Fun:
An Exploration in its Relevance to Interaction Design

A Thesis

Presented in Partial Fulfillment of the Requirements for
The Degree Master of Fine Arts in the
Graduate School of The Ohio State University

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2010

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Abstract

Fun is one of the most ubiquitous human experiences. It would be hard to find someone who would say they had never had fun. It would be equally hard to find someone who didn't want to have fun. Why then is it so hard to articulate what makes an experience fun? For the designer, this creates a complex problem. When designers are charged with creating fun experiences, how does one know where to begin? What is fun and why is it important? How do we go about creating a fun experience? We are in need of a “fun” model appropriate for design practice. The goal of this thesis is to provide just that.

Through my research, I will provide designers with a relevant definition of fun. The basis for this definition will be the “funtinuum,” a qualitative scale of the dimensions of fun. Second, a rationale for the importance of “fun,” its tangible benefits to end users and appropriate contexts for fun in design will be discussed. Lastly, I will present guiding principles for producing fun experiences through interaction design. Case studies of current “fun” products and applications will be explored in the context of these guidelines to provide further explanation on how to create fun experiences.
Dedicated to my family,

with whom I always have fun.
Acknowledgements

The following people must be thanked for their contributions to making my graduate school experience wonderful and this thesis possible:

Without my adviser, R. Brian Stone, none of this would have been fun. Thank you for sharing your knowledge and philosophies with me over the past three years. Your support and guidance (and text message “reminders”) helped me to grow exponentially as a design professional. I will miss our weekly meeting greatly. My thanks also to my committee members, Paul Nini and Phil Smith. Your encouragement and critical insights provided the perfect amount of support and motivation through my grad school experience.

I want to make sure my Funtinuum research team, Robert Strouse, Mei Hui Lin and Fernando Bernal, knows how integral they were to my success. You helped lay the foundation for my thesis. I definitely had fun working with you and I hope we get the opportunity to do it again in the future.

My copy editors, Anna Gerber and Teresa Woolley, have my heartfelt thanks for their hard (and volunteer) work to ensure my thesis was well structured and free of grammar errors and typos.
Lastly I need to thank my parents — my mother for sharing her superior business skills and problem solving techniques and my father for encouraging my imagination and creativity, and for teaching me the art of storytelling. Without these skills, I would not be the designer and professional I am today.
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Chapter 1: Introduction

Fun is one of the most ubiquitous human experiences. It would be hard to find someone who would say they had never had fun. It would be equally hard to find someone who didn’t want to have fun. Fun is an important part of happiness and enjoyment. Experiencing a bit of fun can easily turn a lousy day in to a good one. Designers frequently receive requests for fun. The shampoo maker wants a “fun experience” on their website to sell their product to 14-year-olds; the museum director wants people to have fun while learning about 17th Century Dutch portraiture; the digital music player manufacturer wants his product to be more fun than his competitors.

For the designer, these requests create a complex problem. It is hard to articulate what makes something fun. It is difficult to know what the client means when requesting fun. Is the client’s idea of fun the same as the user’s idea of fun? What people find fun in one context might not be the same in another. Designers need to know if fun is appropriate in all instances where it is requested. Designers have minimal resources to facilitate a meaningful dialogue with clients and users around creating fun experiences.

The catalyst for this thesis was just such an experience. A colleague had been charged with developing an educational game for children with diabetes. The client specifically asked for a game that was 70% fun and 30% educational. As we discussed this project, many questions arose: What is fun? How do you design for it? Can you quantify it? Why is it important? While my colleague went on to develop the game, I decided to...
investigate these issues surrounding fun in order to aid with his endeavor. As I explored existing fun research, most articles call for more research. Many pointed to the limited research on combining hedonic and goal oriented considerations, investigating the emotional usability of interfaces, and considering beauty, fun or pleasure (Carroll 1981, Hassenzahl 2000, Norman 2004). With further exploration it became clear that the breadth of knowledge needed was quite large, which led to this thesis.

Through this thesis, interaction and experience designers will gain a rich understanding of fun and why it’s important. It will provide them with the necessary ‘tools’ for discussing, creating and evaluating fun experiences. First, a model/definition for fun relevant to designers will be discussed. The basis for this model will be the “Funtinuum”, a qualitative scale of the dimensions of fun. The theories of other “fun” researchers and their relationship to the Funtinuum will also be explored. Second, a rationale for the importance of “fun”, its tangible benefits to end users and appropriate contexts for fun in design will be discussed. Third, guiding principles for producing fun experiences through interaction design will be presented. Lastly, case studies of current “fun” products and applications will be explored in the context of these guidelines to provide further explanation on how fun experiences are designed and evaluated. After reading this thesis, designers will enrich their body of knowledge so fun is no longer created by chance, but rather by design.

1.1 Scope of the study
While the contents of this thesis could apply to any one charged with creating ‘fun’, the intended audience for this thesis are interaction and user experience designers; those charged with creating dynamic and usually screen-based applications. Other practitioners within this space, including engineers and developers may also find the
information presented worth adding to their body of knowledge. The context and examples presented are specific to this space and those practicing in it.

In this thesis, I define interaction design a bit more broadly than is typical. In addition to screen-based applications, such as websites and software, video games and exhibit touch screens, I consider areas where interaction and product design are blurred. This allows me to include devices that have some interaction component, such as smart phones, hand-held gaming devices and the like in the discussion. These interactive experiences can be controlled via the mouse and keyboard paradigm or can be touch-driven. While I do not discuss applications using tangible user interfaces, this may be relevant to that space as well and should be investigated further as those kinds of devices become more common.

There are a few elements of fun I do not discuss in this thesis. Novelty as an aspect of fun is not covered. I am concerned with repeated fun, and often, novel items are only fun once and then quickly become boring. I also do not address fun as it relates to past memories. This sentimental fun is outside the scope of designing new fun experiences. This thesis does not delve into “not fun” — or the antithesis of fun. While the lessons learned from investigating what is “not fun” could be useful, it fell outside the scope of this particular research endeavor.
Chapter 2: Understanding Fun

2.1 Defining fun for design (fun by design)

Fun is a subjective state of being, varying from person to person (Jordan 2000, 12), which makes the task of designing fun difficult. While some love the thrill of a rollercoaster and relish the chance to go rock climbing, others may see these activities as utterly terrifying. Curling up with a good book or “vegging out” in front of the TV is entertaining for some, but absolutely boring for others. The same diversity can be found in interactive experiences as well, and for a designer charged with designing a fun experience, this broad spectrum can make the job a daunting task. How can the common result of such diverse activities be defined properly in a context useful for design?

When a designer gets the request to make something “fun,” how do they know what this means? The shampoo maker wants a “fun experience” on their website to sell their product to 14-year-olds; the museum director wants people to have fun while learning about 17th Century Dutch portraiture; the digital music player manufacturer wants his product to be more fun than the competition’s. What people will find fun in one context might not be the same in another. How do designers know if fun is appropriate in all instances where it is requested?

Using the educational diabetes example from the introduction, we can see how this client request can be difficult to dissect. All too often this request for “fun” has no
meaning. The client has no real idea what their users would find fun, and the designer has no clear understanding on how to deliver it. In creating a meaningful and “fun” experience, both sides need the ability to have a clear and purposeful dialogue about what fun is and how best to deliver it to the end user. By providing designers and clients with a relevant model for fun, there will be an increase in the intellectual level of discourse and a common set of knowledge around which conversations can be had. Designers can talk to their clients, in specific terms, about what a fun experience is and whether or not it is appropriate to the project.

Understanding fun is the only way to have a meaningful conversation about it. A proper model will bring understanding for fun in the context of user experience. Designers will be empowered to create successful fun experiences. They will be able to have meaningful discussions with clients. They will be able to elicit from their users what “fun” is appropriate for them. We can create fun by design and not by chance.
2.2 The Funtinnum — a qualitative visualization of fun

Figure 2.1: The Funtinnum
Funtinuum (fun + continuum) is the visual result of research conducted to provide a qualitative scale of the dimensions of fun. Axes for interaction (from high to low) and engagement (passive to active) create the dimensions encompassed by “fun.” By defining fun as a 2-D continuum of interaction level and engagement level, instead of providing a constraining verbal definition, designers can get a clearer picture of defining fun in the context of experience. The Funtinuum illustrates fun as a multifaceted space, providing a more encompassing view of the diverse nature of fun.

The Funtinuum was the result of a research effort seeking to find an answer to “what is fun?” A colleague had been working with a local diabetes organization to develop a board game that could teach children about managing childhood diabetes while maintaining a high level of playability and fun. The client specifically requested that the board game be 30% educational and 70% fun. This led me and a few other associates to inquire, “what is fun?” We wondered what it meant for some activity to be fun and if you could, in fact, quantify it. To properly design fun, we needed to have a clear understanding about what it meant when someone said something they did was fun. We developed and employed four different research methodologies for getting at the answer to what fun is. We asked over 150 participants with various backgrounds and ages (no one under 18 years of age) to take a three-part survey, comprised of a questionnaire, word association task and mind-map task. We also had about 40 people complete a card sorting task, where they were to sort images into three categories: fun, not fun and undecided. (For more specific information on our methods and research, please refer to the methods section). As we analyzed our results, a picture emerged of fun not as a static thing, but as a range or continuum of varied experiences. Differences between fun alone versus fun in groups (level of interaction), active fun and passive fun (how engaged the person is in the activity) became apparent.
2.3 Describing the Funtinuum

Figure 2.2: The Funtinuum with mind-map results

Figure 2.3: The Funtinuum with fun image and fun activity results
Understanding the y-axis (engagement level)

**Passive fun** — Low engagement activities are those that do not require physical effort and where mental challenge is low. A person’s attention may be stimulated but not in such a way to get a significant reaction from the subjects, i.e. Watch TV, movies, music listening, etc. There is an innate need for relaxation and recovery time, which may point to why low engagement is fun. In his discussions on flow theory, Mihaly Csikszentmihalyi points out the need for relaxation to recoup from the day and stresses of life (Csikszentmihalyi 2002).

**Active fun** — High engagement experiences are those that do require some (in some cases a great deal) of physical effort and mental challenges varying from medium to very high. Focused attention is usually required as in sports, puzzles and games, playing an instrument, etc.

Understanding the x-axis (interaction level)

**Low interaction** — Experiences are considered to be “low interaction” when there is only one person participating. Group activities can be considered “low interaction” if no one is directly engaging those around them. This can be explained as “doing alone things together.” Examples include watching TV, movies, reading, jogging, etc.

**High interaction** — Activities that can usually be enjoyed by two or more persons engaged with the activity and with each other are considered to be in the “high interaction” category. A distinction is made because these activities usually promote communion and are often used as a vehicle to increase socialization i.e. parties, team sports, board games, etc.
In reviewing the various activities that the participants listed as fun, we came to the conclusion that any fun experience can be explained and understood in terms of whether it is active or passive (how engaged in the activity a person is) and what the level of interaction is with others during the activity. The Funtinuum provides a roadmap to understanding what the differences are between this broad range of fun experiences. It allows us to see why watching a movie alone can be fun (low engagement/low interaction experience) and why going to a party with friends is fun (high engagement/high interaction experience).

2.4 Illuminating specific fun experiences

![Figure 2.4: The Funtinuum with mind-map results and fun activities](image)

By examining our open-ended questions and mind-map results, we were able to compile a list of “fun” activities. We plotted the activities our participants cited as fun within the Funtinuum to see where the majority of fun activities fell. The more
often something was mentioned, the larger the type size. The dots on the Funtinuum represent how many times a specific item or activity was referenced in our findings. A blue dot indicates one person listed the activity as fun; a yellow indicates three people mentioned the activity and the orange indicates five people said the activity is fun. (It should be noted some of the blue dots are not labeled for the sake of legibility. More often than not, the word mentioned was related to the larger category). Funtinuum shows that activities that fall along a diagonal from the lower left quadrant (low interaction/low engagement) to the top right quadrant (high interaction/high interaction) tend to be preferred. This indicates that fun experiences that fall within this area of the Funtinuum will be the most appealing to people. This diagonal may be an area where designers should focus for the most successful fun experiences.

2.5 The importance of friends for having “fun”

During the analysis of the result from an open-ended question, it was often noted that friends were an important factor in having fun. Activities benefit from communal fun and the amount of fun experienced related directly to the amount of energy contributed to the group. Taking a passive activity, such as watching a movie, and then adding friends to the mix increased its intrinsic value (even if the activity is still passive and low on interaction). While we determined that “Friends” was a necessary category item belonging in the high activity/high interaction quadrant, we needed to indicate this important connection to other areas of the continuum. Therefore, friends are “tied” to other categories to illuminate this finding. Most activities are more fun when done with others with whom you share a bond. This is probably a result of the social nature of human beings. For the most part, people desire to be around others, especially those to whom they are close. With people around, one can share the same experience for discussion or memory (story) sharing later. It gives the opportunity for friendly competition or camaraderie for team activities. Designers should be aware of the influence friends have on the “fun-ness” of an activity and leverage that power whenever appropriate.
Figure 2.5: Funtinuum showing connections between fun and friends
2.6 Other fun research

While there isn’t a prolific amount of published research about fun, especially outside the context of games, there seems to be a small group within the Human-Computer Interaction (HCI) community interested in the topic. Most of the researchers’ perspectives fall into two categories: fun as a result of the experience and fun as the result of the interface design. The latter group is of the opinion that good visual communication design alone is what results in fun. For the purposes of this thesis, I will focus on research about “fun from experience,” as it is of greater relevance to user experience and interaction design and supports the findings that led to the FunTinuum.

