



This is to certify that the
dissertation entitled

Beyond Attention-Getters:
Designing for Deep Engagement

presented by

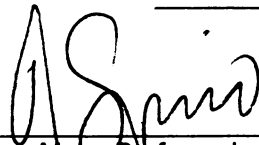
Kym Buchanan

has been accepted towards fulfillment
of the requirements for the

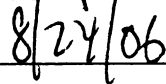
PhD

degree in

Counseling, Educational
Psychology, and Special
Education



Major Professor's Signature



Date

MSU is an Affirmative Action/Equal Opportunity Institution

LIBRARY
Michigan State
University

PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.
MAY BE RECALLED with earlier due date if requested.

| DATE DUE | DATE DUE | DATE DUE |
|----------|----------|----------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**BEYOND ATTENTION-GETTERS:
DESIGNING FOR DEEP ENGAGEMENT**

By

Kym Buchanan

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

Department of Counseling, Educational Psychology, & Special Education

2006

ABSTRACT

BEYOND ATTENTION-GETTERS:
DESIGNING FOR DEEP ENGAGEMENT

By

Kym Buchanan

Immersion can enhance the experience of playing a video game, as a player perceives the peculiarities of the new context with palpable immediacy. Immersion can also be useful for teaching, since it can lead to motivation to learn. Hence, both game designers and teachers should understand how to design for immersion.

Immersion can only occur if a player or student is receptive. Receptivity is a voluntary openness to new experiences. For different players or students, different design choices may elicit different levels of receptivity. This is particularly salient in the initial five to fifteen minutes of play: the "5-15 window." An initial failure to elicit receptivity may foreclose on immersion—a player stops playing or a student stops participating. Fortunately, as an interactive medium, a video game can adapt based on player feedback.

This study focused on designing for receptivity. The concepts were grounded in literature from game studies and education, and in the development of a specific educational game (*Ink*). A new model was developed: Actions and Identity in Games and Learning.

Two phases of empirical research were conducted. First, an online survey was administered. The survey used a series of questions to construct a profile of

a subject. Then it presented a subset of previews for *Ink*. In the Match or Mismatch experimental conditions, it presented previews that were expected to elicit high or low receptivity, respectively, based on the subject's profile. In the Random condition, the survey randomly presented previews. Finally, the survey measured receptivity in several ways. Different designs, coupled with profiling and adaptation, were expected to elicit different levels of receptivity. This inference was partially proven.

In the second empirical phase, several subjects were interviewed individually about their survey responses. The subjects also played through the 5-15 windows for several recreational video games, and discussed their receptivity. The interviews were used to write case studies, which revealed much about design choices and receptivity.

Finally, the broader conclusions and implications were explored, for game design, instructional design, and further research.

ACKNOWLEDGMENTS

This dissertation was made possible and immeasurably improved by the support and guidance of many people. I am grateful to them all, but especially: Rand Spiro, for being an extraordinary advisor, mentor, and friend; Jere Brophy, Bill Hart-Davidson, and Brian Winn, for their confidence in me, and their attitudes and wisdom as a committee; the Writing In Digital Environments (WIDE) Research Center, for believing in *Ink*; Steve Jones, for sharing his research instrument (and resending it after my computer drowned); Janet Swenson, for so many reasons, but especially for nurturing a humanistic perspective in my scholarship; David Sheridan, for being an ideal collaborator, not least because of his attitude (“if it wasn’t this, it would be something else”); Peggy, my mom, for nurturing my imagination; Bayli, my daughter, for being my motivation when all other lights had gone out; and most of all, Jodi, my wife, for all she does to make my life easier and more joyful, and for patiently repeating, “Maybe you should study games.”

TABLE OF CONTENTS

| | |
|--|-----------|
| CHAPTER 1: INTRODUCTION, CONTEXT, & BACKGROUND | 1 |
| Introduction | 1 |
| Overview | 4 |
| Conceptual Lenses | 5 |
| Context: Designing a Game for Writing Courses | 7 |
| Area of Inquiry: Immersion | 9 |
| Theories Related to Immersion | 12 |
| An Essential Precursor: Receptivity | 16 |
| The First Contact Window | 18 |
| Receptivity in Education | 24 |
| More About Receptivity in Video Games | 27 |
| Model: Actions & Identity in Games & Learning | 28 |
| Games: Simple Model | 29 |
| Learning: Simple Model | 31 |
| Games: Full Model | 34 |
| Learning: Full Model | 39 |
| Model Applied to Writing | 43 |
| Research Questions | 47 |
| Preliminary Research: Sample Games | 47 |
| Animal Crossing | 49 |
| Super Mario Sunshine | 54 |
| Resident Evil 4 (Preview) | 58 |

| | |
|--|------------|
| Beyond Good and Evil..... | 61 |
| Additional Remarks | 66 |
| CHAPTER 2: EXPERIMENTING WITH DESIGNS FOR RECEPTIVITY . | 69 |
| Populations (Survey)..... | 69 |
| Methods & Measures (Survey)..... | 71 |
| Profiling | 72 |
| Designing the Previews..... | 78 |
| Presenting the Previews..... | 80 |
| Measuring Receptivity | 83 |
| Data Analyses (Survey) | 86 |
| Profile Data: General Questions..... | 87 |
| Profile Data: Video Games | 89 |
| Profile Data: Technologies | 103 |
| Profile Data: Entertainment | 107 |
| Profile Data: Writing | 109 |
| Profile Data: Ink & Composite Scores | 112 |
| Profile Data: Correlations | 117 |
| Computing Receptivity | 119 |
| Analyses of Previews | 126 |
| Analyses of Adaptation..... | 134 |
| CHAPTER 3: CASE STUDIES OF RECEPTIVITY EXPERIENCES..... | 136 |
| Subjects (Case Studies)..... | 136 |
| Methods (Case Studies)..... | 137 |

| | |
|-----------------------------------|------------|
| Monisha | 139 |
| Ink Previews | 141 |
| Animal Crossing | 142 |
| Super Mario Sunshine | 144 |
| Resident Evil 4 | 144 |
| Beyond Good and Evil..... | 145 |
| Shun..... | 146 |
| Ink Previews | 148 |
| Animal Crossing | 150 |
| Super Mario Sunshine..... | 151 |
| Resident Evil 4 | 152 |
| Beyond Good and Evil..... | 153 |
| Eric..... | 154 |
| Ink Previews | 156 |
| Animal Crossing | 157 |
| Super Mario Sunshine | 158 |
| Resident Evil 4 | 160 |
| Beyond Good and Evil..... | 161 |
| Siera..... | 163 |
| Ink Previews | 165 |
| Animal Crossing | 167 |
| Super Mario Sunshine..... | 168 |
| Resident Evil 4 | 170 |

| | |
|---|------------|
| Beyond Good and Evil..... | 171 |
| CHAPTER 4: CONCLUSIONS & IMPLICATIONS..... | 175 |
| Discussion of the Survey..... | 175 |
| Populations..... | 175 |
| Writing & Gender..... | 177 |
| Questions & Their Modifiers..... | 179 |
| Adaptation..... | 182 |
| Discussion of the Case Studies..... | 184 |
| Talking Through Receptivity..... | 185 |
| The Games..... | 187 |
| Gaming Experience..... | 188 |
| Diversity..... | 190 |
| Individuality & Receptivity..... | 191 |
| Broader Conclusions & Implications..... | 192 |
| APPENDIX 1: SURVEY QUESTIONS..... | 198 |
| All Questions, with Any Aspect Modifiers..... | 198 |
| Only Questions with Aspect Modifiers, by Aspect..... | 215 |
| Possible Aspect Values..... | 225 |
| APPENDIX 2: INTERVIEW PROTOCOL..... | 226 |
| Start..... | 226 |
| Review Profiling Questions..... | 227 |
| Review Ink Previews..... | 227 |
| Game #1 (Animal Crossing)..... | 227 |

| | |
|---|-----|
| Game #2 (Super Mario Sunshine)..... | 229 |
| 5 Minute Break..... | 229 |
| Game #3 (Resident Evil 4) (Preview) | 229 |
| Game #4 (Beyond Good & Evil)..... | 230 |
| Wrap Up..... | 230 |
| BIBLIOGRAPHY | 232 |

LIST OF TABLES

| | |
|----------------|-----|
| Table 1 | 90 |
| Table 2 | 91 |
| Table 3 | 92 |
| Table 4 | 94 |
| Table 5 | 95 |
| Table 6 | 96 |
| Table 7 | 97 |
| Table 8 | 98 |
| Table 9 | 101 |
| Table 10 | 102 |
| Table 11 | 104 |
| Table 12 | 105 |
| Table 13 | 106 |
| Table 14 | 107 |
| Table 15 | 109 |
| Table 16 | 110 |
| Table 17 | 111 |
| Table 18 | 112 |
| Table 19 | 116 |
| Table 20 | 116 |
| Table 21 | 119 |
| Table 22 | 121 |

| | |
|----------------|-----|
| Table 23 | 122 |
| Table 24 | 123 |
| Table 25 | 125 |
| Table 26 | 128 |
| Table 27 | 129 |
| Table 28 | 130 |
| Table 29 | 225 |

LIST OF FIGURES

| | |
|---|----|
| <i>Figure 1.</i> The first contact window includes two sub-windows: the pre-play window and the 5-15 window. | 20 |
| <i>Figure 2.</i> The experience of playing a game is a convergence of gameplay and identity-play. | 29 |
| <i>Figure 3.</i> The experience of learning is a convergence of actions and identity-play. | 32 |
| <i>Figure 4.</i> The experience of play is enhanced by gameplay and identity-play. These two parts are connected by the stakes involved. | 35 |
| <i>Figure 5.</i> This study focused on some parts of the AIGL model, especially stakes, identity-play, and receptivity. | 39 |
| <i>Figure 6.</i> The experience of learning is enhanced by actions and identity-play. These two parts are connected by the stakes involved. | 40 |
| <i>Figure 7.</i> Each subject's profile included 15 aspects, which matched 15 possible previews. Each aspect was initially 50. | 73 |
| <i>Figure 8.</i> Mira's profile reflected her responses to the profiling questions. Some responses increased some aspects, while other responses decreased some aspects. | 82 |
| <i>Figure 9.</i> In the Match and Mismatch conditions, the survey sorted Mira's profile. Then it presented the top five aspects (Match) or bottom five aspects (Mismatch). | 83 |

CHAPTER 1: INTRODUCTION, CONTEXT, & BACKGROUND

Introduction

“If you want to build a ship, don't drum up the men to gather wood, divide the work and give orders. Instead, teach them to yearn for the vast and endless sea” (Saint-Exupery, 2006).

This study was about designing better educational video games and other educational tools and experiences. Making educational experiences appealing and compelling is partly a design problem, and this study included an experiment in design.

Motivation is one of the central challenges of teaching. A student's *motivation to learn* affects almost every aspect of the learning process (Dewey, 1913; Brophy, 2004). The absence of motivation to learn impedes learning, and may even make learning impossible. The absence of motivation to learn also means a student experiences little joy in educational experiences. So a teacher should foster a motivation to learn. It makes the experiences of teaching and learning more productive and enjoyable for both himself and his students¹.

¹ Throughout this study, the hypothetical designer or teacher is male and the hypothetical player or student is female. This is only to maximize clarity by using different pronouns, and implies nothing about gender/power. But note that gender is a vexed issue in game design, as discussed later.

Recreational video games² are designed to foster *motivation to play* and to foster enjoyment. Some video games are very effective in fostering these outcomes. This circumstance suggests that video games can be used to offer compelling experiences to students. If those compelling experiences can also support learning outcomes, then video games can be powerful teaching tools. Many educators support teaching using video games (cf. Gredler, 1996; Elliot, Adams, & Bruckman, 2002; Gee, 2003; Dede, 1996; Haynes & Holmevik, 2001; Prensky, 2001; Squire & Jenkins, 2003; Jones, 2003; Aldrich, 2004). The content of most recreational video games isn't appropriate or relevant in formal education settings. However, if the motivational influence of video games can be preserved while including more appropriate, relevant content, video games can offer experiences that are compelling, enjoyable, and educative.

Creating an experience that elicits positive motivation outcomes is a *design problem*. Fostering motivation to learn and/or play is a problem space. Whether teaching or creating a video game, a designer³ makes *design choices*

² "Video games" include console games, computer games, network-based games, cell phone games, etc. This study applies to any game that is created and played using computer technology, and perhaps some that aren't (e.g., tabletop role-playing games).

³ Throughout this study, the hypothetical designer may seem to work alone. This is mainly to maximize clarity. Most contemporary video games are created and marketed by teams. However, many teams are lead by a single individual, and this individual is responsible for how design choices combine in the finished game. Describing a teacher as a lone designer is less problematic, although a teacher seldom creates a curriculum from scratch, and a teacher is

(or design “moves”) within the problem space to create a *designed experience*.

The designer usually has an ideal experience in mind. An individual's actual experience usually diverges from this ideal. When an individual encounters a designed experience, her relevant *dispositions* interact with the design choices to create her actual experience (e.g., enjoyment, motivation to play, or lack thereof). Relevant dispositions might include her tastes, attitudes, and goals (and more). For example, she may enjoy action games, she may be willing to try something new, and she may be seeking catharsis through play. A designer tries to make choices that interact with a player's relevant dispositions to elicit desirable phenomena and douse undesirable phenomena.

Motivation theories and game design theories focus on some similar phenomena, and share some principles and design strategies. For example, a designer in either field should use strategies like guided practice and optimal challenge. Given this overlap, an interdisciplinary approach to motivation, blending motivation theories and game design theories, can yield new insights and strategies.

Learning theories and game design theories also have much in common. This study focused on motivation outcomes. But it's worth remembering that teaching using video games can also positively impact learning outcomes, beyond just the “trickle up” benefits of motivating students (cf. Gee, 2003; Prensky, 2001). For example, interactivity is a potentially powerful tool for both

usually accountable to standards, course sequences, etc. In any case, the key ideas in this study should be applied by individuals and teams alike.

motivation and learning. This study used interactivity to adapt to an individual's dispositions, thereby increasing motivation to play. Interactivity could also be used to adapt to an individual's task performance, thereby optimizing instruction to the individual's current ability level.

This study was about finding ways to inspire individuals “to yearn for the vast and endless sea.” Motivation is a large domain. This study focused on a specific, desirable motivation phenomenon in learning and video games: *immersion*. Immersion can include motivation to learn and/or motivation to play. Immersion can also include a sense of enjoyment. Thus, for both teaching and game design, immersion is a potentially useful phenomenon. A designer who wants to create an educational video game should understand and design for immersion—indeed, this was a central goal of this study (see Context: Designing a Game for Writing Courses, p. 7). More broadly, this study also built a better understanding of motivation in both teaching and game design.

Overview

This study is described in four chapters.

In *Chapter 1*, the key ideas are introduced, with support from prior theoretical and empirical work in educational psychology and video game design. A new theoretical model is proposed (the AIGL model), synthesizing ideas from both fields. Finally, the empirical research questions and preliminary research are described.

In *Chapter 2*, the first of two empirical phases is described, including methods and data analysis. An adaptive, online survey was created to test the

key ideas of this study. Subjects were assigned to different experimental conditions and responded to different previews for an educational video game (*Ink*). Both the design and results of the survey illustrate key ideas.

In *Chapter 3*, the second empirical phase is described. Four subjects took the survey and were then interviewed individually. Each subject discussed his or her survey responses, and played a few recreational video games while participating in a “think aloud” protocol. Based on these interviews, the four case studies in this chapter further illustrate key ideas.

Finally, in *Chapter 4*, the results of both the survey and interviews are discussed, along with broader conclusions and implications for teaching and game design.

Conceptual Lenses

Motivation is a complex problem space. Such spaces often require flexible thinking, including multiple lenses and models (Spiro, Coulson, Feltovich, & Anderson, 1988). This study focused on immersion. The ways in which design choices and an individual’s dispositions interact can be understood from multiple perspectives. This study primarily used four conceptual lenses: game design, motivation in education, learning in complex domains, and persuasive dialog.

The lens of *game design* focuses on creating a compelling, enjoyable experience of play. Video games are usually multimedia, multimodal artifacts, combining text, images, sound, animation, one or more player-controlled characters, computer-controlled characters, and more. Game design includes

making choices from a palette of many elements, balancing tensions among some elements, and creating and preserving compelling, enjoyable play.

The lens of *motivation in education* focuses on creating a compelling, enjoyable experience of learning. Motivation in education includes identifying and adapting to a student's interests and knowledge, guiding her exploration of a topic or problem space, and using that exploration to alter or reinforce her interests and knowledge.

The lens of *learning in complex domains* also focuses on creating an experience of learning, while calling attention to particular challenges of complex domains. For example, this lens calls attention to the dangers of over-simplifying a complex domain for a novice, because she may develop naïve or brittle knowledge that leaves her ill-prepared to deal with the complexities of more authentic future practice. Yet a novice can be overwhelmed and intimidated by the intricacies of a complex domain. In a complex domain like a video game, the designer must be careful that the initial experience neither overwhelms a new player nor over-simplifies.

The lens of *persuasive dialog* is used informally in this study. This lens focuses on persuasion as a design problem. A video game, as an interactive media artifact, can be viewed as a dialog between a designer and a player, shifted in time and space via technology. The designer defines the game world and tells a story, while offering the player an in-game identity and presenting her with a series of choices that affect the flow of the story. Text, images, sound, and other content/media are tools of influence. This lens recasts the problem of

immersion as a composition task. Using strategies like audience consideration, the lens of persuasive dialog suggests that a designer approach the problem as he might approach a persuasive essay.

Context: Designing a Game for Writing Courses

Immersion can be useful for teaching a variety of things. One domain where immersion has great potential utility is teaching writing (i.e., composition). This study is a part of a much larger project aimed at teaching writing using a video game.

The Writing Center at Michigan State University is developing an original video game for teaching writing, called *Ink*⁴. The first empirical phase of this study is contextualized in *Ink*: in the survey, individuals viewed previews of *Ink* and reported their receptivity. Designing for immersion in *Ink* had practical constraints: those of the larger project. For example, many decisions about the themes, gameplay, and technology had already been made.

Ink is designed for use in undergraduate writing courses, and it will also be open to the public. This means *Ink* needs to appeal to two kinds of players. "Student players" will be students in undergraduate writing courses, who approach *Ink* as an assignment. "Collateral players" will be students not currently enrolled in writing courses, or people from outside the university, who approach

⁴ For more information about *Ink*, see <http://writing.msu.edu/ink>. Development of *Ink* was funded by the Writing In Digital Environments (WIDE) Research Center at Michigan State University.

See: <http://wide.msu.edu>

Ink as recreation. Collateral players are a desirable addition to the game for many reasons (e.g., increasing community continuity from semester to semester).

Current students are the main audience for *Ink*, so this study focused on appealing to them. However, trying to appeal to collateral players may be a productive design pressure. Presumably, many of the design choices that increase the game's appeal to collateral players also increase its appeal to student players, and vice versa. There may be significant overlap in relevant dispositions between student players and collateral players.

Many student players may be nascent collateral players—players who would enjoy *Ink* if they discovered it on their own, or who may continue to play after completing an assignment or a class. In a one study, "65% of college students reported being regular or occasional game players" and 14% of students play an online game daily (Jones, 2003, p. 2, 6). This trend is likely to continue: a different study found that 49% of 15-18 year olds play video games every day (Rideout, Roberts, & Foehr, 2005, p. 30).

There is an additional complication when designing an educational video game. The design choices and a player's responses to the choices may be generally similar for either a recreational game or an educational game. However, while an educational game may be intended to be enjoyable, it is primarily intended to be educative. This adds an orthogonal dimension to the problem space: a designer must try to balance additional tensions when making design choices. For example, if a designer is creating a game based on real

history, careless use of artistic license (e.g., to make a scene more dramatic) could significantly mar the game's usefulness as a teaching tool.

In summary, by contextualizing the empirical phases of this study in *Ink*, this study inherited many dimensions of the ongoing design space, including prior design choices about the game, appealing to student players and collateral players, and preserving instructional utility. Grounding this study in the development of a specific game increased the credibility of the results. Conversely, this study tried to extend the results beyond *Ink* to other games for teaching, recreational video games, and non-game instructional design.

That last idea is worth emphasizing. This study focused on fostering motivation in a technology-mediated space—an educational video game. This study used technology to explicitly illustrate key ideas. For example, in the experimental phase, a receptivity score was calculated for each subject. However, the issues and implications aren't limited to technology-mediated spaces. Immersion is relevant and potentially useful in designing face-to-face teaching, low-tech media, etc. Face-to-face instruction is embedded in human interaction, with all its complexity and potential opacity. The design choices are more sophisticated and the outcomes less easily quantified, but the interaction between a designed experience and a student's dispositions is still a central issue.

Area of Inquiry: Immersion

To appreciate the potential utility of immersion, it helps to understand its dynamics. Immersion is the semi-voluntary experience of being transported into a

new context—a narrower or alternate context—for an extended duration.

Immersion can be a sensory-motor, cognitive, and affective experience.

Immersion is not unique to playing video games. An individual can become immersed in many kinds of activities, including recreation, learning, and work.

The context is narrower or alternate relative to an individual's "home" context: her day-to-day identity, roles, and activities. The experience of being transported is psychological: the individual may or may not physically travel. For many immersion experiences, imagination is the vehicle. For example, an individual may become immersed in a video game by imagining herself into its setting and narrative, while still sitting in her living room.

Immersion is *semi-voluntary* because an individual chooses whether to be transported. But once immersed, an individual no longer has complete control over her thoughts and emotions. An essential element of immersion is sensitivity to the content and tone of the experience: an individual perceives the peculiarities of the new context with palpable immediacy. This heightened sensitivity limits control. For example, once immersed in a horror-themed game, a player may become afraid. This example is noteworthy because it may seem perverse for an individual to seek fearful experiences. Yet games and other immersive media with horror themes are popular. This circumstance supports two essential ideas in this study.

The first essential idea is that individuals may seek immersion partially for *the experience of immersion* itself. The palpable immediacy of immersion can be highly stimulating, so immersion can be pleasurable on aesthetic, intellectual,

emotional, and visceral levels. Imaginative immersion can provide a greater sense of autonomy, an escape from anxieties in the home context, and satisfy similar needs or desires. Immersive experiences can include unpleasant elements (e.g., fear), but these elements can be very intense and hence pleasurable on some level. Much like sour candy, the feeling/flavor is seemingly unpleasant, yet apparently pleasurable in its intensity/immediacy. It's this intensity that a player may be seeking from a horror game, especially if the design affords catharsis (e.g., eventually defusing the fear/intensity by defeating a fear-inducing enemy).

The second essential idea is that immersion is *subjective*. Different individuals seek different kinds of immersion because they have different relevant dispositions (e.g., tastes, past experiences). Not everyone likes sour candy, and not everyone likes horror. The elements that foster immersion for one individual may fail or even backfire for another. A designer who wants to immerse a player must be thoughtful about the player's dispositions. A player who wants to be immersed must be mindful of clues when selecting experiences (e.g., when buying a video game).

Of course, immersion is not the only criterion for evaluating the quality of an experience. But many individuals are attracted to possible immersion. For example, an individual may seek out a game/book/movie/etc. because she believes it will be immersive, even if its designer or themes diverge from her

habits⁵. This is a big part of the potential educational utility of video games: a student may approach an educational video game with the same enthusiasm she approaches a recreational game, if she believes she will be immersed. Relative to some other educational activities, immersion in a game can be very appealing.

Theories Related to Immersion

Several theories are related to immersion, including flow, interest, intrinsic motivation, and cognitive flexibility theory.

Csikszentmihalyi (1990) describes *flow* as a state of intense concentration and pleasure-in-doing. An individual in flow becomes very focused on her present experience; she perceives the peculiarities with palpable immediacy. She is effectively transported into a narrower context—she is immersed. Flow requires optimal challenge: a perfect match between the rigors of a task and the abilities of an individual. Immersion doesn't require optimal challenge, although it may help. For example, if a video game is too easy or too hard, a player may become preoccupied by boredom or frustration, and thus fail to be immersed. In any case, all flow states involve immersion, but not all immersion involves flow.

Schraw, Flowerday, and Lehman describe *situational interest* as “temporary interest that arises spontaneously due to environmental factors such as task instructions or an engaging text” (2001, p. 211) (see also: Schraw &

⁵ For example, an individual may select a movie because it has won an Academy Award or placed in a “Top 100” list. She may believe that the award or placement correlates with a high potential for immersion.

Lehman, 2001; Bergin, 1999). Situational interest is elicited from elements of a designed experience, in conjunction with general human dispositions, rather than individual dispositions. Building on Dewey (1913), Mitchell (1993) has offered strategies for designing experiences that elicit situational interest. For example, if an activity seems meaningful to a student (i.e., relevant and useful in her life), it will elicit more interest. Brophy makes a similar argument by touting “minds-on” activities with powerful ideas (2004). Mitchell particularly emphasizes “hold” factors that keep an individual focused on the substance of an experience, not just its trappings. These and other researchers have argued that eliciting interest is worthwhile because interest influences attention and effort (which influence learning outcomes). Hence, situational interest can foster motivation to learn. An educational experience that elicits high situational interest can become immersive.

Situational interest is usually contrasted with *personal interest*. Personal interest is independent of the elements of an experience—it exists before and after. However, individuals generally seek experiences that match their personal interests, so an experience can elicit situational interest while also satisfying personal interest. Video games are a personal interest for many students. They seek to play games, as well as discover new games, discuss games with peers, and otherwise participate in the gaming subculture. Even students who don't play video games may have a personal interest in maintaining familiarity with games, since gaming is a vibrant part of youth culture (Buchanan, Submitted). All this is

important because it means that previews for a new game like *Ink* may connect with a student's personal interests.

Intrinsic motivation is similar to both situational interest and personal interest. An individual with intrinsic motivation participates in an experience for its own sake, not for arbitrary incentives or other extrinsic reasons (cf. Malone, 1981; Eccles & Wigfield, 2002; Waterman et al., 2003; Vansteekiste, Simons, Lens, Sheldon, & Deci, 2004). The experience of play is a perfect example of intrinsic motivation. An individual can go through the motions of playing, but real play involves becoming immersed in an experience for its own sake—embracing its immediacy. Indeed, Eccles and Wigfield have argued that intrinsic motivation and flow are "two sides of the same coin" (2002, p. 113), that an individual seeks experiences that satisfy both immediate goals (e.g., enjoyment in flow) and ultimate goals (e.g., development in areas of high intrinsic motivation). If an education video game is compelling and enjoyable, while also connecting with a student's intrinsic interests, immersion in the game could be a happy convergence of flow and development.

In short, both situational interest and personal interest can lead to immersion. Also, since immersion involves being focused on an experience (instead of on the home context, extrinsic incentives, etc.), intrinsic motivation is important or even necessary for immersion.

Cognitive flexibility theory (CFT) has been developed by Spiro and others to prescribe teaching strategies for complex domains and ill-structured domains (Spiro, Vispoel, Schmitz, Samarapungavan, & Boerger, 1987; Spiro et al., 1988;

Spiro & Jehng, 1990; Spiro, Collins, Thota, & Feltovich, 2003). In a complex domain, the peculiarities often can't be taught by transmitting general principles. In an ill-structured domain, the irregularities even defy general principles. Instead, a student needs to conceptually visit these kinds of domains, via examples and cases. The student needs to "criss-cross" a domain in many directions, paying attention to the unusual or even unique ways relevant phenomena interact in various places. Immersion is an ideal strategy for CFT-based teaching—being transported to a new context is a good first step toward criss-crossing it. Immersion places an individual in direct contact with the peculiarities of the new context; she perceives them with palpable immediacy. If that context is a complex and/or ill-structured domain, immersion (e.g., role-playing through cases) can be very educative.

Each of these theories helps explain immersion. They also illustrate the potential value of immersion in teaching. The greater goal is eliciting motivation to learn. While some research has been prescriptive (e.g., Schraw et al., 2001; Cordova & Lepper, 1996), eliciting motivation to learn is still a poorly-understood design problem. Immersion is a promising direction for research, especially via design experiments. In order to design for immersion, teachers and game designers need to better understand the foundations of immersion—a line of causality from design choices to immersion. A useful question is, How does immersion begin? At the point of contact between a designed experience and an individual's disposition, certain design choices and dispositions should make immersion more possible and more probable. This was the crux of this study:

designing for deep engagement—immersion—from the point of contact onward. This study asserts that immersion begins with *receptivity*.

An Essential Precursor: Receptivity

Receptivity is a voluntary openness to new experiences.

Receptivity is similar to *willing suspension of disbelief*. When consuming narrative media, an individual is encouraged to suspend disbelief in order to more fully enjoy the experience. The individual accepts the special rules of the new context, and the system of dramatic possibility and probability the rules create (Laurel, 1993). For example, in stories about Superman, the individual is encouraged to accept that Superman can fly, bend steel, etc., and that Superman is vulnerable to kryptonite. Only then does it *make sense* that one man can solve the problems Superman faces, and that a villain can thwart Superman by brandishing a meteor rock.

The key phrase is “make sense.” With or without immersion, a new context is fundamentally at odds with an individual’s home context. For the Superman example, in the individual’s home context, people can’t fly or bend steel. These limits illustrate some of the many possible tensions between a home context and a new context. The laws of physics, physiology, etc. may be different. Characters may demonstrate remarkably broad or deep expertise. Coincidences may be unusually frequent or convenient. And so on. A new context offers its own special rules, to govern dramatic possibility and probability within a “magic circle” of the game/book/movie/etc. Willing suspension of disbelief involves letting these special rules trump the rules of the home context.

Receptivity is a broader idea than suspending disbelief. To be receptive is to be open to a new experience, including playing a game or watching a movie, but also participating in a classroom activity or taking on a new role. Doubt and skepticism limit receptivity. Receptivity is an act of hope and trust. An individual believes that by opening to a new experience, she will experience more enjoyment. Willingly suspending disbelief is an act of receptivity: an individual hoping for an enjoyable experience makes herself receptive to the special rules. Yet receptivity is a more profound openness than suspending disbelief.

As an act of hope and trust, receptivity includes a psychosocial investment in the experience. A receptive individual doesn't merely "sit through" an experience, but makes herself sensitive to its influence on her thoughts and feelings. For example, an individual who is receptive to a movie might try to admire its setting and special rules, identify with the protagonist, and/or consider its themes and messages.

Immersion depends on receptivity. Being open to a new experience is the first step in being transported to a new context. Receptivity doesn't necessarily lead to immersion, but immersion can't occur without receptivity⁶. Accepting the special rules of a new context is an act of receptivity, so without receptivity the rules have no power to immerse.

⁶ There may be exceptional cases (e.g., elaborate ruses, hallucinogens). These are spurious for studying teaching or game design. But for studying confidence games, the victim's hope and trust make receptivity a very viable construct.

Receptivity and immersion comprise a feedback loop. If an individual exercises receptivity, she can become immersed in an experience. If the experience is compelling and/or enjoyable, she will be as or more receptive over time. But if the experience isn't compelling and/or enjoyable, her receptivity will drop, and thus her immersion will be less.

An individual's dispositions strongly influence receptivity. Different individuals are more or less receptive toward different possible experiences. An individual will be more receptive to an experience if she has good reason to hope for satisfaction. Past experiences influence this evaluation, as well as clues about the experience (e.g., an author's reputation, a teacher's enthusiasm). So an individual brings a base receptivity to a designed experience. One of the central jobs of a teacher or game designer is sustaining and increasing receptivity. This happens through an individual's interaction with a designed experience. A teacher or game designer can't control what his audience brings to the experience, but he can influence the interaction.

The First Contact Window

"You never get a second chance to make a first impression."

During first contact, when an individual first interacts with a designed experience, receptivity is both influential and impressionable. Examples of first contact include playing a game for the first time, the first few minutes of a lecture, and the first few pages of a book. First contact is a unique window of opportunity for a designer. An individual uses the first contact window to assess what the design is offering and demanding, and compare it to her dispositions. So first

contact is an opportunity to increase receptivity—to persuade an individual that the experience being offered is worth investing in (with time, money, effort, etc.). An individual will only form a first impression once—during first contact—and this impression will be the foundation for all her future beliefs and evaluations about the design. Even if she later revises her evaluation, it will be an amendment to her first impression.

When designing for immersion, a designer usually wants an individual to be immersed as quickly as possible. Immersion requires a minimum level of receptivity, and receptivity can be increased during first contact.

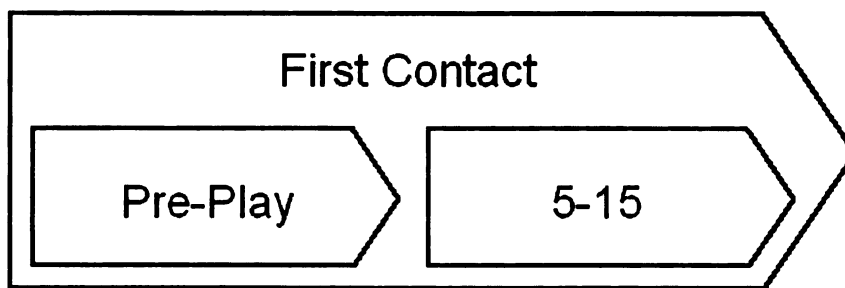
For the sake of clarity of language, the following analysis will focus on games. However, the analysis applies to all designed experiences—only the details are different.

The *first contact window* includes two sub-windows (Figure 1). During the *pre-play window*, an individual first discovers the existence of the game, begins learning about the game, and begins developing initial beliefs and attitudes about the game. During the *5-15 window*, an individual starts playing the game for the first time, continues learning about the game, and continues developing or revising beliefs and attitudes about the game.

The pre-play window may last only seconds, or may last months. A player might visit a friend who is playing a game and be invited to start playing; this is a very short window. Or a player might learn of a game months or years before it's published, and closely follow its development. For players who participate in the gaming subculture (e.g., by consuming game-related media), the pre-play

window is usually long. A great deal of money and effort is spent on shaping the experience of the pre-play window—marketing the game in ways that elicit receptivity and motivation to play the game⁷. The end of the pre-play window may be the end of the first contact window: the pre-play window may fail to elicit enough motivation. Unless a player has a wide variety of relevant dispositions plus lots of time and money, she will only play a few of the games for which she has experienced pre-play windows. A player can use pre-play windows to make decisions about how she spends her time and money.

First Contact Windows



CC | KymBuchanan.org | 2006

Figure 1. The first contact window includes two sub-windows: the pre-play window and the 5-15 window.

The 5-15 window is the first five to fifteen minutes an individual plays a game. The exact time isn't important, and may vary from game to game. The 5-15 window is the first time an individual experiences the game directly as a

⁷ Video game marketing is a sub-industry in its own right. Strategies to shape the pre-play window include: articles and advertising in print, digital, and broadcast media; downloadable or bundled previews or playable demos; developer diaries/blogs; online discussion forums; etc.

player. Often, the 5-15 window is a microcosm for the experience of the whole game. The game world, the player's in-game identity, the story, and the core gameplay mechanics are all usually introduced in the 5-15 window⁸. Thus, the 5-15 window is usually when a game highlights the kinds of narrative and challenges it offers, and the particular skills and knowledge necessary to succeed.

While the pre-play window may have increased or decreased receptivity, the 5-15 window is the first real test of receptivity. Before the 5-15 window, an individual could only guess whether the experience would be enjoyable. This may be an informed guess, especially if the pre-play window was long and detailed. But from the start of the 5-15 window, the individual doesn't need to guess. The game proves enjoyable or not. If the game is not enjoyable, the individual may have reason to believe it will eventually prove enjoyable (e.g., once she plays through the tutorial). But if the 5-15 window isn't enjoyable and the individual doesn't believe it will eventually prove enjoyable, she will probably stop playing. In that case, she will never interact with the vast majority of the work the designer has put into the game. Sustaining and increasing receptivity is very important!

