eliminate is difficult to discern. Here, we can look to Redish as she describes writing for users as a conversation that focuses on key messages. She provides seven guidelines for conversing with users: "Give people what *they* need; Cut! Cut! Cut! And Cut again!; Think 'bite, snack, meal.'; Start with your key message; Layer information; Break down walls of words; and Plan to share and engage through social media" (126). To compliment these guidelines, Redish describes how to write conversationally using personal pronouns to talk directly to users ("I", "we", "you"), which supports the use of active voice. Active voice places the user as the actor which allows users to process information quickly and efficiently.

All of these concepts apply effectively to the mobile environment, and especially games. In the other figures shown in this chapter you can see examples of HS' concise instructional text during the tutorial, but one place where concise writing has to be applied consistently is for the gameplay mode **Tavern Brawl**, shown in Figure 8. **Tavern Brawl** is a game mode that breaks the standard rules for HS and creates new ones each week. Because the mode breaks the rules, the new rules have to be described to the player. On the main Tavern Brawl screen, made to resemble a chalk board, 1-2 sentence instructions display. Sometimes, this is enough to explain the Brawl and other times, the game provides conditional information during gameplay. In Figure 8 below, a recent brawl was to change the cost of spells from mana to health— "All your spells will cost health instead of mana!" Then, in game, each spell card displayed a glowing blood drop instead of the mana crystal. The instructional text provides players with the information needed to build a deck, but the visual effect of changing the mana icon to the blood icon further emphasizes the change. This allows players to easily comprehend the change while adjusting to the new playstyle in game.

Figure 8: Blood Magic Tavern Brawl
Source: *Hearthstone*, Blizzard Entertainment

Aesthetic, conversational, text in CoC is realized through the Village Girl. I detail player interactions with Village Girl in the other sections above, but what makes Village Girl effective is her ability to combine aesthetic and functional text to provide concise instructions that flow as a conversation between players and the game. This allows the gameplay to easily processed, understood, and applied in an engaging manner.

Mobile Help

Where CoC really shines from a Concise view is through the game's embedded help. Embedded help are helpful words or phrases that are directly integrated into the UI rather than being in a separate window (Welinske 94). Embedded help increases the visibility of information while eliminating the need to manipulate the UI to provide help in every piece of the app (94). In CoC, embedded help is implemented all throughout the app and easily accessible through the information icon. An excellent example of this is when browsing the **Shop**, shown in Figure 9. Each shop item has an information icon in the upper right corner that allows players to read about the function of each item. In turn, this allows new players to refresh their memories if they cannot remember all the details from the tutorial, and also allows for wiser spending of gold and resources.

Figure 9: Builder's Hut Help
Source: *Clash of Clans*, Supercell

Another type of help CoC employs is guided help. Guided help provides "interactive assistance that leads the user through manipulation of the app to achieve a specific goal" (Welinske 87). Guided help appears the first time players enter a Clan War. Village Girl provides a detailed explanation for the new gameplay interaction spanning a total of 15 screens. The first four screen are popup messages with a lot of instructional text, but the rest are "dialogue" bubbles similar to the tutorial.

In contrast to CoC, which is full of information and textual content, HS does not use embedded help or provide information resources on gameplay or mechanics. Additionally, players cannot play through or access the tutorial again. The only information icon seen in-game is in the store, where a popup allows players to access the HS forums outside the app. While this can be seen as a detriment to the game, the lack of embedded help was a deliberate design choice. Online Collectible Card Games (CCGs) are designed to educate players based on gameplay experience and through card text, which I will discuss in the next section in more detail. In HS, there are occasional popups and coach marks to remind players of the rules, but most of the game is learned by actually playing and repeatedly queuing into matches. This allows players to master their decks while learning their opponents decks and other card interactions and mechanics. While HS players can access official community forums or Reddit to ask questions, the focus on player experience and practice make in-game help unnecessary to understanding gameplay.