2.6.1 Thomas Malone: challenge, fantasy and curiosity

Thomas Malone was one of the first people to tackle the topic of fun as it relates to interface design. Malone was interested in what made computer games fun. Malone first tackled the topic of fun in his PhD dissertation, “What makes things fun to learn? A study of intrinsically motivating computer games.” He went on to write many often-cited papers on the topic of fun as it relates to children’s computer games. His studies looked at what made computer games captivating. He tested various iterations of games by removing one motivational feature at a time and then recorded the reaction of elementary school children (Malone 1981, 64). Through his research, he developed heuristics for designing fun interfaces. Malone asserts that intrinsic motivation, “what makes an activity fun or rewarding for its own sake,” is a more powerful device in computer games than extrinsic motivation, in this case an external reward (Malone 1980, 162). Malone’s “definition” of fun is comprised of three necessary components: challenge, fantasy and curiosity (Malone 1980, 162). Challenge requires a clear goal (there must be a point to the game), and an uncertain outcome (player’s likelihood of winning or losing is unknown) (Malone 1981, 65). Challenge also includes variability
of difficulty, enabling the user to match their skill level to the difficulty of the activity. Fantasy relates to unfamiliarity and should be emotionally appealing and contain metaphors with physical or other systems understood by the user. Malone ties fantasy to emotion and metaphor, and makes the distinction between intrinsic and extrinsic fantasies. The fantasy aspect should satisfy emotional needs of players. Curiosity is about uncertainty and is accomplished through “an optimal level of informational complexity.” There should also be aspects that are novel and surprising. The interface must also “capitalize on the users’ desire to have well-informed knowledge structures” (Malone 1981, 68). Through these three elements, Malone defines what constitutes a “fun” experience. Malone points out that not all three are necessary in every instance (an activity can have challenge and not fantasy and still be considered fun). He also states that these heuristics can be used to incorporate fun into non-game interfaces. Even though Malone refers to this as “designing enjoyable user interfaces,” I would argue that it is in fact describing how to design enjoyable user experiences. He spends little time discussing the minutia of interface itself and instead focuses on the experience someone has when playing computer games.

Malone’s criteria closely relate to the active end on the Y-axis of the Funtinuum. Challenge, curiosity and fantasy engage users at a high level. Challenge requires problem solving, curiosity evokes the need for discovery and fantasy allows the imagination to play. All of these require the user to be highly engaged in what they are doing.

2.6.2 Brandtzaeg et al: enjoyable technology

Similar to Malone, Petter Bae Brandtzaeg and his colleagues look to define fun by means of explaining what is necessary for a fun experience. Brandtzaeg et. al.
based their fun model on the demand-control-support model developed by Robert Karasek for describing good and healthy work in work and organizational psychology (Brandtzaeg 2004, 55). Karasek’s model states that job satisfaction and well-being comes from a high-level combination of “experienced demands of the work situations, the decision latitude available to the worker and…the degree of social support from co-workers and management” (Brandtzaeg 2004, 56). Brandtzaeg feels this model can also apply to fun experiences because the model components seem to be universal in activities related to well-being (Brandtzaeg 2004, 56). They propose the following three elements for the design of “enjoyable technology”:

**User control and participation, with appropriate challenges:** Users should be made to feel empowered and in control while being able to complete challenging tasks that test his/her skills. Users need to feel like they are active participants (Brandtzaeg 2004, 63).

Like Malone, Brandtzaeg et al. espouse the importance of matching the skill of users if fun is the desired outcome. However, this “challenge” element expands on Malone by recommending that to have fun users need a sense that they are in command of the activity. Games are only fun when the person playing them can still progress to reaching goals. Task-oriented tools are only useful and enjoyable when they don’t get in the way. If software is too difficult or intimidating people don’t want to use it. Conversely, people flock to products that make them feel empowered. They need to feel like they are in control, not the application.
**Variation and multiple opportunities**: Along with multiple possibilities and services, users should be allowed to personalize a product. The user should be given more of this area than they expect (Brandtzaeg 2004, 63).

Personalization allows a person to make a product or application his or her own, thus forming a bond with it. Brandtzaeg feels the ability to personalize allows the user to “influence and create their own experience in a dialogue with the technology” (Brandtzaeg 2004, 60). There are many examples of interaction products that allow for personalization. Brandtzaeg uses Nokia phones as an example. Most Nokia phones are compatible with an array of personalized cases, which allows the owner to make the phone unique to them. They can also change the ringtones, either downloaded or composed, and assign them to various callers or for text messages. The phone also comes with a picture editor, so users can manipulate photos taken with the phone, which then can be used in various places on the phone. There are many software programs, such as offerings in the Adobe Creative Suite, that allow users to “arrange the work space” much like one might arrange the items on their desk. In this way the user can manipulate the interface to meet their specific work needs and organizational preferences. Social networks are a great example of enabling the user to add a personal touch. MySpace allows users to add personal images, customize backgrounds, change typefaces and control colors. Previous iterations of Facebook were very module, enabling users to rearrange the interface as they saw fit. Personalization can come in the form of plug-ins, such as those available for the browser Firefox. Extras can
be added based on the way the user wants to interact with the tool, adding functionality specific to the tasks and goals of the individual. Firefox has recently begun to offer browser “skins.” Users can decorate the browser window with a variety of pictures or even make their own. Personalization can even be as simple as picking colors and typefaces. With regard to multiple opportunities, it is better if an application or devices is not a uni-tasker. Take for example Apple’s iPhone. It goes far beyond being just a phone; it is also a music player, gaming devices, GPS or game that can be played as stand-alone or online, by itself or with others. The video game Little Big Planet is a great example of “multiple opportunity.” It can be played by one’s self, in multi-player mode, and online within an online community. In addition to its supplied levels, users can create their own or play levels created by others via an online community. These options make the game infinitely playable and in theory, infinitely fun.

Social opportunities in terms of co-activity and social cohesion: When using a technology item, users should feel like part of a group (Brandtzaeg 2004, 63). A socially rewarding environment is necessary and essential for all humans and important to the experience of fun (Brandtzaeg 2004, 63). Unlike Malone, Brandtzaeg recognizes the social aspect of fun. This can include interacting with friends and family as a sense of belonging to part of a group. He refers to these as co-activity and social cohesion. (Brandtzaeg 2004, 60).

The Web 2.0 movement is driven by the importance of social interaction in the technology sphere. Social networks, applications with
online communities, even the ability to leave comments (like many news sites) are all evidence of the need to commune and communicate with others. Programs like Skype were created to enable people to communicate across distance. Video games that allow you to play with others, like World of Warcraft or the aforementioned Little Big Planet, have large online communities that create social interactions instead of social isolation. Similar to Jordan’s take on socio-pleasure, Brandtzaeg’s social cohesion addresses the importance of products that make you part of a group too. Adhering to specific brands can provide entrance to the group that uses them. Apple is a good example of a fiercely loyal customer group that identifies very strongly to each other and the products they use.

2.6.3 John Carroll: why various levels of engagement can be fun

In a 2004 paper, John Carroll states, “Things are fun when they attract, capture, and hold our attention by provoking new or unusual perceptions, arousing emotions in contexts that typically arouse none, or arousing emotions not typically aroused in a given context.” This provides further illumination as to why both active and passive activities can be fun. It is more obvious how this applies to experiences in the high engagement and high interaction space. What is less apparent is how this applies to passive activities. Consider the passive activity of movie-watching, which was mentioned many times in the Funtinuum research. According to Carroll, watching a movie becomes fun because it is speaking to our emotional needs. When a movie has a happy ending, it may give us a much-needed emotional boost that can lead to the experience of watching it being labeled as fun. We might not have expected to feel anything while watching TV or a movie or reading a book, so when it happens
we are extra engaged, leading to fun. Listening to music can move you in a way you
didn't expect and is therefore fun. These same activities can also challenge us to think
differently about the world, creating the new perceptions Carroll equates with fun. All
of these passive engagement activities are fun because emotional needs are met and
because these activities capture and engage us in ways we don't expect.

2.6.4 Darren Reed: social fun

In his paper, “Fun on the Phone: The Situated Experience of Recreational Telephone
Conferences,” Darren Reed takes a sociological approach to fun. He asserts that
participants in structures of social relevance (friends, larger cultures, society in
general) have fun together (Reed 2004, 67). As a result of his studies on fun during
conference calls, Reed sees social interaction as a vital component to enjoyable
experiences. Fun is a “situated and interactional experience” (Reed 2004, 67). This
supports our finding that friends are key to having fun and their presence will elevate
the fun factor of any given “fun” activity.

2.6.5 Patrick W. Jordan: The Four Pleasures

While Jordan does not discuss “fun” per se, part of his framework for pleasure in
product design has relevance to the understanding of fun. In order to help designers
consider pleasurable products, Jordan uses the framework created by anthropologist
Lionel Tiger. Tiger's framework breaks pleasure down into four distinct types, physical,
social, psychological and ideological (Jordan 2000, 13). Of these four, social and
psychological are the most relevant for fun.

Tiger defines socio-pleasure as enjoyment brought about through interaction with
others (Jordan 2000, 13). This could be as intimate as enjoyment from being with
family and friends to a more broad social interaction, like interacting with like-minded
individuals or society on the whole (Jordan 2000, 13). Jordan points out that status also
plays a role in socio-pleasure. His examples include: a unique item eliciting comments
or starting conversations with others (a conversation piece), and products that help
you identify with a specific social group. There are many examples of the latter, with
products as status symbols that also identify you with a specific group. iPhone vs.
Droid users, Honda vs. Ford drivers, Mac vs. PC are all products that identify you with
a specific group. Online video games, that have specific gaming communities create in-
group belonging among players. They also provide opportunities for social interaction
with others, albeit remotely. While not absolutely necessary to have fun, experiences
can clearly take advantage of this type of pleasure. No one in the Funtinium study
made specific mention of in-group or social status as an aspect of fun, however the
study and the various research discussed in this (chapter) supports that interaction
between friends and family is vital to fun experiences.

Psycho-pleasure encompasses people’s cognitive and emotional reactions; the
cognitive demands from use and the emotional responses to the experience of a
product (Jordan 2000, 14). Jordan uses the example of a product that works better than
the user expected. If this product helped the user complete a task with fewer errors
and in less time it would then result in more emotionally satisfying experience (Jordan
2000, 14). Similarly Malone, Brandtzaeg and Carroll echo this concept as it relates to
fun. The ideas of challenge and participation discussed by Malone and Brandtzaeg
are related to Jordan’s notion of the importance of cognitive demands. Having the
user’s skill level appropriately matched in an experience can evoke psycho-pleasure.
As Carroll pointed out, meeting emotional needs is an important component of fun.
While Jordan’s example is good, there are richer (emotional/psychological) responses
that can lead to fun more so than merely completing a task well.
Physio-pleasure, pleasures that come from the body and the senses, (Jordan 2000, 13) may apply to a few of the fun activities listed by our research participants. These included activities such as cooking, eating and kissing. However, there are very few activities provided by our participants and no one specifically mentioned physical enjoyment as the reason for having fun.

Ideo-pleasure, the enjoyment one gets from one’s values (Jordan 2000, 13), seems to have no connection to fun. None of the fun research participants responded that meeting an ideological need resulted in having fun.

2.6.6 Stephen Draper: fun as a software requirement

Through his research, Stephen Draper analyzes fun in the context of software and computer game design. Draper spells out the three instances where he thinks fun can be applied in software design:

• Enjoyment as main function of software,
• Learning as the main function;
• Learnability considered as an important secondary requirement of software in conjunction with some other main function.

(Draper 1999, 117)

According to Draper, fun requires conscious attention, and it shouldn’t be included at the expense of a work task. Dividing the users’ attention between fun and another task or goal could be detrimental. Designers should make sure that if fun is included in an application that it isn’t in the way of other goals users might have. Draper takes the position that something is fun to do when not done as a means to
an end, rather the activity is carried out for its own sake. He takes a slightly different position than Malone’s position on fun and intrinsic motivation. To him, fun is a subtype of intrinsic motivation. Fun and motivation come from a relationship between that activity and the individual’s goals at that moment. (Most things you find fun in the middle of the day on vacation you do not find fun when awakened in the middle of the night during the workweek) (Draper 1999, 118). Fun may often co-exist with additional “work” motivations (pairing of intrinsic and extrinsic motivations). Draper puts more emphasis on play than other researchers (play being defined as performing something for it’s own sake (no goals)). In his opinion, fun is play for pleasure. Fun is only one kind of enjoyment; there are other kinds of enjoyment designers can consider, though he doesn’t elaborate. Draper also thinks it’s important “one should expect to design different games for different arousal levels.” This relates to the notion of engagement in the Funtinuum. Draper feels that fun for relaxation as well as fun for engagement should be provided. This is mirrored by the engagement axis of the Funtinuum. Activities in the low engagement area could definitely be considered for the purpose of relaxation.

2.6.7 Fun and games

Just like other areas of fun research, studies and theories explicitly around game play and fun are minimal. Some in the game space seem to have a proclivity to frame fun as a number of different kinds. Alexandre Garnaeau names 14 forms of fun: beauty, immersion, intellectual problem solving, competition, social interaction, comedy, thrill of danger, physical activity, love, creation, power, discovery, advancement and completion, and application of an ability (Garneau 2001). Game designer Marc LeBlanc has 8: sensation, fantasy, narrative, challenge, fellowship, discovery, expression and submission (LeBlanc). Unfortunately these lists aren’t really expanded upon and there is no discussion on how to create these forms of fun.
Similar to Malone’s notions of fun, in her article on why people play games, Nicole Lazzaro defines fun as hard and easy:

“**Hard Fun:** Players like the opportunities for challenge, strategy, and problem solving. Their comments focus on the game’s challenge and strategic thinking and problem solving.

**Easy Fun:** Players enjoy intrigue and curiosity. Players become immersed in games when it absorbs their complete attention, or when it takes them on an exciting adventure. These Immersive game aspects are “Easy Fun” “ (Lazzaro 2004, 4).

Lazzaro also points out the importance of people to game play. She states “players use games as mechanisms for social experiences” (Lazzaro 2004, 5). The social experiences of competition, teamwork, as well as opportunity for social bonding and personal recognition are phenomenon that comes from playing with others (Lazzaro 2004, 5).

Raph Koster is of the opinion “fun is about learning in a context where there is no pressure and that is why games matter” (Koster 2005, 98). He believes comprehension, mastery and solving problems are what make games fun and when games stop teaching they stop being fun (Koster 2005, 44). Koster does not address challenging like Malone and others. In his thesis on the creation of educational games, Erik Evensen says the assumption about educational games is they must be made fun, which implies learning is not fun (Evensen 2008, 108). This is definitely not true as shown by the Funtinquuum and other researchers. Learning can be fun, but they are mutually exclusive. I think the funtinquuum and other research shows that fun does not always equal learning. Especially when fun is for relaxation. I say games should be high engagement, and even better with high interaction.
2.6.8 How existing research maps to the Funtinuum

The figure shows how other researchers theories of fun map to the Funtinuum. Most theories acknowledge only active engagement fun. While Draper and Carroll mention what I call passive engagement fun, they do not address it in detail. Most of their efforts are still focused on active engagement. Reed, Jordan, Brandtzaeg and Lazzaro all recognize the importance of social interaction to fun, but do not make the distinction of fun alone versus fun in groups. There is a clear need in the research to address the more passive aspects of fun. It is clear from looking at the mapping that there is a lack of uniformity on the theories of fun. Moving forward, fun research needs address the broad spectrum conveyed by the Funtinuum, even if the researcher chooses to focus on one area. In this way we can work to have a more cohesive fun theory.