Enjoyment is a subjective phenomenon. For example, consider two players, both in first contact windows for the same complex game. The first

⁸ In the some games, the 5-15 window is a literal microcosm: a discrete chapter in the story. For example, see *Super Mario Sunshine* (p. 54). Also, demos are often used to market games, and a demo may be the 5-15 window of a game.

player doesn't like complexity in games—the intricacies won't be a selling point for this player, and if he does buy the game, trying to master the intricacies will feel tedious. The second player really likes complexity in games—he may look forward to the challenge of mastering the intricacies, and if he does buy the game, he'll find it very enjoyable. This circumstance illustrates an important idea. Like a complete game, the first contact window emerges from a combination of many design choices. Some of these design choices are a matter of degrees, like how quickly the story is revealed. Some design choices are in tension with each other. For example, the designer might limit how much story is revealed (e.g., in previews, in the 5-15 window), because he wants to slowly introduce the central conflict⁹. Most of the design choices are constrained by the designer's resources, including time and technology. But provided these constraints aren't severe, the combination of design choices frames a problem space with many possible moves.

The ideal solution to the problem space is appealing to both players in the example. But this ideal may be impossible, given the dispositions of the players and the possible design choices. Instead, a designer will usually strive for an optimal first contact window for a relatively narrowly-defined kind of player. Even

⁹ There are tensions within tensions. For example, in many games, the player starts as an unremarkable character facing simple challenges (e.g., *Fable*). If a player doesn't know that her protagonist has great things ahead, she may find the 5-15 window less than "epic." Yet if the player started as a powerful living legend, there might be little possibility for advancement or character development.

then, an optimal first contact window must gracefully balance the tensions among design choices, orient a player to her in-game identity, begin teaching the player particular knowledge and skills, promise or deliver enjoyment through play, and ultimately interest the player enough that she plays and continues playing. This is a challenging problem space!

The good news for an ambitious designer is that there may be multiple optimal windows. The *interactive* nature of video games adds an orthogonal dimension to the problem space, at least in the first contact window. Unlike a movie or novel, a game can use player feedback to change the first contact window as it unfolds. The game may be able to present its best "face" by highlighting the elements that would seem to appeal most to the player, based on her choices. But if the game incorrectly extrapolates what the player will like, it may actually occlude its most appealing elements.

Interactivity means the first contact window is more like the beginning of a conversation than the beginning of a book. The game can "listen" as well as "speak." Like many conversations, the beginning illustrates much about the nature and style of the whole. For example, does the designer seem like an imaginative storyteller who is mindful of the player's dispositions? Or does the designer seem like an amateur hack whose design choices will bore, frustrate, or otherwise alienate the player? Just like in a face-to-face conversation, these initial impressions will usually influence whether the player continues the conversation. The first contact window is a window of opportunity. It "opens the door" to everything that comes next, or closes it.

The first contact window is part of a chain of events. An individual becomes aware of a game for the first time at the beginning of the pre-play window. Then she uses the pre-play window to form expectations for the 5-15 window; the pre-play window “sets the stage” for the 5-15 window. If the pre-play window sustains and/or increases receptivity, the player is motivated to play. Then she uses the 5-15 window to continue evaluating the offered experience. She continues playing or stops. The experience of this first contact window then influences how she interacts with other pre-play windows. And so on. The end of the first contact window is the end of this study’s focus, but the chain continues.

The first contact window is a challenging problem space, with its many design choices, tensions, and potential to adapt to the player. However, since the first contact window emerges from a series of design choices, there should be strategies a designer can use to seek one or more optimal solutions. By focusing on the design choices in the first contact window, this study tried to explicate some of the key design choices, empirically test their influence on receptivity, and offer strategic advice to designers. This study will also guide the design of *Ink’s* window.

Receptivity in Education

The previous section focused on video games. Receptivity and the first contact window are equally important in teaching. A teacher wants to elicit high receptivity in his student—an openness to new, potentially-educative experiences. Almost any educational activity will be more educative if a student is more receptive.

In education, receptivity can help foster motivation to learn. Brophy describes motivation to learn partly by emphasizing what it is not. A student who is motivated to learn is invested in the experience itself, not (only) in future rewards or other incentives (Brophy, 2004, p. 15). A teacher who wants to elicit motivation to learn should consider a student's motivational *zone of proximal development* (ZPD) (Brophy, 1999). Alone, a student may not have sufficient motivation to learn. But a student has a ZPD in which a teacher can mediate the student's motivation. Increasing receptivity is one way to move a student "upward" through her motivational ZPD. With a teacher's mediation, a student who is not otherwise open to an experience might participate instead. Thus, increasing receptivity can lead to participation, through which a student's motivation to learn can increase—by participating, she can directly appreciate the possible return on her investment. Possible mediation strategies for moving a student through her motivational ZPD include modeling, coaching, and feedback (Brophy, 1999). There's a parallel here: feedback from a teacher can increase motivation to learn, while feedback in a video game can increase motivation to play.

Receptivity is especially important when using immersion as a teaching tool. In educational experiences, the psychosocial investment that accompanies immersion can include or foster motivation to learn. The best or only way to teach some things is immersing a student in a *performance context*. A performance context is usually a narrower or alternate context for a student. The special rules for the new context are the substance of the relevant content and discipline(s).

Visiting the new context allows a student to learn the rules directly. But only a student with sufficient receptivity can be transported into a performance context.

Furthermore, many educational immersion activities include identity-play¹⁰. A teacher may invite a student to play at being an engineer, a historian, or what-have-you. A student must be receptive to engage in identity-play, and more receptivity means a student can be immersed more deeply. A student who is more focused and more invested will learn more.

A traditional strategy for increasing receptivity is using an attention-getter at the start of an educational activity. The attention-getter might be an interesting story, picture, video clip, etc. A good attention-getter does not stimulate interest for its own sake, but to foster motivation to learn. For example, a chemistry teacher might mix two colorless chemicals together to produce a vividly-colored reaction. This can increase receptivity and motivation to learn: a student may become more open to an experience that will include learning the facts and theories of chemistry which explain the reaction and color change.

After an attention-getter, a teacher wants to sustain and increase motivation to learn. Immersion is one useful strategy, because of the feedback loop between receptivity and immersion. In other words, an attention-getter can be the start of a recursive system for sustaining and increasing receptivity, immersion, motivation to learn, and their benefits (focus, effort, etc.). This study

¹⁰ Identity-play is similar to role-play. See Games: Simple Model (p. 29).

was about designing for motivation beyond attention-getters, to get and keep students deeply engaged—immersed—in educational experiences.

More About Receptivity in Video Games

Until now, this study may have seemed to imply that receptivity is well-understood in video game design. Not so. The effects of receptivity and immersion on motivation to play and enjoyment through play are poorly understood. Many recreational games offer previously-established, fairly-narrow in-game identities (e.g., warrior, archer, wizard)—identities often inspired by literature and movies (e.g., *Lord of the Rings*, *Raiders of the Lost Ark*). These identities are often closely tied to particular, narrow genres and kinds of challenges: those kinds resolved through combat and physical prowess. Fewer games offer more novel identities and challenges, such as cleaning up pollution (*Super Mario Sunshine*) or investigative photojournalism (*Beyond Good and Evil*). As a result, the recreational video games industry has struggled to appeal to larger and more diverse audiences than those who enjoy the identities, genres, and kinds of challenges found in most contemporary games.

Many game designers recognize the need for different, better designs in order to elicit more receptivity from more people. For example, Crawford devotes a chapter of his book to creativity (2003), while Rollings and Adams discuss suspension of disbelief and immersion (2003). Laurel discusses designing video games to appeal to girls (2001). In education, Mishra, Heeter, and others have invited students to design video games and game-like spaces in ways the

students themselves believe will appeal to their peers (cf. Mishra et al., 2005; Barab, Hay, Barnett, & Squire, 2001).

In discussions about increasing motivation to play, character design is a frequent topic (e.g., Rollings & Adams, 2003). A player's ability to identify with a character is a logical influence on receptivity, in video games or other narrative media. Another frequent topic is the strengths and weaknesses of video games as an immersive medium. For example, video games have been criticized for over-reliance on movie techniques (e.g., cut scenes¹¹), rather than more organic (i.e., interactive) techniques.

In short, immersion and receptivity are still significant design challenges in video games, especially if the craft wants to grow beyond its current audiences.

Model: Actions & Identity in Games & Learning

If teachers and video game designers want to design for receptivity and immersion, they need explanatory models and prescriptive strategies. The theories already discussed are a good starting place (e.g., situational interest). This study uses and supports an additional, new model called *Actions and Identity in Games and Learning* (AIGL). The AIGL model primarily draws on two conceptual lenses: game design and motivation in education. This interdisciplinary approach emphasizes that similar design choices have similar effects in both domains. The AIGL model focuses on the convergence of two sets

¹¹ A "cut scene" is a short, non-interactive video clip. Cut scenes are frequently used for important plot twists or character revelations. Arguably, the use of cut scenes reflects poorly on game designers' ability to foster immersion—watching is not playing.

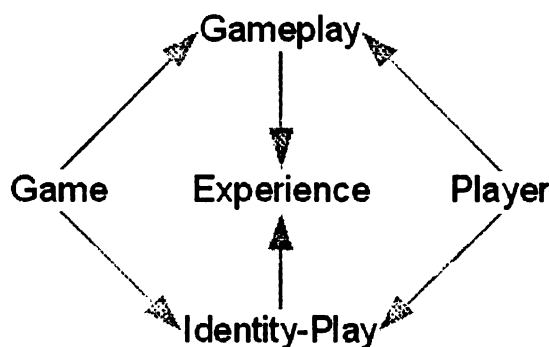
of phenomena—actions and identity—as they influence the experience of play and/or learning.

The AIGL model has a simple, compressed form and a full, expanded form. Each form can be applied to video games or learning.

Games: Simple Model

The simple form of the AIGL model, when applied to games, distinguishes between two major parts of a play experience: *gameplay* and *identity-play* (Figure 2). Gameplay consists of the moment-to-moment sensory-motor and cognitive challenges and choices (including perceptual challenges). For example, this could include dodging an enemy, then jumping to a new platform. Gameplay is one way a player can become immersed in a game.

Actions & Identity in Games: Simple Model



CC | KymBuchanan.org | 2006

Figure 2. The experience of playing a game is a convergence of gameplay and identity-play.

Identity-play is the more holistic part of the experience, and refers the player adopting a relatively long-term¹² identity in a game. Identity-play is the other way a player can become immersed in a game: the player adopts an alternate identity for the new context. An alternate identity is usually a combination of the identity a designer frames (e.g., with backstory) and the idiosyncrasies a player brings or invents. The more freedom a game offers, the more co-authorship a player has in her identity-play.

Identity-play is similar to role-play. However, since the term “role-play” conflates contextualized actions (i.e., a role) with identity, the AIGL model uses the term “identity-play” to emphasize the separate influences of gameplay and identity-play on an experience.

Gameplay and identity-play converge as the experience of play: gameplay is meaningful as the goal-oriented behavior of a player's in-game identity, which is reciprocally defined by her actions—plot is character (Aristotle, via Laurel, 1993). Both gameplay and identity-play can be immersive.

In some games a player can play as herself. (*Ink* gives a player this choice.) Identity-play still occurs. Rather than adopt and tailor an identity designed by someone else, the player redesigns her own identity to “make sense” in the new context of the game. A game can include a fictional setting while still letting a player play as herself. For example, the game world may be a

¹² “Long-term” is relative to “moment-to-moment,” and varies widely across games. In an online, multiplayer game like *Ink*, a player may maintain a character (and hence, identity) for months or years. In contrast, a player may only “be” *PacMan* for a few minutes.

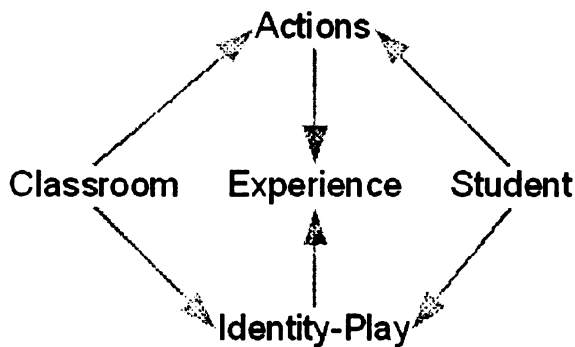
“parallel dimension” which a player visits through the “magic window” of a computer. (*Ink* has this kind of world.) If a player is receptive to this conceit, then she can still be immersed.

Learning: Simple Model

The simple form of the AIGL model, when applied to learning, distinguishes between two parts to a learning experience: *actions* and *identity-play* (Figure 3). These parts are analogous to those for games. Actions consist of the moment-to-moment sensory-motor and cognitive challenges and choices (including perceptual challenges). For example, this could include measuring the base and height of a triangle, then calculating its area. Identity-play is the more holistic part of the experience, and refers to a student adopting a relatively long-term identity. This is the identity in which the actions are more meaningful than merely “academic.” Disciplines or professions often provide this new context of meaning. For example, a student might be encouraged to pretend to be a landscape architect calculating the area of a triangular grassy plot.

Actions and identity-play converge as the experience of learning: actions are meaningful as the goal-oriented behavior of a student’s in-context identity, which is reciprocally defined by her actions. This is a Vygotskian view of learning: by playing at an identity and practicing the actions of the identity, a student can eventually make that identity part of her enduring self—a process of internalization (Vygotsky, 1978).

Actions & Identity in Learning: Simple Model



CC | KymBuchanan.org | 2006

Figure 3. The experience of learning is a convergence of actions and identity-play.

Just as some games allow a player to play as herself, identity-play in learning does not need to be fantastical. A student can be very receptive to playing a mundane identity if she wants to make it part of her own identity. For example, a student in a preservice teacher-training program can be very receptive to playing the identity of a teacher. Motivation researchers assert that a student will have motivation to learn if the content seems meaningful (Brophy, 2004); in other words, a student will be more receptive to actions and identity-play that connect with her current or desired identity.

If a teacher wants to design an experience so that it seems meaningful to a student, one strategy is to increase authenticity. Authenticity refers to how closely the challenges and working conditions in an educational experience match those of the *presumptive performance* context—the context in which the learning can or should be applied. More authenticity can mean more identity-

play: a student experiences an identity more divergent from “student” and more convergent with the presumptive performance context. More identity-play can mean more immersion, as a student becomes focused on the content and problems, and less on extrinsic elements (e.g., grades).

Valuing immersion in more authentic contexts does not necessarily mean discarding less authentic contexts altogether (e.g., lectures). Rather, as the lens of learning in complex domains highlights, for some content a student needs to conceptually visit the domain. Only then will the knowledge she constructs be sensitive to the peculiarities of the domain. Honebein says it well:

Many people misunderstand the true nature of authentic activities. People ask, "How are simulations 'authentic' when by their very nature they are not authentic at all? They're still a simulation." The aim of authentic activity is not just to simulate or replicate the physical environment, calling it "authentic." Rather, the aim is to design an environment in which learners use their minds and bodies as they would if they were practitioners in a domain. It is the purpose of the learning environment, whether it be simulation, actual practice, or independent study, to stimulate learners so that their thinking is related to actual practice... (Honebein, 1996, p. 20)

Dede also emphasizes the educative value of being immersed in the presumptive performance context, as “the equivalent of diving rather than riding in a glass-bottomed boat” (Dede, 1996, p. 171). In any case, if a teacher wants to foster immersion, both the actions and the identity-play offered should elicit receptivity.

Games: Full Model

When applied to video games, the full AIGL model explicates key relationships that influence the experience and suggest strategies for increasing immersion (Figure 4).

The design of a game is the ideal experience the designer envisions. In an online, multiplayer game like *Ink*, the managers who shape the game and the community of players who appropriate the game also influence the game a player encounters. For example, the designer may create what he thinks is a moderately-difficult puzzle, but the community can make it easier or harder (e.g., several players can try to solve the puzzle simultaneously, by working together or by trying to thwart each other). A community is portrayed as appropriating the game because as individuals become immersed in the game, their collective investment and interactions become a culture (in the sense that culture is shared values and practices).

From the opposite side, a player brings her abilities and knowledge (regarding the game and everything else), her habits and tastes, and her culture and identity (from her home context). These collectively predispose the player to accept the challenges and adopt an in-game identity (or not).

The player's actions in response to challenges unify as gameplay. Gameplay is a nebulous idea that is much-discussed by video game designers. Rollings and Adams define gameplay as: "One or more causally linked series of challenges in a simulated environment" (2003, p. 201). Acclaimed designer Sid Meier "once defined gameplay as 'a series of interesting choices'" (Rollings &

Adams, 2003, p. 200). Good gameplay also depends on interface design, game balancing, and similar design choices. Good gameplay can foster immersion, enhancing the experience of play—increasing motivation to play and increasing enjoyment.

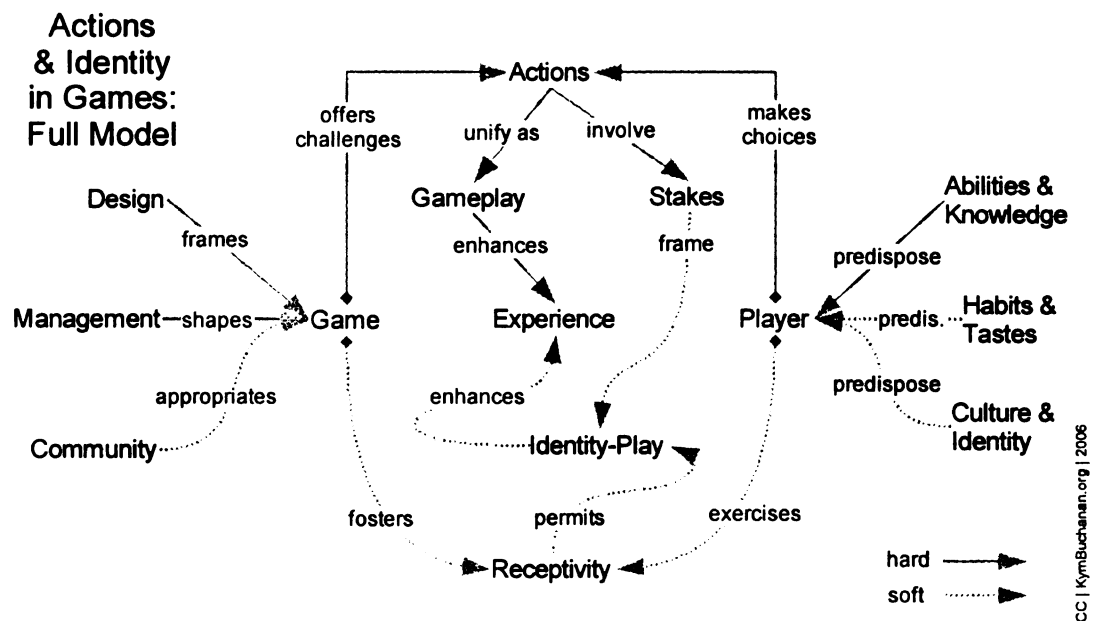


Figure 4. The experience of play is enhanced by gameplay and identity-play. These two parts are connected by the stakes involved.

While some designers might conflate identity-play with gameplay, the AIGL model separates these ideas to emphasize the influence of stakes. The stakes are the consequences for success or failure. In the short-term, the stakes might include a player taking an injury or acquiring a new item. In the long-term, the stakes frequently include whether the player thwarts someone or something sinister. The stakes are an essential part of any narrative—a conflict is only dramatic if the outcome matters. Different genres and themes afford different kinds of stakes.

A player must exercise receptivity to engage in identity-play. She must be open to the special rules of the new context, especially the stakes, in order to be transported to the new context. When a player adopts an in-game identity, she perceives, thinks, and acts based on stakes, including stakes which are only consequential within the game. Thus, identity-play enhances the experience of play by fostering immersion. However, while the AIGL model focuses on in-game phenomena, the stakes can include out-of-game consequences. For example, a player usually derives out-of-game satisfaction for in-game success. This circumstance illustrates that the identity a player adopts in a game is not wholly separate from her home identity—immersion is never complete.

The enhancing effects of gameplay and identity-play are distinct. For example, immersion in *Tetris* is pure gameplay—the designer doesn't offer the player an in-game identity, and the absence of narrative reduces the stakes to abstract scoring. Similarly, a game might have mediocre gameplay but the stakes and identity-play foster immersion (e.g., *Resident Evil 1*). The enhancing effects of each part can constructively interfere. Many of the games beloved by players and critics include both good gameplay and compelling stakes and identity-play.

The AIGL model asserts that identity-play can greatly enhance immersion and the overall quality of the experience of play. So a game designer who wants to broaden and deepen the experience a game offers should offer more novel and varied stakes and identity. This will also help appeal to new and different audiences. There may be constraints on what kinds of identity-play can be offered, since the stakes must be something for which a player can take action.

But video game designers have explored only a fraction of the possible identities and stakes of real life, much less the endless bounds of the imagination.

One potentially powerful design strategy is offering a world with sufficient sophistication and diversity of challenges and choices that it supports a variety of stakes and identities. Some recreational video games are experimenting with this strategy, allowing a player to co-author her identity by making moral choices in the game and experiencing the consequences. For example, *Fable* allows a player to adopt an identity anywhere along a continuum from heroic to villainous, as different actions shift the player's "morality" score up or down. Some games allow a player to experiment with different solutions to a problem. For example, problems in *Deus Ex* can be solved with violence, stealth, computer hacking, or all of the above. These design choices improve gameplay and identity-play, enhancing the experience from both sides.

A designer of an educational video game faces constraints on what identities and stakes he can offer, because he needs to preserve instructional utility. A designer must choose challenges, stakes, and identity-play that fit with the content to be taught. Relatively little traditional academic content can be reduced or translated into hand-eye coordination in violent settings.

In the full AIGL model, some influences are "hard" (solid lines). These influences are relatively well-understood by designers. Often, they are sensory-motor and cognitive phenomena. Other influences are "soft" (dashed lines). These influences are relatively mysterious. Often, they are affective phenomena, which are subjective and ill-structured. The AIGL model emphasizes that many

designers better understand how design choices affect the influence of actions, compared to understanding how design choices affect the influence of receptivity and identity-play¹³. For example, designing a new weapon is better understood than nurturing a community. The “bottom” half of the AIGL model is less understood, yet it can be as or more influential.

Finally, while the AIGL model only explicates receptivity as it applies to identity-play, receptivity also matters as it applies to gameplay. A player must be receptive enough to make choices, so the model could also include a second instance of “Receptivity” between “Player” and “Actions.” However, this study focused on increasing receptivity by offering more compelling identity-play, because that half of the model is poorly understood. Figure 5 shows the parts of the model this study focused on.

¹³ In video games, this imbalance of understanding is evident in the variety of gameplay in contemporary games, compared to the homogeneity of identities (e.g., confident, straight, white, masculine hero in excellent physical health).

Key Parts of the AIGL Model

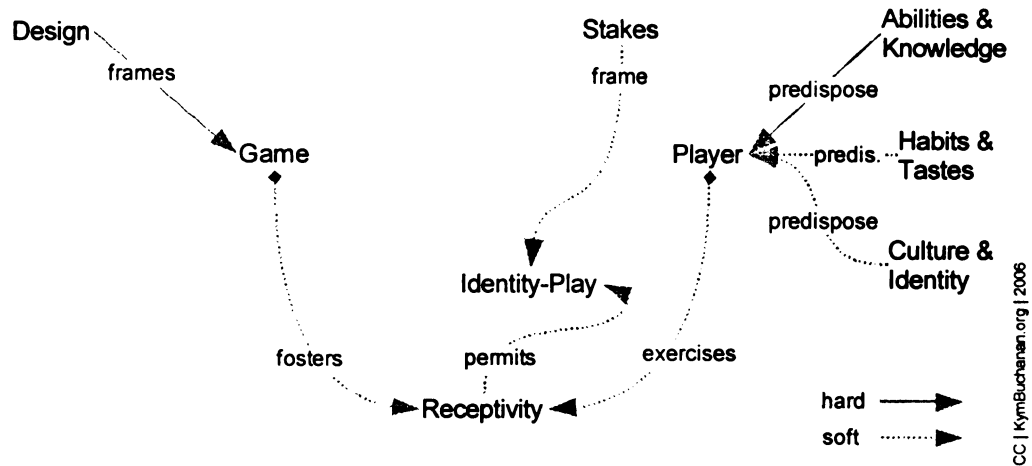


Figure 5. This study focused on some parts of the AIGL model, especially stakes, identity-play, and receptivity.

Learning: Full Model

When applied to learning, the full AIGL model again explicates key relationships that influence immersion. Most of the influences are analogous to those for video games (Figure 6). Instead of management, a teacher shapes how a designed experience unfolds for a student. Instead of gameplay, actions unify as activities. However, these activities have a similar, limited influence on the experience. As with games, it is the stakes involved and the identity-play the stakes frame that enhance the experience beyond just activities.

This is the heart of the AIGL model: *the stakes-based relationship between actions and identity are similar in games and learning*. In both cases, the sensory-motor and cognitive challenges and behaviors are only part of the

potential experience. Identity-play can enhance the experience, eliciting more immersion, more enjoyment, and more motivation to play and/or learn.

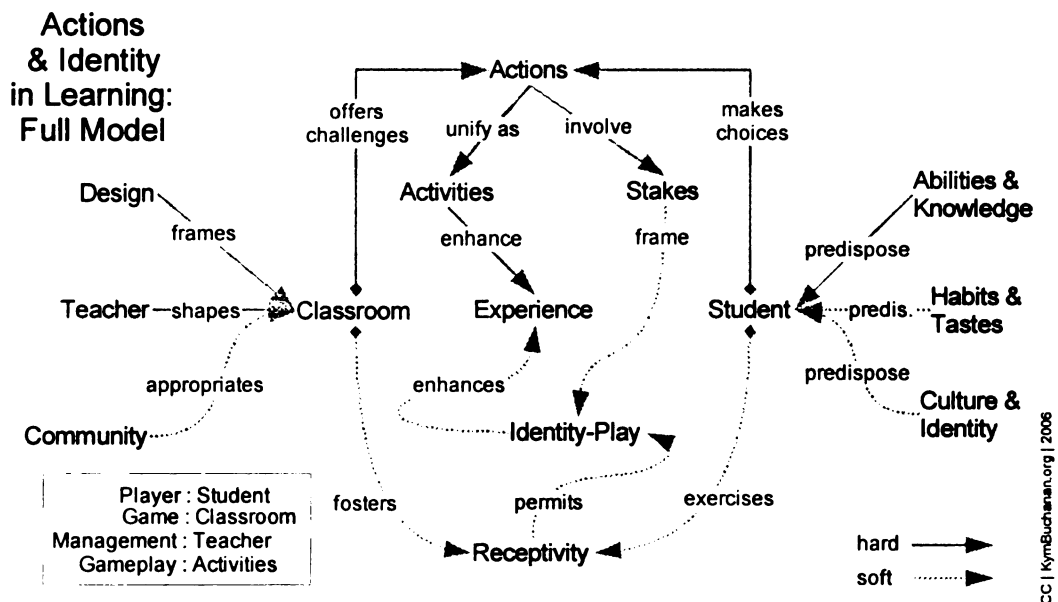


Figure 6. The experience of learning is enhanced by actions and identity-play. These two parts are connected by the stakes involved.

A teacher who wants to increase authenticity to make an experience more meaningful should consider the stakes involved. Actions with trivial stakes will probably seem trivial to a student. The stakes don't need to be extraordinary (e.g., dire). Rather, an experience can seem meaningful to a student if the stakes make success feel empowering. In other words, making challenges more authentic can make success meaningful in a student's home context, not just meaningful in the educational experience. For example, a social studies teacher could present a controversial current issue and guide a student through understanding the different sides and stakes. The student could thus learn about the issue as well as the skills of democratic debate and policy analysis. The

“cross-over” of the stakes from the classroom to her own life should be motivating, as should the stakes for other issues to which she can apply her new skills—successfully understanding the issue and learning the skills will feel empowering.

This strategy is supported by the sociocultural model of *legitimate peripheral participation* (LPP) (cf. Englert, 1992; Hutchins, 1996; Cobb, 1994; Lave & Wenger, 1991). LPP values placing a student in a context in which she has choices and stakes that are very similar to a presumptive performance context. A teacher controls the stakes by designing and shaping the experience so that responsibility is shared between teacher and student, on what Englert calls “an interpsychological plane” (1992, p. 159). LPP supports using immersion: a student can face stakes that are very similar to those in the presumptive performance context, but mitigated by the teacher’s design and shaping of the experience. For example, Hutchins describes how an apprentice navigator is given responsibility for calculating the position of a ship, while a more experienced navigator checks his work (1996). The stakes are meaningful without being dire.

The way in which the AIGL model privileges stakes as influential on the experience (and hence motivation) is supported by the *expectancy x value model* (ExV). In the ExV model, a student forms and modifies a sense of expectancy by comparing her abilities to the challenges. She forms and modifies a sense of value by comparing her long-term goals and priorities to the stakes. Both expectancy and value determine her motivation. If a student places little value on

the outcome of a task, she will have less motivation. If the stakes aren't compelling to a student or player, she will have less motivation to learn or play.

As discussed in *Receptivity in Education* (p. 24), the stakes don't need to be compelling by themselves. A teacher or game designer can mediate a student's perception of stakes, increasing her receptivity toward the identity-play involved. Thus, a teacher or game designer who wants to foster high motivation should be offer challenges that are within an individual's cognitive zone of proximal development (ZPD), and stakes that are within her motivational ZPD. Continuing the example of teaching using a controversial current issue, the teacher might need to mediate a student's perception of the stakes and the challenge. Alone, the student may not recognize the importance of the issue, and she may not be able to analyze it. If the teacher wants the student to be immersed in the learning experience (e.g., by pretending to be a policymaker), he will need to mediate the student's perception and scaffold her skills. Otherwise, the student's perceptions that the stakes are trivial and the challenge is too great will mean low receptivity, hence little or no immersion, hence less or no learning.

In the full AIGL model for learning, the absence of some connections may be vexing to some educators (e.g., a connection between design and teacher). The AIGL model simplifies or excludes some relationships to focus on the convergence of actions and identity-play; the model may be inappropriate for other analyses. In any case, "Classroom" is just a placeholder for any educational environment.

Just like in the full model for games, the hard and soft lines reflect comparative understanding of the influences. For example, designing a multiple choice test is better understood than nurturing a classroom community.

Finally, while this study focuses on imaginative immersion experiences (i.e., video games), the AIGL model applies to any potentially immersive experience—playful, educative, or what-have-you.

Model Applied to Writing

Teaching writing is one area where the AIGL model has high explanatory and prescriptive utility. This section illustrates that utility, first by describing some of the challenges of this domain, and then by describing why games like *Ink* can be powerful teaching tools.

Writing is an act of communication between a writer and her audience—an interpersonal activity. A writer's audience may be one or more real people, and/or a hypothetical audience. For a student learning to write, the audience almost always includes a teacher, in addition to any real or hypothetical audience. The purpose is often hypothetical. For example, a student may be directed to write a persuasive essay, but the teacher will probably not read it to be persuaded. Rather, the teacher will probably read it to evaluate the student's writing ability. This example illustrates that for a student learning to write, her identity as a student is often her prominent or only identity, and the stakes include something relatively peripheral to the writing task itself, like a grade. However, when a student moves beyond the classroom (e.g., into a job), she will want or need to write for many other audiences (e.g., possible clients) for a variety of purposes

(e.g., attract new business). The stakes will be central to the act of communication (e.g., business success), and perhaps more meaningful (to the former student) than a grade.

In or beyond the classroom, purposes and audiences can vary greatly. A writer must learn to be perceptive of the peculiarities of a writing task, and to adapt to them by using different strategies. General rules or models have limited utility. In short, writing is a complex domain. So writing is best mastered through criss-crossing: practicing writing for a variety of audiences and purposes. The best way to learn to write is by writing (cf. Brock & Raphael, 2003), and writing for a variety of audiences and purposes in the classroom will better prepare a student for writing beyond the classroom.

These circumstances mean a teacher has at least two challenges in teaching writing well. The first challenge is providing opportunities for a student to practice writing for a variety of audiences and purposes. The second challenge is providing stakes that are more meaningful than a grade. The educative value of meeting these challenges has been established through research (cf. Englert, 1992). It's less clear *how* to meet these challenges, especially within the practical constraints of a classroom.

The AIGL model asserts that challenges like these can be better understood and met by attending to identity and stakes. Based on a student's dispositions, the right combination of identity and stakes can lead to immersion. Immersion can include perceiving the peculiarities of a writing task with palpable immediacy. If a student values a grade, she may become immersed in a writing

task, and expend great effort to be perceptive and responsive to the peculiarities (e.g., the teacher's expectations). However, for at least some students at some times, if their prominent or only identity is "student" and if the stakes are only something like a grade, they are less likely to be immersed. Without immersion, these students won't perceive the peculiarities with as much palpable immediacy, and thus they won't learn as much from the experience.

The AIGL model asserts that the stakes-based relationship between actions and identity are similar in games and learning. The same structures that foster immersion in games can foster immersion in learning. Thus, if a teacher wants to foster immersion in learning to write, he can adapt structures from games. *Ink* is designed on this idea. *Ink* offers a player a more prominent identity than "student" by casting her as a citizen in an imaginary city, and *Ink* offers stakes that are more central to the writing tasks. For example, many writing tasks in *Ink* involve trying to persuade other players to take sides on political issues in the city. A player who writes a persuasive essay in *Ink* probably does so for a variety of audiences—other players—and with stakes quite different from an assessment of her writing ability. Rather, the stakes are the political issue and its ramifications for the player, the other players, and the city. Politics are only one part of *Ink*; the other parts involve many other purposes (e.g., entrepreneurship, disciplined inquiry, creative writing).

In order to increase receptivity and immersion, *Ink* uses a strategy described in the AIGL model (p. 31): increase authenticity. The identity and stakes offered to a player more closely match the presumptive performance

context. Of course, immersion in *Ink* still depends on a felicitous interaction between a player's dispositions and the design choices. Even if a player finds the identity and stakes appealing, she will not completely shed her identity as a student. But if she becomes immersed, she will perceive the peculiarities of *Ink* with palpable immediacy, and she will practice writing in a context that is more complex—hence, more authentic—than some classrooms. Thus, she will be better prepared for writing in even more complex contexts, beyond classrooms altogether.

The intrinsic technologies may make video games a more practical solution than others. For example, the “mini economy” of *Ink* can operate on a faster timescale than the real world, so the impact of writing can be seen much faster. Another advantage of games is that the alternate context can distort stakes in particularly useful ways. For example, the stakes in *Ink* can be dire and a player's writing can be influential, because *Ink* is an imaginary space and its special rules allow for such stakes and influence. In the real world, for possible writing tasks with the most dire stakes (e.g., international diplomacy), a student's writing is unlikely to be influential.

However, neither *Ink* nor video games in general are unique in offering the educative benefits of immersing developing writers in more authentic contexts. Rather, *Ink* illustrates how attending to identity and stakes in creative, playful ways can help a teacher meet some of the challenges in teaching writing well.

Research Questions

The AIGL model accounts for a variety of phenomena which interact in complex ways. For the purposes of empirical rigor and reasonable scope, this study focused on the first contact window, especially receptivity. This study proposes that: *For a target population of players or students, certain design choices elicit more receptivity.* To support this proposition, the empirical phases of this study tried to answer the following research questions:

1. In the pre-play window for a specific video game, which design choices are most effective in eliciting receptivity? How is effectiveness mitigated by specific audience traits (e.g., gender)?
2. How can adaptation based on interactivity be used to optimize a pre-play window's effectiveness in eliciting receptivity (e.g., by adapting the window based on player feedback)?
3. In the 5-15 window for a specific video game, which design choices are most effective in eliciting receptivity? How is effectiveness mitigated by specific audience traits?