Word Choice and Language

While both games are exemplary examples of the Concise heuristic, there is room for improvement on their word choice and language. As mentioned above, Redish and Krug advocate for cutting language down as much as possible, which makes word choice difficult; as

the space becomes smaller, each word counts more. In CoC, word choice and language are well cultivated and it is clear Supercell has a strong grasp of these necessary writing skills. Most text is in active voice, and text explaining shop items are consistent in their construction. The description starts with a flavor sentence about the item and then another sentence describes the item's purpose. While the flavor text isn't necessary, such as eliminating "Nothing gets done around here without builders!", the text adds to the theme of the game despite being a non-diegetic action. The one area I find lacking is the initial explanation of Clan Wars. As shown in Figure 10, a feature tour appears with Village Girl explaining the process of preparing for a Clan War, but the paragraph text is easily overlooked and I ended up skipping the tour entirely. I found the guided overlay tour that followed the text heavy paragraphs far more engaging and informative.

Figure 10: Clan War Feature Tour screen
Source: *Clash of Clans*, Supercell

In HS, the coach mark language is concise and in active voice, but card text inconsistency is a problem. As described above, as a CCG, HS instructs players on core mechanics through gameplay experience and practice, as well as the card text, which provides specific instructions

on a single card's mechanic. Individual cards have different mechanics which creates synergies between multiple cards and, in turn, supports different deck archetypes and styles. For example, **Flamewalker** synergizes well with Tempo Mage, but is not very effective in Freeze Mage even though it is a Mage-only card. Card mechanics and interactions are what make CCGs interesting, creative, and fun.

Many HS players, content creators, and professionals, most notably Disguised Toast, habitually point out inconsistencies in card text as problematic for understanding gameplay interactions[3]. For example, a notable scenario is between the two Druid cards, **Druid of the Claw** and **Druid of the Flame**, shown in Figure 11below.

Figure 11: Druid of the Claw (R) and Druid of the Flame (L)
Source: *Hearthstone* Wiki

Both cards behave the same manner. The Druid has the ability to choose how he wants to change the card. In the case of **Druid of the Claw,** the card becomes a **Cat** with **Charge** or a **Bear** with 4 attack, 6 health, and **Taunt**. But looking at the card text between the two, **Druid of**

[3] See Disguised Toast's YouTube video on Druid of the Claw, "Druid of the Claw - Will it ever be fixed?" (https://www.youtube.com/watch?v=uSeLPyHM7xU&index=8&list=PLwYRiq-Ob29vearyu_uHV90Mw_2tC1fjT)

the Flame is far more descriptive and precise about the mechanic: “Transform into a 5/2 minion; or a 2/5 minion.” Improper semi-colon use aside, the key here is the word “transform.” The base minion *becomes* a different minion. This is crucial when opponents try to **Silence** either of these cards. If Bear-form **Druid of the Claw** is silenced, the **Taunt** goes away, but the 4/6 stats remain. The same holds true for **Druid of the Flame** transformations. However, **Druid of the Claw’s** card text does not reflect this mechanic, and in fact, infers the opposite in which the card can be silenced back to the base form of a 4/4 (which is similar to another Druid card **Ancient of War)**. Only through repeated gameplay are the mechanics understood. For technical communicators, we are trained to know this is not effective instruction and that consistency is critical, especially when text informs technical interactions.

Despite both of these limitations, overall HS and CoC are concise in their language and word choice. CoC can improve their feature tour text by either redesigning how the information is displayed to the player or by trimming the text more. While card text inconsistencies are an issue in HS, with each release the HS development team continues to standardize and revise card text for clarity and consistency. HS does not necessarily need in-game help, especially for loyal players; however, basic explanations of the card keywords, mechanics, and rules would be beneficial for new players or players returning after a long break.

Social Interactions, Purchases, and Ethics

Despite not being part of Welinske’s 4 C’s, social interactions and purchases are integral to the mobile ecosystem. Mobile is a billion-dollar market and mobile gaming is coming close to surpassing PC game revenue. As discussed in this thesis literature review, high spenders make up less than 10% of the player base and are encouraged to spend money through perceived

emotional, cost, and social values. Social interactions keep players invested and drive purchases. According to Think Gaming, a mobile game revenue analytics group, as of December 31, 2016, CoC was the fourth for top grossing revenue in 2016, and HS landed at 125. Clearly both of these games are successful from a business perspective. With the amount of money in mobile gaming, it is important that game studios balance microtransactions with free-to-play (FTP) mechanics—as mentioned in the literature review, only 15% of players account for 50% of mobile game revenue; if the game economy is unbalanced, people will not play and the studio will not make money.