Figure 2.6: How other fun theories map to the Funtinuum.
2.7 Summary

In this chapter, the Funtinuum is presented as a qualitative means for understanding the dimensions of fun. Existing fun theories from researchers Thomas Malone, John Carroll, Petter Bae Brandtzaeg, Darren Reed, Patrick Jordan, Stephen Draper and Nicole Lazzaro are discussed and related the Funtinuum. This chapter provides designers with a clear understanding of fun and provides context for fun in user experience. It empowers designers to create successful fun experiences. The next chapter will explore why fun is important, outlining a rationale for the inclusion of fun in the interaction design space.
Chapter 3: The Importance of Fun

Justifying fun seems like a strange thing to do. Who doesn’t appreciate having fun? It seems odd that anyone would object to partaking in a fun activity. However, in the design space, fun often gets resigned as something only suitable for children and video games. If fun is considered in the design process, it is often an afterthought or window-dressing. Comments like “our website should be fun” or “make this educational game 70% fun” are often uttered with out any real thought to the importance of including fun into the experience under consideration. But fun is important. There are emotional and cognitive benefits to engaging in fun. Users can benefit from fun in a variety of task oriented (training/educational) scenarios. Including fun into an interactive experience can help a designer create something that increases or enhances a users cognitive abilities, enabling them to become a better creative thinker, a better problem solver, increase retention and spend more time engaged in the experience (Norman 2004, Isen 2001, Isen 2003).

3.1 Fun’s own value

3.1.1 Fun is positive

The result of having fun is positive. It is unlikely that one would avoid having fun or find it unpleasant. Fun makes you happy and joyful. Fun puts you in a good mood. Fun is something people seek out. Often events are screened and only if one thinks it will be fun will they decide to participate. If an activity has the possibility for fun, and will therefore make us happy, people will give it a chance. According to a basic-emotions
perspective, happiness (or joy) is rooted in getting what we want. It can be the result of pleasant surprises from personal successes and dealings with others. When we are happy, our behavior is more outgoing and signals that things are going well and we should continue on our present course. Happiness leads us to social activities that foster interaction, acting like social glue (It is no wonder why fun is increased by the presence of others; remind you of the Funtinumm?). Happiness can also be a resource for coping with times of distress (Cunningham 2009). If we can get to happiness through fun, it is no wonder why fun has such a powerful draw. Having fun can make you feel better physically and emotionally. Why? Because having fun results in a positive affective state (Norman 2004). The resulting positive emotional state (mood) has many benefits. Cognitive benefits of this positive mood are explored later.

### 3.1.2 Intrinsic reward/internal motivation

One of the greatest benefits of fun is that it provides users with internal motivation to participate or engage in an activity. Whether the activity is easy or hard, executed by one’s self or with others, so long as it is fun, people will partake just for the purpose of having fun. According to Stephen Draper, “when people say they did something for fun, they are drawing attention to the existence of intrinsic motivation for the action” (Draper 1999). Motivation and fun are intertwined. By making something fun, you are giving it self-contained motivation to participate (Carroll 1988). When you are having fun, you are driven from within. People will want to interact just because they will have fun. No other motivators are needed. When fun is involved in an activity, it is no longer necessary to motivate through grades, reprimand, snacks or praise. (Malone 1981, Carroll 1988). Fun is now the reward (Carroll 1988). This internal motivation is often referred to as “intrinsic” motivation. As defined by Malone, intrinsic motivation is “what makes an activity fun or rewarding for its own sake rather than for the sake
of some external reward” (Malone 1980, 162). You do something because it is fun and often there doesn’t have to be another reason. Fun provides “intrinsic, self-generated motivation” which is more powerful than being rewarded (Carroll 1988, 22). This intrinsic motivation acts as an internal reward (Carroll 1988, 22).

This fun-effect can be seen most readily in the game space. Video games are often complex, with difficult tasks, no easy solutions and the possibility of failure. But gamers will play over and over again, even if they fail at the task multiple times. No one makes them play the game; in fact they are often scolded socially for being “addicted” to their games. They receive nothing from the game, except for the fact that while they are playing they are having fun. How many board games don’t get played because someone says “that’s not fun” or “I think it’s boring.” In my family there are often arguments about which board game to play because some of us find it boring (not fun) and others don’t.

In an oft-cited experiment by Lepper, Green and Nisbett, two groups of children were watched while they played with colored pencils. Half the children just played with the colored pencils, while the other half were given a reward for coloring. The unrewarded children played with the colored pencils for a longer period of time. Lepper, Green and Nisbett suggest that merely playing with the pencils is a greater motivator to continue coloring (stronger incentive) than the external (or extrinsic) reward. Because the children offered a reward quit playing, they supposed that by offering an external reward, the appeal of the pencils was actually lessened. Being rewarded can actually lessen the fun in a given experience (Carroll 1988, 23).

In a similar study, Malone showed the intrinsic value of fun was important to getting
students to engage in computer-based educational games (Malone 1981). Malone said that through the use of his three components of fun: challenge, fantasy and curiosity, children no longer need motivation from their teacher to tackle difficult or unfamiliar tasks (Malone 1981). Their motivation to complete these tasks came only from the enjoyment they got out of engaging in the games.

3.2 Fun’s influence on cognition

Affect, which includes emotion, is the system we use to evaluate our environment; judging what’s good or bad, safe or dangerous (Norman 2004, 11, 20). The affective system has several components, some only lasting seconds, while others span a lifetime. In order from briefest to longest, the affective system is made up of expressions, autonomic responses, emotions, moods, emotional disorders and personality traits.

**Affective System**

![Affective System Diagram](Source: Cunningham 2010)

*Figure 3.1: Components of the affective system*
In concert with the affective system, the cognitive system gathers and interprets information to help us understand the world (Norman 2004, 10). The cognitive system includes functions such as perception, attention, memory and decision-making. The two systems work together enabling us to gather information from the world around us and give us the ability to act (Norman 2004). Currently, research being done in the field of cognition and affect explore the relationship as a two-way street. Affect, and more specifically emotion, can influence cognition and vice versa (Goldstein 2005). With regard to fun, I believe it is most relevant to consider the direction of emotion's influence on cognition. Since fun leads to happiness and joy, both positive emotions, it is then interesting to investigate the benefits of those resulting positive emotions as a rationale for the benefits of fun.

Emotion is the most relevant aspect of affect in the context of fun. Emotion is the conscious experience of affect and they are usually directed or related to a trigger (an event, an object, a person) (Norman 2004, 11, 20; Cunningham 2009). Without emotion there is no daily force for action (Cunningham 2009). Emotions help us tag memories, judge our surroundings, and provide insights into the internal states of others (Cunningham 2009). This helps us predict behaviors and provides the readiness to act to them (Cunningham 2009). A good example of this is fight-or-flight; when confronted with a startling or potentially dangerous situation the affective system readies the body to either run a way from or stay to confront the issue at hand. Emotion is also tied to the body and body responses. Emotions are something one can feel (Cunningham 2009). Getting emotion-driven cues and sensations from the body helps us to respond appropriately to situations we may encounter. This is why experiences that evoke emotions can make us physically feel good or bad (Norman 2004, 51).
Positive emotion creates positive affect (Shih 2007, 205-206). We have already discussed that fun brings about joy and happiness, which are positive emotions. Therefore, it is safe to say that fun is one of the best ways to create a positive affective state. This is important because being in a positive affective state can benefit the cognitive system due to the interplay between the two systems. Benefits include increased ability to problem solve and think creatively, more salient memories, better knowledge retention and learning. As stated by Alice Isen, “In most circumstances, positive affect enhances problem solving and decision making, leading to cognitive processing that is not only flexible innovative and creative, but also thorough and efficient” (Isen 2001, Isen 2003). If designers have a better understanding of how fun can be used to create a positive affective state and thus influence cognition, it will be a powerful tool for increasing usability and enhancing the interaction between person and product. By making an experience fun (where appropriate) designers will be creating more helpful or useful experiences and people can reap all of the benefits of this positive state.

3.2.1 Increased ability to problem-solve and think creatively

Being in either a positive or negative emotional state will greatly influence how someone will process and decide how to deal with a given situation. When a person finds himself or herself in a negative state, perhaps anxious or scared, attention becomes more focused and resistant to distraction (Norman 2004, 25). A good example of this is the phenomenon referred to as “weapons focus.” During an incident of high stress, such as a crime, the person focuses on only one aspect of the event, like the gun being pointed at them, neglecting all other aspects of the event. LaBar and Cabeza’s study also support this. They found that emotional arousal caused the focusing of attention on “central gist” information at the expense of peripheral details
There are instances where this focused attention can be a detriment. In his book “Emotional Design,” Norman uses the example of people fleeing a theater that is on fire. In many instances people are so focused on escaping they cannot cope with a door that does not open in the way they anticipate. They will continue to push on a door even though it needs to be pulled to open. In a state of high negative affect, their problem-solving abilities become so limited that they die as a result. (Norman 2004, 28).

As one might expect, being in a positive affective state has the opposite effect. A positive emotional state creates advantages when it comes to problem solving and creative thinking. In a study on the effects of happiness, Alice Isen and colleagues asked participants to solve difficult problems that required “unusual” thinking (Norman 2004, 19). They found that people performed better after they were given a small gift (some candy or short comedy film). The good mood that resulted from this small gift made participants better at creative thinking and brainstorming. It also increased their ability to explore multiple alternatives. (Norman 2004, 19; Shih 2007; Isen 2003). Positive emotions lead to creative and imaginative thinking and “positive affects facilitate problem solving” (Shih & Liu 2007; Norman 2004; Isen 2003). In discussing Isen’s study, Donald Norman asserts “positive emotions are critical to learning, curiosity and creative thought” (Norman 2004, 19). Being in a positive emotional state will allow someone to look for alternative approaches and they will not remember the difficulties they faced while finding a solution (Norman 2004, 20).

This has implications for the application of fun. In tasks that are difficult or lead to instances of frequent frustration, fun can be worked into the experience to enable the user to remain in a positive state. In an experience or task where problem solving
or innovation is key, adding fun can increase their performance in these scenarios. The cognitive benefits resulting from the positive state brought about by fun can help them complete tasks more effectively, find more robust solutions and perhaps ease cognitive load. Fun does not have a hydraulic relationship with education and learning. However, this false dichotomy is a belief commonly held by people working to create fun experiences. Given the strength of the research to the contrary, designers must be advocates for how learning can benefit from fun.

3.2.2 Better knowledge retention/enables learning

It has been shown that emotion plays an important role in memory. A study on emotion and memory by Kevin LaBar and Roberto Cabeza shows that emotion “has powerful influences on learning and memory” (LaBar 2006, 62). They found that stimuli with strong emotional associations had better retention over long intervals than neutral stimuli. Not only does emotion influence multiple types of memory, it also influences the various stages of memory processing (LaBar 2006, 62). LaBar and Cabeza found that for both the encoding and retrieval processes, brain activity increased for emotionally charged images. Experiencing fun elicits a strong emotional response. This is why fun experiences stand out in our memory over mundane ones. Because of this, fun can aid in activities where learning and memory retention are important.

In addition to making someone a better thinker, positive affect also makes one a better learner. The same broadened brain processing that aids in better problem solving also aids memory formation and retrieval. People in a positive state are less focused, more receptive to interruption, and more apt to attend to a new (novel) idea or event (Norman 2004, 26). Positive affect “arouses curiosity, engages creativity and make the
brain more effective learning organism” (Norman 2004, 26). Shih and Liu relate this back to the power of intrinsic motivation. They support the idea that positive affect “can provoke a learner’s intrinsic motivation and will ultimately lead to better learning experience” (Shih 2007).

Fun can ensure a positive emotional state. Therefore, the likelihood of learning is increased (Norman 2004, 26). Fun can be implemented to create a positive relationship between a user and a device or application. This positive relationship “attracts and holds [the] user’s attention, enabling learning to take place” (Shih 2007, 207). In his article on the subject of fun in the context of educational software, Stephen Draper discusses the merits of fun in such applications. He believes that when learning is the main goal of a software application, fun is an important component (Draper 1999). He also states that fun can aid in the “learnability,” one’s ability to learn how to use software (Draper 1999). In short, fun is better for learning and in application where learning is a requirement; adding fun to the experience can provide important benefits.

3.3 Fun aids emotional usability

Emotional usability, or the degree to which a product is desirable or serves a need(s) beyond the traditional functional objective (Hassenzahl et al 2000, 202), is gaining more focus in recent times. More and more researchers are beginning to recognize the need to address the emotional needs of the people their products serve. One of the more vocal proponents of emotional usability is Donald Norman, who has called on designers to move past functional usability and focus on the emotional aspect (Norman 2004). As there are now more and more functionally acceptable products/programs/devices out there, developers/designers need to set products apart by addressing the emotional needs of their users (Norman 2004). On his website, The
Bright Site, Danish designer and writer Morton Muller discusses the importance of emotional usability. He states, “By incorporating emotional usability in designing user interfaces, it can enhance consumers’ satisfaction with products, make users enjoy the products and find them fun and pleasurable to interact with” (Muller, www.bright.dk). He feels that attending to how much users like something, designers can increase the quality of the system/application/product (Muller, www.bright.dk). Turkka Keinonen, professor of industrial design in the School of Design at the University of Art and Design Helsinki, maintains that “the emotional dimension of usability attracts and holds users’ attention, enables learning to take place and relieves users’ computer anxiety while they are interacting with the products’ (Keinonen 1999). In the paper “The Importance of Emotional Usability,” Yi-Hsuen Shih and Min Liu posit that “implementing emotional usability in designing educational applications will enable learners to put more trust in the service and content, enjoy greater pleasure in interactive learning experiences and be more satisfied with products” (Shih 2007). Case in point — the iPod. Apple has tapped into the strong influence of emotion to make their product the most popular. It doesn’t matter if there is an MP3 player that works better than the iPod — because of the attention to emotional usability people flock to the iPod. Apple’s usage of and elegant interactions set the iPod Touch apart from other MP3 players and make it a joy to use. The simplified and transparent controls make the iPod easy to learn, eliminate fear of failure and allow users to enjoy the product. Superior visual communication and product design make it beautiful as well, taking full advantage of the Aesthetic-Usability Effect (see Chapter 4 for further explanation).