The survey tried to answers questions 1 and 2. The interviews tried to answer questions 1 and 3. The survey results were primarily quantitative and are reported in Chapter 2. The interview results were primarily qualitative and are reported (as case studies) in Chapter 3.

Preliminary Research: Sample Games

Many of the ideas in this study follow from theories and models in motivation and game design. However, recreational video games were also a

major inspiration. As part of the preliminary research for this study, several recreational video games were analyzed. For each game, the design choices in the 5-15 window were deconstructed and evaluated for their effectiveness in eliciting receptivity. The games were: *Animal Crossing*, *Super Mario Sunshine*, and *Beyond Good and Evil*. A preview for *Resident Evil 4* was also analyzed. The games and preview were later used in the interviews, so these analyses helped inform the case studies.

The games were selected because they clearly illustrate deliberate design choices in the 5-15 window, the choices aren't unique to these games, and interested readers should be able to find copies to play. While the games are only a sample of a much larger and much more diverse medium, they are diverse enough to illustrate different ways of eliciting receptivity. Many critics and gamers have praised the immersive potential of these particular games, so the evaluation of receptivity was expected to be positive.

The AIGL model guided this analysis, so the focus was on the identity and stakes each game offers or promises. The model predicts higher receptivity when a player finds the identity desirable and the stakes compelling. This is somewhat an issue of themes. For example, do the genre-like qualities of the game connect with a player's tastes? Is the story such that a player wants to play a major role?

In eliciting receptivity, the games all use "rich media" elements (e.g., graphics, sound) far beyond what *Ink* can or will be like. However, they also use identity and stakes, and the analyses focused on these design choices. Rich media elements can foster immersion themselves, and they can mediate a

player's encounter with deeper design choices. Except for static images, experimenting with advanced media was beyond the scope of the survey (due to cost). However, this mediating effect was studied in the interviews (in which students played rich media recreational video games). The AIGL model asserts that rich media can only elevate the experience so far, so even a graphically- and aurally-rich game can benefit from better design choices regarding identity and stakes.

Animal Crossing

Like many video games, *Animal Crossing*¹⁴ has an “attract mode”—an endlessly looping video to intrigue a player before she presses start. The loop shows a possible sequence of gameplay. A person is walking around a rustic town. The person is either male or female, and sometimes carries a tool (e.g., a fishing pole, an umbrella). The season is different (e.g., fall, winter). This illustrates the core gameplay: walking around a town, performing chores (e.g., fishing), while the sun rises and sets and the seasons turn. The game offers an alternate, complex world to “live” within, which may connect with a player's desire for fantasy or escapism (by allowing her to go someplace new and different).

While the person in the game is humanlike, everyone she encounters is an anthropomorphic animal. The graphics are cartoonish, with bright colors, simple fabric prints (e.g., flowers), and playful fonts. The background music is simple, cheerful, and jazz-like. These aesthetics imply light-hearted themes and

¹⁴ Developed and published by Nintendo. Copyright 2001, 2002. Platform: Nintendo GameCube.

gameplay, which may connect with a player's desire for a neat/clean world with simple challenges. The anthropomorphic characters support fantasy and escapism.

When the player presses start, she meets K.K., a dog strumming a guitar. K.K. is conversational, and his lines set up the story: the player is moving out and getting a place of her own. K.K. approves, because then the player "can do what you want, when you want, where you want." K.K. emphasizes that living alone could be good or bad, so the player should make some friends to get through the bad times. K.K. also conversationally offers to change some of the settings (e.g., stereo sound).

K.K.'s speech and demeanor is casual cool (e.g., "groovy", "dig"). His speech is accompanied by a comical chattering sound (like the teacher in a Charlie Brown movie); the game calls it "Animalese." Every character in the game is voiced this way (with different chattering sounds). As K.K. and other characters talk, comic symbols often appear over their heads (e.g., "?", "!", a lightbulb).

K.K.'s persona may be appealing to a player who admires coolness. The themes of moving out and independence may be appealing to a player who hasn't left home. The stakes of living alone may be appealing. At the same time, the emphasis on friends may appeal to a player who enjoys socializing and agrees that friends are important. Much of the game is about starting an adult life and building friendships with other townsfolk, so K.K.'s lines offer clues about whether this game will be enjoyable.

Once the player is ready, the game advances. The player has a first-person point of view. She is sitting on a moving train, which conveys a sense of going someplace new—this may appeal to a desire for escapism and/or to explore new places. The player watches a cat enter. The cat introduces himself (herself?) as Rover and asks about the time. The player inputs the current, out-of-game time. This is actually a setting, since the game world runs in “real time” (e.g., if it’s night in the player’s world then it’s night in the game). The player may already know this from the pre-play window; otherwise, this is an intriguing request. Rover’s personality is abrasive. For example, he often laughs at the player. Rover offers the player some false choices. For example, he asks if he can sit down, but if the player refuses, Rover says, “...I’m going to sit here anyway.” Regarding receptivity, this may be a split: being offered a choice feels empowering, but if the choice is effectively meaningless, the feeling fades.

Rover asks for the player’s name (which she inputs), and then asks what the player thinks of her name. Possible responses include “It’s cool” and “It’s cute.” Through Rover’s lines, the game equates the response with the player’s gender (cool = male, cute = female), then checks to see if it’s correct. Rover then asks where the player is going. The player’s response becomes the name of the town where the rest of the game takes place.

Rover recognizes the town, and wonders aloud where the player is going to live. Rover knows a shopkeeper in the town. He gets up, goes down the aisle, and uses a telephone. The player can overhear the conversation. Rover talks to Nook the shopkeeper and comes back with good news. Nook “has some brand-

new houses for sale, dirt cheap!" Among Rover's final rambling is encouragement to have other friends play in visit the player's town. Again, this is a feature being presented conversationally: other players can visit or move into the same town, by playing the same copy of the game.

Rover is helpful yet abrasive. His biting humor may be appealing to young people who practice such humor. Many of the townsfolk will be both helpful and eccentric, or even rude, so the player will have to be accommodating in order to succeed. This is another clue to the kinds of experience the game offers.

Upon arriving at the train station, the player sees her in-game self for the first time, from a third-person perspective. The rest of the game is played from this perspective. The porter (a monkey) welcomes the player to town, using the town name the player just provided. This is a good example of the power of interactivity to elicit receptivity. By naming the town, the player may feel more ownership and investment. More ownership means higher stakes, and thus more potential immersion.

The only place the player can walk is off the train platform, at which point Tom Nook automatically shows up. As with Rover's false choices, there is a sense of freedom, but the game is still shepherding the player down a linear path. Many games keep a player "on rails" in the beginning, to ensure critical narrative and gameplay introductions are presented. Too much freedom too fast can be disorienting.

Nook (a raccoon) is very talkative. Like Rover, Nook often laughs at the player, yet he is also helpful. He leads the player to the houses he's selling, and

invites her to look inside. The interior of each house is very small and bare. A big part of the eventual gameplay is furnishing and expanding a house. There are four houses total, because three other players can live in the same town. When the player picks a house, Nook explains some basic features, and emphasizes that, "You can do whatever you like with your own stuff..." This continues the theme of independence K.K. introduces. The game invites the player to set her own goals and stakes. For example, if the game elicits a desire to decorate and expand, by adopting these goals the player is affected by the relevant stakes (e.g., the money needed to afford such upgrades).

When the player tries to pay Nook for the house, she discovers she has very little money. Nook still lets the player move in, but expects her to work part-time in his shop to pay off the debt. This is a central challenge of the game: working for Nook and paying off the debt. It's also a central plot device, as Nook will send the player on errands throughout the town.

After Nook leaves, the player is free to do many possible things, including exploring the town and talking with townsfolk. Eventually she will find Nook's shop and start working.

In summary, the 5-15 window for *Animal Crossing* is well-designed to elicit receptivity among young people who enjoy escapism, coolness, independence, empowerment, and perhaps biting humor. The window offers many accurate clues about the experience ahead, and introduces some of the basic gameplay. The narrative doesn't seem epic or heroic, and it isn't. For a player looking for unusual, enjoyable experiences, the 5-15 window does a good job

contextualizing initial choices (e.g., town name) while conveying a sense of arriving some place new and interesting. The player can tailor her identity, and choose from many different goals and relevant stakes.

Super Mario Sunshine

The attract mode for *Super Mario Sunshine*¹⁵ includes important backstory, so it automatically plays the first time the game is loaded. Mario and his friends are in a jet plane, flying to a tropical island. Most players will recognize Mario immediately (from past games), with his distinctive overalls and cap. Mario and his friends watch an in-flight welcome message for Isle Delfino, which shows many of the locations the player can eventually visit. Both *Sunshine* and *Beyond Good and Evil* (below) use media-within-media. This can be an effective way to foster immersion, when the player watches an in-game message through the eyes of a character. It draws the player's perspective into the game. It also adds the depth to the in-game world in an unobtrusive way—the player has media in the new context, just like in her home context.

The graphics and music are cartoonish and whimsical. Like *Animal Crossing*, this may appeal to a desire for light-hearted, escapist play.

One of the central mysteries of the game is introduced in the welcome message. A shadowy figure appears in the background, but only the character Peach notices.

¹⁵ Developed and published by Nintendo. Copyright 2002. Platform: Nintendo GameCube.

After the player presses start, the game begins with the plane landing at a little airport surrounded by water. It's a rough landing, because the runway is sunken and covered with goop. This goop is one of the central challenges. It is vaguely like oil on water: colorful and shimmering, but messy and unpleasant. Peach momentarily spies the shadowy figure in the distance. As in the welcome message, this mystery is presented in a heavy-handed way. But from the pre-play window, the player is probably expecting a straightforward action game, so subtle mysteries or complex puzzles might be unwelcome.

As Mario, the player is charged with looking for help to clean up the mess. This may appeal to a player's desire to play a hero. The player takes control of Mario from a third-person perspective. Mario is a very agile character, as befits an action game. By talking to the characters standing around on the runway, the player can learn the basic game mechanics (e.g., jumping). The player can take as much time as she wants to get used to the controls. If the player touches the goop, she discovers it's very slippery, and harmful in concentrated form. The chance to explore without much pressure may appeal to a player's desire to relax and take things at her own pace.

Some of the natives imply or express that the player is responsible for the goop. This is an intriguing twist, since the player knows Mario just arrived. Further, if the player is observant, she will notice wanted posters for a character that looks like Mario. Another native tells the player to pick up a nearby water pump and clean up the goop.

The water pump is the Flash Liquidizer Ultra Dousing Device (FLUDD). FLUDD has an artificial intelligence, so when the player approaches, FLUDD explains its functions. Spraying water with FLUDD is a central gameplay mechanic. FLUDD offers to repeat the directions, thus emphasizing their importance while giving the player another opportunity to learn. When the player is ready, FLUDD encourages the player to practice by washing off an M on a nearby wall. Using FLUDD is viscerally enjoyable, just like throwing a water balloon or playing with a hose. When the M is cleaned off, the wall sparkles a little, and the player earns a gold coin. The player is reinforced both by the aesthetic satisfaction of cleaning up a mess and by the coin. The player is probably very curious what else she can spray with FLUDD. This may appeal to a desire to explore and experiment, as well as a desire to have unusual abilities. The stakes are clear and direct: removing messes efficiently without getting hurt.

When the player tries to wash the goop off the airstrip, a giant piranha plant (made of goop) emerges and the music changes. This is a boss battle, an experience very familiar to an experienced player. A boss is more challenging than a typical enemy, and defeating a boss usually advances the story significantly. This first boss is not very aggressive, which gives the player a chance to get oriented to using FLUDD as a weapon. FLUDD urges the player to spray the plant with water. After spraying it enough, the piranha plant and all the goop disappear. The sunken section of the runway magically fills in, and a shine sprite appears. This is a glowing, twinkling-sounding gold sun that can be picked up. Again the player is reinforced by cleaning up a mess and earning something

shiny and special. There is the appeal of making the world a better place and being a hero.

The player has no time to savor her victory. The local police arrive and arrest her. A court scene follows, in which the prosecuting attorney describes the goopy pollution over the island, and how the island is in shadow even at mid-day. The judge orders the player to cleanup all the goop. This is the main quest of the game. As FLUDD privately explains to the player, cleaning up the goop will attract more shine sprites, and return sunshine to the island. (FLUDD offers to repeat the explanation.) This is the ultimate “cleaning up” aesthetic: a chance to bring sunshine back to a benighted tropical paradise. The stakes are on a larger scale than cleaning up messes. Since the goop is so widespread, *Sunshine* has an environmental protection overtone and stakes.

Finally, the player enters the game proper, with a variety of possible things to do. Eventually she will find another goop piranha plant, defeat it, and start one of many side quests.

The 5-15 window of *Super Mario Sunshine* is particularly notable because it is a microcosm. The airport is a contained space to introduce narrative and gameplay. The player can't leave until she masters the basics of using FLUDD, and the landing-battle-trial sequence is the exposition for the story.

In summary, the 5-15 window for *Super Mario Sunshine* is well-designed to elicit receptivity among people who enjoy escapism, action, exploring and experimenting, having unusual abilities, heroics, and playfully cleaning up messes. The window offers many accurate clues about the experience ahead,

and introduces much of the basic gameplay. The narrative is straightforward, with a hero and a villain, and a case of mistaken identity. Mario games aren't renowned for their stories, so an experienced gamer will probably find this narrative just complex enough to not get in the way of the action and the visceral enjoyment of FLUDD. The 5-15 window doesn't make much use of Mario's agility, which may leave an experienced player wondering whether *Sunshine* will involve the acrobatics Mario is famous for, while leaving an inexperienced player with a false sense of the kinds of challenges ahead. The stakes are as dire as possible for a mostly-whimsical game, while the choices involve straightforward perception and control challenges, not choices about identity (e.g., the player can't refuse to clean up the mess).

Resident Evil 4 (Preview)

The preview for *Resident Evil 4*¹⁶ illustrates how a designer can shape a pre-play window. Previews are often bundled with other games, and are also available online. This preview was released before the game, and was distributed (for free) at video game stores. The preview plays in a GameCube (perfect for potential buyers), and includes a non-interactive video and a playable demo. For this study, only the video was used.

The preview starts with the "Mature" game rating logo and "Warning: This game contains strong language, and scenes of explicit violence and gore." This

¹⁶ Developed and published by Capcom. Copyright 2005. Platform: Nintendo GameCube.

may appeal to a desire to play something vivid and realistic—at least the flavor of realism associated with mature action movies.

The preview is like that for a movie, alternating between title cards and frenetic sequences of narrative and gameplay. It opens with “Several years have passed since the destruction of Raccoon City.” There have been many Resident Evil games, and most take place in and around Raccoon City (sic), so an experienced player will recognize the reference. Then the camera pans down over a desolate canyon, with the words “Autumn, 2004 Europe.” Unlike *Sunshine* or *Beyond*, this game is set in our time and our world. Further title cards are “A mysterious village,” “The nightmare returns,” and “Creatures that defy God’s creation.”

Another sequence shows two men dumping a dead body overboard, while a rugged-looking blond man in a jacket watches through binoculars. He swears angrily. Further sequences show the man walking or running through dreary locations in disrepair—horror movie set pieces like a forsaken village and a decrepit mansion. The graphics are realistic, with muted colors. The music is suspenseful and disorienting. The tone is clearly gothic horror, as emphasized by sequences of villagers attacking with farm implements and chainsaws, resulting in blood sprays. The villagers speak a cryptic foreign language. All these horrific and disorienting elements may appeal to a desire to confront fearful and adrenaline-releasing challenges.

The blond man introduces himself to a young woman (and hence the audience). His name is Leon, and he’s been sent to rescue the young woman,

Ashley, who is the President's daughter. Ashley is a pretty blonde in a "schoolgirl" outfit, including calf-high boots, a short skirt, and a sweater draped over her shoulders. Further sequences show gameplay as Ashley, and gameplay with Leon and Ashley. This illustrates some of the teamwork and relationship elements of the game. The stakes are rescuing, protecting, or surviving as a vulnerable innocent, while she is threatened by evil, ugly, horrific enemies.

Further title cards read "Blast the enemy in key hit zones" and "A curse that plagues the human body...." The gameplay is obviously very violent and realistic. An experienced player may know that a mutagenic disease that reanimates the dead is a central plot element in Resident Evil games. One sequence shows Leon coughing up blood and falling to the floor. Another sequence shows a crazed mob carrying torches. Near the end of the preview, the camera shows a church graveyard at night in a thunderstorm, with a grim voice saying, "Resident Evil Four." The preview ends with Ashley being caught in an elaborate trap, and Leon shouting, "Don't worry Ashley! I'm coming for ya!"

Overall, the preview is a roller-coaster of sights, sounds, and themes. The tone is horrific and very violent. Throughout the preview, different gigantic monsters are shown for split seconds. There are apparently many terrible surprises and confrontations in the game. As part of the pre-play window, the preview is well-designed to elicit receptivity from people who enjoy horror, realistic action, heroics, stoicism, and solving problems with violence. The preview sketches the narrative of the game in broad, disorienting strokes. The player learns very little about Leon, Ashley, or the many enemies. This may be

appealing, because it means there will be plenty to discover in the actual game. But if a player is partially basing her receptivity on the identity being offered, there are few clues as to what it will be like to play the identity of Leon or Ashley.

Beyond Good and Evil

Many players may miss the attract mode for *Beyond Good and Evil*¹⁷, since it only plays if the game is left idle for awhile. It's also available on demand through a menu. But evidently the designer did not choose to make the attract mode an important part of the 5-15 window, so it wasn't analyzed.

When the player presses start, the game begins with a newscast. This provides backstory and introduces the science fiction setting. The planet Hillys is encircled by the Domz. True to a sci-fi literary convention, things aren't clearly explained. For example, who or what are the Domz? What is the relationship between Hillys and Earth? An experienced player may expect to figure these things out as the game progresses, but an inexperienced player may immediately feel disoriented. The newscast includes part of a patriotic speech by General Keck, who later gradually emerges as a major villain.

The graphics are stylized rather than realistic, although with hard edges and dark or muted colors. The music is similarly ambiguous while trending toward ominous. The newscast and these aesthetics may make the game appealing to a player with a desire for an imaginative world, science fiction, and serious themes.

¹⁷ Developed and published by Ubisoft. Copyright 2003. Platform: Sony PlayStation 2.

After the newscast, the player sees a young woman and a goat boy practicing a form of moving meditation, on a grassy slope overlooking a bay. The music becomes grim as darkness fills the sky and meteors begin falling. The woman picks up the boy and starts running toward the nearby lighthouse. In a dramatic freeze-frame close-up, the woman is introduced as Jade. She is realistically proportioned¹⁸, wearing casual, somewhat-revealing clothing, including a green jacket, green lipstick, and a green headband. Jade's ethnicity is ambiguous, perhaps Mediterranean or Hispanic.

Jade tries to raise the shield on the lighthouse, but the computer informs her that her account is past due. The goat boy and some other children are standing nearby. A meteor crashes into the ground, and the children fall into the hole. Then scary-looking, biomechanical¹⁹ monsters rise from the hole, each with a blank-eyed child trapped in its sickly green chest. Jade narrows her eyes, picks up a burning branch, and wields it like a quarterstaff. The clues are strong and clear about the identity and stakes the game offers: taking arms against horrors to save innocents.

At this point the player takes control of Jade, to start learning how to fight by doing so. There are subtle on-screen prompts (e.g., which button to press to

¹⁸ This is worth noting only because many female characters in video games have unnatural, lascivious proportions.

¹⁹ The design of these monsters—the Domz—obviously owes much to Giger's work on the movie *Alien*.

attack). As with the first boss battle in *Super Mario Sunshine*, this is a relatively easy fight, although the player can still get hurt. As she defeats each monster, a child is freed and apparently unharmed. The player says things like, "I got it handled. Get yourself to safety." Also, as each monster perishes, dark energy flows from it into crater, although this is probably too subtle for the player to notice in the midst of combat. Just before the player defeats the last monsters, a slow motion effect automatically starts, heightening the drama of the conflict and calling attention to the player's graceful and powerful fighting style. This may satisfy a desire to be powerful, as well as amplify the visceral satisfaction of hitting evil, ugly things.

After the fight, the player loses control. As the children look on, Jade approaches the hole and is dragged in by a tentacle. A one-eyed monster talks to Jade in a strange voice, seeming to hypnotize her. But then Pey'j attacks, shouting a battle cry and leaping out of a window in the lighthouse. Pey'j is a pig man, and he's named in a freeze-frame close-up just like Jade. He attacks the monster, frees Jade, and throws her a proper staff. Like Ashley in *Resident Evil 4*, Pey'j may appeal to a desire for teamwork.

The player resumes control and begins fighting the boss monster, plus more of the original monsters. Pey'j gives advice on how to defeat the boss. It's a complex battle, since the boss has minions and multiple modes of attack. Pey'j's life meter is also on the screen, emphasizing that he's vulnerable just like the player. It's an easy battle compared to future ones, but hard the first time or for an inexperienced player.

After the player defeats the monster, she loses control again. The monster melts away, revealing a glowing pearl. This shiny reward is analogous to the shine sprit in *Sunshine*—both are part of the stakes in battles with bosses, of which there will be many.

The player regains control. She can talk to Pey'j via a dialog tree. This is a series of things the player can say, which elicit different responses from Pey'j. The player can't leave the crater, and eventually picks up the pearl. The pearl is "digitized" into a bag on the player's hip, and the bag's holographic artificial intelligence appears. Secundo is a saucy Spaniard²⁰ who alternates between English and Spanish. Among other things, he cautions the player that he has detected an anomaly in her "psychokarma"—another sci-fi term the player must assume will be explained eventually. This sequence may appeal to a desire for some role-playing elements (e.g., the dialog tree, a party of adventurers that includes the player, Pey'j, and Secundo).

As the player and Pey'j leave the hole, a group of soldiers is arriving. These are the Alpha Sections—the planetary defense force, as the player will learn—and wear intimidating-looking armor, including full helmets. They are accompanied by the reporter from the newscast, who reveals that the lighthouse is a shelter for war orphans. Pey'j angrily criticizes the Alpha Sections' response time, but then Jade faints. The story is apparently complex, as the Alpha

²⁰ Or Italian?

Sections aren't straightforward heroes, and something weird is happening with Jade (e.g., hypnotism, polluted psychokarma, fainting).

When Jade wakes up, she is greeted by the children and a big dog. She is depressed about money, but Secundo reveals there's a bounty for taking a picture of each type of creature on the planet. The player resumes control. A cool-looking camera is in the foreground, and one of the children says he found the player's camera and put it over there. The child resumes listening to the radio, which is playing the report that the player just saw, including Pey'j's angry remarks. The player can walk over and pick up camera. She is then guided in taking her first picture (of a bug), and is promptly paid a bounty. This is a particularly clever approach to a familiar game mechanic. Many games keep a tally of creatures a player has killed, perhaps rewarding the player for killing one of each kind. *Beyond* rewards the player for taking a picture of one of each kind. The stakes are different—conservation rather than destruction.

The player can start exploring the lighthouse and the island, and eventually gets her first photojournalism job.

In her appearance and first actions, Jade is a particularly appealing character, with a strong potential for the player to identify with her. She is strong, smart, feminine, caring, and imperfect. Jade can fight and perform typical action-game moves (e.g., climbing), but she's also a photojournalist and looks after war orphans. The identity and stakes are complex and weighty: earning money, providing shelter, fighting monsters, relationships with other characters, and more. Pey'j is also appealing, as a sidekick/paternal character and a source of

comic relief. The story of Hillys, General Keck, the Alpha Sections, and the Domz is very complex compared to most video games. It's also much darker and more humanized than most. As the 5-15 window implies, the stakes are dire. This may appeal to a desire for more sophistication and more mature themes.

In summary, the 5-15 window of *Beyond Good and Evil* is well-designed to elicit receptivity among people who enjoy escapism, action, science fiction, storytelling, heroics (especially protecting innocents), teamwork, dramatic battles, and mature themes. The story is sophisticated, so the window leaves the player with many questions. This can be very appealing, because it suggests the game has enough story to fill many hours. Or it can be unappealing, if a player prefers a game that will only tax her perception and control abilities. For a player who wants to invest in a complex story, advancing the story can be an enjoyable reward. In contrast, *Sunshine* has little story to advance, so beating a perception or control challenge must be a reward in itself.

Additional Remarks

Animal Crossing, *Super Mario Sunshine*, and *Resident Evil 4* all sold well. *Beyond Good and Evil* did not, although it was critically acclaimed. There are many theories about *Beyond's* poor reception by fans. One of the most compelling is that the publisher released two similar games simultaneously. The other, *Prince of Persia*, is not nearly as complex in setting, story, characters, or themes. Also, *Prince* offers a traditional, one-dimensional, male action hero, while Jade is remarkably complex and dynamic. Perhaps gamers didn't know what to make of a game in which the player is a woman who protects orphans,

takes pictures of bugs, and banters with a pig man. In other words, the challenges to receptivity were high, and the first contact window failed to elicit sufficient receptivity in most potential customers.

While the video preview for *Resident Evil 4* was used in the interviews, it is only one part of the possible pre-play window. Other parts include the box (e.g., as encountered at a game store) and the manual. Some game manuals are highly stylized. For example, a manual can have the look and tone of an item in the game world (e.g., the protagonist's mission briefing). However, all these games teach the player through conversations or other prompts in the game, rather than assume the player has read the manual first. Indeed, many players no longer read manuals before starting to play. As Gee points out, this means a game must teach the player itself (2003).

Sunshine and *Beyond* both try to quickly immerse a player through gameplay, with what might be called "instant action." Only some of the exposition is presented before giving the player something to do. For eliciting receptivity, this is akin to a pre-emptive strike: while the player is still evaluating the experience being offered, she is thrust into the midst of a challenge.

All four games offer a strong sense of place. *Crossing* and *Sunshine* look like playable cartoons, and are populated by conversational characters and local cultural landmarks and events. *Beyond* offers a complete, realistic world in the tradition of science fiction, with a rich, diverse culture, landscape, and ecosystem. *Resident*, while largely contained in horror movie set pieces, offers a persistent, gritty realism. Sense of place is hard to convey in a pre-play or 5-15

window, but if the whole design has it, it can “trickle down” to the effectiveness of the first contact window in eliciting receptivity. A player will be more willing to travel to a new context if the context seems full and detailed—there must be depth for immersion to be deep.

CHAPTER 2: EXPERIMENTING WITH DESIGNS FOR RECEPTIVITY

This chapter describes the first of two empirical phases of this study²¹. An adaptive, online survey was created to test key ideas about receptivity. The focus was on research questions 1 and 2 (p. 47): testing the effectiveness of design choices, especially adaptation based on interactivity, on eliciting receptivity in the pre-play window. Subjects were assigned to different experimental conditions and responded to different previews for an educational video game (*Ink*). The results are reported at the end of this chapter and further discussed in Chapter 4.

Populations (Survey)

Subjects were recruited from several different populations. The original target population was students in undergraduate writing courses. Unfortunately, at the time of the survey (July 2006), few writing courses were being taught in the region, and the instructors were unresponsive. Instead, several other populations were targeted.

An email message was sent to the H-Net Network on Digital Rhetoric²², a list for instructors and scholars interested in digital rhetoric. Several instructors replied and agreed to invite their students to take the survey. This was the closest population to the original target, and represented possible student players of *Ink*.

²¹ The Social Science, Behavioral and Education Institutional Review Board (SIRB) at Michigan State University approved this study. IRB# X06-519.

²² H-DIGIRHET@H-NET.MSU.EDU and <http://www.h-net.org/~digirhet/>

The Director of the Michigan State University Writing Center (Janet Swenson) sent an email message to several lists for instructors and scholars involved in writing (e.g., National Writing Project directors, writing center directors). Many recipients took the survey, and shared the link with colleagues and students. Hence, some subjects were students, while others were instructors. The students represented possible student players. The instructors represented one possible source of collateral players—people who enjoy writing—as well as instructors and scholars who might teach with or study *Ink*.

Multiple messages were posted in-game in *A Tale in the Desert*²³, an online, multiplayer game that has many similarities with *Ink*. Some subjects also reported learning about the survey from friends who read one of the messages. A message was also sent to SpartaSoft, the Michigan State University student organization for future video game developers. This population represented another possible source of collateral players—people who enjoy gaming.

All subjects who completed the survey had the choice to enter a drawing for one of two \$15 Best Buy gift cards.

Each population received a different initial link to the survey, so the data for each subject automatically included how she learned about the survey. The survey also asked a subject, “3. How did you find out about this survey?” In some of the analyses, the data were disaggregated by population.

²³ <http://www.atitd.com/>

The heterogeneity of these populations was only somewhat detrimental to this study. *Ink* does not try to be “all things to all people.” However, the game is designed to appeal to a variety of different dispositions along several continua, including gaming experience, enjoyment of writing, and relevant habits and tastes (especially in entertainment). Different populations will be predisposed to be more or less receptive toward any designed experience—this is beyond a designer’s control. The design problem is how to increase receptivity to its highest possible level. By surveying heterogeneous populations, the relative effectiveness of design choices could be more generalized. To wit: this study could have proven that certain design choices—especially adaptation—can significantly increase receptivity, even in populations in which the highest possible receptivity is relatively low. As long as there is a range for possible receptivity, design choices can increase receptivity.

Methods & Measures (Survey)

The design of the survey illustrates some key ideas for this study, particularly the possible utility of adaptation based on interactivity. The survey questions are listed in APPENDIX 1: SURVEY QUESTIONS (p. 198).

The survey was created as a series of dynamic, database-driven webpages, using PHP and MySQL²⁴. The survey functioned autonomously; like

²⁴ All the files to set up and run the survey are available at <http://KymBuchanan.org> under “Publications.”

a video game, the designer's dialog with a subject was shifted in time and space by the intermediary of technology.

The survey had three parts: profiling, presenting the previews, and measuring receptivity. The survey was not the same for every subject. Rather, a subject's responses to some of the profiling questions affected which previews she viewed. The survey tried to present previews that most closely fit a subject's disposition.

Profiling

The first part of the survey asked questions about demographics and background, video games and similar technologies, *Ink*-related themes, and writing. Most of the questions asked about dispositions that might affect receptivity toward *Ink*. The subject's responses were used to edit her unique *profile* appropriately. For example, politics is a major theme in *Ink*, so several questions probed a subject's disposition toward this theme. Suppose a subject's responses indicated a positive disposition toward this theme. Then the survey extrapolated that this theme should be emphasized in one of the previews the subject viewed, in order to increase receptivity toward *Ink*.

A subject's profile consisted of 15 extrapolations of distinct dispositions. These dispositions were called *aspects*. Each subject was assigned the same 15 aspects, with equal initial values of 50. A response that indicated a positive disposition increased the value of an aspect, while a response that indicated a negative disposition decreased the value. Any increase or decrease was called a *modifier* (e.g., +20, -10). The aspects matched 15 possible previews, so if a

response modified the value of an aspect, it directly modified the likelihood of a subject viewing the matching preview. Continuing the politics example, a response could increase the aspect of *Government & Politics* and thus increase the likelihood of the subject viewing the *Government & Politics Preview*. A subject was not aware of her aspects during the survey, and a subject was not aware of how a response could modify an aspect. The aspects/previews are shown in Figure 7.

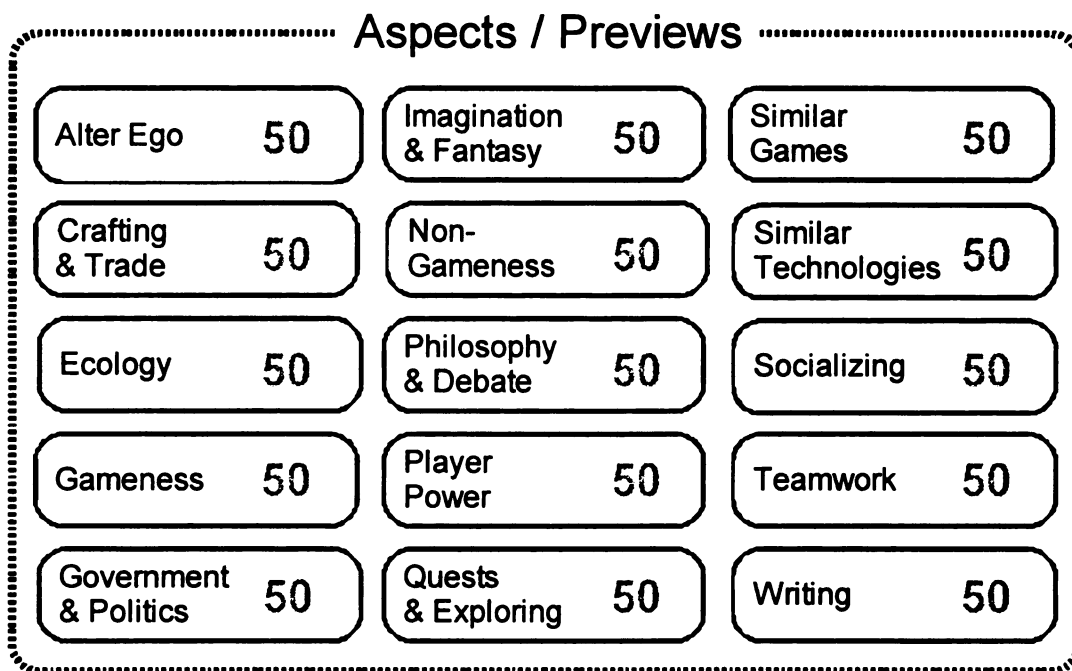


Figure 7. Each subject's profile included 15 aspects, which matched 15 possible previews. Each aspect was initially 50.

The aspects were chosen after careful reflection on the design of *Ink*, particularly its themes and the challenges, actions, and identities it offers. The survey questions, aspects, and previews were developed simultaneously, sometimes in mutually-inspirational ways. For example, a fairly-obvious question

was asking whether a subject played games like *Ink*, which modified *Similar Games*, which determined whether the subject saw the *Similar Games Preview*. This preview tried to increase receptivity by favorably comparing *Ink* to games the subject has played. The *Similar Games Preview* inspired the *Similar Technologies Preview*. This preview tried to increase receptivity by favorably comparing the experience of playing *Ink* to technologies a subject has enjoyed (e.g., blogging, instant messaging). The suitability of the *Similar Technologies Preview* depended on whether a subject used and enjoyed these technologies, so the survey needed to ask questions about that. And so on.

The central design problem of the survey was increasing a subject's receptivity toward *Ink* using some of the previews. After the profiling questions, a subject's 15 modified aspects determined which previews she saw. Hence, much of the design work focused on asking the "right" questions and attaching the "right" modifiers. This was an iterative, recursive process. The final list of questions appears in APPENDIX 1: SURVEY QUESTIONS (p. 198). The process for creating this list was as follows.

First, a series of questions and aspects were brainstormed. The questions were loosely modeled on the survey used by Jones (2003) in his study of undergraduates and their technology and media habits and tastes²⁵. The questions were also modeled on a survey used in a prior study of high school students and their video game habits (Buchanan, Submitted).

²⁵ Jones' instrument wasn't published. He was kind enough to send me a copy.

To simplify the process, a response could only modify one aspect. Each response was first assigned the most appropriate aspect, with a small magnitude (e.g., 10) in the appropriate direction—positive or negative. For example, question 22 asked, “If you play video games, what best describes your reason for doing so?” A response of “Cooperate with other players” was assigned “+10 *Teamwork*” because it seemed to indicate that a subject enjoyed teamwork and thus would be more receptive toward *Ink* if she viewed the *Teamwork Preview*.