CoC uses the gems as their micro-transaction currency, and gems can be used to speed up builders and purchase extra and special items from the shop. CoC does a good job of making gems noticeable within the games, such as reminding players that they are available for purchase when all builders are being used, but the lack of gems does not severely inhibit gameplay. The tradeoff is that players have to wait for army soldiers to generate or buildings to complete, but CoC enables players to easily play without paying.

HS is also designed to allow for FTP players to accumulate cards for building decks. The simplest way to do this is by becoming an “infinite” Arena player (Infinite refers to players who average at least 7 out of 12 wins most of the time, and gain more than the 150 gold they paid to play Arena), and there are professional players who started as FTP players. The game advertises new expansions but also gives out a free card pack each week through Tavern Brawl; HS, like CoC, do not inundate the player with messages to make purchases. However, as the game evolves, prices are rising. Recently Blizzard announced price increases on the various levels of card packs and Engadget ran a story reporting that to obtain 90% of the cards available in 2017,

players need to spend $670. This article also noted that while “whales,” or high spenders, do typically account for most of the game revenue, informal polls on Reddit tracked that 32% of players (around 8,000) spent between $100-$400 in HS’s lifetime. Considering that I am in this 32%, and that I even strategize which cards to craft and try not to spend money outside of the expansion pre-orders, this is a staggering amount, especially compared to current AAA console titles priced at a level $60. While HS does a good job from a UI perspective, objectively examining the game’s costs just to be an intermediate level player and see success in HS is eye-opening and worrying.

By following Welinske’s 4 C’s of Contextual, Conforming, Conditional, and Concise, one can see how mobile games apply these techniques for mobile UI/UA. Both CoC and HS use “guided overlay tours” to provide robust tutorial experiences for new players, and provide core HUD features that are easily accessible. The games also provide extra help when necessary through coach marks, while writing this text and in-game help concisely, and balance micro-transactions and FTP content fairly well. From these examples, technical communicators can see what information is useful to their specific purposes and how they are applied effectively in different situations.

CHAPTER 5: CONCLUSION

In this thesis, I aimed to address the following questions:

- How can technical communicators leverage games and game studies to engage users to create a fun, interactive, and useful user experience?
- How can technical communicators use other digital media to enhance their own work and provide new perspectives on mobile UA and design?
- What can technical communication as a field offer to video game design?

By using Welinske's 4 C's as a heuristic, I demonstrated the application of both game design and technical communication theories for two successful free mobile games, Supercell's *Clash of Clans* and Blizzard Entertainment's *Hearthstone*. The analysis of both of these games allows technical communicators to see the benefits of exploring free mobile games when coming up with their own designs, as well as understanding the value in examining game design theories and studies.

Leveraging Games Studies for User Engagement and Experiences

There are many benefits to studying and reviewing game design methods and theories for technical communicators, especially when designing mobile applications. Technical communicators can use theories of fun and cognitive learning to further understand user behavior and employ new methods for engaging users. By understanding concepts of fun, boredom, and how our brains are engaged through learning, technical communicators can use patterns to their advantage by structuring their apps with self-exploration in mind to create a memorable and engaging experiences.

Technical communicators can also take advantage of methods in which games show and tell learning, such as the transfer theory and patterns of fun. The Transfer theory recognizes user/players' previous experiences and allows those users to explore the app at their own discretion. Putting the user in the driver seat of a workflow empowers the user, and allows them to not only master the pattern but feel accomplished and satisfied in doing so. This, in turn, becomes a positive user experience.

User-centered design and UX are very familiar fields to technical communicators and there is a lot of overlap between technical communication ideas about usability and game design's playability. Like other game design theories, playability focuses on the entertainment, as well as player's experience. Outside of games, development studios are beginning to reach out to their players and use them for testing through PTRs or listen to feedback through community management. Like technical communicators, games are also moving towards a user-centered design methodology.

Overall, game design theory is similar to software/mobile development theory and intersects at many points; however, game design theory's primary goal is the focus on the player's experience. Because technical communication also focuses on the user's experience, there is a lot of technical communicators can learn and implement from game design theory.