There have been a few studies specific to one emotion and its impact on designing interactive systems. In a study on banking systems by Kim and Moon, they attempted to design specifically for “trustworthiness.” The “results demonstrate that it is possible
to elicit target emotions in a majority of subjects, thus making it possible to design emotive interfaces for widespread use” (Kim 1998, 22). Kim and Moon assert that their research shows that it is possible to target a specific emotion through design (Kim 1998). At a minimum, this study is evidence for the potential to design for emotional requirements in other contexts.

Fun has a significant impact on the emotional usability spectrum. Using fun to create a positive relationship between the user and the experience has tangible benefits including an increase in perceived usability and usefulness, and overall user satisfaction.

3.3.1 Perceived usability and usefulness

Fun can aid in increasing perceived usability and usefulness. Perceived usability, the degree to which a thing is thought to work well, is very important to any interactive application, be it software, a device or system. If something is thought to be too hard to use, it is likely to be rejected by users. One way to increase perceived usability is to make it fun. When people are happy they are “more creative, able to overlook and cope with minor problems with devices – especially if it’s fun to work with” (Norman 2004). When a device is fun and enjoyable, designers have more latitude and do not have to strive for functional perfection (Norman 2004, 26). If a person has fun while engaged with a particular application, minor functional issues will not distract from the experience. While shopping for cars online, I came across a great example of this very issue in a review of the Mini Cooper on edmunds.com:

“You know that old saying about form following function? Well, Mini’s interior design team apparently prefers it the other way around.
Aesthetically, the Clubman’s gauges and control layout are every bit as cute as its adorable mug. Functionally, however, they leave much to be desired, from the center-mounted speedometer to those inscrutable banks of metallic toggle switches — and don’t get us started on the downright nonsensical radio controls (good luck finding the volume knob). To be fair, most Clubman buyers will probably be quick to forgive its ergonomic eccentricities. But we’re not so sympathetic. Frankly, all of the Clubman’s competitors offer more intuitive driver interfaces” (edmunds.com).

Regardless of how easy or difficult a device is to use, if the user does not feel it is useful, it is also likely to fail. How well a device or application helps a person accomplish a task or help them in their daily life, or perceived usefulness, is an important consideration for any design. In their research, Yi and Hwang found that enjoyment has a positive impact on both perceived usefulness and perceived usability. Just like Norman, they assert that enjoyable experiences aid in “smoothing over the rough spots in a design” if people have fun interacting with it (Zhang 2005). Igbaria, Schiffman and Wieckowski (1994) found that perceived fun increases perceived usefulness and time spent interacting with a product in a work context. They found that both usefulness and fun play an equal role in the acceptance of new microcomputer technology. “Perceived fun had a stronger effect on user satisfaction than perceived usefulness.” Enhancing perceived fun also increases time spent with a system (Hassenzahl et al 2000; Shih 2007).
3.3.2 User preference/satisfaction

In 2000, Hassenzahl et al. conducted a study to determine if users of software systems used functional usability and enjoyment/fun when judging the appeal of a system. Hassenzahl and his team referred to this as Ergonomic Quality (EQ) and Hedonic Quality (HQ). Participants were asked to rate seven prototypes via a semantic differential, before and after usage. They found that EQ and HQ are independently perceived by users and equally contribute to the appeal of software. They feel it is important to have a better understanding of what makes a software system appealing to take advantage of HQ (Hassenzahl et al 2000, 207). In a later paper on the same topic, Hassenzahl states the traditional definition of usability does not account for user satisfaction and preference, which stem from perceived fun (Shih 2007, 209).

In their study they also drew on the research of Davis et al., which showed that user preference for software systems could be increased with fun, so long as the system was already perceived as useful (Hassenzahl et al. 2000). Hassenzahl also discusses Igbaria, Schiffman and Wieckowski’s research on software systems in a work context found that perceived fun had a positive effect on both system usage and user satisfaction. Hassenzahl concluded that their findings showed that fun would increase the time spent with a software system, which would lead to better understanding and more productive use of said system (Hassenzahl et al. 2000). He stated, “enhancing perceived fun should be a valuable road to directly increase user satisfaction” (Hassenzahl et al. 2000). From these studies it can be concluded that when designers make things fun, people will be apt to use them longer, like them better and be more satisfied with experience. People will find applications that provide fun experiences more appealing to competition, which will give said applications a competitive advantage in marketplace.
3.4 Fun and flow

Flow is a theory in psychology, proposed by Mihaly Csikszentmihalyi, to provide an understanding of experiences where “individuals are fully involved in the present moment” (Csikszentmihalyi 2002, 89). When someone enters a state of flow, it can be described as the optimal experience, where they are the most engaged with what they are doing, becoming completely absorbed by the activity at hand (Shih 2007; Shneiderman 2004; Csikszentmihalyi 2002, 89). Flow leads to mastery of a task or activity (Shih 2007; Shneiderman 2004). When looking at the conditions necessary for a flow state, it is striking how similar they are to conditions necessary for fun. Both require the appropriate amount of challenge to the individual engaged in the experience and provide intrinsic motivation to the activity. Even the experiential characteristics of flow can be used to describe the experience of fun. The following further elaborates on the coupled relationship between fun and flow.

3.4.1 Challenge in fun and flow

Challenge and goals are both key components of fun and flow. To achieve flow it is necessary to have “perceived challenges or opportunities for action, that stretch (neither overmatching nor underutilizing) existing skills” (Csikszentmihalyi 2002, 90). A person involved in an activity needs the sense that the challenges are at a level appropriate to their skill in order to achieve a flow experience (Csikszentmihalyi 2002, 90). Flow also requires “clear proximal goals and immediate feedback about progress that is being made” (Csikszentmihalyi 2002, 90). This is similar to a component in the “fun theories” of Thomas Malone, Petter Bae Brandtzæg, and Patrick Jordan. Research results from all three have a “challenge” component, in which they state the need for having the users’ skill level appropriately matched in an experience. In Malone’s research on computer games, he presents the concept of “challenge,” which seems
directly related to the components of challenge in flow theory. Malone’s challenge is broken down into three parts: goals, uncertain outcome and self-esteem. The goals component requires that there are clear goals for the user in any fun activity. Games without clear goals were less enjoyable than games with goals (Malone 1981). Goals also call for proper levels of feedback, which are necessary to inform the user on how well he or she is doing on achieving the goals (Malone 1981). The aspect of uncertain outcome — the odds of winning or losing are not known to the player — is not shared with flow, but may be implied (Malone 1981). The final characteristic of Malone’s challenge, self-esteem, relates to flow’s requirement of matching the users skill level for optimum performance (Malone 1980). Malone states that challenges and goals should engage a player’s self-esteem. The ability to achieve success in a game can increase a person’s self-esteem just as failure can lead to lowered self-esteem and perhaps refusal to play again. To ensure the player’s self-esteem is engaged, Malone suggests having variable difficulty levels so players can choose the level appropriate to their skills (Malone 1980). Malone doesn’t specifically address what happens when a game is too easy, but the recommendation for variable skill settings implicitly suggests that this needs to be addressed. While flow theory doesn’t address the specific self-esteem need, the need for appropriate skill level is virtually the same. If something is too hard, frustrations will prevent the achievement of flow (Csikszentmihalyi 2002, 90). Conversely, if something is too easy people boredom will prevent a flow state.

3.4.2 Intrinsic motivation

As already addressed in chapter one, fun provides intrinsic motivation to an activity. Flow also provides the benefit of intrinsic motivation. Csikszentmihalyi states that “flow research and theory had their origin in a desire to understand this phenomenon of intrinsically motivated, or autotelic, activity...apart from its end product or any extrinsic good that might result from the activity” (Csikszentmihalyi 2002, 89).
3.4.3 Fun and flow eliminate fear
According to the theory, a person can only reach a state of flow when he or she suspends their fears and anxieties (Schneiderman 2004). This can also be important to some fun experiences (watching a horror film, riding a rollercoaster or going to a haunted house could be notable exceptions). Fun cannot be attained if there is a fear of failure or mistake. The key question, though, is does fun lead to flow because fear is eliminated in a fun experience or is it the other way around? It would be interesting to investigate this further in future studies.

3.4.4 Other shared characteristics of fun and flow
Many of the characteristics of flow could be said for the experience of having fun:

- “Intense and focused concentration on what one is doing in the present moment
- Merging of action and awareness
- Loss of reflective self-consciousness (removal of fear of failure)
- Distortion of temporal experience (typically a sense that time has passed faster than normal)
- Experience of the activity as intrinsically rewarding, such that often the goal is just an excuse for the process.” (Csikszentmihalyi 2002, 90)

3.4.5 Flow and the Funtinuum
Flow theory provides insight to the multiple levels of engagement in the Funtinuum that result in fun that most fun theories have yet to address. “We speculate that two kinds of experiences might be intrinsically rewarding: one involving the conservation of energy (relaxation), the other involving the use of skills to seize ever-greater opportunities (flow)” (Csikszentmihalyi 2002). I believe this provides support for passive engagement fun as reflected in the Funtinuum research. The juxtaposition
of experiences for relaxation and flow correlates with our finding in the Funtinuum research. People have fun during activities for relaxation as well as highly engaging experiences. The upper half of the Funtinuum, that has high levels of engagement, is the most likely area for flow to result from fun. Ben Schneiderman refers to this high-engagement, active fun as “fun-in-doing” and directly equates it to flow (Shneiderman 2004). I think it is safe to say that flow leads to a more immersive experience as engagement increases on the Funtinuum. From one of his flow studies, Csikszentmihalyi presents that levels of flow were higher in active class work than in passive class work which evidently parallels well-documented differences in quality of experience between active and passive leisure pursuits (e.g. sports vs. TV viewing) in education research (Csikszentmihalyi 2002, 96). However, there may be exceptions. Anyone who has become completely absorbed by a film and lost track of time, or become completely engrossed in a book, staying up all night to finish reading it, could make the argument that flow can also result from low-engagement fun.

3.4.6 Fun and flow in interaction design: a case study

It is important to illustrate, in the context of interaction design, how fun and flow can come together in a given experience. For this case study, World of Warcraft (WoW) will be examined for two reasons: it is a skill-development based strategy game and it is intended to be played with others (teams against teams). In addition to solving individual tasks to develop your avatar’s skills, WoW also requires players to work together in teams (in the game they are called guilds) to solve larger problems. The goal is developing and executing a strategy to win, and players must intently focus on solving the problem before the other team does. Challenge, which promotes both fun and flow, is present in this scenario and is variable based on users skill set and hours logged in playing the game. The context of the game turns standard “drill and
practice” into a fun experience and enables the user to incrementally improve and eventually move on to harder tasks with more experienced players. During play, the player becomes immersed in the game, becoming intently focused on the goals of that particular session. This results in the player losing track of time and becoming immune to distractions around him. He is absorbed by the game and the task at hand leading to a flow state. Once in flow, fear of losing is no longer in the forefront of his thoughts. This enhances the fun had while “playing,” which in this game is really solving difficult problems and performing complex tasks. This flow and fun cycle that results from playing, becomes an intrinsic motivator, providing the stimulus for repeated game play.

3.4.7 Fun and flow theory conclusions

Based on the research, I speculate that fun and flow are linked, especially in high engagement fun activities. Which comes first may in fact be a “chicken and the egg” problem. It seems apparent that you can be in a state of flow, but not describe it as the same experience as having fun. In a study on predictors of happiness, Myers and Diener list “engagement in work and leisure (being in the “flow”)” as one of the predictive markers for happiness (DeKay 2010). Maybe this indicates that fun can lead to flow. This would be a most interesting area to research. For now, noticing the similarities between the two and looking for ways to leverage that in the interactive design space will have to be enough.
3.5 Fun survey findings on the importance of fun

Within the findings from the Funtinuum research, we discovered that people place a high value on fun in their lives. Participants were given a “fun questionnaire” with a series of questions followed by a ‘very much’ (agree) through ‘not at all’ (disagree) five-point Likert Scale (for specifics, please see the methods section). For the questions “Having fun is very important for me” and “Having Fun is very important for others” the majority of the participants marked “very much” (the highest positive rating). It can be concluded from these questions that fun is of major importance for people in general and they consider fun to be pivotal for others as well. The question “How fun do you consider yourself to be?”, which had a slightly different scale (‘loads of fun’ to ‘kind of boring’), had surprising results. Ninety-six percent of the participants considered themselves to be in the upper half of the scale, from somewhat fun to loads of fun. This self-evaluation provided a very good insight into the social importance of being considered “fun” and how the idea of being seen as “boring” has negative connotations (or that people desire to avoid being seen as boring). Most participants also strongly disagreed with the question, “It is possible to have too much fun.” The reaction to this question was commonly “you can always have more fun.” Another strong tendency noted were the answers to the question related to the frequency of fun needed, “I have fun on a _____ basis.” The majority of answers indicated the need for fun hourly or daily for both themselves and for others. It is clear people hope to dedicate plenty of time to having fun.

These results show us it is important to address fun for no other reason than people value it and make it important. The answers from the survey show the significance that people place on having fun in their lives. The social and personal importance of fun makes it worthy of serious inquiry and attention within the context of interaction and experience design.
3.6 Summary

In this chapter the emotional and cognitive benefits of fun are presented. Fun is positive, leading to happiness. It provides intrinsic motivation for engaging in activities and completing tasks. The positive affective state resulting from fun increases or enhances a user's cognitive abilities, enabling them to become a better creative thinker, a better problem solver, increase retention and spend more time engaged in the experience. Fun aids emotional usability by increasing perceived usability and usefulness of an application, and creates user preference and satisfaction. Fun and its relationship to Flow Theory are discussed. The section concludes with statements from the Funtinuum research on why people say fun is important (not just why designers and researchers say it’s important). This information will aid designers in creating more helpful or useful experiences that allow people to reap all of the benefits of engaging in a fun experience. The next chapter highlights why good visual communication is an important component of a fun experience.
Chapter 4: The Role of Visual Communication Design in Fun Experiences

4.1 How visual communication is important for Fun

Visual communication can create a positive perception and relationship between user and product, opening the door to fun experiences. A good visual design can act as an introductory aspect, something that can draw a person into the experience. VC can be used to get users’ attention by attracting them to a device or application through a pleasing design. If no one bothers to use the system because it is ugly, fun can never be had. Good visual communication can grab a person's attention from the crowd of options available to them; peaking interest initially, then drawing them into an experience that continues to engage. According to “Universal Principles of Design,” a positive relationship with a product has an effect on the long-term usability and success of a design (Lidwell 2003, 18). The Aesthetic-Usability Effect is the name given to the phenomenon of aesthetic designs being perceived as easier to use than less-aesthetic designs (Lidwell 2003, 18). Interestingly, the designs may not in fact be easier to use, but because of how they look people think that they are. This effect was first discussed in a research paper by Japanese researchers Kurosa and Kashimura. They wanted to determine what gave products apparent usability (the perception that products are easy to use) and whether or not it correlated with inherent usability (that the product was in fact easy to use). They set out creating 26 different patterns for an ATM screen layout, which were then evaluated and rated by 252 students from design and psychology. The students were asked to rate each design in two ways using
a ten-point scale: how easy to use it looks (apparent usability) and how beautiful it is. The results showed a high correlation between apparent usability and beauty; the more beautiful a design was rated, the more usable the design was rated. Kurosa and Kashimura concluded that apparent usability had more to do with beauty than with inherent usability. Israeli scientist Noam Tractinsky repeated the study and found an even stronger correlation between perceived usability and aesthetics (Tractinsky 2000; Norman 2004, 18). This points to the need for good visual communication design as a vital component to fun experiences.