For some questions, different responses modified different aspects (e.g., “19. If you do not play video games at all, what best describes your reason for not doing so?”). When there was doubt about what a response indicated, no modifier was assigned. If other responses to the same question had modifiers, the response in doubt was assigned “+0 *nil*” (for technical reasons²⁶). For some responses, an aspect was assigned but with a zero modifier, to illustrate how different responses to the same question were related.

If a response seemed a strong indicator of either a positive or negative disposition, the magnitude of the modifier was increased. For example, question 14 asked for “Major/Profession.” A response of “Social Work” seemed to strongly indicate an interest in social justice, so it was assigned “+30 *Government & Politics*.” For similar or parallel questions (e.g., questions about tastes in different genres), modifiers were similar or parallel (e.g., different aspects but equal

²⁶ The survey processed all responses to a question as a set. If any response modified an aspect, all responses had to be processed the same way. Thus, the survey modified a subject’s “aspect” of *nil* for some responses, but this aspect had no effect.

magnitude). For example, preferring action/adventure was assigned “+30 *Quests & Exploring*,” while preferring crime/procedural was assigned “+30 *Player Power*.”

For a question that offered a range of choices, like a Likert scale, the magnitude was increased based on distance from the neutral response; if the responses were symmetrical (e.g., “I like it a lot” to “I hate it”), the responses all modified the same aspect, and the magnitudes were symmetrical (e.g., +30 to -30). The exception is *Gameness* and *Non-Gameness*. Early on the designer decided to use separate previews to appeal to experienced and inexperienced players, and this necessitated separate aspects. Liking and playing games positively modified *Gameness*, while disliking and not playing games positively modified *Non-Gameness*.

In iterating the questions and modifiers, it was helpful to calculate some descriptive statistics for each aspect. The number of questions that potentially modified the aspect was counted. Also, the final possible values were calculated. The minimum possible value would occur if a subject’s responses were all those with the most negative modifiers. The maximum possible value would occur if a subject’s responses were all those with the most positive modifiers. The difference between the minimum and maximum possible values was the range of final possible values. The descriptive statistics are listed with each aspect and tabulated in APPENDIX 1: SURVEY QUESTIONS (p. 198).

These statistics helped when balancing the questions and modifiers. One goal was ensuring that no aspect had a disproportionate number of questions or

range. However, perfect balance or symmetry was not an absolute imperative. The previews, like *Ink* itself, were not symmetrical. *Ink* only offers certain themes, kinds of challenges, etc., so there are limits to how many ways *Ink* can be made appealing. For example, it's difficult to occlude the central gameplay of writing. Furthermore, it's easier to devise questions for some aspects than others. The ultimate goal of increasing receptivity was best served by emphasizing some of *Ink*'s best elements to a subject, not by muting strong elements to attain balance with weak ones.

Some aspects had few questions and/or small ranges, because it was difficult to devise questions to extrapolate relevant dispositions. For an aspect with many questions, the magnitude of each response was sometimes reduced, to curtail the range. Conversely, for an aspect with few questions, the magnitude of each response was sometimes increased, if a response seemed a moderately strong indicator; this made the smaller number of questions more sensitive.

At the end of the process, each aspect was modified by two, three, or four questions, with a range between 20 and 150. The least minimum possible value was -10, while the greatest maximum possible value was 140.

The main purpose of the survey was experimenting with designs for receptivity. However, many questions were never intended to modify aspects. The questions that didn't modify aspects were included because the descriptive statistics are interesting and/or useful. For example, the background questions could be used to create subgroups for post hoc analysis.

Designing the Previews

Throughout the survey-creation process, selecting aspects and magnitudes suggested which elements to include in which previews. While creating each preview, the relevant questions and responses were closely reviewed, as these dictated the probable dispositions of the subject viewing the preview. For example, the responses that increased *Non-Gameness* would lead to the *Non-Gameness Preview*, so that preview needed to speak to a subject's inexperience with or dislike of other games.

The previews were created as web pages²⁷. The previews consisted of short paragraphs with short, descriptive sentences, supplemented by images. Second-person language was used extensively (e.g., "You can experiment with new identities..."). The tone was friendly (e.g., "Don't worry!"), optimistic (e.g., "If you enjoy discussing issues, you'll enjoy Ink."), and enthusiastic (e.g., "The world of Ink is a strange and wonderful place."). Important words or phrases were bolded, to help a subject process the previews more quickly and easily.

The text of a preview highlighted major features of the game, central elements of gameplay, and/or some of the possible experiences of playing. A preview's aspect dictated which features, elements, and/or experiences were included and emphasized. While some of the text of a preview was often adapted from *Ink* or project materials, most of the text was revised or original.

²⁷ The previews were created as PHP pages using CSS styling (e.g., to specify a font).

The images in the previews were taken from *Ink*: interface icons, logos for in-game groups, and pictures of places in the game world. Each preview had several images, and no image was used more than once. In many cases the images were closely and obviously connected with the text. In some cases the images were only visual embellishment.

The relative media simplicity of the previews—text and images—fits with the nature of *Ink*. The game is equally unsophisticated in its media (for the most part), so the previews were an organic derivative. While more sophisticated media might elicit more receptivity in the pre-play window, the previews were created as genuine marketing material for *Ink*. Since this study is part of the larger *Ink* project, it would be deceitful to represent *Ink* as more media-rich than it is—and probably harmful to the long-term interests of the project²⁸. However, since most video games use sophisticated media, most video games previews also use sophisticated media. The influence of sophisticated media in a preview was explored in the case studies (i.e., the preview for *Resident Evil 4*).

Some previews referred to some of the same elements of the game. These elements were the most central or prominent elements, making it difficult to “isolate” them in separate previews. However, any overlap was limited, because each preview focused on a different aspect. Furthermore, such overlap wasn’t unwelcome. As Spiro and his colleagues have argued, when exploring a

²⁸ Indeed, several recent recreational video games have been criticized for failing to deliver the graphical sophistication implied by marketing materials.

complex domain, it is educative to criss-cross the conceptual landscape, and approach the same locations from different directions (cf. Spiro & Jehng, 1990). Revisiting was not repeating, when different previews gave a subject a deeper and more nuanced understanding of the same element(s). A subject viewed several previews, so the previews had individual as well as collective influences on receptivity. Any criss-crossing probably increased the collective influence on receptivity.

In the process of creating the previews, some elements were so central or prominent that they would have appeared in most previews. These elements were “pushed out” to a “general preview”—a preview that every subject viewed before she viewed the more specific, aspect-focused previews.

In all, 15 previews were created, to match the 15 aspects. Since the previews were created as web pages, it’s impossible to properly represent their layout and formatting here²⁹.

Presenting the Previews

A subject only viewed five previews. Those five previews were selected based on the subject’s profile and the subject’s assignment to an experimental condition. The assignment to condition was the key *independent variable* in this study, while reported receptivity was the key *dependent variable*. After completing the profiling part of the survey, a subject was randomly assigned to

²⁹ All the files to set up and run the survey (including the previews) are available at <http://KymBuchanan.org> under “Publications.”

one of three conditions: *Random*, *Match*, or *Mismatch*. A subject had an equal chance of being assigned to a condition, and the conditions were roughly equal in number of subjects. A subject was not aware of her assignment.

In the *Random* condition, the survey disregarded the subject's aspects and presented five previews chosen at random. In the *Match* and *Mismatch* conditions, the survey first sorted the subject's aspects from greatest to least. In the *Match* group, the survey presented the top five previews—the previews expected to elicit the greatest receptivity for that subject. In the *Mismatch* group, the survey presented the bottom five previews—the previews expected to elicit the least receptivity for that subject. A subject was not told of this adaptation beforehand, nor did a subject have any explicit indication that it happened.

To illustrate the process of selecting previews, consider a hypothetical subject named Mira. After Mira completed the profiling part of the survey, many of her aspects were no longer equal to 50 (Figure 8). If Mira was assigned to the *Random* condition, the survey disregarded her aspects and presented five previews at random. If Mira was assigned to the *Match* or *Mismatch* conditions, the survey sorted her aspects. In the *Match* condition, the survey presented the top five previews: *Gameness*, ..., *Quests & Exploring* (Figure 9). In the *Mismatch* condition, the survey presented the bottom five previews: *Ecology*, ..., *Similar Games*. In every condition, the previews were presented in random order. So if Mira was in the *Match* condition, the first preview she viewed wasn't necessarily *Gameness*.

The Match condition was the implementation of a key idea in this study, that receptivity can be affected by design choices. The survey asked questions about a subject's dispositions, and then tried to increase receptivity in Match subjects. The Mismatch condition was the implementation of the same key idea, only in reverse. The survey asked questions, and then tried to *decrease* receptivity in Mismatch subjects. The Random condition was the control group, to test whether the experimental manipulation was significant. Receptivity in the Match condition should have been higher than in the Random condition, which in turn should have been higher than in the Mismatch condition.

Mira's Profile

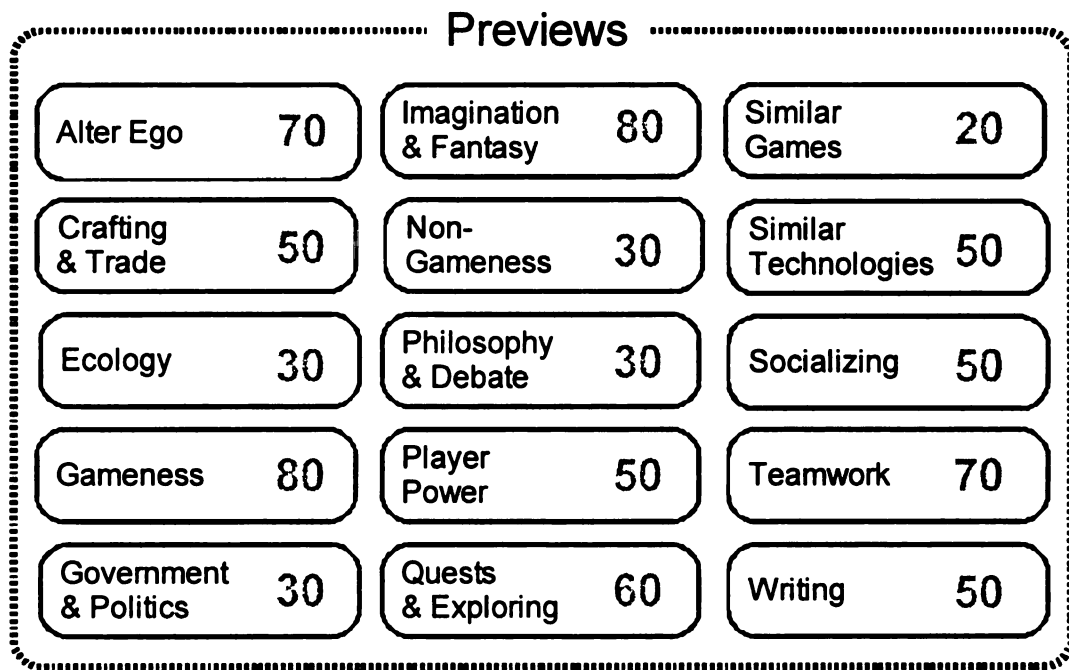


Figure 8. Mira's profile reflected her responses to the profiling questions. Some responses increased some aspects, while other responses decreased some aspects.

In summary, a subject's responses to questions modified her aspects; these modifiers were extrapolations of the subject's relevant dispositions. In the Match condition, the survey previewed *Ink* in ways that should be very appealing, while in the Mismatch condition the survey previewed *Ink* in ways that should be less appealing or wholly unappealing. Hence, a subject's responses and assignment to experimental condition were the *principle basis* for the customization of the pre-play window she experienced.

Mira's Profile, Sorted

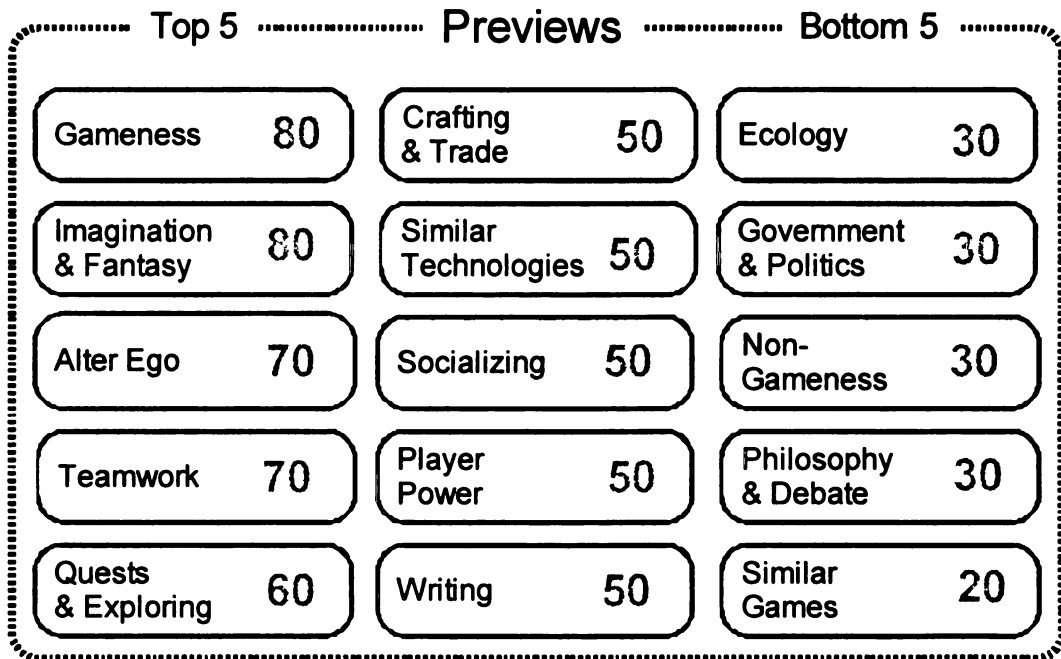


Figure 9. In the Match and Mismatch conditions, the survey sorted Mira's profile. Then it presented the top five aspects (Match) or bottom five aspects (Mismatch).

Measuring Receptivity

Reported receptivity was the key dependent variable in this study. The final part of the survey measured a subject's receptivity in several ways.

First, the survey asked a subject about her desire to play *Ink*, by offering several Likert-type statements and choices (Strongly agree, Agree, Neutral or unsure, Disagree, Strongly disagree). These desire-to-play questions were:

55. I want to learn more about this game.

56. I would enjoy playing this game.

57. I want to play this game as part of a class.

58. I want to play this game, even if it's not part of a class.

59. I want to tell my friends about this game.

Questions 55, 56, and 59 were relatively simple probes of receptivity. Question 57 probed a subject's receptivity as a possible student player, while Question 58 probed a subject's receptivity as a possible collateral player.

Second, the survey asked several open-ended questions to probe receptivity. There was no intention to code or otherwise quantify responses. Rather, these questions were intended to help interpret responses to the other receptivity questions, especially for subjects who reported very high or very low receptivity. The open-ended questions were:

60. What makes you want to play this game, or not want to play?

61. Think about the previews you just saw. What about the previews makes you want to play this game, or not want to play?

62. What would increase how much you want to play? For example, what kind(s) of information?

Think about the design of the game, as shown in the previews. The design offers players certain identities/roles, abilities, challenges, stories, themes, etc.

63. What changes could we make to the design that would increase how much you want to play?

Third and finally, the survey asked two yes-or-no questions about choosing to continue the activity, that is, playing *Ink* or learning more about *Ink*. Offering a subject the choice to continue an activity is an established method for measuring motivation, particularly intrinsic motivation, so it was judged suitable for measuring receptivity. The two questions were:

65. The game isn't finished yet. Would you like to receive an email when it's ready?

71. The official Ink website has more information about the game. Would you like to go there when you finish this survey?

Together, all these questions measured a subject's receptivity toward *Ink*. The desire-to-play and continue-the-activity questions were intended to be used as both separate and combined quantitative measures of receptivity.

Data Analyses (Survey)

Data were collected for about two weeks in July 2006. After discarding incomplete surveys³⁰, the data included 140 subjects' responses. These subjects were labeled based on the populations from which they were recruited [see Populations (Survey), p. 69]. *Student* subjects were recruited by writing instructors. *Writer* subjects were recruited from writing-related email lists; many described themselves as instructors. Only subjects who had not completed their senior year (as of June 2006) were labeled as *student*; graduate students or ambiguous subjects were labeled as *writer*. *Gamer* subjects were recruited from the online game *A Tale in the Desert* and from Spartasoft, the student game developers club. Some *gamer* subjects had not completed their senior year, but they weren't labeled as *students* because they were recruited based on their interest in games. In the analyses that follow, subjects are often referred to as students, writers, or gamers—the populations they represent.

The survey results were analyzed in five parts³¹. First, the profile data were descriptively analyzed—who took the survey and what were the average responses? Second, correlations among profile data were tested—did some responses frequently appear with other responses? Third, the measures of

³⁰ A survey was considered incomplete if the subject did not view all the pages. If a subject skipped some questions but viewed all the pages, her survey was included. About 50 incomplete surveys were discarded.

³¹ All analyses were conducted in SPSS 14.0 in Microsoft Windows XP.

receptivity were computed, for use in the remaining analyses. Fourth, the previews and their effectiveness were descriptively analyzed—which previews were viewed most, and which previews were associated with greater receptivity? Fifth and finally, the effectiveness of the experimental manipulation was inferentially analyzed—did the survey's adaptation influence receptivity?

Profile Data: General Questions

A series of descriptive analyses were conducted on the profile data. The order of these analyses loosely followed the order of questions in the survey. First, data from the general demographics questions were analyzed.

The majority of subjects were writers (n=99, 70.7%). Gamers (n=19, 13.6%) and students (n=22, 15.7%) were less numerous. A majority of students and writers were female (73%, 81%), while a minority of gamers were female (32%)³².

In age³³, most gamers were 18-25 years old (74%); another five gamers were 26-31 years old (21%), while one gamer was 54 years old (5%). Most students were also 18-25 years old (91%); two students were 26-31 years old (9%). In contrast, most writers were 26 years old or older (88%); the oldest writer was 76 years old. Four writers did not report their ages (4%).

³² Question 8. Gender?

³³ 7. Age? (years)

Almost all subjects identified themselves only as “White, not of Hispanic origin” (93%)³⁴. One subject also self-identified as “Hispanic, Latino, not of European origin.” The other ethnic groups were represented by a few subjects. Almost all subjects were citizens of the United States (99%)³⁵, except for a gamer from Australia and a writer from Canada³⁶.

All subjects responded “Yes” to the question “Is English your native language?”³⁷ If any subject had responded “No,” this question would have modified her aspect of *Writing* by +10—but none did.

Almost all writers had at least a bachelors degree (93%), and most had a masters degree or PhD (72%)³⁸. Most majored or worked in education (75%)³⁹. In short, most writers were instructors. All students had not completed their senior year (by definition). Many students were majoring in education (36%). Some other majors were marginally represented, although no students were majoring in art or architecture, engineering, natural sciences, or urban planning or public administration. Most gamers had not yet completed their senior year

³⁴ 9. You identify yourself as...? (Choose all that apply)

³⁵ 11. Are you a citizen of the United States?

³⁶ 12. If you are not a citizen of the United States, what is your home country?

³⁷ 13. Is English your native language?

³⁸ 10. Highest year of college completed? (as of June 2006)

³⁹ 14. Major/Profession? or What do you plan to major in?

(68%). Many reported their major or profession as engineering (39%). Since neither computer science nor telecommunication was a choice, this is probably how subjects described themselves if they were majoring in these or other games-related fields. Most responses to the question of “Major/Profession?” modified aspects. For example, both “Education” and “Engineering” modified *Teamwork* +10, so for many subjects, the survey extrapolated that the *Teamwork Preview* would be more appealing.

Government and politics are central themes in *Ink*. Almost all subjects were registered to vote⁴⁰: 90% of gamers, 86% of students, 99% of writers. This question modified *Government* +20, so for most subjects, the survey extrapolated that the *Government Preview* would be more appealing.

Profile Data: Video Games

The questions about video games and gaming were analyzed next. Table 1 and Table 2 show how each population felt about video games and how often they played. Not surprisingly, all the gamers liked games⁴¹ and most played often⁴². Most students liked games but played less often than gamers, while

⁴⁰ 16. Are you registered to vote? (in the United States or elsewhere)

⁴¹ 17. Do you like playing video games?

⁴² 18. How often do you play video games?

writers' attitudes and frequencies varied⁴³. Responses to these questions modified *Gameness* and *Nongameness*.

Table 1

Liking Video Games

| Attitude | Gamer ^a | Student ^b | Writer ^c |
|-------------------|--------------------|----------------------|---------------------|
| I like it a lot | 79 | 23 | 14 |
| I like it | 21 | 55 | 25 |
| Neutral or unsure | 0 | 5 | 32 |
| I don't like it | 0 | 9 | 23 |
| I hate it | 0 | 9 | 5 |

Note. The values represent percentages.

^a_{n = 19.} ^b_{n = 22.} ^c_{n = 99.}

⁴³ Also, unfortunately, based on frequencies for other questions, it appears that different subjects interpreted "Never" differently: some seemed to mean "I have never played video games" while others seemed to mean "I never play video games."

Table 2

Frequency of Playing Video Games

| Frequency | Gamer ^a | Student ^b | Writer ^c |
|-----------------------------|--------------------|----------------------|---------------------|
| Never | 0 | 23 | 46 |
| Less often than once a week | 5 | 41 | 33 |
| About once a week | 0 | 5 | 7 |
| A few times a week | 16 | 14 | 6 |
| Almost every day | 79 | 18 | 8 |

Note. The values represent percentages.

^a n = 19. ^b n = 22. ^c n = 99.

The students and writers who didn't play video games at all gave different reasons⁴⁴, as shown in Table 3. No subjects reported that they didn't have the resources. Many responses to this question modified aspects; the survey extrapolated what might elicit receptivity toward *Ink*, based on other games' failure to elicit receptivity. Write-in responses⁴⁵ included, "-limited time -fear of obsession/addiction and not being able to spend a small amount of time playing" and "Would rather be outside or doing something physical."

⁴⁴ 19. If you do not play video games at all, what best describes your reason for not doing so?

⁴⁵ Write-in responses appear as written by the subjects. Apparent errors in grammar, spelling, or punctuation weren't changed.

Table 3

Why Not Games

| Reason | Student ^a | Writer ^b |
|--------------------------|----------------------|---------------------|
| Boring | 10 | 2 |
| Don't have the resources | 0 | 0 |
| Don't have the time | 50 | 25 |
| Not interested | 20 | 55 |
| Waste of time | 20 | 13 |
| Other | 0 | 0 |

Note. The values represent percentages.

^a n = 10. ^b n = 60.

Subjects who did not play video games at all were directed to skip the remaining questions about games. Hence, the following games-related analyses (until the similar technologies questions) only include subjects who played. All gamers were included, so the gender balance was unchanged (32% female). However, there were smaller proportions of females among students (58%) and writers (69%) when only those who played video games were included.

Since gender is a central issue in studying video games, the following games-related analyses were conducted first by population and then by gender. The combined-populations sample of game-players (n=70) included slightly more females (57%) than males.

Table 4 shows which types of video games subjects played⁴⁶. Larger proportions of females played web-based games and cellphone games, while larger proportions of males played console games, network-based games, and other computer games. This fits with the current general perception that females are more likely to play “casual” games and males are more likely to play “hardcore” games.

Table 5 shows the number of players in games the subjects played⁴⁷. A larger proportion of gamers played multi-player and massively multi-player games, while a much smaller proportion of writers played games with two or more players. As an older population, writers may have played older games or older types of games; multi-player and massively multi-player games are somewhat newer. Much larger proportions of males played multi-player and massively multi-player games, which again fits with the perception that males are more likely to play “hardcore” games. Playing two-player and/or multi-player games modified *Teamwork*⁴⁸.

⁴⁶ 21. Which of the following types of video games do you play at least once a week? (Choose all that apply)

⁴⁷ 24. When you play video games, are they? (Choose all that apply)

⁴⁸ Playing massively multi-player games did *not* modify *Teamwork*. This was a design mistake.

Table 4

Types of Video Games Played

| Type | Population | | | Gender | |
|----------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Console | 53 | 67 | 28 | 50 | 35 |
| Handheld | 11 | 17 | 8 | 13 | 8 |
| Web-Based | 26 | 25 | 44 | 23 | 45 |
| Network-Based | 68 | 17 | 10 | 50 | 10 |
| Other Computer | 63 | 8 | 28 | 50 | 23 |
| Cellphone | 0 | 25 | 10 | 3 | 15 |

Note. The values represent percentages. Only subjects who played games were included.

^a_n = 19. ^b_n = 12. ^c_n = 39. ^d_n = 30. ^e_n = 40.

Table 5

Number of Players When Playing

| Number of Players | Population | | | Gender | |
|-------------------------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Single-Player | 84 | 75 | 87 | 87 | 83 |
| Two-Player | 42 | 58 | 28 | 47 | 30 |
| Multi-Player ^f | 68 | 42 | 21 | 60 | 20 |
| Massively Multi-Player ^g | 63 | 25 | 10 | 50 | 10 |

Note. The values represent percentages. Only subjects who played games were included.

^a n = 19. ^b n = 12. ^c n = 39. ^d n = 30. ^e n = 40. ^f 3-32 players. ^g More than 32 players.

MMOGs and MUDs/MOOs are examples of massively multi-player and multiplayer games, respectively. Table 6 and Table 7 show frequency of play for MMOGs⁴⁹ and MUDs or MOOs⁵⁰. Many gamers had never played or didn't currently play these kinds of games. Since *Ink* is similar to MMOGs and MUDs/MOOs, the questions about these kinds of games modified *Similar Games*.

⁴⁹ 27. How often do you play MMOGs?

⁵⁰ 28. How often do you play MUDs or MOOs?

Table 6

Frequency of Playing MMOGs

| Frequency | Population | | | Gender | |
|----------------------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Never played | 16 | 75 | 85 | 40 | 83 |
| Used to play, but don't play now | 26 | 0 | 8 | 20 | 5 |
| Less often than once a week | 5 | 8 | 5 | 13 | 0 |
| About once a week | 0 | 0 | 0 | 0 | 0 |
| A few times a week | 26 | 0 | 0 | 13 | 3 |
| Almost every day | 26 | 17 | 3 | 13 | 10 |

Note. The values represent percentages. Only subjects who played games were included.

^a n = 19. ^b n = 12. ^c n = 39. ^d n = 30. ^e n = 40.

Table 7

Frequency of Playing MUDs and MOOs

| Frequency | Population | | | Gender | |
|-------------------------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Never played | 37 | 92 | 72 | 53 | 75 |
| Used to play, but don't play now | 32 | 0 | 18 | 30 | 13 |
| Less often than once a week | 0 | 8 | 5 | 3 | 3 |
| About once a week | 5 | 0 | 3 | 3 | 3 |
| A few times a week | 26 | 0 | 3 | 10 | 8 |
| Almost every day | 0 | 0 | 0 | 0 | 0 |

Note. The values represent percentages. Only subjects who played games were included.

^a_n = 19. ^b_n = 12. ^c_n = 39. ^d_n = 30. ^e_n = 40.

Next, the question about hardware was analyzed. Table 8 shows the hardware (or “platforms”) subjects owned and/or regularly used in their homes⁵¹. Regarding gender, the results again support the perception that males are more likely to play “hardcore” games, based on the larger proportions of males who had consoles (e.g., PlayStation 2, XBox).

⁵¹ 30. Which of these things do you own and/or regularly use in your home (i.e., in your dorm or local residence)? (Choose all that apply)

Table 8

Gaming Platforms Owned or Regularly Used

| Platform | Population | | | Gender | |
|-----------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| GameBoy | 5 | 17 | 10 | 7 | 13 |
| GameBoy Advance or SP | 11 | 8 | 8 | 7 | 10 |
| GameCube | 26 | 25 | 0 | 17 | 8 |
| Nintendo DS | 16 | 8 | 8 | 13 | 8 |
| PlayStation | 11 | 17 | 5 | 13 | 5 |
| PlayStation 2 | 53 | 42 | 15 | 43 | 20 |
| PlayStation Portable | 0 | 0 | 0 | 0 | 0 |
| XBox | 11 | 17 | 15 | 23 | 8 |
| XBox 360 | 11 | 8 | 5 | 13 | 3 |
| PC/Windows Computer | 100 | 67 | 77 | 87 | 78 |
| Mac/Apple Computer | 0 | 25 | 15 | 10 | 15 |
| Internet - Dial Up | 5 | 0 | 8 | 3 | 8 |
| Internet - Broadband | 84 | 67 | 85 | 87 | 78 |

Note. The values represent percentages. Only subjects who played games were included.

^a n = 19. ^b n = 12. ^c n = 39. ^d n = 30. ^e n = 40.

Next, the question about why subjects played video games was analyzed. Subjects played for a variety of reasons⁵², as shown in Table 9. Leading responses were fun and boredom. Only a small proportion of writers played to compete, cooperate, or interact with other players, which makes sense since only a small proportion played multi-player or massively multi-player games. Curiously, much larger proportions of males chose each reason. This makes it difficult to infer motivation patterns based on gender, beyond the result that females play for fun and boredom in about the same proportions as males. (This difficulty is further discussed under *Writing & Gender*, p. 177.)

Many of the reasons for playing video games modified aspects. Write-in responses to “Other” included: “Helps me think about other things more clearly,” “Better than TV,” and “Procrastination.”

Subjects varied in what they thought were the most important characteristics of a good video game⁵³, as shown in Table 10. Leading responses were interesting choices and optimal challenge. A much larger proportion of gamers valued story, which may be related to the types of games they play. For example, more sophisticated computer games like *Half-Life* tend to have more sophisticated stories, compared to web-based games like *Text Twist*. A larger proportion of females valued graphics, but otherwise much larger

⁵² 22. If you play video games, what best describes your reason for doing so? (Choose up to three)

⁵³ 25. What are the most important characteristics of a good video game? (Choose up to three)

proportions of males chose each characteristic (just as larger proportions of males chose each reason for playing).

While the questions for Table 9 and Table 10 directed subjects to choose up to three responses, some subjects chose less than three or more than three, so any response should only be judged by itself. Write-in responses to these questions as a whole included: "...I think these all apply when considering all games in general...", "I play different kinds of games for different reasons...", "Limiting the most important aspects of a good game is something I find near impossible," and "must have a high level of intellectual stimulation, expandability, diversity."

Table 9

Why Play Video Games

| Reason | Population | | | Gender | |
|-------------------------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Avoid Studying | 0 | 25 | 21 | 23 | 10 |
| Boredom | 47 | 42 | 49 | 43 | 50 |
| Compete with Other Players | 42 | 33 | 10 | 40 | 10 |
| Cooperate with Other Players | 37 | 25 | 5 | 30 | 8 |
| Develop Skills | 21 | 17 | 18 | 23 | 15 |
| Don't Know or Unsure | 0 | 0 | 5 | 0 | 5 |
| Explore New Places or Worlds | 42 | 33 | 15 | 37 | 18 |
| Fun | 95 | 83 | 56 | 77 | 68 |
| Immersion in an Intense Activity | 42 | 17 | 21 | 37 | 18 |
| Interact with Other Players | 63 | 25 | 5 | 37 | 15 |
| Recover from Studying | 11 | 25 | 18 | 20 | 15 |
| Other | 11 | 8 | 8 | 7 | 10 |

Note. The values represent percentages. Only subjects who played games were included.

^a n = 19. ^b n = 12. ^c n = 39. ^d n = 30. ^e n = 40.

Table 10

Characteristics of a Good Video Game

| Characteristic | Population | | | Gender | |
|---|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Excitement | 32 | 25 | 23 | 33 | 20 |
| Good Characters | 36 | 33 | 18 | 33 | 15 |
| Good Graphics | 32 | 33 | 31 | 23 | 38 |
| Good Music and/or Good Sound Effects | 21 | 17 | 13 | 17 | 15 |
| Good Story | 58 | 17 | 21 | 33 | 28 |
| Good Weapons | 11 | 17 | 5 | 17 | 3 |
| Interactivity | 47 | 33 | 31 | 47 | 28 |
| Involves Interesting Choices and Actions | 63 | 33 | 49 | 63 | 40 |
| Lots of Action | 5 | 8 | 3 | 10 | 0 |
| Optimal Challenge | 37 | 33 | 54 | 43 | 48 |
| Unpredictability | 26 | 0 | 18 | 27 | 10 |

Note. The values represent percentages. Only subjects who played games were included.

^a n = 19. ^b n = 12. ^c n = 39. ^d n = 30. ^e n = 40.

Profile Data: Technologies

All subjects⁵⁴ were once more included in the remaining descriptive analyses of the profile data (regardless of gender and whether they played video games), starting with the questions about social websites⁵⁵, chat⁵⁶, forums⁵⁷, and blogging⁵⁸. The results are shown in Table 11, Table 12, Table 13, and Table 14. Since social websites are a relatively new technological/cultural development, it makes sense that the generally-older writers don't use them as much.

The questions about social websites and blogging modified *Similar Technologies*, while the question about chat modified *Socializing* and the question about forums modified *Philosophy & Debate*. Any experience with a technology increased the relevant aspect; a response of "Never used" drastically decreased it. For example, based on their use of chat, most gamers were more likely to view the *Similar Technologies Preview*. Write-in responses to these questions included "I've only blogged when it was required by a class" and "Use

⁵⁴ n = 140.

⁵⁵ 31. How often do you use social websites, like MySpace or FaceBook?

⁵⁶ 32. How often do you use chat, instant messaging, or text messaging?

⁵⁷ 33. How often do you read or post to discussions or debates in online forums or email lists?

⁵⁸ 34. How often do you post to your blog?

blogs, social networks, and IM/Chat more during academic year for communicating with students.”

Table 11

Use of Social Websites

| Frequency | Gamer ^a | Student ^b | Writer ^c |
|--------------------------------|--------------------|----------------------|---------------------|
| Never used | 16 | 0 | 57 |
| Used to use, but don't use now | 11 | 0 | 5 |
| Less often than once a week | 21 | 5 | 16 |
| About once a week | 11 | 14 | 4 |
| A few times a week | 32 | 23 | 5 |
| Almost every day | 11 | 59 | 13 |

Note. The values represent percentages.

^a_n = 19. ^b_n = 22. ^c_n = 99.

Table 12

Use of Chat

| Frequency | Gamer ^a | Student ^b | Writer ^c |
|--------------------------------|--------------------|----------------------|---------------------|
| Never used | 0 | 9 | 24 |
| Used to use, but don't use now | 5 | 18 | 14 |
| Less often than once a week | 21 | 5 | 29 |
| About once a week | 16 | 5 | 4 |
| A few times a week | 0 | 27 | 13 |
| Almost every day | 58 | 36 | 16 |

Note. The values represent percentages.

^a n = 19. ^b n = 22. ^c n = 99.

Table 13

Use of Forums

| Frequency | Gamer ^a | Student ^b | Writer ^c |
|--------------------------------|--------------------|----------------------|---------------------|
| Never used | 11 | 55 | 18 |
| Used to use, but don't use now | 21 | 0 | 9 |
| Less often than once a week | 16 | 18 | 32 |
| About once a week | 5 | 14 | 0 |
| A few times a week | 35 | 5 | 11 |
| Almost every day | 16 | 9 | 17 |

Note. The values represent percentages.

^a n = 19. ^b n = 22. ^c n = 99.