New Perspectives on Mobile UA Design

Through the examination of two successful, free, mobile games, technical communicators can see firsthand how Welinske's 4 C's are effectively applied to the mobile game environment. Contextual UA provides insight into how the players learn through the games' tutorials. Both games have strong tutorials that provide the player with a good foundation of core mechanics that allows them to explore other features within the game successfully. Conforming UA is the

overall theme, palette, and interactions within the app. Much like general mobile app design, mobile game design has standard navigation methods. Through the HUD navigation system, the four core UI elements of status, gameplay, purchasing, and social are easily accessible and positively impact the user's experience. Conditional UA provides the player assistance automatically for new features or more complex interactions. Both games do this in different, but effective ways that fit the ethos of their game. Lastly, Concise UA focuses on functional language and presenting this language concisely in the mobile space. HS relies on a combination of minimal text, visual coach makers, and self-exploration for players to learn new mechanics and interactions. CoC is the opposite, using embedded help throughout the game.

The primary goal of applying Welinske's 4 C's to these two mobile games is to demonstrate to technical communicators that there is value in examining mobile games. Technical communicators looking for examples of mobile UI/UA can easily look at successful free mobile games as design inspiration and case studies for well implemented mobile UA. Additionally, examining free games provides a less stressful way to perform mobile UI/UA research at no cost. Overall, there is great benefits with little risk or investment in examining successful free mobile games.

How Game Design Can Leverage Technical Communication Theories of Language and Rhetoric

Formalizing how to use functional language within game design theory is an area where technical communicators can step in and provide their expertise. While game design theory acknowledges the need for creative, and in some instances, technical writers, there are no specific instructions on how to use effective functional language and word choice in instructional or dialogue based situations, or, more importantly, how to combine the two together effectively, such as in tutorials. Technical communicators can provide great value to game designers through

our existing body of knowledge on using language to communicate effectively. In both games, the language is generally good and despite not being perfect, they are both effective in communicating their messages concisely.

Avenues for Potential Research

Situating Cognitive Leaning Theory with Technical Communication Rhetorical Theories

To understand our users, technical communication steeps itself in rhetorical theory and uses persuasion techniques to understand the contextual implications of words, visuals, and environments users inhabit. Cognitive learning theory can augment existing technical communication theories by providing empirical evidence for understanding user behavior. While UX theory does incorporate cognitive learning theory, general technical communication theory does not mention or lean on these theories. I believe there are great benefits to supporting technical communication's rhetorical theories with cognitive learning theories, in addition to beneficial cross-functional research.

Examining the Rhetorical Effectiveness of Business-related Mobile Games

An interesting intersection between technical communication and games are mobile games that are supported by a business. For example, St. Joseph's Hospital, managed by BayCare Health Systems, released a mobile game called *UnMonsters* to help children acclimate to being in the hospital. Examining this game, and similar games can have interesting rhetorical impacts on business who do not specialize in entertainment, and whether or not the game positively or negatively impacts the business in the long term.

Formalizing Functional Language and Text within Video Games

While there is an understanding of how to implement effective functional text within mobile games, as demonstrated by the samples within this thesis, there is still a lack of a

formalized discussion of functional language within game design texts. Formalizing functional language practices and methods, which technical communication is able to easily provide, would benefit newer game designers or those inexperienced with functional language to help game designers make effective choices in instructional language, text organization, and typography. Additionally, technical communicators can work with creative writers to help formalize methods and practices for combining functional and aesthetic language for various tutorial methods. This could also extend to technical communicators who are looking for creative ways to engage users in their products. Lastly, formalizing functional language within game design also affects accessibility and can ensure that game designers are keeping those with poor vision in their design plans, thus making their games available to a wider audience and more usable overall.

Closing Remarks

After conducting research and synthesizing game design theories and methods with technical communication theory, I discovered that my initial hypothesis that technical communication and mobile game design are familiar cousins was correct; there is much to be gained from the other in both fields. Technical communicators can effectively leverage game design's focus on cognitive learning theory to enhance existing rhetorical theories and knowledge. Game designers can look towards technical communication theories on language, UA, and writing methods and techniques to effectively round out game design methods. By examining the intersections of both fields, all designers can create more engaging and usable experiences.

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