HCI community has finally started to recognize the importance of aesthetic consideration, especially as it relates to meeting emotional needs and aiding in fun. Overbeeke et al. state that “from a product design perspective, the appearance of interactive products can no longer be considered as arbitrary. A tight coupling between action and appearance in interaction design is necessary. “Appearance and interaction need to be designed concurrently” (Overbeeke 2004, 17). Initial beauty can draw one in to the device/product. However beauty should not be a façade and there should be beautiful interactions as well (related to product design), otherwise the overall experience will not be successful (Overbeeke 2004, 11).

There are a few fun researchers that suggest that visual communication alone can be responsible for creating a fun experience. While this is not likely the case, they do point out some important contributions that good visual communication provides to fun experiences. Unlike others exploring fun, Ben Shneiderman chooses to focus on providing fun through the interface itself, rather than through the experience. In order to provide a fun-in-doing to the user, he proposes a 3-step process: “Provide the right functions so that users can accomplish their goals; 2. Offer usability plus reliability
to prevent frustration from undermining fun; and 3. Engage users with fun-features. He defines these fun features as alluring metaphors, compelling content, attractive graphics, appealing animations, and satisfying sounds (Shneiderman 2004, 49). All of the elements in his third step fall under the umbrella of visual communication. While Shneiderman is missing the mark on fun experiences as a whole, he is pointing out the importance of what good visual communication can offer to aid a fun experience.

Beautiful things are perceived to be easier to use which can eliminate impediments to fun. However, aesthetic considerations alone are not a means to an end. Good visual communication does not make up for a lousy experience, but it can definitely enhance a good one. It provides people with something beautiful to speak to their emotional needs (art speaks to the soul). In their article “Engineering Joy,” Mark Hassenzahl and his colleagues discuss current beliefs on how fun is accomplished. One of the three perspectives, Design reductionism, reduces joy of use to a quality that graphical and industrial designers add to software. Designers “possess the ... skills that combine science and a rich body of experience with art and intuition. Here is where ‘joy’ and ‘pleasure’ come into the equation: joy of ownership, joy of use” (Hassenzahl 2001, 71). This perspective assumes that joy of use is concerned more with superficial than with deeper qualities, such as interaction style and functionality. Therefore, it fails to acknowledge the complex interplay of visual, interactional, and functional qualities. (Norman, 1998).

4.2 Summary
This section described how visual communication is a key component to a fun experience. Benefits of the Aesthetic Usability Effect are discussed as they relate to fun. Good visual communication provides beauty, which speaks to emotional needs. The following section explains the tools and process used in executing the Funtinuum research.
Chapter 5: Methods

A colleague had been charged with developing an educational game for children with diabetes. The client specifically asked for a game that was 70% fun and 30% educational. As we discussed this project, many questions arose: What is fun? How do you design for it? Can you quantify it? Why is it important? While my colleague went on to develop the game, a few other colleagues and I decided to investigate these issues surrounding fun in order to aid with his endeavor.

Our original hypothesis was that learning and retention are enhanced when presented in a fun learning environment. The initial idea was to prepare an experiment to demonstrate that adding fun factors to the learning process could increase results in retention, attention and the general learning experience. The first few drafts of the experiments included the creation of a lesson to be taught to an audience in the most common way: a talking head. Then we would have the same content of such lesson and “fun factors” and compare results to see which method proved to be more effective.

In order to design this experiment well, we needed to come up with those “fun factors,” and to link somehow the concepts of “fun” and “learning” in order to create the experiment mentioned above. Without a clear idea, we began exploring and randomly surveying people to get opinions of what fun represents to people and to gather information about “fun learning experiences.”
5.1 Early explorations

In the first phases of this research project, it was unclear what the best course of action would be to investigate fun. Our initial explorations did not have predetermined questions; we implemented a variety of approaches with people to ask them to share their thoughts on what fun is and how they related concepts of fun and learning. Our hope was that these early explorations would provide us with insights on how to formalize our research endeavor. Each group member took different approaches to these early explorations to broaden the range of activities tried. The next section details each member's approach.

Interviews with teenagers and children

Informal interviews were conducted with several people from different age groups and backgrounds. The intent was to hear how people talked about fun in order to develop an effective formal survey/interview.

The first participants were two teenage boys, ages 18 and 19 years old, who were cousins of one of the graduate researchers. Keeping the board game in mind, and gaming in general, the approach to the two teenage males was to ask what made games fun and how their attention level was related. One of the interviewed teenagers answered that everything fun related to sex, drugs and partying. The 19-year-old recognized that fun had much to do with changing situations, the unexpected and interactivity. Both teenagers said they enjoyed video games; both of them agreed that they found more fun games with a good difficulty level rather than a game that was too easy that represented no challenge at all. However, they did point out that games with a very high level of
difficulty fell quickly in the “not fun” category by demanding a much bigger effort. The first teenager’s “sex – drugs – rock n’ roll” answer didn’t help at all, but the other one did state that he did like games that presented a challenge but at the same time not being impossible. A good level of challenge and the fact that situations changed or evolved certainly got his attention and kept him focused. A similar response was given by two more cousins, this time a seven and nine-year-old. They got bored very quickly if the games were too easy that they could be beat quickly. They also mentioned that besides video games they also liked games where they could “run and play ball with their friends.” These answers combined gave us a hint that there could be more than one kind of fun. From these we started seeing differences between fun alone vs. fun in groups, active fun and passive fun (being entertained) and the level of interaction. This difference was kept through the format created to analyze the following fun exploration methods.

**Interviews with advanced notification**

Another team member chose to interview three of her close friends. She believed that the relationships they already had could help those interviewees feel relaxed and talk more about their personal experiences. Interviewees were provided with the questions to be asked two days before the interview. They were also told the purpose of the survey, to encourage them to get involved. The interviewees were asked to think about the experience of fun and fun-learning.
First interviewee: 30 year-old Asian male, majoring in electrical and computer engineering

The first interviewee was a very talkative man. His willingness to discuss fun helped illuminate some new perspectives on fun. He said that “the most fun thing is also the most painful thing for me, and they are all studies,” “I hated physics and math when I was a high school student, but they are the major I am studying now,” and “a good education system should have freedom of learning and good teachers who can lead students properly.” He did not enjoy the conventional education system in his native country and it caused him to study abroad. This decision helped him find the enthusiasm for learning again. He stated “for fun-learning, challenge is necessary,” and “happiness comes from the process of solving problems; it could be an accomplishment or a new challenge.” He believed that the main reason for fun learning was creating “motivation.” He described “motivation” in three ways: giving realistic examples, encouraging students (but not over-encouraging), and teaching according to individual levels. During the interview, the student researcher recognized that the relationship between the interviewee and herself affected the quantity of information acquired. The technique of preparing interviewees and asking questions affected the quality of conversation since talking with friends was sometimes too relaxed.

Second Interviewee: 29 year-old Asian female, majoring in molecular genetics

The second interviewee called to tell the researcher she couldn’t wait
to tell me her fun and fun learning experiences. “Traveling,” she said excitedly. She explained that in order for travel to be fun, she must be going to a place she’d never been before: a new scene and new people. She was also very enthusiastic about new technology, such as cell phones and cameras. She also enjoyed furniture magazines, tips for decorating and interior design. This interviewee supposed that games were fun if the characteristics or the target goal kept changing. For example, puzzle games, like Rubik’s Cube and Sudoku, were really fun for her since they were quiet different every time she played. On the other hand, computer games could be boring if the final aim doesn’t change. For instance, she described one game called Visual City, in which players can invent new tastes of drinks, open stores and banks, to build a city. This game was very boring after playing several times since the only goal was making more money.

Third Interviewee: 27 year-old female, majoring in human resources

The third interviewee was not a talkative person, therefore, she gave very brief answers to each of the questions. She said “dating with my boyfriend is the most fun thing for me since we can only see each other twice a year,” and “that is all I can say.” The researcher kept asking about the relationship between her and her boyfriend and what they do. Eventually, this interviewee started to talk increasingly about her hobbies, singing, dancing, and sports. A very interesting learning experience she had was taking abnormal psychology, which was a very popular class in her college. The unusual topics, the experienced instructor and real case studies were indispensable factors that caused the class to be popular and fun.
**Bulletins on MySpace.com and Facebook.com**

In hopes to contact many people at once, one team member posted bulletins on both MySpace and Facebook asking for input on what made learning fun. This was not a very successful endeavor. A grand total of 3 responses were received.

**Bag of toys**

At some point, the team had assembled a bag of various toys to be used in a tool kit for the Central Ohio Diabetes Association group. As it turned out, they were not needed for their research and since we as a group had so much fun playing with the toys, we decided to incorporate them into our research. The toy-bag exploration was two-fold. For the first part, the group met at the workplace of one of the researchers, the newsroom for the university’s newspaper, The Lantern. For the most part, the people in the room were undergraduates (19-23 years old) who were either paid editors or student reporters. There were anywhere from 13 to 40 people in the room at any given time. The team spread the toys out on a table in a common space and then proceeded to observe any interactions. In the beginning, everyone was a bit timid, but when they were encouraged to play, this seemed to go away. In about 15 minutes, the team had 2-3 people sit at the table to play. In the second part of the exploration, a researcher left the bag of toys in her office, where anyone coming to visit me could access them. The toys remained in the office for about seven weeks. Two favorites quickly emerged: a super bouncy-ball and a giant plastic rat that squeaked. The editors actually started using the bouncy ball as a stress reliever. As soon as the researcher arrived at work, the students would rush into the office and get the ball. It was almost Pavlovian. The rat was habitually squeaked anytime someone was in the office to chat. The only other toy that got much attention was a kaleidoscope that looked like a ray gun (it was a McDonald’s Happy Meal toy from many years ago).
**Class discussion**

In an effort to be a bit more formal with early explorations, one of the researchers asked her class to participate in a 15-minute conversation about “fun learning.” The class in question was a 300-level communications class with approximately 12 students, most of whom were seniors. As a way to break the ice and encourage participation, the researcher brought in candy. She only asked two questions: “What’s the worst class you’ve ever taken?” and “What are some classes that you loved and why?” Generally, students did not like classes where instructors read from PowerPoint slides, did not allow for interaction, and did not allow the students to express their own ideas or develop opinions. They enjoyed classes where the instructor was entertaining and passionate about the topic. They also enjoyed quirky or unexpected ways of teaching a subject (like using Whitesnake songs to teach statistics).

**Informal discussions**

Fourth graduate researcher chose to have several conversations over lunches and other downtimes with friends and family concerning what fun-learning is to them. These conversations had a general awkwardness about them, as the subjects being interviewed consistently had the same reaction. There was an element of confusion displayed among the subjects. They were also consistent in their reactions and redirection most often by questioning, “What do you mean?” and “Fun-learning how?” Topics would shift and sway around the topic of fun-learning. The researcher would ask probing questions about the most fun they have had in a learning environment, or if they think that learning and fun are related and if so, how. Eventually, he found that asking more specific questions would get me more specific answers, but this turned out to be a double edged sword as the more specific answers would often be off the topic or at best loosely related to fun learning. Upon meeting with the group during
a bag-of-toys session, the researcher discussed these findings with his fellow student researchers and found they all had experienced similar stories. It became obvious that by simply asking people, whether in person or on a survey, we were not going to gather any rich data concerning fun-learning. One team member suggested that the group initiate future conversations in the antithesis. He got this idea by using the principles of juxtaposition that he learned in his undergraduate study, such as “one never looks so singular until it is surrounded by many,” and “white looks whiter when it is next to black.” He suggested that as a means to get people to talk about the positive, ask them first about the negative.

So, our approach changed to ask people about the worst learning experiences they have ever had. This line of questioning got people talking immediately and in depth. Subjects had little to no problem getting started into a story about a horrible class or unpleasant experience. After the subjects had thoroughly given the details of their not-fun experience, the researchers then turned the line of questioning to the fun learning experiences they have had. Most of the subjects interviewed took to this kind of conversation like approach as this method yielded rich and detailed descriptions as to what fun and learning were in the context of one another.

**Proposed experiment and redirection**

As a method of testing our hypothesis, we proposed an experiment that was going to be a study of four different presentations on a general topic. The general topic would be presented to a group of 10 students in four different formats: traditional lecture, fun lecture, interactive, and not fun interactive. Each presentation on the general topic would take 10 minutes. The four experimental presentations would be run on four groups of 10 participants in different orders to prevent the presentation order
from influencing the data. Student-researchers would be present during each of the presentation formats recording their observations on the participants. Lastly, these groups of participants would be examined by either interview or test to establish how much learning and retention they had on various topics within the general topic. This retention test would be repeated a full week after the experiment to eliminate any recency-effect that any group was exposed to. Participants would be fed a free meal in return for an a little more than an hour of their cooperation.

After a first round of random interviews, we decided that instead of spending our effort on a fun-learning experiment, we needed to focus on answering the question “What is fun?” As we began to compile the data from our four methodologies, it became clear that we would not have enough time to both analyze the data and design and conduct our experiment. Therefore, we opted to abandon an experiment completely in order to focus on the analysis phase of the fun findings.