Table 14

Use of Blogs

| Frequency | Gamer ^a | Student ^b | Writer ^c |
|--------------------------------|--------------------|----------------------|---------------------|
| Never used | 42 | 46 | 54 |
| Used to use, but don't use now | 16 | 5 | 16 |
| Less often than once a week | 32 | 18 | 16 |
| About once a week | 5 | 23 | 9 |
| A few times a week | 0 | 9 | 2 |
| Almost every day | 5 | 0 | 3 |

Note. The values represent percentages.

^a_n = 19. ^b_n = 22. ^c_n = 99.

Profile Data: Entertainment

The questions about entertainment were analyzed next. Subjects' preferences for several genres or dimensions⁵⁹ were partially combined before being analyzed, into "Like," "Neutral or unsure," and "Dislike." Table 15 shows the analysis of preferences. Several write-in responses included other genres (comedy, horror, satire). It's possible that some subjects perceived these questions as a complete set of genres and thus tried to respond to some genres

⁵⁹ (36-41) Think about the kinds of entertainment you enjoy, including television, movies, books, and games. How much do you prefer the following genres or dimensions?

based on other, unlisted genres (e.g., responding “Like” to supernatural based on liking horror).

Each question about a genre modified a different aspect, except for science fiction. For example, gamers' preference for fantasy meant that most gamers were more likely to view the *Imagination & Fantasy Preview*. Similarly, most students were more likely to view the *Quests & Exploring Preview* (via action/adventure), and most writers were more likely to view the *Player Power Preview* (via Crime/Procedural). Conversely, disliking a genre drastically decreased an aspect. Hence, in this part of the survey, a subject's aspects could change a lot.

Table 15

Preferences for Different Genres or Dimensions

| Genre | Gamer ^a | | Student ^b | | Writer ^c | |
|------------------|--------------------|---------|----------------------|---------|---------------------|---------|
| | Like | Dislike | Like | Dislike | Like | Dislike |
| Action/Adventure | 79 | 5 | 91 | 5 | 62 | 17 |
| Crime/Procedural | 58 | 0 | 86 | 5 | 79 | 10 |
| Fantasy | 95 | 5 | 64 | 14 | 61 | 17 |
| Political | 21 | 21 | 32 | 46 | 55 | 15 |
| Science Fiction | 74 | 16 | 36 | 46 | 35 | 31 |
| Supernatural | 68 | 5 | 59 | 18 | 50 | 26 |

Note. The values represent percentages. Neutral or unsure values are omitted.

^a n = 19. ^b n = 22. ^c n = 99.

Profile Data: Writing

Analysis then shifted to the writing-related questions. Table 16 shows how subjects felt about learning about writing⁶⁰. It wasn't a surprise that most writers liked learning about writing. Liking or disliking writing drastically increased or decreased the likelihood of viewing the *Writing Preview*.

⁶⁰ 43. Do you like learning about writing and composition (regardless of the teacher, class, or classroom)?

Table 16

Like Learning About Writing

| Attitude | Gamer ^a | Student ^b | Writer ^c |
|-------------------|--------------------|----------------------|---------------------|
| I like it a lot | 26 | 14 | 67 |
| I like it | 32 | 19 | 23 |
| Neutral or unsure | 26 | 24 | 7 |
| I don't like it | 9 | 29 | 2 |
| I hate it | 5 | 14 | 1 |

Note. The values represent percentages.

^a n = 19. ^b n = 22. ^c n = 99.

Subjects were also asked about their performance in high school English courses⁶¹, as a possible indicator of their attitudes and abilities regarding writing. The results are shown in Table 17. Most subjects earned high grades⁶², which makes sense since they all were attending or had attended college.

⁶¹ 44. In your high school English courses, what was your approximate grade point average (GPA)?

⁶² Performance was self-reported, and grades are one topic on which subjects' self-reporting can be suspect. However, subjects' had little apparent reason to lie.

Table 17

Performance in High School English Courses

| Performance | Gamer ^a | Student ^b | Writer ^c |
|--|--------------------|----------------------|---------------------|
| 4.0... I usually got A's | 37 | 41 | 53 |
| 3.5... I usually got A's and B's | 37 | 41 | 34 |
| 3.0... I usually got B's | 9 | 14 | 7 |
| 2.5... I usually got B's and C's | 9 | 5 | 3 |
| 2.0 or lower... I usually got C's or lower | 5 | 0 | 3 |

Note. The values represent percentages.

^a n = 19. ^b n = 22. ^c n = 99.

Subjects varied in their enjoyment of different kinds of writing⁶³, as shown in Table 18. Write-in responses included: “When I was in college, I liked writing analyses of literature. I haven't done that kind of writing for about 35 years! ...”, “I don't really care to write. I think it is due to a lack of confidence or certainty about my abilities as a writer,” and “Ok, so I'm an English teacher.”

Each question about a kind of writing modified a different aspect. For example, high enjoyment of creative writing increased *Crafting & Trade*, so most gamers were more likely to view this preview. Like the questions about genres in entertainment, in this part of the survey, a subject's aspects could change a lot.

⁶³ (45-51) How much do you enjoy *writing* each of the following kinds of texts?

Table 18

Enjoyment of Different Kinds of Writing

| Kind | Gamer ^a | | Student ^b | | Writer ^c | |
|-------------------------|--------------------|-----|----------------------|-----|---------------------|-----|
| | High | Low | High | Low | High | Low |
| Analytical | 32 | 37 | 0 | 46 | 55 | 18 |
| Creative | 79 | 11 | 68 | 14 | 73 | 7 |
| Introspective | 32 | 26 | 60 | 27 | 76 | 6 |
| Journalism | 16 | 37 | 27 | 27 | 33 | 20 |
| Personal Correspondence | 22 | 33 | 55 | 9 | 78 | 2 |
| Persuasive | 47 | 24 | 32 | 27 | 54 | 10 |
| Scientific | 5 | 58 | 9 | 73 | 9 | 57 |

Note. The values represent percentages. Neutral or unsure values are omitted.

^a_n = 19. ^b_n = 22. ^c_n = 99.

Profile Data: Ink & Composite Scores

After the writing-related questions, the only questions left before the previews were about background knowledge about *Ink*. Ideally, the subjects should have known nothing about *Ink*⁶⁴, so that the previews served as an independent first contact window. However, while no students had heard of *Ink*, many gamers (26%) and a few writers (7%) had heard of *Ink*. For each subject

⁶⁴ 53. Before taking this survey, had you heard of a game called Ink?

who had heard, the corresponding write-in response was reviewed⁶⁵. Most of these subjects reported only superficial knowledge (e.g., "I know that it is interactive and supports writing..."). Since no subject's write-in response indicated anything that would seem to drastically affect the previews' ability to increase or decrease receptivity, no subjects were excluded.

Before proceeding to other analyses, one further set of descriptive analyses was conducted on the profile data. Three composite scores were computed for each subject: *gaming*, *writing*, and *technology*. These composite scores provided a more holistic sense of the subjects by drawing on several related questions; these scores were also useful in further analyses.

A subject's *gaming* score was based on four questions. *Gaming* started at zero. *Gaming* was increased if a subject liked video games⁶⁶ (+2) or liked video games a lot (+3). *Gaming* was increased based on how often a subject played video games⁶⁷: less often than once a week (+1), about once a week (+2), a few times a week (+3), or almost every day (+4). *Gaming* was increased if a subject currently played MMOGs⁶⁸ (+1) and if a subject currently played MUDs/MOOs⁶⁹ (+1). Thus, *gaming* could range from 0-9.

⁶⁵ 54. If you had heard of Ink, how much do you know about the game?

⁶⁶ 17. Do like playing video games?

⁶⁷ 18. How often do you play video games?

⁶⁸ 27. How often do you play MMOGs?

A subject's *writing* score was based on eight questions. *Writing* started at zero. *Writing* was increased if a subject liked learning about writing⁷⁰ (+1) or liked it a lot (+2). For each of the seven kinds of writing the survey asked about⁷¹, a subject's *writing* score was increased if a subject reported high enjoyment (+1). Thus, *writing* could range from 0-9.

A subject's *technology* score was similar to her *Similar Technologies* aspect, since it was based on some of the same questions. However, since some of those questions didn't modify *Similar Technologies*, a separate composite score was computed. *Technology* started at zero. *Technology* was increased if a subject used any of the non-game technologies similar to *Ink*: social websites, chat, forums, and blogging. The increase was proportional to use: using the technology less often than once a week or about once a week increased *technology* less (+1) than using the technology a few times a week or almost every day (+2). Additionally, having a computer might be a central factor in receptivity toward a computer game like *Ink*. *Technology* was increased if a

⁶⁹ 28. How often do you play MUDs or MOOs?

⁷⁰ 43. Do you like learning about writing and composition (regardless of the teacher, class, or classroom)?

⁷¹ (45-51) How much do you enjoy *writing* each of the following kinds of texts?

subject had either a PC/Windows or Mac/Apple computer⁷² (+1). Thus, *technology* could range from 0-9.

Table 19 shows the average values of the composite scores for each population. The patterns by population make sense: gamers had high *gaming* scores and low *writing* scores, writers had low *gaming* scores and high *writing* scores, and students were in the middle. The younger populations (gamers, students) had higher *technology* scores than the writers, although the writers weren't far behind. (All subjects were recruited via email lists, so generally higher *technology* scores were expected.)

Table 20 shows the average values of the composite scores by gender. Based on the previous analyses of the games-related questions, it makes sense that males had higher *gaming* scores than females. The multiple modes for males in *writing* and *technology* indicate how varied male scores were.

⁷² Question 30 asks about platforms in the subject's home, so the computer was not necessarily the one the subject was using to take the survey.

Table 19

Composite Scores, by Population

| Score | Gamer ^a | | Student ^b | | Writer ^c | |
|------------|--------------------|-------------------|----------------------|------|---------------------|------|
| | Mean | Mode | Mean | Mode | Mean | Mode |
| Gaming | 7.4 | 7 | 3.6 | 3 | 2 | 0 |
| Writing | 2.6 | 0 | 2.4 | 2 | 4.5 | 6 |
| Technology | 5.5 | 5, 8 ^d | 5.1 | 6 | 3.7 | 4 |

Note. The values are composite scores. Each score has a possible range of 0-9. A higher score indicates greater affinity for the activity.

^a_n = 19. ^b_n = 22. ^c_n = 99. ^d Multiple modes.

Table 20

Composite Scores, by Gender

| Score | Male ^a | | Female ^b | |
|------------|-------------------|----------------------|---------------------|------|
| | Mean | Mode | Mean | Mode |
| Gaming | 4.9 | 7 | 2.2 | 0 |
| Writing | 3.1 | 0, 1, 5 ^c | 4.2 | 6 |
| Technology | 4.8 | 4, 5, 6 ^c | 3.9 | 4 |

Note. The values are composite scores. Each score has a possible range of 0-9. A higher score indicates greater affinity for the activity.

^a_n = 38. ^b_n = 102. ^c Multiple modes.

Profile Data: Correlations

Following the descriptive analyses of the profile data, several correlations were also tested. The focus of this study was the effectiveness of the previews, so only a limited number of correlations were tested. However, these correlations were expected to be of interest to others, and to help better understand the subjects and the populations they represent. All correlations were tested for the whole sample (n=140), except when age was a correlate (n=136, due to missing values for four writers).

A positive correlation was predicted between being male and *gaming*, based on the current general perception that a larger proportion of gamers are male. This correlation was found to be moderate (Pearson Corr. = .39, $p < 0.01$, 2-tailed).

A positive correlation was predicted between being male and playing MMOGs, based on the same perception as applied to a "hardcore" kind of game. This correlation was also found to be moderate (Pearson Corr. = .34, $p < 0.01$, 2-tailed).

A negative correlation was predicted between age and *gaming*. The basis for this prediction was that video games are still an emerging activity, so they lack the mainstream presence of movies, television, and other, older media and recreations. Video games are growing in presence and gamers are aging, but the current general perception is that video games are a youth activity. This correlation was found to be moderate (Pearson Corr. = -.39, $p < 0.01$, 2-tailed).

A negative correlation was predicted between age and *technology*. The non-game technologies similar to *Ink*—social websites, chat, forums, blogging—are relatively new and somewhat entangled with youth culture. Hence, younger people were predicted to more likely to use these technologies. This correlation was found to be moderate (Pearson Corr. = $-.42$, $p < 0.01$, 2-tailed).

A positive correlation was predicted between *gaming* and *writing*, based on the belief that both activities can be intellectually stimulating and satisfying, and that subjects who seek and enjoy one will seek and enjoy the other. Instead, a moderate negative correlation was found (Pearson Corr. = $-.33$, $p < 0.01$, 2-tailed). The two activities may be intellectually stimulating, but apparently subjects preferred one or the other. (*Writing* was also a problematic measure, as discussed under Writing & Gender, p. 177.)

In short, most of the predicted correlations were found. Table 21 summarizes these analyses.

Table 21

Correlations

| A | B | Correlation ^a |
|----------------|-------------------|--------------------------|
| Male | <i>Gaming</i> | .39 ^b |
| | MMOGs | .34 ^b |
| Age | <i>Gaming</i> | -.39 ^c |
| | <i>Technology</i> | -.42 ^c |
| <i>Writing</i> | <i>Gaming</i> | -.33 ^b |

^a Pearson Correlation, $p < 0.01$, 2-tailed. ^b $n = 140$. ^c $n = 136$.

Computing Receptivity

After viewing the previews, subjects responded to several questions designed to measure their receptivity toward *Ink*. Reported receptivity was the major dependent variable in this study, so these questions were analyzed in preparation for the remaining analyses.

First, averages were computed for the questions that ask for Likert-type responses⁷³, as shown in Table 22 and Table 23. Responses centered at or somewhat above neutral or unsure (3). Subjects agreed more that they wanted to

⁷³ (55-59) How much do you agree with each of these statements?

learn more⁷⁴, compared to agreeing that they would enjoy playing⁷⁵. Writers and females agreed more that they wanted to learn more. Subjects generally wanted to play *Ink* as part of a class⁷⁶ more than they wanted to play as a non-class activity⁷⁷. Subjects were generally neutral or unsure about telling their friends about *Ink*, although again writers and females agreed more that they wanted to do so.

⁷⁴ 55. I want to learn more about this game.

⁷⁵ 56. I would enjoy playing this game.

⁷⁶ 57. I want to play this game as part of a class.

⁷⁷ 58. I want to play this game, even if it's not part of a class.

Table 22

Likert-Type Measures of Receptivity, by Population

| Measure | Gamer ^a | | Student ^b | | Writer ^c | |
|----------------------|--------------------|----------------|----------------------|-------------------|---------------------|-------------------|
| | Mean | Mode | Mean | Mode | Mean | Mode |
| Learn More | 3.8 | 4 | 3.3 | 4 | 4.2 | 5 |
| Enjoy Playing | 3.4 | 3 | 3.1 | 4 | 3.7 | 3, 4 ^d |
| Want to Play (Class) | 3.6 ^e | 4 ^e | 3.5 | 4, 5 ^d | 3.9 ^f | 3 ^f |
| Want to Play | 3.4 | 3 | 2.9 | 3 | 3.5 ^g | 3 ^g |
| Tell Friends | 3.5 | 3 | 3.0 | 3, 4 ^d | 3.8 ^e | 4 ^e |

Note. The values represent attitudes/beliefs: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral or unsure, 4 = Agree, 5 = Strongly agree.

^a_n = 19. ^b_n = 22. ^c_n = 99. ^d Multiple modes. ^e 1 missing. ^f 3 missing. ^g 2 missing.

Table 23

Likert-Type Measures of Receptivity, by Gender

| Measure | Male ^a | | Female ^b | |
|----------------------|-------------------|----------------|---------------------|----------------|
| | Mean | Mode | Mean | Mode |
| Learn More | 3.6 | 4 | 4.1 | 5 |
| Enjoy Playing | 3.2 | 3 | 3.7 | 4 |
| Want to Play (Class) | 3.7 ^d | 3 ^d | 3.8 ^c | 4 ^c |
| Want to Play | 3.0 ^e | 3 ^e | 3.5 | 3 |
| Tell Friends | 3.2 ^c | 3 ^c | 3.8 | 4 |

Note. The values represent attitudes/beliefs: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral or unsure, 4 = Agree, 5 = Strongly agree.

^a n = 38. ^b n = 102. ^c 1 missing. ^d 3 missing. ^e 2 missing.

In addition to the Likert-type questions, the survey measured receptivity by asking if the subject wanted to be notified when *Ink* was finished⁷⁸, and if the subject wanted to learn more about the game by visiting the *Ink* website⁷⁹. Table 24 shows the results. Most subjects wanted to notified when *Ink* was finished; larger proportions of writers and females wanted to be notified. Only a small

⁷⁸ 65. The game isn't finished yet. Would you like to receive an email when it's ready?

⁷⁹ 71. The official Ink website has more information about the game. Would you like to go there when you finish this survey?

proportion of students wanted to learn more about the game, while again larger proportions of writers and females wanted to learn more.

Table 24

Additional Measures of Receptivity

| Measure | Population | | | Gender | |
|---------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Email When Finished | 58 | 55 | 82 | 63 | 78 |
| Visit Website Now | 47 | 23 | 59 | 44 | 54 |

Note. The values represent percentages of “Yes” responses.

^a_n = 19. ^b_n = 22. ^c_n = 99. ^d_n = 38. ^e_n = 102.

Writers and females reported higher receptivity on both the Likert-type measures and additional measures. The writers’ higher receptivity makes sense, especially since many may have been considering teaching with *Ink* (not just playing). The females’ higher receptivity was intriguing. When only disaggregating the subjects by gender, there were far more writers than gamers or students, so it seemed possible that female writers were skewing the general female results. Hence, the analysis was repeated, disaggregating by both population and gender. The results were generally the same for both gamers and students by themselves: averages and percentages were higher for females. The interaction of gender and receptivity was further explored under Analyses of Adaptation (p. 134).

In anticipation of the remaining analyses, the receptivity measures were combined into a composite *receptivity* score. First, the Likert-type measures were analyzed for reliability: an item-total was computed by adding a subject's responses to all five questions, and then correlations were computed between each item and the item-total. All correlations were found to be strong (Pearson Corr. > 0.8, $p < 0.01$, 2-tailed). In other words, a subject generally reported similar agreement or disagreement for each and every question/item. So no Likert-type measures were discarded based on this analysis.

However, two Likert-type measures were discarded on theoretical grounds. The survey's original target population was students in writing courses. Given that the actual population included many writing instructors, it was unclear what basis these subjects would have used when agreeing with, "I want to play this game as part of a class." (Many writers probably haven't taken a class in a long time, and may never do so again.) Also, while telling friends about *Ink* would probably indicate low receptivity, it was not clear that *not* telling friends would indicate low receptivity. Much might depend on the nature of a friendship and the subculture(s) that frame it. For example, gamers are probably more likely to discuss a new game in casual conversation.

Thus, the three remaining Likert-type measures were retained: "I want to learn more about this game," "I would enjoy playing this game," and "I want to play this game, even if it's not part of a class." Table 25 shows how *receptivity* was increased based on a subject's mean on the three measures. The two additional measures were also used to increase *receptivity*. *Receptivity* was

increased (+2) if a subject want to be notified when *Ink* was ready, and receptivity was increased (+1) if a subject wanted to learn more by visiting the website⁸⁰. *Receptivity* was not increased by missing responses. Thus, *receptivity* could range from 0-9.

Table 25

Computing the Composite Score of Receptivity

| Input: Mean ^a | Output: Receptivity |
|--------------------------|---------------------|
| 5 | +6 |
| 3.51 – 4.99 | +5 |
| 3.01 – 3.50 | +4 |
| 3 | +3 |
| 2.51 – 2.99 | +2 |
| 1.01 – 2.50 | +1 |
| 1 | +0 |

^a Values represent the mean of three Likert-type measures.

Not surprisingly, *receptivity* scores followed the trends of the component measures. *Receptivity* varied for gamers (mean: 5.8, mode: 9) and students

⁸⁰ Since the survey asked if the subject wanted to visit the website when she finished the survey (i.e., in the immediate future), this was judged a less sensitive measure of receptivity. Unrelated factors could have caused a subject to respond "No," including feeling temporarily overwhelmed with information after the previews, having more pressing tasks to attend to, etc.

(mean: 4.6, mode: 7). *Receptivity* was generally high for writers (mean: 6.7, mode: 8). *Receptivity* varied for males (mean: 5.4, mode: 7), and *receptivity* was generally high for females (mean: 6.5, mode: 8). As with the Likert-type measures, the analysis was repeated, disaggregating by both population and gender. The results were generally the same for both gamers and students by themselves: *receptivity* was higher for females.

Analyses of Previews

Subjects viewed different previews based on their aspects and experimental condition. The aspects and the previews they govern were analyzed descriptively.

After responding to all the profiling questions, a subject had a personalized profile of aspects—a “fingerprint” of relevant dispositions. The different populations and genders were expected to have different general profiles, as measured by their average final aspect values. Like *gaming*, *writing*, and *technology*, the final aspect values offered a more holistic view of the populations and genders.

As Table 26 shows, most mean values were above 50, although the nearness to 50 for many suggests that some subjects had values higher than 50 and others had values lower than 50. Since the final aspect values are effectively composite scores, the trends generally echo those found in the previous by-question and composite score analyses. For example, gamers and males have much higher final values for *Similar Games* (e.g., MMOGs, MUDs/MOOs), while the other groups had very low scores. Recall that these values don’t necessarily

indicate which previews a population or gender generally saw, since different experimental conditions used aspect values in different ways.

Based on her aspects and experimental condition, a subject viewed five previews as a set. Yet each preview had unique potential to increase receptivity, based on its particular content. The effectiveness of a preview could be partially measured by the *receptivity* of the subjects who viewed it. (The effectiveness could only be completely measured by isolating the preview—i.e., only showing one preview each to each subject—which didn't happen.) Thus, for each preview, the mean *receptivity* for all subjects who viewed that preview was computed. Also, if a large majority of subjects viewed the same few previews, those previews would have had a disproportionate effect on the mean receptivity for all subjects. Thus, for each preview, the percentage of subjects who viewed that preview was computed. Table 27 and Table 28 show these analyses, ordered by subjects and by *receptivity*. No preview was associated with an unusually high receptivity, although receptivity did vary. No preview was viewed by a majority of subjects, although some previews were viewed by a much larger proportion of subjects than others.

Table 26

Final Aspect Values

| Aspect | Population | | | Gender | |
|-----------------------|--------------------|----------------------|---------------------|-------------------|---------------------|
| | Gamer ^a | Student ^b | Writer ^c | Male ^d | Female ^e |
| Alter Ego | 55 | 53 | 53 | 53 | 53 |
| Crafting & Trade | 66 | 64 | 65 | 63 | 66 |
| Ecology | 61 | 53 | 51 | 58 | 51 |
| Gameness | 85 | 65 | 58 | 72 | 59 |
| Government & Politics | 68 | 68 | 84 | 75 | 81 |
| Imagination & Fantasy | 73 | 62 | 60 | 69 | 59 |
| Non-Gameness | 51 | 61 | 66 | 57 | 65 |
| Philosophy & Debate | 74 | 47 | 71 | 69 | 67 |
| Player Power | 67 | 65 | 76 | 66 | 75 |
| Quests & Exploring | 79 | 82 | 76 | 81 | 76 |
| Similar Games | 71 | 5 | 2 | 33 | 4 |
| Similar Technologies | 59 | 80 | 34 | 59 | 39 |
| Socializing | 82 | 83 | 74 | 72 | 78 |
| Teamwork | 88 | 68 | 62 | 77 | 63 |
| Writing | 64 | 48 | 74 | 62 | 71 |

Note. The values represent mean aspect values after all profiling questions were answered. All aspects were 50 before the profiling questions.

^a_n = 19. ^b_n = 22. ^c_n = 99. ^d_n = 38. ^e_n = 102.

Table 27

Previews, Ordered by Subjects

| Preview | Subjects, % | Receptivity, Mean |
|-----------------------|-------------|-------------------|
| Player Power | 47 | 6.0 |
| Writing | 37 | 5.9 |
| Similar Games | 37 | 5.7 |
| Ecology | 37 | 5.8 |
| Government & Politics | 36 | 5.8 |
| Similar Technologies | 36 | 6.2 |
| Philosophy & Debate | 35 | 6.8 |
| Alter Ego | 32 | 6.0 |
| Socializing | 32 | 6.4 |
| Non-Gameness | 32 | 6.0 |
| Quests & Exploring | 30 | 6.4 |
| Crafting & Trade | 29 | 5.7 |
| Teamwork | 27 | 6.5 |
| Gameness | 25 | 6.4 |

Table 28

Previews, Ordered by Receptivity

| Preview | Subjects, % | Receptivity, Mean |
|-----------------------|-------------|-------------------|
| Philosophy & Debate | 35 | 6.8 |
| Teamwork | 27 | 6.5 |
| Socializing | 32 | 6.4 |
| Quests & Exploring | 30 | 6.4 |
| Gameness | 25 | 6.4 |
| Imagination & Fantasy | 22 | 6.3 |
| Similar Technologies | 36 | 6.2 |
| Player Power | 47 | 6.0 |
| Non-Gameness | 32 | 6.0 |
| Alter Ego | 32 | 6.0 |
| Writing | 37 | 5.9 |
| Government & Politics | 36 | 5.8 |
| Ecology | 37 | 5.8 |
| Similar Games | 37 | 5.7 |

Several write-in questions asked subjects to elaborate on their responses to the receptivity questions and the previews in general⁸¹. Most subjects

⁸¹ 60. What makes you want to play this game, or not want to play? 61. Think about the previews you just saw. What about the previews makes you want to play this game, or not want to play?

responded to these questions, and many responded in great detail (e.g., 1-2 paragraphs). Recall that subjects in the Mismatch or Random conditions viewed previews that were probably ill-suited to their dispositions; hence, these aren't necessarily straightforward responses to *Ink*.

Many subjects gave specific reasons for wanting to play *Ink*, although these reasons could seldom be traced to specific previews. The possibilities for creativity and collaboration were appealing to many subjects. Positive responses included: "I like the idea that it encourages creativity while also building in learning experiences. ... Almost everything I saw about the game seemed intriguing to me," "...It doesn't depend on extremely fast hand-eye coordination," and "It sounds challenging and interesting." Several subjects wanted to play *Ink* as part of a class, but wrote they were unlikely to play on their own; the reverse was true for several other subjects. Several subjects liked that *Ink* will be free, although one subject worried that meant the game would include advertising⁸².

Many subjects gave specific reasons for *not* wanting to play. Negative responses included: "i think it would get old fast... unless other players were really involved and inviting," "...it seems like there's too much going on and the player has to devote too much time and resources to play casually," "The explanation that is give is mundane and trite. It appears that this game is aimed

62. What would increase how much you want to play? For example, what kind(s) of information?

63. What changes could we make to the design that would increase how much you want to play?

64. (Optional) If you would like to comment on any of your answers, please use this space.

⁸² There are no plans for *Ink* to include advertising.

at lower level education...," "Not into politics or writing," "i'm too old," "It sounds like an interesting experience that I would like to try, but don't know how easy it would be to navigate for a person like me with low tech knowledge," and "It seems like to much work and not enough fun." Many subjects thought the graphics were immature or needed more color (or animation, or sound), although several other subjects liked their simplicity ("I feel like the game is really living within the imagination of users").

Many subjects were also expressive in their impressions of the previews and in their suggestions for revising the previews. Some responses could traced to previews: "Being able to go up in rank or work as part of the government is why I would want to play this game" and "describing the couch and making your room so people will want to come visit." Most responses were more general. Many subjects wanted a demo or some other way to better understand what playing *Ink* would be like. One subject wrote: "I can't say the previews themselves did anything to draw me in or push me away...."

Few subjects offered suggestions to change the design of the game. Some subjects wrote that they didn't know enough about the design (or game design in general) to offer suggestions. Suggestions did include "incorporate pets" and "more action," as well as several suggestions about the graphics (e.g., more color).

Some write-in responses included questions or confusion about aspects of the game which are covered in some previews. This seemed to indicate that the subjects who remained puzzled by these aspects didn't see these previews; a

casual backtracking of a few subjects' responses to which previews they did view confirmed this interpretation.

Several subjects' responses made it clear that they were only evaluating *Ink* as a teaching tool. Several subjects were unclear on how *Ink* worked, and thus uncertain about playing: "...I'm not used to playing these sorts of games," "Although the text was clearly written, I'm confused," and "How much time will it take to play?" Several subjects were intrigued by the unusual design, including those who played MUDs/MOOs, and those who were aware of the trend of teaching using video games.

A few responses deserve special attention. Some subjects only wanted a short pre-play window: "I'm ready to try it out. I don't need all the information first--it can discourage me--I prefer to learn by doing it" and "Less information during the previews." Some subjects wanted to know how "other people have fared in the game previously," and one subject wrote that "sitting next to someone would help me process." For these subjects, they wanted to base their receptivity at least partially on others' experiences. Finally, while several subjects criticized the fantasy elements in *Ink* and wanted more realism, a roughly equal number of subjects criticized the realism and wanted more fantasy.

One of the most striking "measures" of receptivity occurred outside the survey. One subject sent an email message asking which courses at his university would be using *Ink*, so that he could register for one.

Analyses of Adaptation

A key idea in this study was that receptivity can be increased through design choices. In the Match and Mismatch conditions, the previews were chosen in ways that should have increased or decreased receptivity. Hence, the final analyses focused on testing the inference between experimental condition and receptivity.

All subjects were included in these analyses (n=140). The survey tried to assign equal numbers of subjects to the experimental conditions. However, since some subjects didn't complete the survey after being assigned to a condition, the final numbers in each condition varied slightly: Match, n=49; Mismatch, n=45; Random, n=46.

The main hypothesis was: $\text{Receptivity}(\text{Match}) > \text{Receptivity}(\text{Random}) > \text{Receptivity}(\text{Mismatch})$. This was tested with a one-factor, between-subjects ANOVA of *receptivity* on experimental condition. The *receptivity* means (with standard deviations) were 6.42 (2.60) (Match), 6.41 (2.60) (Random), and 5.53 (2.53) (Mismatch). The test was not significant: by itself, experimental condition did not significantly influence *receptivity*. However, there was a substantial difference between Match and Mismatch ($6.42 - 5.53 = 0.89$); about one-third of subjects were within one standard deviation ($0.89 / 2.6 = 0.34$), which suggests the experimental manipulation might have worked partially or for some subjects, but *receptivity* wasn't sensitive enough to detect a significant difference.

Receptivity was probably influenced by several factors, including the dispositions the composite scores tried to measure. Linear regression was used

to try to isolate the separate influences of several factors. For example, the disposition measured by *gaming* could have had a significant effect on *receptivity*, even if experimental condition did not have an effect. Also, two or more factors could have interacted, making experimental condition only significant for some subjects (e.g., those with high *gaming*). Hence, *receptivity* was tested as the dependent variable in a 5-variable linear regression. Experimental condition was included (with dummy coding: Mismatch=1, Random=2, Match=3). Gender was included (1=Male, 2=Female). *Gaming*, *writing*, and *technology* were included (each ranged from 0-9). The regression test was significant, although experimental condition, *gaming*, and *technology* were not significant factors. Hence, each of these variables was systematically removed, but removing one or two did not achieve significance for the other one or two. Thus, the only significant inference found was linear regression of *receptivity* ($F=12.8$, $p < 0.01$) dependent on gender ($b=.12$) and *writing* ($b=.35$).

CHAPTER 3: CASE STUDIES OF RECEPTIVITY EXPERIENCES

This chapter describes the second of two empirical phases of this study⁸³.

Four subjects were individually interviewed about their receptivity toward *Ink* and several recreational video games. The focus was on research questions 1 and 3 (p. 47): studying the effectiveness of design choices on eliciting receptivity in the pre-play window (*Ink* and *Resident Evil 4*) and the 5-15 window (the three other recreational games). Individual interviews were conducted to explore the interaction between design choices and an individual's relevant dispositions. These interviews complemented the survey, by focusing on similar phenomena using different methods. The results are reported in this chapter as case studies, and the case studies are further discussed in Chapter 4.

Subjects (Case Studies)

Four subjects were interviewed. All subjects were recruited by email. Two subjects (Monisha and Shun) were recruited from the staff at the Michigan State University (MSU) Writing Center. This population was chosen in hopes of finding subjects who enjoyed writing. It was also hoped that the subjects would be articulate in discussing writing (in relation to *Ink*), and in viewing video games via a background in writing. Two subjects (Eric and Siera) were recruited from Spartasoft, an MSU student organization for future game developers. This population was chosen in hopes of finding subjects who enjoyed video games. It

⁸³ The Social Science, Behavioral and Education Institutional Review Board (SIRB) at Michigan State University approved this study. IRB# X06-519.

was also hoped that the SpartaSoft subjects would be articulate in discussing video games, and in viewing video games via a background in gaming and game design.

From among those who expressed interest, the interview subjects were chosen to represent some diversity, including: gender, year in school, habits and attitudes toward writing, and habits and attitudes toward gaming. Three of the four subjects were women. This imbalance was partly based on trying to achieve more diversity on the other criteria (from among those who expressed interest), and partly because the recreational games chosen are particularly interesting to view through the eyes of female players (see Ashley in *Resident Evil 4* and Jade in *Beyond Good and Evil*)⁸⁴.

All interview subjects took the survey before the interview. Monisha and Shun already knew the interviewer, so their data were not included in the analyses in Chapter 2. However, Eric and Siera didn't know the interviewer, so their data were included (as gamers). Each subject was paid \$20 at the end of the interview.

Methods (Case Studies)

Each interview lasted about two hours. The interview was audio recorded, as a backup to the interviewer's notes. The interview loosely followed a protocol,

⁸⁴ Also, I'm a male gamer who enjoys writing, so that perspective was already well-represented in this study.

adapted as need and opportunity arose (see APPENDIX 2: INTERVIEW PROTOCOL, p. 226). The interview had several parts.

In the first part of the interview, the subject was asked to elaborate on some of her survey responses. The subject was particularly invited to elaborate on juxtapositions of questions. For example, a subject might have been asked to elaborate on high enjoyment for some kinds of writing versus low enjoyment for others, or for some kinds of entertainment versus others. This part of the interview was kept short, to accommodate the other parts.

In the second part of the interview, the subject was asked to review the previews she saw in the survey, and to elaborate on her responses to the questions about *Ink* (i.e., the questions that measured receptivity). The subject was particularly invited to elaborate on revised impressions of *Ink* after time had passed (since taking the survey), and on ways the previews could be changed to make *Ink* more appealing.

In the third part of the interview, the subject played through the 5-15 window for *Animal Crossing*⁸⁵. The subject was encouraged to “think aloud” as she played—to spontaneously voice her thoughts and feelings in response to the game. At the end of the window, the subject was asked a series of questions about the game. These questions focused on whether and why she wanted to continue to play, including the influence of graphics and sound on her desire. If

⁸⁵ See Preliminary Research: Sample Games (p. 47) for detailed deconstructions of the 5-15 windows for the games used in the interviews.

the subject was already familiar the game, she was asked to re-evaluate the initial experience given her more holistic perspective.

The fourth part of the interview was identical to the third part (*Animal Crossing*), only the game was *Super Mario Sunshine*. Then the interviewer and subject took a five minute break.

The interview resumed with the fifth part, in which the subject viewed the preview for *Resident Evil*. The subject first viewed the preview without being encouraged to think aloud. Then the preview was replayed but muted as the interviewer asked questions about the preview. The questions focused on whether and why the subject wanted to play the game, based on the preview.

The sixth part of the interview was identical to the third part (*Animal Crossing*), only the game was *Beyond Good and Evil*.

In the seventh and final part of the interview, the subject was asked about the four games collectively, including which game she would want to play the most (if given the opportunity). Finally, the subject was debriefed about this study, including a short explanation of immersion and receptivity, and of the profiling and adaptation in the survey.