5.2 Formal research methodologies

To properly design for ‘fun,’ we decided that we needed to have a clear understanding of it. Our team developed and employed four different research methodologies for answering what fun is. We asked more than 150 people of various ages and backgrounds (none under 18 years of age) to participate in our three-part survey; this survey was comprised of a questionnaire, a word association task and a mind-map task. We also asked about 40 people (some of whom had also participated in the survey) to complete a card-sorting task; they were asked to sort images into three categories: fun, not fun and other (undecided).
**Image-sort**

At the same time that we were designing the first survey, a complementary test was conceived. The initial idea was to have people create a collage of what fun meant for them out of a selection of images. However, this idea evolved into the “card-sorting survey” which was similar in nature but easier to apply. It consisted in having a deck of cards with different images so people would classify them into three groups: fun, not fun and other.
Creating the deck

Figure 5.1: The construction of the final image-sort deck. Nearly 400 images (left) were narrowed down to 100 images (bottom).

For the image-sort task, participants were asked to consider the different images on each card in a deck of cards and then categorize the cards into three groups: fun, not fun and other (undecided). Our research team hoped this qualitative test could provide
us with interesting insights by allowing participants to express their thoughts on fun through the use of images instead of words. By escaping the typical survey and trying something more ‘fun,’ we hoped to elicit deeper responses to how people thought about fun. The design of this activity included gathering opinions and comments on the task itself. We gathered nearly 400 images in several categories: food, animals, gross/awful, black and white, technology, sports, ambiguous, family/friends, people, OSU, funny, clothes and traveling. Images related to learning were also included. These depicted different learning scenarios such as field trips, lectures, meeting rooms, educational activities and were given a special marking. These images were the last remains of our initial intention of linking fun and learning. We then narrowed it to 100 cards for the final deck. We scanned all the images and printed them to create a uniform deck of 2.5” x 3.5” cards.

The card-sort was thought to be a qualitative test that could provide us with insight on how perception played a major roll in fun. It was also intended to be a test in which people would be audio recorded as they completed the sorting, because most of them would add comments as they classified the images, this provided yet another important source of information not only for this test but for all the surveys. The design of this activity included gathering opinions and comments on the test itself. By escaping the typical survey and trying something more “fun,” we wanted to see if it made a difference in the response of participants to traditional surveying methods. Marking each image with a number and keeping a control sheet for every participant became a much easier way of keeping track and handling the information.
Three-part survey: questionnaire with open-ended question, word choice and mind map

Our research team decided to interview people in order to find out what ‘fun’ meant in general terms and how important ‘fun’ was in their lives. We prepared a questionnaire so that we could assign quantitative values to the answers and have a bigger sample size. The first part of what became known as the ‘fun survey’ was a traditional questionnaire with a series of questions followed by a ‘disagree through agree’ five-point Likert Scale. The questions were selected thinking of the approaches of the early exploration phase. The last question on the first page of the survey was a short answer, open-ended question that was phrased “What makes fun in groups different from fun alone?” The open-ended question was included to give participants the opportunity for a free-form response. We hoped to obtain a wider variety of answers that could provide unexpected insight.

The second page of the survey had a series of 54 words evenly divided into three columns. Participants were asked to circle any words they associated with fun. These words were selected using the same logic as for the images in the card-sort, ranging from very easy and classifiable terms to ambiguous terms that would require some effort and interpretation from the participant to figure out.

The last page of the survey was a mind-map. This page had no instructions, just the single word ‘FUN’ in a large letters in the middle of the page. Participants were verbally asked to put down anything they associated with fun on the blank parts of the page; this gave the participants the opportunity to tell us about fun in any way they deemed appropriate.
Figure 5.2: Three-part Survey: Questionnaire, Word Choice and Mind-map
5.3 Approaches to implementation

Because we conducted our research outside of class, it became difficult to keep a uniform implementation process between group members. Each of us had access to different groups of people in various locations. The team decided to take advantage of these different approaches because it allowed for triangulation of the results. The following explains the various implementation approaches. Most were done between-subjects. A small group of 14 were done within-subjects and led to a few discoveries about how to execute these research methods in future studies.

First approach — card-sort

In the first approach, the graduate researcher surveyed ten people: five Chinese friends and five American strangers, for this fun survey. Four of them were male and six of them were female. Along the way, the researcher observed the differences between West and East, friends and strangers, and male and female. The first item of interest was the self-evaluation of fun rank. The Americans ranked themselves from four to seven points (of the seven-point scale); however, the Chinese ranked themselves from two to five points. Assuming that those interviewed were chosen randomly, the number revealed differences of culture, such as self-evaluation and confidence. This notes that some research questions related to different cultures may cause missing information. Consequently, a comprehensive questionnaire can get more current information since every individual has their own style of answering questions.

When completing the card-sort task, the participants were pretty quiet during the whole process whether they were close friends or just strangers found in the library. Most of them talked only when asked to describe why they were putting an image in a specific pile. Although the researcher already encouraged them to talk about the images, they still insisted on putting more effort into arranging the cards instead of
talking about their thoughts. Based on observations during this approach, some of the
interviewees smiled at the card, or unintentionally ignored any questions they were
asked. It is possible this is because the interviewees really participated in the survey
and enjoyed playing with the survey cards. However, since the number of cards was
more than the interviewees expected, some of them complained and had decreased
desire to answer more questions after arranging those cards. In other words, we
couldn't get more information from interviewees by asking extra questions.

**Second approach — card-sort**

The second approach to the card-sort was conducted in an airport. One of the
researchers had to take a trip abroad and chose to approach fellow passengers while
they waited. This became a positive factor because having to spend time at airports
and having lots of people who are only “waiting” gave him a chance to get lots
of collaboration.

People at the airport proved to be a unique surveying experience. These are people who

- Have to wait
- Are bored or looking for something to do
- Perfect strangers who will never see you again
- Are honest

Most of the people at the airport would not refuse to answer a survey and most would
be honest and say that they would do whatever kept them busy while they waited. They
were generally very open and honest with their feedback. Other people would ask more
questions about the research and became fascinated with our methods. Most people
said that it had been a fun experience and some others made recommendations of
images that should be included in the deck.
Third approach — card-sort

The third approach taken by one of the researchers was to conduct the image-sort with peers (fellow graduate students) when it was convenient for them. He observed and listened to each participant and then asked questions pertaining to some of their strongest reactions. Each conversation was recorded and documented both by recording and photographing their categories. One of the interviews had a notable exception in the instance of a subject’s reaction to a gun. While most people categorized guns as not-fun, this particular individual went to the shooting range quite a bit and enjoyed the sport of it.

Three-part survey approaches

First approach — surveys

One of the researchers tried to pass out the three-part survey to students in the Science and Engineering Library on campus. This particular library is open all night and is usually filled with students studying or completing homework. It was very difficult to attract participants in this way. The lack of interest implied that people don’t like surveys and avoid doing them. However, not everyone disliked the survey. The researcher interviewed six Chinese females in the lobby of their dormitory after they finished their classes that day. They said this “fun survey” was the most interesting questionnaire they had ever taken. Moreover, they kept telling the researcher the strategy they used when filling the forms. For example, they tried not to answer the writing part on the questionnaire sheet because it seemed difficult and the question was ambiguous. However, some of them came back to put some words in the blank if they had extra time or they got ideas from the word-association sheet or the fun-map sheet.
Second approach — surveys
The graduate researcher who conducted the card-sort activity in various airports also tried to find participants for the three-part survey. People did not react well and at times would not finish the survey. As the researcher kept surveying people, he realized that most of them found the activity to be very tedious and they didn’t see a point to all the questions. However, others found this section as a free canvas to express what fun meant for them. There were three main tendencies: drawings as answers, few word mind maps and heavy density mind maps. Most of the people interviewed gave short answers or pictures to illustrate fun.

Third approach — surveys
One researcher took the approach of engaging people to participate in the surveys by asking two groups close to the researcher. The first group of participants was acquaintances formed while the researcher was a TA in a class for undergraduate students the prior quarter. Surveys were handed out to a class while they were in a studio and instructions were given with an instructor's tone. The second group was made up of family and close friends. These surveys were handed out in social settings and instructions were given to small groups of people. Both groups expressed displeasure while taking the survey, but completed it nonetheless.

Using “within subjects” approach — card-sort and surveys
One graduate researcher's implementation process was unique among the group in that she was the only one to conduct both the image-sort and the survey with the same group of people (within subjects). Her co-workers were gracious enough to participate in the research. They were student editors for the university’s newspaper, The Lantern. During the first week of data gathering, the researcher conducted the images sort. She did three to four a day over the course of four days. She audio-recorded and
photographed each participant as they completed the task. After they had sorted the cards, she spent about five minutes discussing their choices with them. She made notes on the data sheet about what they said. The following week, the researcher asked them to complete the survey (questionnaire, word choice and mind map). This is where the team discovered the priming effect of the image-sort. We found that we obtained better results on the survey methods when the participants had completed the card-sorting activity first. The co-workers enjoyed the mind map, and their answers were more involved than other participants. The researcher also asked a colleague to have his class complete the survey. The mind map was not completed on any of the surveys he returned.

Figure 5.3: Participants completing the image-sort task
5.4 Analysis

Analysis — image-sort

Our research team created a “score sheet” with numbered thumbnails of all the images in the card deck. After a participant finished the sorting task, we scored the sheet according to their choices. The results of all the participants’ score sheets were then put into a spreadsheet. The criterion for the analysis was as follows: if any image was considered fun by more than 75 percent of the population, it was declared as fun. The same rule was applied to an image that was considered not-fun by 75 percent or more of the population. There were also cases in which images were classified as either fun or not-fun by roughly half of our sample population; these images were classified as ‘fence-sitter images’ and the interpretation of these was backed up by the recorded comments of participants. There were also cases classified as ‘notable exceptions,’ that under very specific circumstances any image previously declared as fun or not-fun would be placed in the opposite classification. Explanations were documented and proved to be valuable for these images in particular. We also looked for patterns related to demographics but found nothing of interest.
Figure 5.4: Image-sort results. From left: Images >75% Fun; Images 60–74% Fun
Figure 5.5: Image-sort results. From left: fence sitter images (~ half fun & half not fun); notable exceptions.
Analysis: three-part survey

Demographic information was recorded with each survey, but after analyzing the results, our research team concluded that there were no patterns attributable to demographic variables. Therefore, we decided to present the survey findings as a whole.

The first two statements of the survey page were: “Having fun is very important for me.” and “Having fun is very important for others.” The majority of the participants strongly agreed with both statements. It can be concluded from these statements that fun is of major importance for people in general, and that people do consider fun to be pivotal for others, as well. The question “How fun do you consider yourself to be?” had surprising results: 96 percent of the participants considered themselves to be in the upper half of the scale, from somewhat fun to loads of fun. This self-evaluation provided a very good insight into the social importance of fun; people did not want to be considered ‘boring.’ Most participants strongly disagreed with the fifth statement of the survey: “It is possible to have too much fun.” Participants often responded, “You can always have more fun.” Another curious result was the ninth statement of the survey: “Interaction is a major component of fun.” This statement almost always resulted in a neutral response from our participants. This is an interesting finding because it contradicts data compiled from the rest of the survey. All the other tests positioned ‘interaction’ as one of the major components of fun. One explanation may be that the participants did not understand the question. In any event, the topic certainly remains as one that could be researched further. Additionally, we noted participants’ strong tendencies toward the frequency of fun. The grand majority of answers to this survey question positioned participants’ need for fun for themselves and for others in the upper two categories — daily and hourly.
Analysis — open ended question

To begin the analysis of the open-ended question ("What makes fun in groups different from fun alone?") , the responses were first organized into four groups: non-answers, short responses (less than one sentence), one-sentence responses and multiple-sentence responses. Non-answers were left blank and put aside. Short responses were put into two categories: informative and non-informative. One-sentence and multi-sentence answers were all considered informative. Non-informative answers included words such as “duh” and “silly question.” Once all the answers were separated into groups, each word or thought was written on a Post-it note and stuck to a wall. Post-it notes on the right side of the wall had to do with ideas concerning fun in groups, while the Post-it notes on the left side of the wall were expressing the ideas concerning fun alone. On the two sides, Post-it notes were moved around according to the commonalities and differences they represented. Post-it notes that touched indicated a strong association to their neighbors, while Post-it notes that did not touch any others represented more unique ideas and concepts. On the side of ‘fun in groups,’ a clear pattern of interaction and relating to others immediately became apparent. A simple, central column of the repeated term ‘interaction’ formed a backbone of this side of the wall. As more thoughts were arranged around this backbone, the implications of fun in groups emerged, such as: ‘people benefit from the communal fun experienced in groups’ and ‘the amount of fun experienced relates directly to the amount of energy a person contributes to the group.’ On the side of ‘fun alone,’ the wall was sparsely populated with concepts and had a broader range of answers. The commonality that existed on this side of the wall was a theme of independence and self-centeredness.
Figure 5.6: Analysis of the open-ended question. Top: responses informing fun in groups. Bottom: images informing fun alone. Post-it notes that touch each other are related.
**Analysis — word choice/association**

Fifty-four of these completed pages (from the 150 distributed) from the survey were entered into a spreadsheet and totals for each word were tallied. For purposes of communicating our information, we increased the point size of each word one point each time it was selected as ‘fun’ by a participant. This allowed our results to be more easily reviewed as this technique greatly contrasted the words that were chosen most versus the words that were chosen only by some. Notable findings included that only two words (‘Suffer’ and ‘Drowning’) of the 54 provided did not get circled once. All other words were circled by at least one participant. ‘Play’ was the most frequently circled word followed closely by ‘Dance’ and ‘Ocean’.
Figure 5.7: Results of the word choice section of the presentation. Size indicates frequency a word was chosen as fun.
Analysis — mind map

We encountered a variety of responses to the mind map. In addition to the traditional ‘cloud-cluster’ one associates with mind maps, quite a few individuals drew pictures of things they considered fun. The completed mind maps were categorized into three groups: sparse, intermediate and dense. Each of these three groups was spread out on a large surface so that they could all be seen together. Each word or thought was written on a blue Post-it note and placed on a large movable wall. As repeat words became apparent, we changed the color of the Post-it notes to compensate. A yellow Post-it note had the value of three blue Post-it notes and an orange Post-it note represented five blue Post-it notes. At first we organized the Post-it notes according to level of interaction with others, but as we added more and more Post-it notes, a clear distinction between active and passive activities became apparent. We began to create a ‘field’ of fun, with the top and bottom of the field representing the level of interaction and the left and right side of the field representing the type of interaction being active or passive. As we finished organizing our Post-it notes and sat down in front of our wall to observe it, we saw a clear pattern emerge — the passive/low interaction quadrant of the map and the active/high interaction part of the map were aglow with multiple colors of Post-it notes, but particularly dense in orange Post-it notes, which were worth the most.

Figure 5.8: Examples of completed mind maps: dense, sparse, moderate.
Figure 5.9: Analysis of the mind map involved transferring every word or picture onto a large mind map. The research team started to put these on a large white board but soon had to move to a movable wall (top right). We then drew the results using the words on the Post-its on the white board (bottom right).
5.5 Key discoveries/findings

One key observation that does not immediately present itself in the data but was obvious to our research team was the difficulty with which our participants completed the three-part survey. We observed many participants unable to articulate or express what fun means to them or how they have fun without using the word ‘fun.’ A similar frustration is met when one is asked to describe the color blue using only words. The color analogy is used to imply that fun, like color, is something that is difficult to describe in terms of language only. Our observations were that fun is a universal experience that everyone understands but is difficult to put in words.

When participants struggled to articulate ‘fun,’ our research team asked them to think about what fun is not. We then asked them to focus on the major differences between the two extremes. We quickly noted that this got people talking in an excited state; participants told us many stories that relayed the opposite of ‘fun’ (i.e., feelings of unimportance, embarrassment and disinterest). Once these conversations began, we noticed that we could ask participants the same questions that had previously gotten limited, nondescript answers; these same participants now gave rich, detailed responses about ‘fun’ (i.e., their best experiences). Subjects often spoke about the fun of learning, their favorite teachers and positive emotions like feeling included and engaged in an interactive experience. We also noticed that these responses were more often than not related to the negative aspect of the ‘fun’ question in some way (i.e., subjects would compare and contrast their best and worst teachers, classes and experiences). In some way, these answers, although rich in detail, might be misleading as they were predicated on a negative question.
**Image-sort to mind map**

We found that conducting the image-sorting task first produced a priming effect on our participants; this act produced mind maps far richer in content than the mind-maps provided by participants who had not been primed with the image-sorting task. Subjects sorted the image cards one week prior to participating in the mind map; we believe that these subjects actually kept thinking about the topic of fun after the image-sort task, so that when the mind map activity was presented to them, they took less time than other participants to complete the activity, and they produced better results.

**Word choice/association to mind map**

It is important to note that some participants borrowed several terms from our survey’s word choice page (i.e., the page instructing participants to ‘circle the words you associate with fun’); these participants used our terms on their mind-maps. We believe these mind maps should be viewed with skepticism as the words were obviously over-represented as part of a priming effect.

**Mind map to open ended question**

We found many participants who initially skipped the open-ended question (“What makes fun in groups different from fun alone?”), returned to answer it after completing the mind map activity. The observed hesitation seems to support the thought that fun is innate to human experience and not easily articulated; it was only after spending a significant amount of time actively thinking about fun (via the mind map) that quite a few participants were able to respond to the open ended question.
5.6 Summary

This chapter of the thesis explained the tools and processes used in executing the Funtinuum research. It gave a complete picture of how the information was obtained and how it led to the creation of Funtinuum. The methodologies can provide a framework for future fun research endeavors, highlighting the do's and do not's of fun exploration. The next chapter presents thoughts on where to or where not to use fun in applications, guidelines for designing fun experiences and use case studies to illustrate how the guidelines can be used.
6.1 Where to use fun and where not to use fun

While it is my intent that individual designers decide when and what kind of fun is appropriate for their project, there are some instances where fun is warranted and some applications when fun may be a distraction. In this section, I will propose my thoughts on what those applications are.

6.1.1 Where fun is appropriate

Fun and games obviously go hand in hand, but games are not the only place for fun. Clearly, one of the most pertinent places for fun is when there is a learning objective attached to the experience. It is clear that effective teaching and fun have a symbiotic relationship. Any application that has a knowledge-generating component should consider how fun could be integrated into the experience. Interactive exhibits, be it in science museums or art galleries, should look at leveraging fun in the experience. Adding fun to guided or exploratory experiences can lead to better learning and more retention of information. Classroom software or supplemental educational software for the home should be fun. Exam prep software, like for the SAT or GRE, should definitely be fun. Skill-teaching software can also benefit from fun. Like Draper suggests, fun can also be added to the experience to enable learning of the application itself. Application tutorials should be fun, in order to facilitate quicker learning of how the software works. Applications that are supposed to help people solve problems or find creative solutions may benefit from fun. As you may recall from the importance
section, the positive affective state that results from fun has a substantial facilitating impact on organization of thought, cognitive flexibility, innovative responding and openness to information (Isen 2003). In tasks that are difficult or lead to instances of frequent frustration, fun can be worked into the experience to enable the user to remain in a positive state. In an experience or task where problem solving or innovation is key, adding fun can increase their performance in these scenarios. The cognitive benefits resulting from the positive state brought about by fun can help them complete tasks more effectively, find more robust solutions and ease cognitive load. ‘Loss of Skill’ applications could be an excellent area for fun. In systems where humans are only expected to intervene in a crisis, loss of basic skills is a real concern. By designing fun practice applications, people can keep their skills up to date and in peak shape.

Thomas Malone suggests adding fun when people need help being motivated to participate in an activity. “Much of the motivation for using the system (tools) depends on the user’s motivation to achieve the external goal. In cases where the external goal is not highly motivating (routine or boring), the toy-like features…can be especially useful in making the activity enjoyable” (Malone 1981). Fun provides the intrinsic motivation to engage in an otherwise boring activity. Vigilance tasks would benefit from this. There are often tasks in manufacturing plants where someone has to watch a panel of flashing lights for hours, or watch a production line for defects or other such tasks that get boring quickly. If it is fun or has a component of play, it could increase morale in the work environment, lessen stress from boredom and fatigue, and possibly improve quality of performance. If the task can be changed in such a way that it was fun, it could be a much less arduous task.
Designers should not discount appropriate uses for passive fun. Fun for entertainment and relaxation can be just as important as active fun experiences. Engrossing narratives and emotional story lines can add to passive fun experience. Humor can also be effective for passive fun, but remember, fun does not equal funny.

I am sure that this is only a small section of fun appropriate applications. Designers should use the information presented in this thesis to make their own educated decisions about when and what kind of fun is appropriate to their project.

**6.1.2 Where fun may not be appropriate**

While I would like to say that fun could be included everywhere, this really isn’t the case. There are instances where including fun in the experience will only serve as a distraction or perhaps interfere with the performance of those engaged in a specific task. While the negative side of fun was not thoroughly explored in this thesis, the following are a few cautionary thoughts on the matter.

First and foremost, the goals of the user should be clearly outlined before fun is considered. It may become apparent that fun would only distract from the indented tasks or be perceived as irrelevant or out of place, based on the users' goals. If fun in the experience would conflict with the goals of the user, it should not be included. While it may not be correct, fun tends to be associated with a lack of seriousness that some systems require. If an application responsible for critical safety tasks was fun, this may be perceived as inappropriate. The happy state that fun results in is usually an indicator that everything in the environment is good and that “all is well” (Lowenstein 2003, 629). This would be bad in safety or critical task situation where more vigilance and seriousness is required. These systems need the negative feelings that alert the
body to the fact that a problem needs attention (Lowenstein 2003, 629). Additionally, fun may not be appropriate in applications where trustworthiness is required. The security and safety these systems need to project are not served by fun. While I did not investigate how fun can act as a distracter in certain situations, this may be something for future fun researchers to consider.

6.1.3 Fun and risk taking

While not directed at a specific kind of application, I thought it important to point out the relationship between fun and risk taking. Positive affect does not generally lead to increased risk taking if the risk is real and meaningful. Throwing caution to the wind only happens when the risk is small or hypothetical. In situation where risk is real and sizable or meaningful, positive affect leads to reduced risk-taking in comparison with controls (Isen 2003). When people are happy, they have more to lose and have a tendency to protect that happy/positive state: possibly for this reason they avoid the chance of meaningful loss. In other words, loss looms larger when happy (Isen 1987; Isen et al 1988). Positive affect seems to lead people to give more weight to hedonic impact of the outcome than to the probability of that outcome (Nygren et al. 1996). This may be an issue for applications like gambling, money matters, investment, or safety oriented programs. Designers should consider whether or not risk-taking is a component of the application and how the use of fun may affect peoples’ proclivities.

6.1.4 Summary

Presented in this section were thoughts on where to and where not to use fun. While this should not be considered a comprehensive listing, it does serve to point designers to key applications for fun. The next section presents guidelines that can be used to direct fun design endeavors as well as for the evaluation of existing fun experiences.
6.2 Guidelines for designing fun experiences

Once it has been determined that fun is appropriate, the following are guidelines on considerations for designing a fun experience. These are not a guarantee for fun, but rather needs that should be met to enable the opportunity for fun. These guidelines can be used for both creating and evaluating fun experiences. They can be referenced at the beginning of a project to help set specifications and objective. When analyzing existing or completed projects, these guidelines can be used for a heuristic analysis to determine “fun-ness.” The guidelines are broken into 2 groups: guidelines to prevent barriers to fun and guidelines to enhance fun within an experience. If elements outlined in the prevention of barriers guidelines are not met, the enhancement guidelines will not be effective and will not guarantee fun. When creating fun experiences, designers must first prevent barriers. Only after barriers to fun have been removed can they incorporate enhancements. The fun guidelines are not presented in order of importance. There is often overlap between guidelines with one aspect of design fulfilling requirements of multiple guidelines. Not all are necessary to include in every project. They should be considered in combination depending on project needs. However, the more that can be incorporated, the more likely to have a fun experience. Further research will be necessary to definitively state fun will result.

Guidelines for designing fun experiences

Prevents barriers to fun

1. Meets functional usability requirements
2. Provides meaningful feedback; responds to user input/interaction
3. Eliminates or reduces fear of failure
4. Can be learned by doing and from others; no instructions, manual required
5. Provides distraction from daily burdens; takes user out of current situation

Enhances fun
6. Fulfills an emotional need(s)
7. Multiple opportunities for interaction depending on user (flexible interaction)
8. Enables creativity and discovery
9. Makes completing a task feel less like completing a task
10. User interface can be personalized or customized

1. Meets functional usability requirements
In order for an application to be fun it must first be usable. If a person cannot figure out how to use a system, or cannot learn a system, they will never have any fun. This guideline is of the utmost importance and is the only one absolutely necessary for fun to be had. The interface components and controls should not be the focus of attention and mental effort. They should support the higher-level experience or task. Any designer who sets out to create a fun experience must first adhere to relevant principles for interface usability. Proper testing should be conducted to ensure the design is functionally sound.

2. Provides meaningful feedback; responds to user input/interaction
“The possibility of fun arises when we are both aroused and intrigued, and at the same time recognize an intention to communicate through a design” – John Carroll

Feedback is important because it reduces the “unknown” factor of an activity. Fear of the unknown frustrates people. And frustration does not lead to fun. Communication,
and therefore system feedback, is important to creating fun experiences. Feedback is necessary to serve as an effective and attractive representation of communication process (telephony). Security comes from knowing how good/bad one is doing. Users should always know how much longer until the end of this task, mistakes should be pointed out, and there should be opportunities to correct mistakes or errors (Malone 1980, 163). Important in Human-Computer Interaction (HCI) and computer science, feedback is foundation of good system design. It is just as important to fun as it is to functional usability.

3. Eliminates or reduces fear of failure
When people are not afraid of failure or bad outcomes, they are free to enjoy (Reed 2004). Discussed in the section on the importance of fun, positive affect allows for broad and creative thinking while negative affect leads to focused and inflexible thinking. Fear of failure and the resulting anxiety is a speedy way to drive users to a state of negative affect. Fun application should reduce anxiety and provide a feeling of safety. Video games do this by providing save points that allow users to take risks and try new strategies because they know it is okay to fail. The same “safety” measures should be included in non-game applications when appropriate. Designers should avoid creating non-transparent situations. This will also prevent the fear of failure as users will be able to see how the system works and what the available options are. Also, if a designer can eliminate the fear of failure, then perhaps a design benefit from both fun AND flow.

4. Can be learned by doing and from others; no instructions, manual required
Simply put, instructions impede fun. Games are often learned by doing. When was the last time you sat down to play a game and read the instructions? Probably never.
You just started playing and could usually learn through doing. Only when you reach a point of frustration or lack of understanding do you reach for the directions. This event usually interrupts the ability to have fun. What is even worse is when players cannot figure out how the game is to be played or how goals are accomplished. The game is abandoned and no fun is had. If memorization of rules, directions or controls is too cumbersome it will destroy the opportunity for fun. Apple has definitely decided this in important in their products. Neither the iPhone nor the iPad come with written instructions. Instead, learning to use these products comes from doing with a little guidance from the system itself. Interaction designers can learn from the methods of ready-to-assemble products, like furniture from IKEA. These items are better when they do not require complicated manuals to build. These same principles can be applied to interactive experiences. They should not have construction manuals — they should just be usable (or learnable). This guideline could be thought of as a requirement for functional usability. Systems should not be difficult to use and easy to learn.

5. Provides distraction from daily burdens; takes user out of current situation
One of the most consistent responses from participants in the Funtinuum research was fun was so important because it provides distraction. In many ways having fun is not scheduled, it is freeform, for leisure — it is play. It is often something you do by choice, not something you have to do. Fun is not a commodity (bread and milk): it is often viewed like a luxury item (snickers bar and beer). This is why people visit Facebook while they are at work or play Paper Toss on their smartphone; to provide distraction from their required daily routine. Fun lacks the constraints of many everyday activities. Often fun is not limited by time, money, energy and effort.
6. Fulfills an emotional need(s)

Meeting an emotional need of the user is mentioned in many of the works on fun covered in this thesis (Carroll, Reed, Jordan, Brandtzaeg, Overbeeke, Wensveen). Active fun experiences can meet emotional needs by giving the user a sense of accomplishment, connecting them to others, or providing a self-esteem boost. In some cases, say haunted houses or roller coasters, scaring someone or inducing fear could be meeting an emotional need. Passive activities fulfill emotional needs for rest and the relief of stress. Watching a movie helps relieve sadness by helping someone cry. Rewards may be considered an emotional need. Winning is almost always fun. Getting something for doing a good job makes you happy. The accomplishment that comes from beating a level in a video game is part of what makes it fun to play. Another way to meet a user’s emotional needs is to allow the user to feel emotionally connected or express emotions. This is often accomplished with online communities and networks. Web 2.0 is centered on giving users the ability to contribute and express themselves. Allowing users to express emotion to a product is also important (Wensveen 2004, 277). If the user can let the system know how they feel so the system can then respond appropriately, it can lead to a fun experience (Wensveen 2004, 280). The connection to friends and family is probably the singular most important emotional need to be met. The interaction between friends and family is vital to fun experiences. The Funtinuum research shows that friends are vital to increasing fun in any experience. Connecting to others is meeting an emotional need. This can explain the rise of social networks and Web 2.0. Many fun applications have a component connecting the users to others. Bridges distance between friends and loved ones. Allows users to feel close to their friends even though they may be separated physically. Mitigates sense of loss, be it through distance, scheduling/lack of availability issues (like if you are in the grad school and don’t have time to hang out). Regardless, this is one of the more
complicated aspects of fun. It is up to the designer to determine the goals of the user in a given situation and determine what their emotional needs will be.