Based on the interviews, a case study was written for each subject, using a pseudonym.

Monisha

Monisha is a black woman in her early 20s, with a two year-old son. She recently completed her BA in English Literature/Language, and she is deciding

whether to go to graduate school or find a job. Monisha is registered to vote, and has voted for several years.

Monisha used to play many video games. Since the birth of her son, she has had less time to play—a regret that she voiced several times during the interview. She still plays *The Sims 2*, less often than once a week. Monisha's top reasons for playing games are fun, immersion in an intense activity, and to "create fantasy world/interact and play a major role in creating a world outside of reality." She likes *The Sims 2* because it allows her to create and interact with an alternate world. She also likes the lack of a final victory condition, and how the game "reminds me of playing dolls... I used to play Barbies." Monisha thinks she plays *The Sims 2* "to the max," describing how she bought a strategy guide and how she has developed a deep understanding of the game mechanics.

Monisha is very aware that *The Sims 2* is perceived as a "girl game," and she seems to resent the possible stereotype of her as a player. This was one of several points in the interview when she demonstrated self-awareness of her identity, and how games can provide appealing identity-play or clash with her perceived or desired identity. Various experiences have probably made her more aware of her identity, including being a person of color, a mother, and a female gamer.

For Monisha, the most important characteristics of a good video game are good graphics, optimal challenge, and unpredictability. Monisha has never played MMOGs, MUDs, or MOOs. She has used technologies similar to *Ink*, but no longer uses them or uses them infrequently.

Regarding entertainment genres, Monisha prefers crime/procedural and fantasy. In crime/procedural, she likes that “the suspense is really high” as the mystery unfolds. She likes fantasy for similar reasons, praising movies like *Fight Club* and *Memento* for the way “you have to put the puzzle pieces together one step at a time.” In the survey, she indicated a dislike for science fiction, but in the interview she clarified that she doesn’t like science fiction that includes fright or fear.

Ink Previews

In reviewing the previews⁸⁶ for *Ink*, Monisha was apparently somewhat interested in the game. She was remarkably thoughtful about possible audience responses to the previews and *Ink* itself, revealing nuances of her own receptivity. Her thoughtful consideration of audience was possibly due to her background in English studies. She wondered at the target age for the game, and suggested that it “would be awesome in an elementary class.” She could also “definitely see an adult loving this game,” while wondering whether the vocabulary level of the previews would be a barrier to entry for college students. As she indicated in the survey, graphics are a big influence on Monisha’s receptivity. “I was first connected with the images, before I even looked at the text.” She thought the artwork in the previews was childlike. She wondered if

⁸⁶ Monisha was in the Match condition. She viewed the *Quests*, *Player Power*, *Socializing*, *Imagination & Fantasy*, and *Writing* previews.

some of the artwork had “a hidden agenda,” like secret messages or clues⁸⁷.

She also troubled the subtext of diversity in *Ink*'s themes, suggesting that the previews and game use “more bright colors, to show the rainbow [of diversity].”

Would Monisha play *Ink*? “I like the ideal of democracy,” she said. She also liked the idea that playing in *Ink* could be a “rags to riches” experience; the previews made her think about “the American dream.” Coupled with the rainbow suggestion, this illustrates some stakes and identity-play that the *Ink* design team hadn't fully considered, beyond themes of fairness and entrepreneurship.

Monisha is clearly someone who wants intellectual stimulation in her entertainment, including stakes that connect with real life. For example, playing *The Sims 2* has helped her reflect on relationships. Presumably, if *Ink* more clearly offered to let her playfully engage with social justice issues, it could elicit more receptivity.

Monisha's main suggestion for making *Ink* more appealing would be adding some kind of intro to the previews and/or the game, like a short narrative. She seemed to envision something animated with sound. All three of the games she was about to play have such intros; they had mixed effects on Monisha's receptivity.

Animal Crossing

Monisha was unfamiliar with the four recreational video games, although she had played other *Mario* games, and tried playing an earlier *Resident Evil*

⁸⁷ There was no hidden agenda. But as the lead designer of *Ink*, I was excited by this idea!

game. Her gaming experience showed from the beginning. As each game was presented, she studied the front and back of the case. She was comfortable picking up the controller, pressing start, and the like.

Monisha was underwhelmed by *Animal Crossing*. Her think aloud remarks included “it’s very childlike,” “he’s rambling,” “this is stupid,” and “is there a way you can skip this?” The lengthy conversations that precede full player control clearly frustrated and disinterested her. The conversational gender-setting function failed: “I’m not a boy,” she muttered. Her disinterest was particularly apparent when she told Rover she was on her way to “your mom” (which then became the name of the town). As the 5-15 window wore on, her body language showed impatience and an absence of fun. She even put the controller down on the table, just hitting one button to advance the dialog. To all of Nook’s dialog and directions, she muttered “it’s too much, too much.”

Clearly, Monisha had little interest in playing further. There was “too much talking at you... it was so dry... it was rambling.” The Animalese chattering sound “became really irritating... I didn’t like the music either.” She thought she might be more interested in playing if she got more control sooner, and if “the graphics were a little bit more mature.... The better the graphics, the better I can create a fantasy.” The game’s attempt to let her co-author the story didn’t seem to work, since she felt it didn’t offer any real choices, that it just laid out the backstory: “I felt like they had more control over the situation than I did.”

Super Mario Sunshine

Monisha found *Super Mario Sunshine* far more appealing. Her body language reflected interest, and she frequently laughed a little at the jokes. She struggled a bit to learn the controls and to advance through the airport plot. But later she said she didn't mind this learning curve, because she liked the chance to figure things out for herself: "you had to move around to see what was going on." Monisha liked the story, FLUDD ("the water pump thing"), and the graphics and sound. "I would like to keep playing a lot," she said.

Monisha did wonder about Princess Peach. "I hope there's a place in here where you can use her. The damsel in distress thing is old." She would also prefer more contemporary music. Monisha emphasized that the graphics were really appealing, while also praising the stakes: "I like the idea of cleaning up pollution." The set-up of Mario's false conviction seemed to appeal to her taste in the crime/procedural genre.

Resident Evil 4

The preview for *Resident Evil 4* was less appealing than *Sunshine* but still elicited receptivity: "I'd want to play it, a lot." Once again the graphics were a major part of the appeal: "I like how they look so real." Monisha also liked the intensity: "It seems like it would be something exciting to play. ... Even though I have this thing for scary things, it seemed like a pretty cool game. ... It would definitely grab my attention in terms of intensity and challenge." She related *Resident* to a James Bond game she had enjoyed.

Monisha was concerned about the drab colors: "I think I might get tired of the color scheme." She also wondered if the whole game had the intensity of the preview, or whether there would be some humor. Finally, as with *Sunshine*, Monisha was concerned about the female character (Ashley): "The damsel in distress is very comballish." Monisha is displeased that female characters in recreational video games are frequently either victims or vixens: they are rarely powerful, and when they are, "they're very slutily dressed."

Beyond Good and Evil

Monisha also demonstrated and reported high receptivity toward *Beyond Good and Evil*. She was quickly immersed in the battle, although the slow motion confused her ("Am I dying?"). She was also a little startled by the controller's vibration, although she later praised it for heightening the intensity. Pey'j's entrance earned a laugh. During the boss battle, Monisha was puzzled as to whether she could jump. She did die once during the boss battle, but fought much better the second time.

Monisha said she'd like to keep playing, because she liked the story. As with the other games, the graphics were also a major factor. How important? "Very, very important."

Once again, Monisha was perceptive of the identity being offered. "I saw diversity, which I thought was cool," she said, while also worrying about possible stereotypes (e.g., is Pey'j a redneck caricature?). She was also concerned about the sci-fi setting: the animal people were questionable, and "too much of the extraterrestrial stuff would make me not want to play." She was worried about

playing a game with horror elements that would linger in her mind, and “affect me when I slept.” As with *Crossing*, she seemed to resent the lack of choice in the 5-15 window: the battle “was more a directive than a challenge.” She was also concerned that she’d “get tired of hitting things with a stick.”⁸⁸

Of the four games, Monisha most wanted to continue playing *Sunshine*. Through past games, “I know the history.” Apparently, familiarity meant she could become immersed more quickly and easily. Again, the graphics were a major factor: “The bright colors in *Mario* definitely drew me to the game.”

Overall, the interview made Monisha nostalgic, and made her wish she could play games more. “I had given up on games. This one [*Sunshine*] sort of brought me back... I can’t answer why.”

Shun

Shun is an Asian woman in her mid-twenties, from the People’s Republic of China. She has a BA in Computer Science and an MA in Linguistics. Shun is in the United States to pursue a PhD in Education. English is not her native language. This sometimes made it harder for her to respond to the interview questions, but not prohibitively so.

Shun doesn’t like playing video games and has played very few games. She’s enjoyed playing *Tetris* and a mouse-controlled shooting gallery game. Shun has seen several video games, but only has a little knowledge of them. *CounterStrike* was very popular among her students in China, and her boyfriend

⁸⁸ The interviewer used the phrase “hitting things with a stick” first.

plays games like it. Shun also knows that playing MMOGs has become a dangerous obsession for some Chinese young people, and that MMOGs have been implicated in at least one death.

Why doesn't Shun play video games? "I don't like games maybe because of my parents," she said. As children, Shun and her friends played *Super Mario Brothers* a lot. Her parents noticed, and discouraged her from playing video games at all: "playing games would not be helpful to my study. ... Every time I saw a game, in my heart I tell myself I can't play it." Shun's parents told her that good children don't play video games. Later, as a young adult, Shun had "some freedom to choose my own entertainment." That's when she started playing *Tetris*.

Regarding technologies similar to *Ink*, Shun has used all of them, and uses some almost every day. Shun had blogged in China, but become a more active blogger when she came to the US. Her friends were interested in the similarities and differences she saw as an international student, and they encouraged her to blog on this theme.

Regarding entertainment, Shun felt neutral about most of the genres in the survey, except she doesn't like action/adventure, and she likes political. When asked about a favorite political movie or TV show, Shun talked about *Commander in Chief*. She said, "It's very interesting... a story about a woman... the first female president." In so many words, Shun said her identity doesn't include a strong interest in politics ("I'm a typical girl"), but she finds the plot of a *Commander* episode to be relatively easy to follow (as a non-native speaker).

Shun reported high enjoyment for most kinds of writing, and neutral for the rest. She has written some ghost stories and blogged them. In China, she wrote some articles for her university newspaper. In explaining why she likes writing, Shun compared it to karaoke: "Writing is a kind of entertainment. ... I like karaoke. It's the quickest way to express your feelings, relieve your burden." But in the US she had trouble finding many friends to go karaoke with. So she's been writing instead: "I want to express myself and relieve my burden, and I think writing is a good way to do that." In this way, Shun seems to welcome stakes that overlap into her home context, if an activity is cathartic.

Ink Previews

Shun's engaged with the previews⁸⁹ largely with an interest in *Ink's* educational utility. Like Monisha, Shun was curious about the intended audience for *Ink* (i.e., grade level). As a teacher and a writer, Shun liked the main idea of the game: "It's so exciting to find some game that encouraged you to write." She had little prior knowledge about *Ink*, although she had discussed the game a little with the producer⁹⁰. Like the producer, Shun is particularly excited about how *Ink* could help "underprivileged students."

⁸⁹ Shun was in the Match condition. She viewed the *Writing, Non-Gameness, Socializing, Similar Technologies*, and *Government* previews.

⁹⁰ *Ink's* producer is Janet Swenson, the Director of the Michigan State University Writing Center. Shun works in the Writing Center.

Shun told several stories about education in China. She explained that computer-assisted learning is “still very novel for most students.” Shun thinks teaching using tools like *Ink* is “inevitable,” particularly since it can make teaching more student-centered. She feels professionally obligated “to keep up with tendency,” that is, trends like teaching using video games. Thus, Shun wanted to evaluate *Ink* through the eyes of others. For example, she wanted to see data that showed *Ink* does help players become better writers. She was uncertain about whether “this kind of environment will encourage them to write more, or discourage them.” The fact that *Ink* is a game was somewhat arbitrary to Shun: “I’m more interested in whether others are interested,” she said, and explained that if *Ink* was a TV show for improving writing, she’d probably have the same level of interest. As with karaoke, the actions matter to Shun, but perhaps not as much as the effect on identity (i.e., being a writer).

When pressed, Shun was uncertain whether she’d play *Ink*: “I’ve developed my own writing style, my own habit. I don’t want to change too much.” She liked the idea of making friends in a writing-focused setting. Shun felt mixed about the images in the previews: “While I am writing, the pictures will distract me. ... It will prevent me from concentrating on the writing.” She acknowledged that the images could provide some guidance, but worried that “it may constrain your thoughts. Maybe with some pictures you will not express you real feelings. Pictures represent the thoughts of the drawers or the designers.” Conversely, she suggested that “animated pictures would be much better than static ones... more space to imagine things.”

Ultimately, Shun was cautious of being overly critical until she knew more about *Ink*. After she had a chance to play, she expected to have more and better comments.

Animal Crossing

Shun wasn't familiar with any of the video games, although she had played some past *Mario* games. Her relative inexperience with games showed: she needed coaching on using the controller, she was uncertain about making choices (e.g., in a menu), her in-game movements were tentative, etc. Shun voiced far fewer think-aloud remarks than other interview subjects, probably because she was more preoccupied with decoding on-screen text, getting her bearings, and the like.

When Shun saw the box for *Animal Crossing*, she asked, "Is it a game for kids?" Her think aloud remarks included: "What should I do next?", "Is this me? <pointing to Rover>," "How can they tell if I'm a girl or a boy?", "What's the purpose of this game?", "A button <to self>," and "What should I do next?"

Shun had no desire to continue playing, because she found it boring: "I can't see any sense from this game... I don't know what the purpose of it." She thought the introduction part was too long. Shun felt neutral about the graphics and sound, and believed that changing or improving them wouldn't change her desire to play.

Shun was somewhat interested in the conversations. "That kind of conversation is attractive to me," she said, explaining that as an English language learner she liked practicing everyday language, including slang. Shun

couldn't understand the babble noise (Animalese), and she was uncertain whether that was because she was a non-native speaker, or because it was gibberish.

Regarding the character and story, Shun said, "If I have to play this game, this character is OK for me.... Maybe if it was a soldier in a war, I would refuse to do so." In so many words, the identity and stakes of *Crossing* were marginally appealing, while those of war were not appealing at all. When asked what might increase her desire to play, Shun seemed to refer to gameplay: "Maybe it should be changed into some kind of game that you have to use your mind." She used *Tetris* as an example, and seemed to refer to both eye-hand coordination and interesting choices (as described by Sid Meier; see *Games: Full Model*, p. 34).

Super Mario Sunshine

Shun was unfamiliar with *Super Mario Sunshine*, but recognized the name "Mario," whom she associated with jumping and hitting things with his head. She showed much more interest in *Sunshine* than *Crossing* from the beginning. Shun said little while playing.

Shun seemed to be confused about the controls, and moved erratically at first. At times, she seemed directionless. She seemed unfamiliar with playing in a 3D world, and the camera seemed to interfere with her experience⁹¹. "I can't see

⁹¹ The camera is the point of view for the player. In a third-person game like *Sunshine*, it's usually angled down from a distance. *Sunshine* has a particularly good auto-camera, which means it tries to position the point of view to facilitate what the player is trying to do.

the M,” she said, and spent considerable time moving around to coax the camera into showing her what she wanted. (A more experienced player might have known or discovered that the camera could be controlled manually.) Shun struggled to learn how to aim FLUDD. Since Shun’s frustration seemed to be growing and in the interests of time, the interviewer took over. The interviewer played through the battle against the plant while Shun watched.

However, the learning curve didn’t seem to discourage Shun. “This one is much more interesting than [*Animal Crossing*],” she said twice. “Games are more interesting than I imagined.” She explained that she had a general sense that video games only had stories for children, and that *Sunshine*’s story seemed sufficiently sophisticated to interest her. Shun didn’t mind struggling to master the controls, because she didn’t feel any pressure from the game: “You can find something by yourself... you can practice your skills.”

“The graphics look so fake,” Shun said. While Mario looked fine, she thought “the other characters do not look cute.” Shun liked the story and challenges: “he’s a problem solving... I like the idea of solving problems.” She elaborated that this included “all kinds of problems,” including small problems like puzzles and large problems like helping the people of Delfino. Shun again used her vague idea of gameplay, comparing moving blocks in *Tetris* to moving Mario, and she explained that she likes “mental challenge.”

Resident Evil 4

Shun was unfamiliar with *Resident Evil 4*. She had little to say about it, even after watching the preview.

Shun's first impression of the preview was that "it's a lot like a TV show." She liked what she called "drama," and seemed to refer to the intensity and suspense. Shun liked the plot and the characters (both Leon and Ashley). She also liked the graphics: "The character looks so real... like a real person."

"I've never played this kind of game," Shun explained, so "I don't know what skills I will use." She liked the drama (i.e., identity and stakes), but she was unsure whether she'd like the gameplay: "If it's like *Super Mario [Brothers]*, I will like it... running, jumping, collecting." Shun wondered whether *Resident* was like *CounterStrike (CS)*. *CS* is a realistic military first-person shooter, so it has some similarities to *Resident*. Arguably, *Resident* is more like *CS* than like *Sunshine*, and the interviewer said so. Shun has bad associations with "those kind of games... most of my students played *CS*," she explained. Shun wasn't opposed to violent video games, but the identity and stakes didn't appeal to her.

Beyond Good and Evil

Time was running out, and Shun had struggled to master the controls for *Sunshine*. For *Beyond Good and Evil*, the interviewer played while Shun watched.

The science fiction setting made the game a non-starter for Shun: "I don't like this kind of story," she said cool certainty. "It's more like a fairy story: it's not true." Thus, she had little say about the game, and no motivation to play. Shun emphasized that it was the setting, not the game itself, "just like I don't like *Star Wars*." She thought the graphics and sound were "OK, [but] not as good as

Resident Evil.” The challenges may be the kinds that she liked, but “not under this kind of story.” Her voice and body language expressed complete disinterest.

When asked which of the four games she would most want to play, Shun was torn between *Resident Evil 4* and *Super Mario Sunshine*. She found *Resident* appealing, but she had “never played this kind of game... not sure what kind of skills I need.” *Sunshine* was “not as attractive,” but she was more confident that the challenges would match her skills and tastes. “This game evokes me because it’s a game,” she said of *Sunshine*. “This game evokes me because it’s an interesting story,” she said of *Resident*. Perhaps her taste in writing ghost stories influenced her interest in *Resident*.

Shun could confidently discard *Animal Crossing*—“don’t like the graphics... the other things don’t seem as attractive to me either”—and *Beyond Good and Evil*—“don’t like the plot... also saw other things that were unattractive to me.” Shun thought her boyfriend would like *Resident*, because he likes *CounterStrike*.

In the end, Shun was still very curious about *Ink*. “I still have so many ideas about *Ink*,” she exclaimed, probably meaning questions. She was clearly interested in *Ink* as a teacher and as a researcher. But as a player? Not so much.

Eric

Eric is a white man in his late teens. He’s going into his sophomore year as a Computer Science and Telecommunication double major. The telecomm program offers a specialization in video games, and he’s seriously considering it. Eric is planning to register to vote for the first time this fall.

Eric likes playing video games a lot. He plays almost every day, including console games, web-based computer games, network-based computer games, and other computer games. One of his current favorite games is *The Elder Scrolls 3: Morrowind*. He likes the open-ended nature of the game, including the new features and places created by the mod community⁹². Eric said that some mods are “as good if not better” than the original game. Eric is “burnt out” on *World of Warcraft* (a MMOG), having reached the highest level of character advancement. He doesn’t find the end game appealing, because it involves “spending six hours with people I don’t know” on group raids—huge quests and battles that require dozens of players. Eric hasn’t played MUDs or MOOs.

Eric plays games to cure boredom, compete with other players, for fun, and for immersion in an intense activity. According to Eric, a good game has excitement, a good story, and involves interesting choices and actions. Eric regularly uses technologies similar to *Ink*, except for blogging.

When it comes to entertainment, Eric likes action/adventure, crime/procedural, and fantasy. He prefers science fiction. This preference seems to be related to a major part of his identity. Regarding his major, he said that he’s “always been interested in how computers work.” He likes technology, and he thinks science fiction shapes “the technology we have today,” since it helps us see what’s possible. What’s one of his favorite examples of science fiction? “I’m

⁹² *Morrowind*, like many computer games, can be modified by hobbyists. Modifications, or mods, are often created and appreciated within a mod community.

a big *Star Wars* geek. I have a lot of the books, and most of the games. I'm not so big on the movies. ... The universe in general interests me."

Eric finds only low enjoyment in most kinds of writing, although he does enjoy writing stories, because "I can write whatever I want to write." Does he write fan fiction⁹³, perhaps set in the *Star Wars* universe? No, but he ruefully admits writing *Pokemon* fan fiction in 7th grade.

Ink Previews

In reviewing the previews⁹⁴ for *Ink*, Eric was tentatively interested in playing. He had difficulty imagining the game based on the previews: "It didn't really show me how this would work. ... I was quite confused about how this would work." Thus, he suggested a screenshot, and in the survey he wrote, "I'd like to see a short demo. You've aptly described different aspects of the game, now I want to see how they are implemented." As an experienced gamer, Eric drew on his knowledge of similar games. He was particularly concerned about the power *Ink* gives players to manage the game world: "Some of the stuff has been tried before and didn't work to well." Eric wanted to know what was different

⁹³ Fan fiction is hobbyist creative writing, usually short stories, that uses characters and/or settings from published media (e.g., movies, television shows). It's one of the most creative ways fans relate to the object of their affection, and relate with each other (by reading one another's fiction).

⁹⁴ Eric was in the Random condition. He viewed the *Crafting & Trade*, *Ecology*, *Imagination & Fantasy*, *Teamwork*, and *Player Power* previews.

about *Ink* that would make it work. He was cautious about dismissing the game without knowing more, especially without having played it. Eric believed that the game would be good if the systems worked as described in the previews.

Eric's mixed experiences in *World of Warcraft (WoW)* influenced his response to the teamwork aspect of *Ink*. In theory, he thought "it would be interesting," but he worries that some people online "aren't so useful and friendly." This was probably a tactful way to refer to the immature or outright hostile behavior of some players in games like *WoW*. Eric has had trouble finding people to relate to and play with in *WoW*, so he reserved judgment on this aspect of *Ink*. He was also cautiously intrigued by the paths, but was left with many questions: "what they do, what they're for, what's the difference between them."

Animal Crossing

Eric was familiar with all four of the recreational games, mainly from watching friends play them. He personally played *Resident Evil 4* to the end. Like Monisha, Eric's gaming experience made him comfortable and confident with the basics: holding the controller, advancing through menus, etc. He played through each game very quickly compared to other interview subjects, because he spent less time reading text (e.g., dialog boxes) and fought more efficiently.

Eric was familiar with *Animal Crossing* because "a couple my friends... were quite involved for a while." But he thought it looked very boring. His think aloud remarks included: "the voice is annoying me," "sounds like a hippy dog," and "this is a really slow opening." Regarding the conversational way the game

asks his name, Eric said, "It's an interesting way to get information out of you, but I'm not sure I like it. It's a little too round about."

Eric had no interest in continuing to play. He didn't like the stakes being offered: "having no pressure, nothing to do, not all that exciting." Furthermore, "Paying off a house is something I'm going to have to do eventually, so why simulate it?" Eric also didn't like the open-ended gameplay—an intriguing contrast to his praise of *Morrowind*. In so many words, he criticized *Crossing* several times for having "no sense of direction." He wanted "a sense of purpose, some goal to reach or at least strive for." Eric acknowledged that there were many kinds of collection challenges in *Crossing*, but "there's no real point to me collecting this stuff." He compared the collection challenges to similar challenges in *World of Warcraft*, and explained that's one of the reasons he's lost interest in that game.

The graphics weren't a major factor for Eric. He thought fancy graphics were unnecessary for this particular game: "they wouldn't add to the gameplay in any way... they could probably get away with 2D models and it would be the same game." Eric didn't like the look of his in-game character, and he didn't like the "whiney voices" (Animalese).

Super Mario Sunshine

Eric found *Super Mario Sunshine* more appealing. He had played the game a little in the past. His think aloud remarks included: "definitely bright and pretty," "a little more character development than most of the *Mario* games," "I

always wondered what happened to Luigi,”⁹⁵ and “these graphics are better than I remember.” Eric learned the controls quickly by experimenting—trying different buttons and moves until he figured them out. He breezed through the airport plot.

Eric interest in technology influenced his receptivity. In thinking aloud, he said things like, “I didn’t know they had planes in the Mushroom Kingdom” and “I’ve never understood how water hurts plants.” Having played previous *Mario* games, he said, “I kind of prefer the classic Mario,” without a device like FLUDD. The water pump is “a very highly technological device in a not so technological world, so it’s kind of inconsistent.”

Eric thought the graphics and sound were adequate, and that they didn’t have a strong influence on his desire to play. Eric liked the initial story, especially the way it’s depicted through the airport plot and the trial. As an experienced gamer, he understands that “you have to tell the player what kind of world you’re in and what you’re supposed to be doing.” *Sunshine* has “a rather unique way” of doing this, and “that’s a good thing... they do a good job of conveying what they’re supposed to.”

Did Eric want to keep playing? Yes, because “it’s Mario... there’s name recognition.” He has played other *Mario* games, and he associates them with good puzzles and secrets. Again, he thought the story was appealing: “I like

⁹⁵ Luigi is Mario’s brother, and appears in many *Mario* games. He does not appear in *Sunshine* nor is he referred to. Eric was demonstrating his familiarity with the *Mario* series and game world.

writing and I like writing stories, so I like a good story in a game. This one has the potential to be interesting.”

Resident Evil 4

Since Eric had played *Resident Evil 4* to the end, he was asked to evaluate how well the preview represented the game. His face and body language showed more concentration and investment than with *Crossing*. Eric liked the cinematic qualities of the preview (and the game). “It really feels more like a movie preview,” he said, referring to the titles cards as one cause of this feeling. Eric doesn’t believe a game needs to be like a movie, but that in trying to make *Resident* like a movie they did a good job. The graphics, especially the animation, were appealing to Eric. He liked the realism. He thought that while *Crossing* and *Sunshine* don’t need realistic graphics, they add a lot to *Resident*.

Eric liked the main character (Leon): “he’s very down to earth, not fantastical, someone you can relate to.” Eric thought that a more realistic game required a more realistic character: Mario was right for a *Mario* game, and Leon was right for *Resident*. Seeing Ashley (the female character) reminded him that he didn’t enjoy that part of the game: “The girl is really obnoxious to lug around and not get her killed. Even in the preview it’s not appealing.”

Eric was puzzled about how the publisher was trying to market the game, given the preview. Drawing on his gaming experience, he analyzed *Resident* using conventions from “survival horror”—a well-established subgenre in video games and other media. He thought the publisher was trying to market *Resident* as survival horror but that the game was more “action/adventure.” He referred to

design choices like abundant ammunition, sudden death challenges, “waves and waves of enemies,” and periodic boss battles as ways *Resident* is more of an action/adventure game. Different choices in these areas might make *Resident* more like survival horror, and “they could have made it more scary.”

As someone who's played *Resident*, Eric thought the preview represented the game well: “it's intriguing...it does a good job making you wonder what's going on... I don't see anything that would decrease wanting to play.” He liked the balance of story and demonstrations of gameplay. In so many words, Eric appreciates some of the influence of a preview on the pre-play window: “the more you know about a game, the more interested you'll be in trying it out.” Eric likes a preview when it adequately informs him about the story and the gameplay. “Then if I see it on a store shelf, I might get that. The preview did a good job of showing what it was all about.”

Beyond Good and Evil

Eric had passing familiarity with *Beyond Good and Evil*: “I've heard a bit about it... seen it played.” Eric owns a GameCube, which helps explain his comfort with the controller when playing *Crossing* and *Sunshine*. But he doesn't own a PlayStation 2, so he didn't like the controller and said so. This and other think aloud comments indicated limited receptivity: “I'm not sure what that thing's supposed to be,” “it's very button-mashy,” and “OK <said tentatively, several different times>.” Despite his unfamiliarity with the controller, Eric learned fast and fought well, so he quickly advanced through the attack-on-the-lighthouse plot.

"I think they had some good art direction in this game," Eric said. "But I think they used green too much." Eric saw a possible disconnect between two overtones in the game: "campy, cartoony, slapstick... and... ultra-serious." Partly because of the art, Eric felt the serious tone fell flat. "They should really stick to the slapstick, because that's what the graphics seemed to be designed for."

Eric's experience with science fiction meant he was willing to learn about the world as the game progressed. He said, "I kind of like the story" even though "it's really confusing," because "I always like a mystery." Eric quickly picked up on the ambiguous heroism of the Alpha Sections. He chastised Jade for picking up the pearl and only then scanning it: "should have done that before you touched it." Here and elsewhere, Eric seemed very aware of the technology in the game world (e.g., "apparently they're digital photos") and thus one element of the identity being offered.

Eric liked the balance of story and gameplay in the beginning: "it's nice that they let you play a little." But he felt directionless as the game got underway; he wanted more than "go take pictures of stuff"—perhaps more exposition. Eric appreciated that the game designers were trying something different, but he thought that omitting "a tutorial-type section" was probably a mistake. He was particularly concerned that the control scheme would be hard for some players to learn: "People who don't know video games are probably going to die in that fight. It kind of needs something to say this is how you do this part."

The "button mashing" hindered Eric's receptivity. Button mashing refers to gameplay that requires hitting a button quickly and frequently, rather than

exercising more sophisticated skills. Referring to the battles, he said, “She was doing fairly complex maneuvers with her stick, and all I’m doing is click, click, click <mimes pushing a button>... you don’t feel like you’re really helping... not so entertaining, I think.” He also thought the photography gameplay was contrived—just an attempt to be different.

Eric said he “would probably continue to play for awhile... for the story, if nothing else.” In so many words, he liked the stakes and identity being offered: “they did a good job introducing Jade and the lighthouse people,” and he liked that Jade and Pey’j seemed like good people (e.g., taking care of orphans).

When asked which game he’d most like to play, Eric had two answers. If he hadn’t already played *Resident Evil 4*, he’d choose it. But among the others, he’d “probably play *Beyond Good and Evil*, because it’s something new and different.” Eric really didn’t like *Animal Crossing*, but knows “quite a few people who really got involved in it for quite a while... probably because they like collecting stuff.”

Eric’s final thoughts were back to *Ink*: “I’d like to hear more... because it looks interesting... could be useful... could be a good game.”

Siera

Siera is a black woman in her late teens. She’s going into her sophomore year as a double major in Studio Art and Japanese. She’s been interested in Japan and its culture for a long time. Like Eric, Siera is considering the video games specialization (via Studio Art). She is registered to vote.

Siera has played many video games. She particularly enjoys MUSHs and MOOs⁹⁶. One favorite is *PernWorld*, in which she rose to an in-game leadership role. However, Siera is cutting back on playing MUSHs and MOOs, because she's concerned about the time commitment: "it got to the point where I was starting to focus more on that than my real life." (What little Shun knows about video games includes a wariness of their addictive potential.) Siera believes text-base role-playing games "can be a lot more intense than regular gaming," and she was very interested in *Ink*. Siera also likes simulation games like *Tropico* and *The Sims*.

Siera plays video games a few times a week, and she plays in order to interact and cooperate with other players, explore new places or worlds, and have fun. Siera likes socializing in games. Games have also been a part of her broader social life. She explained that her older brother "kind of got me into games and everything," and she shared many stories of her brother, her sister, and her playing games together, including *Animal Crossing*. Siera also shared stories of playing games in her dorm. She and a female friend would watch as a male friend played through *Resident Evil 4*. They were interested in the story, but found the game too scary to play directly. In short, they liked the stakes and identity, but not the gameplay.

⁹⁶ Multi User Shared Hallucinations (MUSHs) and Multi User Dungeons, Object-Oriented (MOOs) are text-based games similar to *Ink*. The emphasis is usually on identity-play rather than fighting.

According to Siera, the most important characteristics of a good video game are good characters, good graphics, and a good story. She has played MMOGs, but she prefers MUSHs and MOOs. Siera frequently uses all of the technologies similar to *Ink*.

In entertainment, Siera likes action/adventure and fantasy, and she prefers crime/procedural. She really likes the different *Law and Order* television series. "I don't like the idea of dead bodies," she said, referring back to scary games like *Resident Evil 4* as well. But she likes the different stories in *Law and Order* as well as the character progression.

Siera feels neutral about most kinds of writing, although she reported low enjoyment of scientific writing. She highly enjoys creative writing: "It's a lot of the reason that I play MUDs. ... It lets you get all this energy out. ... It's an easy way to kind of escape. I needed that a lot in high school."

Ink Previews

Siera's discussion of the *Ink* previews⁹⁷ was question-driven. She really wanted to know more about how the game works: "I'm still trying to figure out the whole thing of earning ink." Siera had several comments about the art, probably partly because of her interest and background in studio art. She found the simple artwork of the previews "refreshing" by comparison to the "fancy art" in

⁹⁷ Siera was in the Random condition. She viewed the *Imagination & Fantasy*, *Teamwork*, *Alter Ego*, *Gameness*, and *Ecology* previews.

recreational video games, like Square-Enix role-playing games⁹⁸. Siera “felt like random words were bolded” in the previews, and she suggested adding more color. She also wanted more information about the paths: “I really like the idea of the Path of Chimera [Ink], but then it makes me think, What are the other paths?” She was quick to emphasize that her constructive criticism of the art and her unsated curiosity about the paths were minor impediments: her receptivity was still very high. Of the four interview subjects, Siera was far and away the most interested in playing *Ink*.

Siera has apparently found both enjoyment and catharsis in playing text-based role-playing games, and she was excited that other people might discover the same benefits through *Ink*. “I think that more people should try to do things like this,” she said. “I think that *Ink*’s a good way to try to get people into this.” On a similar note, Siera liked seeing her favorite kind of game being applied to education: “I think it’s a good idea to have kids be rewarded for being better writers.” Curiously, Siera did not want to play *Ink* as part of a class: “doing anything as part of a class... like having to read [a book] as part of class is kind of discouraging, kind of turns me off. It feels like it’s more of an obligation than being able to enjoy it fully.”

Siera’s extensive experience with text-based role-playing made her a discerning audience for the previews. In particular, she liked the subtext that *Ink* was a game for everyone—a friendly and accepting place. Siera has had

⁹⁸ Square-Enix publishes the *Final Fantasy* series, which is known for cutting-edge graphics.

unpleasant experiences with similar games, in which the staff and/or veteran players were elitist or otherwise hostile. (Eric has had unpleasant experiences with other players in *World of Warcraft*.) Siera would feel like they were saying, “my sandbox, my toys... if you don’t like it, get out.” Sometimes it felt like bullying. In contrast, she believed that playing in *Ink* would mean “you get rewarded for doing good writing, rather than appealing to someone else with your writing.”⁹⁹

Animal Crossing

Like Eric, Siera already familiar with *Animal Crossing*, *Super Mario Sunshine*, and *Resident Evil 4*. She played through the 5-15 windows quickly. She was comfortable picking up a controller, pressing start, and the like.

Siera played *Crossing* with her brother and sister. They shared the same town, which sometimes led to arguments, like when one sibling sabotaged another’s favorite part of the town. Siera really liked *Crossing*, although in revisiting the 5-15 window, she found some parts lackluster. Siera’s think aloud remarks included: “This part is so long, you can’t like fast forward through it...”, “<laughs> I love Rover,” “I hate how [Rover] laughs about [my name],” “Yes Tom Nook, blah blah blah blah,”

Playing through the 5-15 window reminded Siera of her past experiences in *Crossing*: her favorite challenges, some of the appealing features, and funny

⁹⁹ Actually, other players’ judgment is a central part of *Ink*. Siera’s remark reflects a failure by the previews to properly explain this part of the game.

stories about her and her siblings' town. She described some subversive play, like being chided by the game "when you put in bad words," or the time she "just said entirely mean things to [Rover] the whole time... I felt so bad." Siera also remembered that "Tom Nook is annoying as heck" and that some parts are monotonous.

The graphics were "really important" to Siera. Overall, she liked the art design: "I like a lot of bright colors... might be part of why I don't like survival horror." She knew that the game includes a lot of interior decorating, and she liked that. But she really didn't like how her character looked: "I hate that shirt, it's so ugly... pink shirt, pink hair... There's a point at which brightness is good, but then it just screams girly." Siera liked the sound, including Animalese: "I think it's so funny the way they talk." In discussing the graphics and sound, she said, "I like being influenced by the games I play."

Would Siera want to play *Crossing* again? "I'd probably play it for maybe an hour out of the day." She thought, "It's really, really addictive when you first start playing. ... You collect things and you get really stuck on that." She also liked interacting with townsfolk: even though they are relatively simple characters, "it still feels like personal interaction."

Super Mario Sunshine

Siera was also familiar with *Sunshine*: "I like that game... never beat it, but it was really cute." Her body language and voice indicated enthusiasm and

fondness. Her think aloud remarks included: “didn’t Miyamoto¹⁰⁰ do this one?”, “Delfino <before the island is named>,” “no one pays attention to Peach,” “Oh yeah, FLUDD <before FLUDD is named>,” “yea... a shiny object,” “FLUDD reminds me of Navi from Zelda,”¹⁰¹ and “How come video games characters have like the worst judgment ever?”

Siera played through the 5-15 window quickly, relearning the controls by experimenting. She engaged in a lot of subversive play, including jumping on characters (and laughing) and spraying characters with water (and laughing).

In discussing *Sunshine*, Siera was very thoughtful about the graphics and sound. She said, “I think they’re so cute... the island people... I like the shapes.” Siera thought that the graphics were especially important to the experience of *Sunshine* because of all the goop: “I like the paint and like how it’s always moving and shimmering and stuff.” She also liked the way the island gets brighter as Mario overcomes challenges: “It’s a really good motivator.” Siera liked the sound, although “Peach has the stupidest voice ever. It’s so high pitched.” She noticed that the islanders have no mouths, and mused that made it easier to localize the game in a different language (since there was no need for lip synching). Siera also thought there should be subtitles, for hearing-impaired

¹⁰⁰ Shigeru Miyamoto is a widely-acclaimed game designer. His credits include several previous *Mario* games. He produced (not directed) *Sunshine*.

¹⁰¹ Navi plays a similar tutoring role in *The Legend of Zelda: Ocarina of Time*.

players. These comments illustrated her interest in making video games, not just playing them.

Siera wanted to keep playing *Sunshine* a lot. She liked the unusual story and challenges: "It's not like, 'Let's go beat up the boss.' It's... 'Let's clean up all the paint that's everywhere.'" Mario is an appealing identity for Siera: "Yeah, I love Mario... He's just Mario... the whole thing with the food... sitting in the jail cell. He could have broken out but he doesn't."

Resident Evil 4

Before she watched the preview for *Resident Evil 4*, Siera told a story about her brother and her playing the first *Resident Evil* for the GameCube. They kept screaming in fear, and their mother eventually took the game away. Siera said she was also frightened while watching her male friend play through *Resident Evil 4*. She seemed jumpy and squeamish during the preview. Here and elsewhere in the interview, she made it clear that she doesn't like to *play* this kind of game. Like Eric, because Siera was already familiar with *Resident*, she was asked to evaluate how well the preview represented the game.

Once again, Siera offered a sophisticated critique of the graphics. She said, "I like and I can appreciate the art that they used, but a lot of it is really neutral toned stuff." She thought the graphics and sound support the intensity of the story and gameplay. For Siera, part of the appeal of the game is the main character (Leon): "he's pretty cute and he looks pretty bad ass."

Ashley evoked loathing in Siera: "Well, great! Another useless female character in a game. ... The girl is just the stupidest, annoying character." Siera's

body language and voice emphasized her exasperation. She took issue with Ashley's outfit: "with all the running that sweater would be gone. ... Those boots were so impractical!" Siera dismissed Ashley as "fan service appeal" to male players. While her male friend was playing *Resident*, Siera and her female friend once told him to shoot Ashley, because they were so annoyed by her.

At one point in the preview, Leon decides that he and Ashley should escape an angry mob by entering a shabby-looking cabin. Siera criticized Leon's judgment: "nobody does that... it's like a movie rule." Later Siera told a story about watching an inexperienced friend play a survival horror game, and breaking all the "rules" (e.g., by not conserving ammunition). (Eric criticized *Resident's* lack of adherence to survival horror rules.)

Siera liked the preview overall and thought it represented the game well: "I think it looks like a really interesting game. ... It looks like it has a really good, deep story." Like Eric, Siera praised the movie-like quality of the preview and the game itself. "There's so many different things going on it, but you know, you get the feeling that they're all tied together."

Beyond Good and Evil

Siera was mostly unfamiliar with *Beyond Good and Evil*. She could remember seeing the art, and she examined the box with great interest. She found the back of the box unappealing: "the description is so cheesy!" Siera hoped Jade was "going to do more than take pictures of stuff." Her think aloud

remarks included: "I haven't played a lot of games by Ubisoft,"¹⁰² "Oh I just saved that kid? That's good, I guess," "Who did not see that coming? <when Jade is grabbed by the tentacle>," "Whoa! That was awesome!", "Eat that! ... Bye bye!", and "That dude didn't help me. Why am I thanking him? I just totally owned that thing by myself."

Siera seemed to learn the controls with little effort, and easily defeated the monsters and the boss. Like Monisha, Siera initially thought the slow motion meant she was going to die, and then she became frustrated by the slow down in the action.

"I already really, really like the art and the music," Siera said, several times in so many words. "I like the use of color," she said. "I like the greenish type environments." (Eric criticized *Beyond* for its extensive use of green.) Just as Siera noticed the islanders in *Sunshine* didn't have mouths, she noticed that the reporter's lip synching was "kind of off." She liked how the music slowed down with the slow motion: "that's really inventive." Siera thought Jade was "very Disney-ish in her appearance." Of Secundo, Siera said: "I can't understand him. ... I know they're trying to do the accent thing, but it looks like they took it overboard with him. He comes across as an annoying character." Siera thought the graphics and gameplay had to be good to appeal to players, because the story started in such a confusing way.

¹⁰² Ubisoft published *Beyond Good and Evil*, so their name and logo are featured in the startup sequence.

Siera said, "You're like totally launched into the story without any explanation... It's cool that it has some... intrigue... but at the same time I'm kind of like, 'What am I doing and why?'" She wanted to know more about the direction the story was going to take, and more about the world Jade lives in. Siera liked some of the otherworldly elements, like the alien creatures (called vorax) that are briefly shown. However, the goat boy made her ask, "What is that?" and she repeated "psychokarma" in a questioning tone.

Siera liked Jade, tentatively saying that "she seems pretty cool." Siera took quick stock of the identity being offered: "She's a photographer that can fight and can do something with some kind of weird energy force, and she takes care of orphans." Siera really liked the photography gameplay, "even though I thought it was going to be lame at first." Siera was reminded of another game she enjoyed: *Pokemon Safari* focuses on photography¹⁰³ gameplay.

Siera wanted to continue playing *Beyond* "a lot." As a gamer, she was very frustrated at missing it. "I really wish it had been better marketed," she said. "The advertisement on the back of the box... was a total turn off. ... If I'd seen it in a store... the art is really cool, the graphics are really cool... but I think that they way they chose to market it would have turned me off."

That meant that *Beyond Good and Evil* was the game Siera most wanted to continue playing: "I like the fact that it has a pretty interesting female character. ... Sometimes it's refreshing as a girl gamer to see... a character that's not totally

¹⁰³ This is probably the best play-on-words in this study.

stupid like Ashley... and I really like the whole camera thing." Siera thought *Resident Evil 4* was a better fit for her male friend, since he "is a lot more strategic and logic[al]... he'll take the time [to aim, to conserve ammo]. I'm more of a button masher... I'm more into the incoherent, fluidy type stuff." (Eric criticized *Beyond* for its button mashing.) Finally, Siera was disappointed that she didn't get to play *Ink*: "I can't wait until comes out."

CHAPTER 4: CONCLUSIONS & IMPLICATIONS

This last chapter includes a discussion of the survey results, followed by a discussion of the case studies. Specific results were described in previous chapters. Hence, this chapter focuses on general trends, while also addressing some interesting peculiarities. This chapter concludes with a discussion of the broader implications for teaching and video game design.

Discussion of the Survey

While the survey failed to fully support the main hypothesis—adaptation can increase receptivity—it offers many important insights into the problem space of designing compelling experiences. Most concretely, the survey's failure inspires the question, What went wrong? Insights and directions for revision are discussed below under four themes: populations, writing and gender, questions and their modifiers, and adaptation.

Populations

The populations surveyed were non-ideal. One of the target audiences for *Ink* is students in undergraduate writing courses. While the *student* subjects represented that population, the majority of subjects were *writers*, who often self-reported as writing instructors. Many write-in responses from *writers* made it clear they were evaluating *Ink* as a teaching tool, not as potential players. This may have created a floor or ceiling effect—they were going to be highly receptive or not at all receptive to playing *Ink* regardless of the previews' effectiveness or adaptation. Perhaps the survey should have offered instructors a whole different

set of previews, designed to increase their receptivity toward the experience of teaching using *Ink*.

While the populations may have been non-ideal, it was still valuable to “see” *Ink* through their different eyes (*gamers, students, writers*). However, recruiting a new, larger sample of *students* would probably be one of the best ways to validate or trouble the results of the inferential analysis. Also, while *Ink* is designed for undergraduate students, many subjects suggested *Ink* might be appealing to middle school students or high school students. It might be worthwhile to recruit a sample from either or both of these populations. The survey results would be an efficient way for the project to gauge whether *Ink* should be offered to instructors at that level.

There was almost no ethnic diversity among the subjects, all subjects were native English speakers, and almost all subjects were US citizens. The absence of international students and other non-native speakers was particularly disappointing because a game like *Ink* can be a powerful space for cultural and language learning—this can be part of its appeal¹⁰⁴. A more diverse sample wouldn’t necessarily change the outcome of the inferential analysis. However, in the larger contexts of the *Ink* project, education, and game design, this study’s generalizability may be limited to white Americans (see also: Diversity, p. 190).

¹⁰⁴ In recreational MUDs and MOOs, I have met more than a few players who play partly to learn English and American culture.

A final strategy for better sampling would be recruiting from a population that knew nothing about *Ink*. Subjects in this study could self-report their prior knowledge about *Ink*, and no subjects were excluded based on their self-report. However, ideally, the pre-play window for the game should start with the previews, to isolate the previews' influence on receptivity.

Writing & Gender

In the inferential analysis of the survey's adaptation, only *writing* and gender were found to be significant factors. Each of these factors merits further discussion.

The significance of *writing* is not surprising: *Ink* is a game about writing, so subjects who enjoy writing should be more receptive. However, it's not completely clear what *writing* measured or how it relates to receptivity. To wit: liking learning about writing is not the same thing as liking writing, and enjoying a variety of kinds of writing is not the same thing as liking writing a lot. *Ink* is designed to foster learning about writing, but a player could play (and enjoy playing) without seeking learning. Also, the experience of learning about writing in *Ink*, especially for collateral players, could be very different from a subject's past experiences (e.g., in writing courses). As to the questions about kinds of writing, these were used to compute a composite score because the survey didn't include questions like those *gaming* was based on. For example, *gaming* was partially based on question 17, "Do you like playing video games?" There is no parallel question for *writing*. Thus, *writing* would be more useful and

transparent if it was based on different questions, possibly questions like “Do you like writing?” and “How often do you write for enjoyment?”

Gender was also found to be a significant factor. There is general perception that when creating video games for teaching, designers need to be mindful of appealing to females. The importance of this is underscored by the lower *gaming* scores for females—females may have lower initial or possible receptivity toward video games in general. For the broader *Ink* project, it’s exciting that even with lower *gaming* scores, females reported higher receptivity.

Yet as a factor, gender has complications. Smaller proportions of females reported reasons for why they play video games (Table 9, p. 101) and for the characteristics of a good video game (Table 10, p. 102). The former question modified aspects, so females’ profiles were less modified. This is not necessarily troubling, since aspects were initially neutral not vacant. But it may indicate broader gender-related design problems in the survey. Perhaps females were less able to articulate their reasons for playing (e.g., as evidenced by 5% on “Don’t know or unsure”) or for judging video games, to themselves or to the survey. For example, females may not have as much experience discussing video games, and thus have trouble making sense of the somewhat-similar possible responses (e.g., “Interactivity,” “Lots of action”). Perhaps the possible responses offered by the survey don’t fit well with the kinds of games females play and their reasons for playing. For example, competition, cooperation, and interaction with other players are only possible in multi-player games. One strategy for revising the survey would be adding responses that better suit

females' game-playing habits and tastes. The more responses the survey collects, the more information it has from which to extrapolate a profile.

Only some survey data were disaggregated by gender. For example, data on similar technologies and on entertainment genres weren't disaggregated. This study tried to consider gender while deliberately downplaying its relevance to designing for receptivity. While certain dispositions may be correlated with gender, there is a risk of stereotyping. Designers should think in terms of dispositions (e.g., preferring competitive play to cooperative play), not in terms of gender (e.g., males vs. females). So, for example, a survey like this one should never use gender to modify an aspect. A key idea of this study, as expressed in the AIGL model, was that an experience emerges from design and dispositions. A design that appeals to a greater variety of dispositions will appeal to a larger number of individuals. To appeal to more females, video game designers need to offer more kinds of experiences. Designers will then be appealing to more males, too—a rising tide lifts all ships. *Ink* is based on this idea. *Ink* is designed to offer a variety of experiences: competitive, cooperative, “casual,” “hardcore,” etc.

Questions & Their Modifiers

Some of the survey questions and their modifiers merit further discussion. For instance, the survey only asked about some genres of entertainment. *Ink* has a limited number of themes, and it would probably be specious to extrapolate relevant dispositions based on some genres (e.g., romance, horror). Hence, the survey only included genres which would modify aspects. The exception was science fiction. Science fiction didn't modify an aspect but it was included

because it seems to sharply divide some people's tastes (as Shun's case study illustrates). Beyond that, it seemed a waste of a subject's time to ask questions about genres that wouldn't have modifiers.

However, several write-in responses indicated that some subjects were troubled or confused by the apparently-incomplete list¹⁰⁵. If a subject thought she was responding to a complete (albeit flawed) list, she may have responded to some genres in ways that represent her enjoyment of other, unlisted genres. Possible confusion or distortion could be foreclosed on by adding all other major genres, while still only applying logical modifiers. Also, each genre was accompanied by two examples of TV shows or movies in that genre. These examples may have biased some subjects, if subjects particularly liked or hated the examples. This risk of this bias could be reduced by either listing no examples or listing many more.

When the survey asked a subject why she played video games and for the characteristics of a good video game, it also directed her to "Choose up to three." Many subjects chose more than three responses. This effectively divided the subjects into pseudo-groups: those who follow directions and those who don't. While the reasons for playing modified aspects, and while Table 9 (p. 101) and Table 10 (p. 102) must be read a little more carefully, this is not especially troubling. However, it could be wholly avoided by redesigning the questions or

¹⁰⁵ In their defense, subjects didn't know about aspects or modifiers, so they couldn't easily surmise an explanation for the incomplete list.

the survey interface to restrict responses to three or less. Similarly, if a subject responded that she didn't play video games, the survey directed her to skip several questions. Instead, the interface could be redesigned to present different questions based on earlier responses.

Another area for possible revision is the similar technologies questions. When the survey asked about each similar technology (e.g., blogs), it conflated the technology, the subject's enjoyment, and her frequency of use. For example, suppose a subject was very comfortable posting to a blog but didn't particularly enjoy it and didn't do it often (e.g., because it was an assignment). This subject might have had the technology literacy to understand the *Similar Technologies Preview* and the disposition to find it appealing in the context of *Ink*. But the survey only asked about frequency of activity; a response of "Less often than once a week" did not drastically increase *Similar Technologies*. A longer, more specific set of questions could be more sensitive to these nuances.

Finally, the profiling questions almost certainly activated a subject's identity as a media consumer just before she viewed the previews. In particular, her thoughts and feelings about video games and entertainment genres probably lingered as she continued through the survey. For example, in many write-in responses, subjects discussed the balance of fantasy and realism in *Ink*. Fewer subjects might have attended to this issue if they hadn't just responded to a question about fantasy. So a subject probably had a heightened self-awareness of her habits and tastes as she viewed the previews and as she responded to the receptivity questions. This is not undesirable or problematic. When evaluating

any new game within the first contact window, a player will probably have a heightened awareness of her relevant dispositions, especially those grounded in previous games (e.g., "I hope it's better than ____"). While the survey couldn't simulate the experience of browsing in a video game store, it did effectively stimulate some of the same heightened self-awareness.

Adaptation

The survey's adaptation was supposed to demonstrate the potential power of interactivity in tailoring an experience to an individual. Since it didn't support the main hypothesis, the survey failed, at least partially. However, the failure is neither simple nor absolute.

The basic design was sound: create an individual profile, and then deliver a tailored experience. While the populations may have been non-ideal, the survey itself may be a flawed design. Since the design of *Ink* was beyond the scope of this study, the questions and the previews were the crux of the survey's effectiveness—the right questions needed to be asked, the right modifiers needed to be assigned, and the right previews needed to be created and presented. Unfortunately, this means that two issues are entangled in the survey's failure. The effectiveness of the approach (asking questions, modifying aspects) is entangled with the effectiveness of the design (the actual questions asked, the actual modifiers). The effectiveness of the approach can't be gauged until at least one actual design succeeds (or perhaps until a great many fail). The approach is a complex problem space, and each actual design is an act of criss-

crossing. At this point, it's too early to be certain the problem space is unsolvable, the approach untenable.

The process of creating questions, aspects, and profiles was iterative and recursive. A great deal of time and effort was expended, yet there were some errors¹⁰⁶, and there are endless possible further revisions, major and minor. Fortunately, the processes of creating and revising are valuable in themselves. They can reveal much about how a designer explains his own dispositions to himself, as well as reveal much about how he builds mental models of subjects/players/students/users. Those who read this study can experience some of the same revelations, both vicariously and by questioning the designer's choices¹⁰⁷. These revelations can inform broader design work in similar problem spaces—teaching and designing video games.

There are several possible strategies for continuing to revise this survey, to test the effectiveness of the approach. A close reading of Table 27 (p. 129) and Table 28 (p.130) might suggest strategies for revising the aspect modification system and the previews. For example, perhaps the survey should be revised with the goal of each preview being seen by an equal number of subjects. This might be achieved by revising the assignment of aspects and

¹⁰⁶ For example, playing multi-player games modified *Teamwork*, but playing massively multi-player games did not. It should have.

¹⁰⁷ For example, you might question why I thought a response of ___ should modify ___ by ___.

What questions would you ask? What aspects would the responses modify?

magnitudes to different questions, and/or by adding questions that increase the likelihood of viewing previews that were viewed by smaller proportions of subjects (e.g., *Teamwork*, *Gameness*). Perhaps a subject's aspects should not all start at the same neutral value. Perhaps a response should modify more than one aspect. In this survey, each response only modified one aspect by a multiple of 10 (e.g., +10, -30), but these design choices are idiosyncratic to this survey. For the approach to be effective, the proof-of-concept survey might need to be very different.

Last but not least, the receptivity results from the survey may say more about *Ink* than anything in this study. Perhaps *Ink*—with its novelty, innovations, complexity, etc.—will inevitably elicit varied levels of receptivity. This study asserts that receptivity can be designed for, but only up to a point. Perhaps the “signal”—the survey design’s effectiveness—is lost in the “noise” of *Ink*’s inherent nature. The significance of *writing* in the inferential analyses of receptivity supports this possibility.

Discussion of the Case Studies

The case studies provided detailed examples of interactions between design choices and individual dispositions. While it’s problematic to draw broad conclusions from four cases, the case studies offer many useful insights into receptivity, especially in conjunction with the survey results. Insights and interesting peculiarities are discussed below under five themes: talking through receptivity, the games, gaming experience, diversity, and individuality and receptivity.

Talking Through Receptivity

Overall, the case studies were a good complement to the survey. They illustrate some of the key ideas of this study in ways the survey can't. For example, it was relatively easier to discern how the interview subjects were responding to the identities and stakes being offered by the recreational video games. Moreover, some of the interview responses helped in analyzing the survey data. For example, one of Monisha's interview responses suggested genre confusion: she classified the movies *Fight Club* and *Memento* as fantasy. The profiling questions in the survey were designed with certain assumptions, including the assumption that subjects would immediately and clearly understand the questions. As Monisha's interview response and some of the survey write-in responses indicated, this kind of assumption didn't necessarily hold true. The effectiveness of the survey's adaptation partially depended on asking the right questions. Talking through receptivity experiences with a variety of individuals proved to be an excellent way to better understand the questioning and profiling process. The interviews revealed how well certain design choices worked for the interview subjects (or didn't work), and thus the interviews revealed areas for improvement.

One key assumption in the survey was made problematic by the case studies. In designing the survey, it was tacitly assumed that preferences for genres were cross-media and relatively homogenous across media. So the questions about entertainment genres were used to choose which themes were emphasized in the pre-play window for *Ink* (i.e., the previews). In other words,

especially for non-gamers, preferences in TV, movies, and books were expected to cross into video games. However, Siera watched her male friend play *Resident Evil 4* but didn't want to play the game herself. Shun enjoys watching *Commander in Chief*, but mainly for the story and characters, not the theme of politics. Eric likes the universe of *Star Wars*, but mainly via books and games, not the movies. While questions about genre are probably an excellent strategy for profiling and adaptation, preferences are more complex than the survey allowed. This doesn't wholly discount the survey—any design will necessarily use somewhat broad “strokes” to profile a subject. However, for genres and themes, a more sophisticated approach with more questions would probably be more effective.

Talking through receptivity also helped highlight how powerful the effect of a disposition can be on receptivity—regardless of design choices. For example, Shun had absolutely no interest in *Beyond Good and Evil* because it was science fiction. All other design choices in *Beyond's* 5-15 window were moot. It might be difficult to capture this impact on receptivity in a survey, beyond a response at the extreme of a Likert-type scale, especially if a subject doesn't append an illuminating write-in response. Some subjects made have had similar, absolute reactions to *Ink* because it's an educational game, or because writing is central to gameplay.

Shun's cool reaction to science fiction is straightforward. However, the case studies also offer many examples of the complexity of the first contact window. For example, Siera closely examined the box for *Beyond Good and Evil*,

which made it part of the pre-play window. At that point, she didn't like the gameplay based on taking photographs. However, after playing through the 5-15 window, she said this gameplay was one of the reasons she wanted to keep playing. Eliciting receptivity doesn't seem to be as simple as just offering players what they think they want.

Finally, one limitation to the case studies' usefulness is that not all interview subjects were in the same experimental condition. For the purposes of probing the previews' effectiveness in eliciting receptivity, it would have been better to manually assign all interview subjects to Match.

The Games

The recreational video games were chosen partly because they clearly illustrate deliberate design choices in the 5-15 window. As the case studies show, the games were a rich space for talking through receptivity. They offered different themes, identities, stakes, gameplay, and aesthetics. The interview subjects' receptivity varied by game and by subject, which helped tease out the interactions between design choices and dispositions. In short, choosing the "right" games was important, and these seemed to work well.

The case studies reveal that even "top tier" video games can be ineffective in eliciting receptivity. The case studies should be useful to designers when they make choices about the 5-15 window, if only to learn from others' experiments and mistakes. For example, *Animal Crossing's* lengthy narrative introduction and contextualized questions seem like sound design choices, but the interview subjects disliked these choices. *Beyond Good and Evil* does a poor job informing

the player what the rest of the game will be like (e.g., the full game includes much more exploration and photography than fighting), the slow motion effect was more disorienting than dramatic, and the “instant action” of being thrust into combat left some subjects feeling directed rather than inspired¹⁰⁸. In *Super Mario Sunshine*, the player is directed (via an in-game character) to cross over to the shore for help, when she is actually supposed to find FLUDD and fight the boss monster. As a result, some subjects wandered a bit before finding the actual next step. Or perhaps this is what *Sunshine*'s designer intended. In short, recreational video games do undergo user testing before they're published, but it seems there is always room for improvement.

It's unfortunate that some subjects had already played some of the games. It might be difficult to find ideal video games for the case studies. Such games would need sufficiently sophisticated 5-15 windows, yet not be widely-known. There would be a great methodological advantage in isolating a fresh first contact window for each subject. *Ink* could be such a game, when it's ready to be played.

Gaming Experience

A subject's prior gaming experience was expected to be a significant influence in the 5-15 window. It was. The case studies emphasize how many

¹⁰⁸ I greatly enjoyed playing *Beyond Good and Evil*, and I had expected the interview subjects to find it very appealing, too. But having seen the game through their eyes, I now appreciate some of the shortcomings in its 5-15 window.

assumptions recreational video games make about players. For example, Shun lacked the media literacy and controller comfort of a more experienced player (e.g., she wondered if *Animal Crossing's* Rover was her character). This meant that some sophisticated design choices were probably lost on her, since she was preoccupied with lower-level concerns. Also, Shun seemed less able to discuss the games in detail, because she didn't have the vocabulary or background of other games, or the experience of talking about video games.

The subjects with more experience could engage with the game more comfortably and with more control. Monisha and Siera's subversive play are good examples: Monisha told *Animal Crossing's* Rover she was going to "your mom," Siera described similar past subversive play in *Crossing*, Siera jumped on and sprayed innocent bystanders in *Super Mario Sunshine*, etc. Rather than simply accept or reject the identity, stakes, and challenges being offered, experienced players can exercise more co-authorship of the experience—they make it their own. Experience also changed how subjects viewed the games. Siera and Eric both know the "rules" of survival horror and could critique *Resident Evil 4's* adherence to them (or lack thereof). Monisha and Siera both referred to *The Sims* (e.g., to make a point about *Ink*). Siera and Eric both referred to "button mashing" when discussing their receptivity toward *Beyond Good and Evil* (Siera likes games that reward button mashing, while Eric does not).

If nothing else, the case studies should give designers pause about the assumptions they make about players literacies, knowledge, and skill sets, especially if they want to attract inexperienced and non-traditional players.

An inexperienced subject also poses a methodological challenge. Shun's inexperience eventually made it necessary for her to watch rather than play. Before that point, it was still very interesting to watch an inexperienced player learn the basic conventions of a contemporary video game. But an inexperienced player's fumbling and frustration with the very framework of the experience (e.g., the controller) adds significant confounds to analyzing design choices in a 5-15 window.

Diversity

The case studies already make several important points about diversity, including ethnic diversity and gender diversity. However, a bit more discussion is merited.

Diversity can have an influence on receptivity as a design choice itself (e.g., by including diverse characters). For example, Monisha was perceptive of the ethnic diversity in *Beyond Good and Evil*, and it increased her receptivity. Receptivity can also be influenced by honoring diversity in potential players. For example, Shun had previously blogged about her cross-cultural experiences (at the urging of friends), and was more receptive to *Ink* because she saw the game as another space where her diversity would be honored.

Diversity is partly an issue of identity. A new context can honor diversity by letting an individual accept or adapt an alternate identity while not devaluing or discarding the identity she values in her home context. For example, both Monisha and Siera were less receptive to *Resident Evil 4* because Ashley wasn't an appealing identity. Siera said, "The girl is just the stupidest, annoying

character,” while Monisha said, “The damsel in distress thing is old.” These women are very conscious of the tensions between being a gamer and being female. They are reluctant or wholly unwilling to devalue or discard parts of their desired identities as females (e.g., strength, independence) in order to be immersed in *Resident’s* context.

As mentioned under Writing & Gender (p. 177), honoring diversity does not necessarily mean simply avoiding stereotypes. Rather, a designer should be mindful of how different choices (e.g., about in-game identity) might interact with different dispositions. This study urges more variety in games, not simply changing character skin tones or the like. For example, *Super Mario Sunshine* involves cleaning up pollution, while *Beyond Good and Evil* includes investigative photojournalism—these are radically different identities and stakes than fighting. When variety is increased, receptivity will increase for all players. Even Eric remembered the gameplay of protecting Ashley as “really obnoxious.”

Individuality & Receptivity

One of the strongest conclusions from the case studies perhaps seems like common sense: individuals have different dispositions, and thus different levels of receptivity to different designed experiences. More specifically, in terms of motivation theory, the case studies suggest that situational interest is much less of an influence on receptivity than personal interest. For example, the interview subjects seemed to view the previews for *Ink* through different lenses, and these lenses seemed more influential than design choices in the previews. Monisha seemed to use her training in audience consideration, while Shun was

evaluating *Ink* as a possible teaching tool. Eric critiqued *Ink* as a game designer, while Siera viewed *Ink* through her experiences in other text-based games.

Regarding the recreational video games, Siera discussed the graphics more and with more sophistication, while Eric, a technologist, was especially mindful of in-game technology (e.g., FLUDD in *Sunshine*).

The survey results, especially the significance of *writing*, further suggest that personal interest can be an overwhelming influence. A game's inherent effectiveness in eliciting receptivity may not be something that design choices in the first contact window can significantly mitigate. In other words, perhaps the influence of design choices on receptivity is more limited than this study hopes. Or perhaps, just as the "noise" of *Ink* may have overwhelmed the "signal" of survey adaptation, the noise of personal interest can overwhelm the signal of situational interest.

Broader Conclusions & Implications

This study hoped to demonstrate that receptivity can be significantly influenced by design choices. Specifically, the survey was intended to be a proof-of-concept that design choices in the first contact window can influence receptivity, in ways distinct from design choices in the larger game. Perhaps the influence of these other, larger choices is too strong to mitigate. *Ink* is a complex, unusual game. It was difficult to design previews that honored its complexity without overwhelming the subjects. Even subjects who had played MMOGs and MUDs/MOOs and viewed the *Similar Games Preview* may have struggled to understand the experience being offered. For example, Siera was probably one

of the best-equipped subjects to understand *Ink* quickly and well, yet she had many questions after viewing the previews.

Yet part of the promise of teaching using video games is the extraordinary effort players expend to learn their complexities and peculiarities—from the beginning, when receptivity is still very malleable. Shun struggled with even basic controls in *Super Mario Sunshine*, but she wanted to continue playing. *Challenge is not antithetical to receptivity*. So while the influence of design choices in the first contact window may be muted by design choices in the larger design, there is another, more compelling possibility. Perhaps first contact design choices can be influential, but only if larger design choices are made with the first contact window in mind. In other words, when making design choices about a larger experience, a designer should be mindful of what constraints he is placing on the design of the first contact window. After all, if the first contact window doesn't elicit receptivity, none of the other choices matter. But neither can nor should the first contact window try to elicit receptivity in ways that don't fit with the larger design. A game should represent itself as it is. *Ink* isn't for everyone, and no amount of cleverness in first contact design choices will change that.

The complexity of these issues emphasizes the importance of this kind of study, that is, the importance asking people about their dispositions. Even the descriptive analyses of the profile data are useful, especially to educators and designers who want to better understand these populations. For the larger *Ink* project, this study is partly "market research." But this was more than a survey. The survey's adaptation illustrates the potential power of interactivity in eliciting

receptivity, in opening the door to motivation to play and motivation to learn. The survey failed to support the main hypothesis, but its design still illustrates much about the problem space.

The profile-and-adapt approach to exploring the problem space still seems sound, and there are many issues that can be further explored empirically. For example, the survey offered a limited amount of information in each preview and a limited number of previews, to ensure that each subject accessed roughly the same amount of information in the same length of time. But pre-play windows can vary widely—anything from just reading the back of a box to fully researching a game. The survey could be redesigned to give subjects access to vast amounts of information about *Ink*, and then track which information they access. As another example for follow-up research, perhaps receptivity needs to be measured more finely. Instead of only asking about a general desire to play, the survey could ask about different parts of *Ink* (e.g., “Do you like that *Ink* includes imaginative writing?” and “How much does this part of the game influence your desire to play?”). As another possible variation, perhaps a subject could be invited to profile herself, rather than extrapolating from indirect questions. Finally, there are many other ways to research receptivity besides a survey. For example, a box could be created for a fictional game and then placed on the shelf of a video game store. A customer who tried to buy the game could be asked about her reasons for being interested in the game.

Fortunately, this seems to be an area where subjects are eager to participate in studies. Write-in responses were numerous and detailed¹⁰⁹. People like to talk about video games and other entertainment media.

If other designers and researchers use this study as an inspiration, they should note one subtle methodological choice. The case studies deliberately used cognitive language rather than affective language: “Eric thought” instead of “Eric felt.” This was mainly to be consistent. But since receptivity is both a cognitive and affective phenomenon, those who study it or design for it should be mindful of even the language they use. Receptivity, like love or faith, should be carefully treated like the complex human phenomenon it is.

In this study, the designer may have made incorrect extrapolations between responses and relevant dispositions. However, the larger goal was to illustrate how designers can make the process of eliciting receptivity more conscious and transparent to themselves and to others. For example, a video game designer can take many different approaches to his work. He can incrementally improve on others’ design choices by emulating their designs¹¹⁰. He can rely on the receptivity elicited by other designed experiences (e.g., in designing a video game based on a movie). He can make design choices first and then hope that players will have the right dispositions. He can learn from this

¹⁰⁹ I have conducted other surveys with write-in responses, and this one garnered far more and better responses.

¹¹⁰ It can be useful to leverage players’ existing literacies, knowledge, and skill sets.

study, and try to build inferential bridges from possible dispositions to design choices (e.g., by offering new and varied identities and stakes). Each of these approaches has merit, except perhaps hoping that players have the right dispositions. (That approach could relegate recreational video games to the vicious cycle of an insular subculture.) Since the design space is complex and there are practical constraints (e.g., money, technology), the best approach may be an amalgam. This study's key ideas make it a useful addition to such an amalgam.

Furthermore, these issues are not unique to video games. In designing an educational experience, a designer can take many different approaches, approaches that parallel those just described. Perhaps too often, a designer simply hopes (or assumes) that students will have the right dispositions; perhaps he even assumes that they will be compelled by other factors (e.g., grades). Instead, a designer should try to offer an experience that compels students by connecting with their interests, identities, and desired identities. This is a central theme in contemporary motivation theory and many pedagogies. It's entangled with a problematic conceit: a designer can know a student well enough to design for deep engagement. The ideal design for motivation may be a one-to-one instructor-student relationship over an extended time. Practical constraints require compromising this ideal. But if a designer must compromise, he should be mindful of his assumptions. Chief among these assumptions is that there are "shortcuts" to knowing someone (e.g., that survey questions can measure dispositions). So even after educators decide to motivate by interest rather than

coercion, the design work has just begun. Educators are well aware of the practical constraints; educators also need to aware of their assumptions. One of the best ways to bare assumptions is building models like the Actions and Identity in Games and Learning model. One of the best ways to test assumptions is empirical research like this study.

Hopefully, this study will help designers inventory their own assumptions, and become more thoughtful about receptivity. This study abjures simple models like player “types.” An individual is a composite of many different dispositions, and a designer should “talk” with an individual to extrapolate what will motivate her. As recommendation systems on Amazon.com and Netflix illustrate, computers can be powerful intermediaries. As this study’s survey illustrates, these issues can be studied empirically.

The ultimate goal is nothing less than helping individuals move toward self-actualization. Receptivity can lead to immersion, motivation to play, and/or motivation to learn. From there, designers face other challenges: fostering catharsis, educating, etc. But it begins with receptivity, with eliciting openness by connecting with an individual’s current and desired selves. When explaining why she wanted to keep playing *Super Mario Sunshine*, Shun said it best: “This game evokes me.”

APPENDIX 1: SURVEY QUESTIONS

This appendix includes all the questions from the survey. The survey was administered online, so it is best appreciated via a web browser. All the files to set up and run the survey (including the previews) are available at <http://KymBuchanan.org> under "Publications."

All Questions, with Any Aspect Modifiers

All the questions are listed below. Horizontal lines indicate page breaks. A subject could not see the aspect modifiers.

To begin, please fill out the form below, and click "Next".

1. First Name:

2. Last Name:

3. How did you find out about this survey?

4. May I use your answers as part of a research study?

- Yes, use my answers
 - No, don't use my answers
-

This survey is divided into sets of questions. Each set appears on one page. Please answer every question on the page, then click "Next" to continue. If you prefer not to answer a question, you can leave it blank. But please continue the survey until you reach the end. Unfinished surveys will be ignored/discarded.

This survey has three parts. The first part will ask about your background, video games, and other media.

5. If you are a student, what is the name of your school, college, or university?

6. Where do you live? (city and state)

7. Age? (years)

8. Gender?

- Male
- Female

9. You identify yourself as...? (Choose all that apply)

- American Indian or Alaskan Native
- Asian or Pacific Islander
- Black, African-American, not of Hispanic origin
- Hispanic/Latino, not of European origin
- White, not of Hispanic origin

10. Highest year of college completed? (as of June 2006)

- Less than 1 year
- Freshman year

- Sophomore year
- Associates degree
- Junior year
- Senior year
- Bachelors degree
- 1 or more years of graduate school
- Masters degree
- PhD or equivalent terminal degree

11. Are you a citizen of the United States?

- Yes, I am a US citizen
- No, I am not a citizen... I am an international student
- No, I am not a citizen... I am not an international student

12. If you are not a citizen of the United States, what is your home country?

13. Is English your native language?

- Yes (+0 *Writing*)
- No (+10 *Writing*)

14. Major/Profession? or What do you plan to major in?

- Art or Architecture (+0 *nil*)
- Business Administration (+10 *Crafting & Trade*)
- Education (+10 *Teamwork*)
- Engineering (+10 *Teamwork*)
- Liberal Arts and Sciences (+10 *Crafting & Trade*)
- Medicine, Dentistry, Nursing, Pharmacy, or Health Sciences (+0 *nil*)
- Natural Sciences (+10 *Government & Politics*)
- Social Work (+30 *Government & Politics*)

- Urban Planning or Public Administration (+10 Ecology)
- Other (+0 nil)

15. If you said "Other" please explain.

| |
|--|
| |
|--|

16. Are you registered to vote? (in the United States or elsewhere)

- Yes (+20 Government & Politics)
- No (+0 Government & Politics)

Video games include: console games (e.g., Nintendo, PlayStation, Xbox), computer games (e.g., Windows, Mac), handheld games (e.g., GameBoy, PSP), online games, cellphone games, etc.

17. Do you like playing video games?

- I like it a lot (+20 Gameness)
- I like it (+10 Gameness)
- Neutral or unsure (+0 Gameness)
- I don't like it (+10 Non-Gameness)
- I hate it (+20 Non-Gameness)

18. How often do you play video games?

- Never (+20 Non-Gameness)
- Less often than once a week (+10 Non-Gameness)
- About once a week (+0 Gameness)
- A few times a week (+10 Gameness)
- Almost every day (+20 Gameness)

19. If you do not play video games at all, what best describes your reason for not doing so?

- I play video games (+0 nil)
- Boring (+10 *Imagination & Fantasy*)
- Don't have the resources (e.g., money, computer, Internet access) (+10 *Similar Technologies*)
- Don't have the time (+10 *Alter Ego*)
- Not interested (+0 nil)
- Waste of time (+10 *Writing*)
- Other (+0 nil)

20. If you said "Other" please explain.

If you do not play video games at all, you can skip the rest of the questions on this page.

21. Which of the following types of video games do you play at least once a week? (Choose all that apply)

- Console games (e.g., Nintendo, PlayStation, XBox)
- Handheld games (e.g., GameBoy, PSP)
- Web-based computer games (e.g., Yahoo! Games, MSN Games)
- Network-based computer games (e.g., Counterstrike, World of Warcraft)
- Other computer games (e.g., Half-Life, Elder Scrolls)
- Cellphone games

22. If you play video games, what best describes your reason for doing so? (Choose up to three)

- Avoid studying (-10 *Writing*)
- Boredom (+ 0 nil)

- Compete with other players (+ 0 nil)
- Cooperate with other players (+ 10 Teamwork)
- Develop skills (+ 20 Writing)
- Don't know or unsure (+ 0 nil)
- Explore new places or worlds (+ 20 Quests & Exploring)
- Fun (+ 0 nil)
- Immersion in an intense activity (+ 10 Alter Ego)
- Interact with other players (+ 20 Teamwork)
- Recover from studying (-10 Writing)
- Other (+ 0 nil)

23. If you said "Other" please explain.

24. When you play video games, are they? (Choose all that apply)

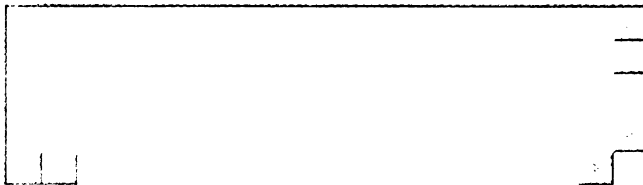
- Single-player (+ 0 Teamwork)
- Two-player (+ 10 Teamwork)
- Multi-player (3-32 players) (+ 20 Teamwork)
- Massively multi-player (more than 32 players) (+ 0 Teamwork)

25. What are the most important characteristics of a good video game? (Choose up to three)

- Excitement
- Good characters
- Good graphics
- Good music and/or good sound effects
- Good story
- Good weapons
- Interactivity

- Involves interesting choices and actions
- Lots of action
- Optimal challenge (not too easy or too hard)
- Unpredictability

26. (Optional) If you would like to comment on any of your answers, please use this space.



Massively multiplayer online games (MMOGs) are graphical online games like EverQuest and World of Warcraft.

27. How often do you play MMOGs?

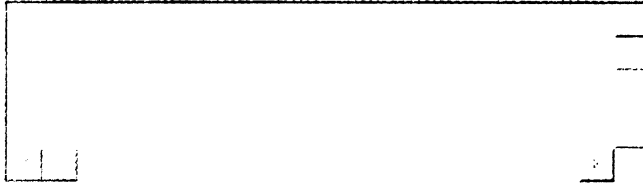
- Never played (-30 *Similar Games*)
- Used to play, but don't play now (+10 *Similar Games*)
- Less often than once a week (+10 *Similar Games*)
- About once a week (+20 *Similar Games*)
- A few times a week (+30 *Similar Games*)
- Almost every day (+40 *Similar Games*)

MUDs or MOOs are text-based online games with few or no graphics.

28. How often do you play MUDs or MOOs?

- Never played (-30 *Similar Games*)
- Used to play, but don't play now (+10 *Similar Games*)
- Less often than once a week (+10 *Similar Games*)
- About once a week (+20 *Similar Games*)
- A few times a week (+30 *Similar Games*)
- Almost every day (+40 *Similar Games*)

29. (Optional) If you would like to comment on any of your answers, please use this space.



30. Which of these things do you own and/or regularly use in your home (i.e., in your dorm or local residence)? (Choose all that apply)

- GameBoy
- GameBoy Advance or SP
- GameCube
- Nintendo DS
- PlayStation
- PlayStation 2
- PlayStation Portable
- XBox
- XBox 360
- PC/Windows Computer
- Mac/Apple Computer
- Internet - Dial up (Phone/Modem)
- Internet - Broadband (MSU, DSL, Cable)

31. How often do you use social websites, like MySpace or FaceBook?

- Never used (-30 *Similar Technologies*)
- Used to use, but don't use now (+10 *Similar Technologies*)
- Less often than once a week (+10 *Similar Technologies*)
- About once a week (+20 *Similar Technologies*)
- A few times a week (+30 *Similar Technologies*)
- Almost every day (+40 *Similar Technologies*)

32. How often do you use chat, instant messaging, or text messaging?

- Never used (-30 *Socializing*)
- Used to use, but don't use now (+10 *Socializing*)
- Less often than once a week (+10 *Socializing*)
- About once a week (+20 *Socializing*)
- A few times a week (+30 *Socializing*)
- Almost every day (+40 *Socializing*)

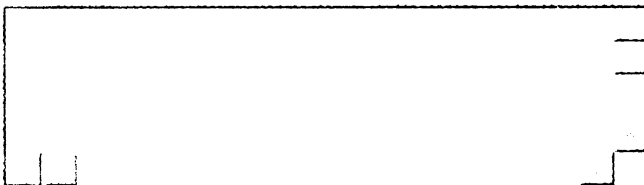
33. How often do you read or post to discussions or debates in online forums or email lists?

- Never used (-30 *Philosophy & Debate*)
- Used to use, but don't use now (+10 *Philosophy & Debate*)
- Less often than once a week (+10 *Philosophy & Debate*)
- About once a week (+20 *Philosophy & Debate*)
- A few times a week (+30 *Philosophy & Debate*)
- Almost every day (+40 *Philosophy & Debate*)

34. How often do you post to your blog?

- Never used (-30 *Similar Technologies*)
- Used to use, but don't use now (+10 *Similar Technologies*)
- Less often than once a week (+10 *Similar Technologies*)
- About once a week (+20 *Similar Technologies*)
- A few times a week (+30 *Similar Technologies*)
- Almost every day (+40 *Similar Technologies*)

35. (Optional) If you would like to comment on any of your answers, please use this space.



Think about the kinds of entertainment you enjoy, including television, movies, books, and games. How much do you prefer the following genres or dimensions?

36. Action/Adventure (e.g., Batman Begins)

- Prefer (+30 *Quests & Exploring*)
- Like (+20 *Quests & Exploring*)
- Neutral or unsure (+0 *Quests & Exploring*)
- Don't like (-20 *Quests & Exploring*)
- Hate (-30 *Quests & Exploring*)

37. Crime/Procedural (e.g., CSI, Law & Order)

- Prefer (+30 *Player Power*)
- Like (+20 *Player Power*)
- Neutral or unsure (+0 *Player Power*)
- Don't like (-20 *Player Power*)
- Hate (-30 *Player Power*)

38. Fantasy (e.g., The Lord of the Rings, Harry Potter)

- Prefer (+30 *Imagination & Fantasy*)
- Like (+20 *Imagination & Fantasy*)
- Neutral or unsure (+0 *Imagination & Fantasy*)
- Don't like (-20 *Imagination & Fantasy*)
- Hate (-30 *Imagination & Fantasy*)

39. Political (e.g., The West Wing, Commander in Chief)

- Prefer (+30 *Government & Politics*)
- Like (+20 *Government & Politics*)
- Neutral or unsure (+0 *Government & Politics*)
- Don't like (-20 *Government & Politics*)
- Hate (-30 *Government & Politics*)

40. Science Fiction (e.g., Star Wars, Battlestar Galactica)

- Prefer
- Like
- Neutral or unsure
- Don't like
- Hate

41. Supernatural (e.g., The Sixth Sense, Medium)

- Prefer (+30 *Ecology*)
- Like (+20 *Ecology*)
- Neutral or unsure (+0 *Ecology*)
- Don't like (-20 *Ecology*)
- Hate (-30 *Ecology*)

42. (Optional) If you would like to comment on any of your answers, please use this space.

43. Do you like learning about writing and composition (regardless of the teacher, class, or classroom)?

- I like it a lot (+30 *Writing*)
- I like it (+20 *Writing*)
- Neutral or unsure (+0 *Writing*)
- I don't like it (-20 *Writing*)
- I hate it (-30 *Writing*)

44. In your high school English courses, what was your approximate grade point average (GPA)?

- 4.0... I usually got A's
- 3.5... I usually got A's and B's
- 3.0... I usually got B's
- 2.5... I usually got B's and C's
- 2.0 or lower... I usually got C's or lower

How much do you enjoy *writing* each of the following kinds of texts?

45. Analytical writing (e.g., literary analysis)

- High enjoyment (+20 *Player Power*)
- Neutral or unsure (+0 *Player Power*)
- Low enjoyment (-10 *Player Power*)

46. Creative writing (e.g., fiction, poetry)

- High enjoyment (+20 *Crafting & Trade*)
- Neutral or unsure (+0 *Crafting & Trade*)
- Low enjoyment (-10 *Crafting & Trade*)

47. Introspective or self-reflective writing (e.g., diary, blogging)

- High enjoyment (+20 *Quests & Exploring*)
- Neutral or unsure (+0 *Quests & Exploring*)
- Low enjoyment (-10 *Quests & Exploring*)

48. Journalism (e.g., news stories)

- High enjoyment (+20 *Government & Politics*)
- Neutral or unsure (+0 *Government & Politics*)
- Low enjoyment (-10 *Government & Politics*)

49. Personal correspondence (e.g., email, letters)

- High enjoyment (+20 *Socializing*)
- Neutral or unsure (+0 *Socializing*)
- Low enjoyment (-10 *Socializing*)

50. Persuasive/argumentative writing (e.g., editorial)

- High enjoyment (+20 *Philosophy & Debate*)
- Neutral or unsure (+0 *Philosophy & Debate*)
- Low enjoyment (-10 *Philosophy & Debate*)

51. Scientific writing (e.g., lab report)

- High enjoyment (+20 *Ecology*)
- Neutral or unsure (+0 *Ecology*)
- Low enjoyment (-10 *Ecology*)

52. (Optional) If you would like to comment on any of your answers, please use this space.

| | |
|--|--|
| | |
|--|--|

53. Before taking this survey, had you heard of a game called Ink?

- Yes
- No

54. If you had heard of Ink, how much do you know about the game?

| | |
|--|--|
| | |
|--|--|

At this point the subject viewed five previews. None of the questions after the previews modified aspects, because it was moot.

You have finished viewing the previews for the game called Ink. The third and final part of this survey will ask how you feel about the game.

How much do you agree with each of these statements?

55. I want to learn more about this game.

- Strongly agree
- Agree
- Neutral or unsure
- Disagree
- Strongly disagree

56. I would enjoy playing this game.

- Strongly agree
- Agree
- Neutral or unsure
- Disagree
- Strongly disagree

57. I want to play this game as part of a class.

- Strongly agree
- Agree
- Neutral or unsure
- Disagree
- Strongly disagree

58. I want to play this game, even if it's not part of a class.

- Strongly agree
- Agree
- Neutral or unsure
- Disagree
- Strongly disagree

59. I want to tell my friends about this game.

- Strongly agree
- Agree
- Neutral or unsure
- Disagree
- Strongly disagree

60. What makes you want to play this game, or not want to play?

61. Think about the previews you just saw. What about the previews makes you want to play this game, or not want to play?

62. What would increase how much you want to play? For example, what kind(s) of information?

Think about the design of the game, as shown in the previews. The design offers players certain identities/roles, abilities, challenges, stories, themes, etc.

63. What changes could we make to the design that would increase how much you want to play?

64. (Optional) If you would like to comment on any of your answers, please use this space.

65. The game isn't finished yet. Would you like to receive an email when it's ready?

- Yes
- No

66. This results of this survey will eventually be published in a scholarly journal. Would you like to receive an email when the journal article is available?

- Yes
- No

I may want to contact you via email, if I have questions about your survey responses. I may also ask you to participate in a paid interview, to ask more questions about video games and other media.

67. Do I have your permission to contact you (via email) to ask questions about your survey and/or request an interview? Choosing "Yes" does not mean you have to answer my questions or agree to an interview. Choosing "Yes" only means I may contact you.

- Yes
- No

68. Do you want to be entered into the drawing for one of two \$15 Best Buy gift cards?

- Yes
- No

69. If you answered "Yes" to any of the last four questions, please enter your email address:

70. (Optional) If you would like to say anything else about video games, Ink, this survey, etc., please use this space.

71. The official Ink website has more information about the game. Would you like to go there when you finish this survey?

- Yes, I'd like to learn more
- No, I'm done for now

You have completed the survey. Thank you very much for your time.

If you're in a class, please don't talk until everyone is finished.

You can learn more about Ink at the official web site:

<http://writing.msu.edu/ink>

Only Questions with Aspect Modifiers, by Aspect

Only the questions that modified aspects are listed below, sorted by aspect. A subject could not see the aspect modifiers. For each question, only the choices that modified the relevant aspect are listed. The statistics for each aspect appear below the questions, and are also tabulated in the next section.

Alter Ego

19. If you do not play video games at all, what best describes your reason for not doing so?

- Don't have the time (+10)

22. If you play video games, what best describes your reason for doing so?
(Choose up to three)

- Immersion in an intense activity (+10)

Number of questions = 2
Minimum possible value = 50
Maximum possible value = 70
Range (Max - Min) = 20

Crafting & Trade

14. Major/Profession? or What do you plan to major in?

- Business Administration (+10)
 Liberal Arts and Sciences (+10)

46. Creative writing (e.g., fiction, poetry)

- High enjoyment (+20)
 Low enjoyment (-10)

Number of questions = 2
Minimum possible value = 40
Maximum possible value = 80
Range (Max - Min) = 40

Ecology

14. Major/Profession? or What do you plan to major in?

Urban Planning or Public Administration (+10)

41. Supernatural (e.g., The Sixth Sense, Medium)

Prefer (+30)

Like (+20)

Don't like (-20)

Hate (-30)

51. Scientific writing (e.g., lab report)

High enjoyment (+20)

Low enjoyment (-10)

Number of questions = 3
Minimum possible value = 10
Maximum possible value = 110
Range (Max - Min) = 100

Gameness

17. Do you like playing video games?

I like it a lot (+20)

I like it (+10)

18. How often do you play video games?

- A few times a week (+10)
- Almost every day (+20)

Number of questions = 2
Minimum possible value = 50
Maximum possible value = 90
Range (Max - Min) = 40

Government & Politics

14. Major/Profession? or What do you plan to major in?

- Natural Sciences (+10)
- Social Work (+30)

16. Are you registered to vote (in the United States or elsewhere)?

- Yes (+20)

39. Political (e.g., The West Wing, Commander in Chief)

- Prefer (+30)
- Like (+20)
- Don't like (-20)
- Hate (-30)

48. Journalism (e.g., news stories)

- High enjoyment (+20)
- Low enjoyment (-10)

Number of questions = 4
Minimum possible value = 10
Maximum possible value = 150
Range (Max - Min) = 140

Imagination & Fantasy

19. If you do not play video games at all, what best describes your reason for not doing so?

Boring (+10)

38. Fantasy (e.g., The Lord of the Rings, Harry Potter)

Prefer (+30)

Like (+20)

Don't like (-20)

Hate (-30)

Number of questions = 2

Minimum possible value = 20

Maximum possible value = 90

Range (Max - Min) = 70

Non-Gameness

17. Do you like playing video games?

I don't like it (+10)

I hate it (+20)

18. How often do you play video games?

Never (+20)

Less often than once a week (+10)

Number of questions = 2

Minimum possible value = 50

Maximum possible value = 90

Range (Max - Min) = 40

Philosophy & Debate

33. How often do you read or post to discussions or debates in online forums or email lists?

- Never used (-30)
- Used to use, but don't use now (+10)
- Less often than once a week (+10)
- About once a week (+20)
- A few times a week (+30)
- Almost every day (+40)

50. Persuasive/argumentative writing (e.g., editorial)

- High enjoyment (+20)
- Low enjoyment (-10)

Number of questions = 2
Minimum possible value = 10
Maximum possible value = 110
Range (Max - Min) = 100

Player Power

37. Crime/Procedural (e.g., CSI, Law & Order)

- Prefer (+30)
- Like (+20)
- Don't like (-20)
- Hate (-30)

45. Analytical writing (e.g., literary analysis)

- High enjoyment (+20)
- Low enjoyment (-10)

Number of questions = 2
Minimum possible value = 10
Maximum possible value = 100
Range (Max - Min) = 90

Quests & Exploring

22. If you play video games, what best describes your reason for doing so?
(Choose up to three)

Explore new places or worlds (+20)

36. Action/Adventure (e.g., Batman Begins)

Prefer (+30)

Like (+20)

Don't like (-20)

Hate (-30)

47. Introspective or self-reflective writing (e.g., diary, blogging)

High enjoyment (+20)

Low enjoyment (-10)

Number of questions = 3

Minimum possible value = 10

Maximum possible value = 120

Range (Max - Min) = 110

Similar Games

27. How often do you play MMOGs?

Never played (-30)

Used to play, but don't play now (+10)

Less often than once a week (+10)

About once a week (+20)

A few times a week (+30)

Almost every day (+40)

28. How often do you play MUDs or MOOs?

- Never played (-30)
- Used to play, but don't play now (+10)
- Less often than once a week (+10)
- About once a week (+20)
- A few times a week (+30)
- Almost every day (+40)

Number of questions = 2
Minimum possible value = -10
Maximum possible value = 130
Range (Max - Min) = 140

Socializing

32. How often do you use chat, instant messaging, or text messaging?

- Never used (-30)
- Used to use, but don't use now (+10)
- Less often than once a week (+10)
- About once a week (+20)
- A few times a week (+30)
- Almost every day (+40)

49. Personal correspondence (e.g., email, letters)

- High enjoyment (+20)
- Low enjoyment (-10)

Number of questions = 2
Minimum possible value = 10
Maximum possible value = 110
Range (Max - Min) = 100

Similar Technologies

19. If you do not play video games at all, what best describes your reason for not doing so?

- Don't have the resources (e.g., money, computer, Internet access) (+10)

31. How often do you use social websites, like MySpace or FaceBook?

- Never used (-30)
- Used to use, but don't use now (+10)
- Less often than once a week (+10)
- About once a week (+20)
- A few times a week (+30)
- Almost every day (+40)

34. How often do you post to your blog?

- Never used (-30)
- Used to use, but don't use now (+10)
- Less often than once a week (+10)
- About once a week (+20)
- A few times a week (+30)
- Almost every day (+40)

Number of questions = 3

Minimum possible value = -10

Maximum possible value = 140

Range (Max - Min) = 150

Teamwork

14. Major/Profession? or What do you plan to major in?

- Education (+10)
- Engineering (+10)

22. If you play video games, what best describes your reason for doing so?
(Choose up to three)

Cooperate with other players (+10)

Interact with other players (+20)

24. When you play video games, are they? (Choose all that apply)

Two-player (+10)

Multi-player (3-32 players) (+20)

Number of questions = 3

Minimum possible value = 50

Maximum possible value = 100

Range (Max - Min) = 50

Writing

13. Is English your native language?

No (+10)

19. If you do not play video games at all, what best describes your reason for not doing so?

Waste of time (+10)

22. If you play video games, what best describes your reason for doing so?
(Choose up to three)

Avoid studying (-10)

Develop skills (+20)

Recover from studying (-10)

43. Do you like learning about writing and composition (regardless of the teacher, class, or classroom)?

I like it a lot (+30)

I like it (+20)

I don't like it (-20)

I hate it (-30)

Number of questions = 4
Minimum possible value = 10
Maximum possible value = 120
Range (Max - Min) = 110

Possible Aspect Values

See Profiling (p. 72) for how this information was computed and used.

Table 29

Possible Aspect Values After Answering All Profiling Questions

| Aspect | Questions | Possible Final Values | | |
|-----------------------|-----------|-----------------------|---------|-------|
| | | Minimum | Maximum | Range |
| Alter Ego | 2 | 50 | 70 | 20 |
| Crafting & Trade | 2 | 40 | 80 | 40 |
| Ecology | 3 | 10 | 110 | 100 |
| Gameness | 2 | 50 | 90 | 40 |
| Government & Politics | 4 | 10 | 150 | 140 |
| Imagination & Fantasy | 2 | 20 | 90 | 70 |
| Non-Gameness | 2 | 50 | 90 | 40 |
| Philosophy & Debate | 2 | 10 | 110 | 100 |
| Player Power | 2 | 10 | 100 | 90 |
| Quests & Exploring | 3 | 10 | 120 | 110 |
| Similar Games | 2 | -10 | 130 | 140 |
| Socializing | 2 | 10 | 110 | 100 |
| Similar Technologies | 3 | -10 | 140 | 150 |
| Teamwork | 3 | 50 | 100 | 50 |
| Writing | 4 | 10 | 120 | 110 |

APPENDIX 2: INTERVIEW PROTOCOL

This protocol was used in the four interviews. It was loosely used: some directions were paraphrased for more natural delivery, some questions were modified or omitted based on previous responses, etc. This allowed the interviewer to build rapport and to follow interesting leads as they emerged.

Start

[Greet the subject.]

Thank you for agreeing to this interview. Your participation will help me better understand how people like you feel about media, especially video games.

This interview is private, just like the survey. I won't ask for any sensitive personal information. When I write about or present on this study, I will keep your identity secret. Your privacy will be protected to the maximum extent allowable by law.

[Obtain consent for the interview.]

Let me explain how this interview will work. We're going to look at the survey you took, and then you'll play some video games. I'd like to use what's called a "think aloud" protocol. This means that I want you to talk about whatever's on your mind, even if it doesn't seem important. You can pretend you're a character on TV, and I can hear what you're thinking. You don't have to talk about anything sensitive or anything that makes you uncomfortable. I will ask you some questions, but mostly I want to understand what you're thinking and feeling, especially when you're playing the games. Does that make sense?

Review Profiling Questions

Let's start by reviewing the survey you took. As we look at each question, if you want to talk about your answer, please do so.

[Briefly review answers to profiling questions.]

Review Ink Previews

Now let's review the previews of the Ink game. As you look at the previews, try to remember how you felt when you first saw them.

Q - What were you thinking about when you first saw these previews?

Q - What are you thinking about now?

Q - Did anything about the previews *increase* how much you wanted to play the game?

Q - Did anything *decrease* how much you wanted to play?

Q - What would *increase* how much you want to play?

So after you looked at the previews, there were some questions about whether you wanted to play the game. Let's look at your answers.

[Review answers to receptivity questions.]

Q - Now that you've had more time to think about the Ink game, have your answered changed?

Game #1 (Animal Crossing)

You're now going to play a few video games. For each game, please try to talk about what you're thinking and feeling as you play. After you finish playing, I'll ask you some questions about the game.

Q - Are you familiar with this game? [If yes, elaborate...]

As you play this game, remember to talk about what you're thinking and feeling.

[Does she sit through the attract mode?]

[Watch body language, hold on the controller, posture...]

Q - We're done playing the game for today. But pretend you could keep playing. How much do you want to keep playing?

Q - What about the game *increases* or *decreases* how much you want to play?

Q - What would *increase* how much you want to play?

Q - What do you think of the graphics and sound of this game?

Q - How important are the graphics and sound in making you want to play?

Q - This game is offering you a character to play, and a story about that character. Do you like this character and story?

Q - This game includes certain kinds of challenges. Do you like these kinds of challenges?

Q - Is there anything else you'd like to say about this game?

Game #2 (Super Mario Sunshine)

[Same as for Game #1.]

5 Minute Break

Game #3 (Resident Evil 4) (Preview)

For this next game, you're not going to actually play. Instead, you're going to watch a preview for the game.

Q - Are you familiar with this game? [If yes, elaborate...]

Since the preview is short, you're going to watch it twice. The first time you watch, you don't need to say anything. Just focus on what you're thinking and feeling.

[First time]

Q - Based on the preview, what's your initial impression of this game?

Q - What were you thinking and feeling as you watched the preview?

[Second time]

Now I'm going to ask you some questions about the preview. I'm going to run the preview you again in case it helps you remember what you were thinking and feeling, but I'm going to mute it.

Q - You're not going to play the game. But pretend you could play the game. How much do you want to play?

Q - What about the preview *increases* or *decreases* how much you want to play?

Q - What would *increase* how much you want to play?

Q - This game is offering you a character to play, and a story about that character. Do you like this character and story?

Q - This game includes certain kinds of challenges. Do you like these kinds of challenges?

Q - Is there anything else you'd like to say about this game?

Game #4 (Beyond Good & Evil)

[Same as Game #1]

Wrap Up

We're almost done. I have just a few more questions.

Q - You played three games today, and viewed a preview for a fourth game. If you had a choice, which game would you want to play most? Why?

Q - Which game did you like least? Do you know someone who you think would like that game? Why do you think s/he would like that game?

Q - Would you like to say anything else about the survey, about Ink, or about the games today?

We're done with the interview. Let tell you a little about my study, and why I'm giving the survey and doing these interviews.

[Briefly explain immersion and receptivity; first contact window (pre-play window, 5-15 window)]

[Briefly explain profiling, xcondition, previews]

My main hypothesis is that by presenting previews that fit your profile, you'll be more interested in playing *Ink*.

Q - Do you have any questions for me?

Thanks again for participating in this interview. If you have any questions later, please feel free to contact me.

[Pay the subject]

BIBLIOGRAPHY

- Aldrich, C. (2004). *Simulations and the future of learning*. San Francisco, CA: Pfeiffer.
- Barab, S. A., Hay, K. E., Barnett, M., & Squire, K. (2001). Constructing virtual worlds: Tracing the historical development of learner practices. *Cognition and Instruction*, 19(1), 47-94.
- Bergin, D. A. (1999). Influences on classroom interest. *Educational Psychologist*, 34(2), 87-98.
- Brock, C. H., & Raphael, T. E. (2003). Guiding three middle school students in learning written academic discourse. *The Elementary School Journal*, 103(5), 481-502.
- Brophy, J. (1999). Toward a model of the value aspects of motivation in education: Developing appreciation for particular learning domains and activities. *Educational Psychologist*, 34(2), 75-85.
- Brophy, J. (2004). *Motivating students to learn* (2nd ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Buchanan, K. (Submitted). George bush vs. Pikachu: Students' recognition of famous people vs. Video game characters. *Journal of Educational Multimedia and Hypermedia*.
- Cobb, P. (1994). Where is the mind? Constructivist and sociocultural perspectives on mathematical development. *Educational Researcher*, 23(7), 13-20.
- Cordova, D. I., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology*, 88, 715-730.
- Crawford, C. (2003). *Chris crawford on game design*. Indianapolis: New Riders.
- Csikszentmihalyi, M. (1990). Happiness revisited. In *Flow: The psychology of optimal experience*. New York: HarperPerennial.
- Dede, C. (1996). The evolution of constructivist learning environments: Immersion in distributed, virtual worlds. In B. G. Wilson (Ed.), *Constructivist learning environments: Case studies in instructional design* (pp. 165-175). Edgewood Cliffs: Educational Technology Publications.
- Dewey, J. (Ed.). (1913). *Interest and effort in education*. Cambridge, MA: Riverside Press.

- Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, 53, 109-132.
- Elliot, J., Adams, L., & Bruckman, A. (2002). No magic bullet: 3d video games in education. Paper presented at the ICLS 2002, Seattle, Washington.
- Englert, C. S. (1992). Writing instruction from a sociocultural perspective: The holistic, dialogic, and social enterprise of writing. *Journal of Learning Disabilities*, 25(23), 153-172.
- Gee, J. P. (2003). *What video games have to teach us about learning and literacy*. New York: Palgrave Macmillan.
- Gredler, M. E. (1996). Educational games and simulations: A technology in search of a (research) paradigm. In D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 521-540). New York: Simon & Schuster Macmillan.
- Haynes, C., & Holmevik, J. R. (Eds.). (2001). *High wired: On the design, use, and theory of educational moos* (2nd ed.). Ann Arbor, Michigan: University of Michigan Press.
- Honebein, P. C. (1996). Seven goals for the design of constructivist learning environments. In B. G. Wilson (Ed.), *Constructivist learning environments: Case studies in instructional design* (pp. 11-24). Edgewood Cliffs: Educational Technology Publications.
- Hutchins, E. (1996). Learning to navigate. In S. Chaiklin & J. Lave (Eds.), *Understanding practice: Perspectives on activity and context* (pp. 35-63). Cambridge: Cambridge University Press.
- Jones, S. (2003). *Let the games begin: Gaming technology and entertainment among college students*. Washington, DC: Pew Internet & American Life Project.
- Laurel, B. (1993). *Computers as theatre*. Boston, MA: Addison-Wesley.
- Laurel, B. (2001). *Utopian entrepreneur*. Cambridge, MA: MIT Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, England: Cambridge University Press.
- Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science*, 4, 333-369.
- Mishra, P., Heeter, C., Chen, Y., Wolf, L. G., Henriksen, D., Sheltroun, N. J., et al. (2005). *Alien games: When 5th and 8th graders design educational*

video games. Paper presented at the Digital Games Research Association (DiGRA) 2005 Conference, Vancouver, British Columbia.

- Mitchell, M. (1993). Situational interest: Its multifaceted structure in the secondary school mathematics classroom. *Journal of Educational Psychology*, 85, 424-436.
- Prensky, M. (2001). *Digital game-based learning*. New York: McGraw-Hill.
- Rideout, V., Roberts, D. F., & Foehr, U. G. (2005). *Generation m: Media in the lives of 8-18 year-olds*. Menlo Park, CA: The Henry J. Kaiser Family Foundation.
- Rollings, A., & Adams, E. (2003). *Andrew rollings and ernest adams on game design*. Boston: New Riders.
- Saint-Exupery, A. d. (2006). *The wisdom of the sands*. New York: Buccaneer Books.
- Schraw, G., Flowerday, T., & Lehman, S. (2001). Increasing situational interest in the classroom. *Educational Psychology Review*, 13(3), 211-224.
- Schraw, G., & Lehman, S. (2001). Situational interest: A review of the literature and directions for future research. *Educational Psychology Review*, 13(1), 23-52.
- Spiro, R. J., Collins, B. P., Thota, J. J., & Feltovich, P. J. (2003). Cognitive flexibility theory: Hypermedia for complex learning, adaptive knowledge application, and experience acceleration. *Educational Technology*, 5-10.
- Spiro, R. J., Coulson, R. L., Feltovich, P. J., & Anderson, D. K. (1988). Cognitive flexibility theory: Advanced knowledge acquisition in ill-structured domains. Paper presented at the Tenth Annual Conference of the Cognitive Science Society, Hillsdale, NJ.
- Spiro, R. J., & Jehng, J.-C. (1990). Cognitive flexibility and hypertext: Theory and technology for the nonlinear and multidimensional traversal of complex subject matter. In D. Nix & R. Spiro (Eds.), *Cognition, education, and multimedia: Exploring ideas in high technology* (pp. 163-205). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Spiro, R. J., Vispoel, W. P., Schmitz, J. G., Samarapungavan, A., & Boerger, A. E. (1987). Knowledge acquisition for application: Cognitive flexibility and transfer in complex content domains. In B. K. Britton & S. M. Glynn (Eds.), *Executive control processes in reading* (pp. 177-199). Hillsdale, N.J.: Lawrence Erlbaum.

- Squire, K., & Jenkins, H. (2003). Harnessing the power of games in education. *InSight*, 3, 5-33.
- Vansteekiste, M., Simons, J., Lens, W., Sheldon, K., & Deci, E. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology*, 87, 246-260.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.
- Waterman, A. S., Schwartz, S. J., Goldbacher, E., Green, H., Miller, C., & Philip, S. (2003). Predicting the subjective experience of intrinsic motivation: The roles of self-determination, the balance of challenges and skills, and self-realization values. *Personality and Social Psychology Bulletin*, 29(11), 1447-1458.

MICHIGAN STATE UNIVERSITY LIBRARIES



3 1293 02845 4126