7. **Multiple opportunities for interaction depending on user (flexible interaction)**
This guideline is similar to Brandtzaeg’s ‘Multiple opportunities’ where he suggests multiple possibilities and services for the user (Brandtzaeg 2004, 63). In addition to Brandtzaeg, many existing fun applications have flexible interaction. A few are explored in the case studies section. This guideline is different from applications being multimodal. Instead of a system being accessible from multiple devices, multi-interaction has to do with the way a user engages with and uses a system. Increasing the number of ways a person can use a system can increase its fun potential. Instead of just supplying preexisting tools, user should be able to build their own. Applications should not be unitaskers, people should be able to complete different tasks using the same application. Instead of forcing the user to work in isolation, they should be able to participate in related online community to share knowledge and seek advice.

8. **Enables creativity and discovery**

   “Designs that engage and empower users increase their enjoyment and encourage them to explore.”

   Jakob Nielsen, User empowerment and the Fun Factor 2002

In some cases it is important for users to feel like an active participants. Applications that allow users to make things or discover new processes and techniques also enable them to have fun. Creativity can come from allowing users to add to the base system, to create new levels, to develop new plug-ins or new tools. Creativity can also come from system flexibility that allow people to find new ways to play, complete a task
or learn something new. Discovery happens in much the same way — when people find new ways to do things, or experience unexpected outcomes. In exhibit systems, discovery works to teach, maybe creativity is through doing and experiment, trying the principle through a mini experiment (think science museum). Creativity and discovery are even better when they can be shared with a larger community.

9. Makes completing a task feel less like completing a task

This guideline is related to providing distraction. It could be considered as combining distraction with a task. Sometimes you can’t get away from required tasks, limits of time, etc. In these instances it becomes important to frame the task in a different way. Integrate fun to make it feel less burdensome and scheduled. It is important to remove the monotony out of doing a task. Strive to make it more engaging and less stressful.

10. User interface can be personalized or customized

The ability to personalize provides ownership and connection to device/system. Brandtzaeg feels the ability to personalize allows the user to “influence and create their own experience in a dialogue with the technology” (Brandtzaeg 2004, 60). It makes the inanimate product feel like a friend or companion. Especially if it is something used very often. It also sets your version apart from others. It is important to allow people to customize task-based applications to fit the way they like to work, how they want to use it. It can be simple like rearranging workspace to creating custom short cuts to adding plug-ins and add-ons.
Guidelines for designing fun experiences

to be used as an analysis tool when designing or evaluating fun experiences

Prevents barriers to fun

- 1. Meets functional usability requirements
   - interface does not hinder use of system
   - there is no confusion on how system works or how to use it

- 2. Provides meaningful feedback; responds to user input/interaction
   - reduce the “unknown” factor
   - effective and attractive representation of communication process

- 3. Eliminates or reduces fear of failure
   - should reduce anxiety
   - provide a feeling of safety
   - avoid creating non-transparent situations

- 4. Can be learned by doing and from others; no instructions required
   - instructions impede fun
   - requirement for functional usability

- 5. Provides distraction from daily burdens
   - allows mind to rest
   - relieved from constraints of “work”

Enhances fun

- 6. Fulfills an emotional need(s)
   - accomplishment
   - rest, relaxation
   - connection to others
   - allows user to express emotion

- 7. Flexible interaction
   - different from multimodal
   - use a variety of different ways
   - can accommodate user’s work patterns

- 8. Enables creativity and discovery
   - users feel like active participants
   - find new ways to do things

- 9. Makes completing a task feel less like completing a task
   - feel less burdensome and scheduled
   - remove the monotony out of doing a task

- 10. User interface can be personalized or customized
    - provides ownership & connection to system
    - fit the way users like to work

Figure 6.1: Guideline checklist
6.3 Summary

The guidelines presented in this section are intended for use as a tool for the creation and evaluation of fun experiences. These are not a guarantee for fun, rather needs that should be met to enable the opportunity for fun. These guidelines can be used for both creating and evaluating fun experiences. The next section explores existing fun applications in the context of these guidelines as a means of illustrating how one might implement said guidelines.
Chapter 7: Fun Audits

The best way to illustrate the guidelines for fun is to look at existing “fun” applications and point out how each guideline is addressed. The following explores applications from different areas of the interaction design spectrum — a video game, a social networking website, a smart phone, “The Fun Theory,” and two experimental fun devices — to illustrate the broad experiences in which fun can be applied. NOTE: Since all of these examples meet the necessary functional usability requirements, that particular guideline is not listed repeatedly.
7.1 Little Big Planet

The point of game play in Little Big Planet (LBP) is to guide one’s own highly customizable “Sackboy” (or Sackgirl) through a series of levels, each with their own end goal and required tasks. LBP can be played in single or multi-player mode and enables users to play with others locally, online or in combination. Levels require players to solve puzzles, rearrange elements to reach special items, avoid traps and enemies, etc.
and increases in difficulty as the player progresses. As levels are completed, items such as costumes, decorations, stickers, and materials are collected which can be also used to further customize one's Sackboy. Some of these items may also be used to decorate the Sackboy’s home base or “pod” and the levels themselves. A contextual “popit” menu enables a player to access these items as well as editing and message tools. Options in the popit menu change based on location of the player in the game play. While the levels appear to be 2D in nature and played in the traditional left to right fashion, LBP employs depth to allow characters to go behind and in front of objects in the level. LBP is unique among video games for enabling user-generated levels, which can be shared through a global online community.

**Fun Guidelines employed**

**Provides meaningful feedback; responds to user input/interaction**

LBP provides feedback in a variety of ways. At the end of every level, the player is given a percentage, which represents how successful they were at completing all the tasks of the level. Players are then given the opportunity to try again to improve or continue on. Contextual controls show the user what is possible at any given point/location in the game. Accompanying sounds alert players to dangers, failed attempts, successes and acquisitions. The expression of the Sackboy also provides feedback, by changing based on the context — such as when killed, squished or drowned. Feedback is also positive when the player is successful (Sackboy becomes happy upon completion of tasks).

**Can be learned by doing and from others AND eliminates or reduces fear of failure**

Before play is started, story-like tutorials instruct the player on how to customize their Sackperson, how to pick up objects and how to use the “popit” menu. When playing for the first time, the first few levels have stop points for tutorials where a friendly British
narrator, Stephen Fry, provides useful tips and pointers while the player practices his/her technique before actual game play begins. The tone and pacing of the narrator makes users feel at ease and reassures them on being successful. The same narrator and technique are used in many tutorials and videos in the “Create” section of the game.

There are also checkpoints located throughout the game. If the player “dies” they don’t have to completely start over. This enables players to take risks while trying to complete a level. However, these checkpoints do not have unlimited use, which provide some consequence for continued dying.

**Provides distraction from daily burdens; takes user out of current situation**

It’s a game.

**Fulfills an emotional need**

LBP gives players the ability to express emotion through control of emotional expressions of the character. Through use of the controller, the Sackboy can be made to express happiness, fear, doubt, sadness, and anger by manipulating its facial expressions. The body language of the Sackboy can also be manipulated through its independently moveable limbs. This helps create a bond with the avatar, making it an even richer extension of the player.

There are rewards for completing tasks successfully as well as rewards upon level completion. For example, players receive special objects for solving puzzles and conquering obstacles and not dying during the level. These are stickers, costumes and other items that can be personalized, for solving puzzles or conquering obstacles. The better one gets at the game, the more interesting the rewards. This promotes the
advancing of skills and encourages the player. It also boosts players’ self-esteem by making them feel good about their accomplishments.

The game also enables players to connect to a robust online community, providing important social connections. One can connect to players far away through online play. They can also post levels they have created to the online community. Players have the ability to provide other players with feedback about the levels they have built. The game uses a heart icon to indicate other players have enjoyed their level.

**Flexible interaction**

LBP stands apart from other video games due in part to its infinitive playability. The game is framed as three planets, “Play,” “Share” and “Create” — which all provide a different way to experience the game. There is also the “Pod,” which serves as a home base for the player as well as a storage and save point. Players can play alone or with others, both locally or online. In addition to the 50 or so premade levels that come with the game, players create levels they themselves can play. These user created levels can also be shared and played via the online community.

**Enables creativity and discovery**

By enabling users to create and share their own levels, the game encourages all players to take a turn as game designers. In this way the game becomes infinitely playable, as it is only limited by the creativity and participation of its players.

**User interface can be personalized or customized**

Little Big Planet provides lots of opportunity for players to personalize the game and game environment. Each Sackboy can be personalized — from the cloth they are
covered in to the costumes they wear. The Pod, or home base, can be personalized with items collected during play. This makes it feel like it is the Sackboy’s home and decorated to suit the personality given to it by the player. The levels can also be decorated with many of the items collected during play. Additionally, photos from “real” world can be taken via the “Playstation eye” and turned into stickers that can be incorporated into the game.
7.2 Facebook

Facebook is a popular and now nearly ubiquitous global social networking website. It is important to note that during a pilot study on fun applications, Facebook was the most common response for a fun website. On the website, it states Facebook gives “people the power to share and make the world more open and connected. Millions of people use Facebook everyday to keep up with friends, upload an unlimited number of photos, share links and videos, and learn more about the people they meet.” In addition, there are many applications that can be added to one’s profile. These include games, travel tracking, item sharing applications and many more.
**Fun guidelines employed**

**Can be learned by doing and from others**

Facebook is careful to follow enough web conventions, making it familiar to users. What controls are unique are easily learned. Users can also ask for help via status posts. I learned how to block posts by third party applications in this way, greatly improving my Facebook experience.

**Provides distraction from daily burdens; takes user out of current situation**

Facebook is commonly used to break up the day, so much so that many companies have blocked it to prevent loss of productivity. Whether it is checking up on friends or playing Farmville, Facebook can take a user's mind off the worries of the day, providing them with some amount of relief.

**Fulfills emotional needs**

The strongest draw of Facebook, and social networks in general, is that it bridges distance between friends and loved ones. It allows users to feel close to their friends even though they may be separated physically. Users can reconnect to people with whom they have lost contact and it acts as an aid to maintaining friendships that might not be manageable in the analog world. This can mitigate a sense of loss, be it through distance or scheduling/lack of availability issues (like if you are in grad school and don't have time to hang out). Facebook also provides a forum for expressing one's current emotional state and receiving immediate support from one's friends. Some take pride and increase their feeling of importance by maintaining a large network. The more “friends” they have, the better they feel about themselves. Users can get positive feedback from friends via “like” action. The “like” action can also be used to identify with various causes, groups and organizations.
Flexible interaction

Private or public profiles allow people to use Facebook in a variety of ways. Some people use Facebook as a professional tool and use a public account to connect with others in their discipline. Some people choose to have very private profiles where only their closest friends can connect to them. Users can decide what components of Facebook they want to use and how detailed they want their profiles to be. As well as individual accounts, groups and companies can create profiles to connect to others. Facebook also provides for synchronous and asynchronous communication. Synchronous conversations are facilitated by a chat feature.

User interface can be personalized or customized

While older versions of Facebook allowed for more interface manipulation than the current iteration, Facebook still has a decent amount of customization control. Users have control over what kinds of information are displayed in the “News Feed.” The third party applications allow users to build a Facebook page that matches their goals for use. Users can also control how those applications are displayed and arranged within their profile. The display language can be changed to accommodate multiple cultures. Some are even included just for amusement including ‘English (Pirate)’ and Esperanto.
7.3 iPhone

The iPhone is Apple’s Internet and multimedia-enabled smart phone.

“An iPhone functions as a camera phone, including text messaging and visual voicemail, a portable media player, and an Internet client, with e-mail, web browsing, and Wi-Fi connectivity. The user interface is built around the device’s multi-touch screen, including a virtual keyboard rather than a physical one. Third-party applications are available. These apps have diverse functionalities, including games, reference, GPS navigation, social networking, and advertising for television shows, films, and celebrities.” — From Wikipedia

Fun guidelines employed

Provides meaningful feedback

The rich and subtle interactions of the iPhone stand out by providing some of the best feedback among current smart phones. From the swiping and bump actions while browsing though app pages, to the scale and move, users are provided with meaningful
feedback to their inputs. Some auditory feedback is provided when typing on the keyboard and unlocking the phone.

**Can be learned by doing and from others**

Apple provides little instruction with the iPhone with the expectation that users can learn how to use the interface through doing. As it turns out, the iPhone is easily learnable, with some of the more complicated features being shared among users.

**Provides distraction from daily burdens**

By downloading games, the iPhone can easily become a portable arcade. It can be used to fill time while waiting, which is great when one doesn’t want to look or feel lonely. It also provides access to almost anything the Internet can provide.

**Fulfills an emotional need**

The iPhone acts as a status symbol and gives a feeling of importance to users. As pointed out by Jordan, this close bond among perceived elite “in-group” of users is important to socio-pleasure. iPhone users highly identify with the Apple brand and its other users. The iPhone (and smart phones in general) give users the feeling of power by enabling them to access information instantly. I personally have won many an argument or solved problems on-the-go because I had access to an iPhone. It relieves anxiety about being disconnected and can keep users from getting lost because of its many features, like maps and GPS.

**Flexible interaction**

The all-in-one nature of the iPhone makes for a very robust example of flexible interaction. Combining multiple devices in one — a phone, digital music player,
camera, web browser, not to mention the myriad of apps that can add additional functions —makes the iPhone a nimble and flexible tool.

Makes completing a task feel less like completing a task
The playful nature of the iPhone makes the multitude of tasks that can be completed on it more pleasant then other means of completing them. This comes from the combination of great visual communication design, rich interactions and the toy-like quality of the device.

**User interface can be personalized or customized**
Currently the iPhone is limited when it comes to personalization. The only element of the interface that is personalize-able is the wallpaper, which you only see when waking the phone from idle. App screens can be rearranged as desired to customize the organization of various functions of the phone in the way that most suits the user. Physically, one can personalize the product itself with cases, but this is not part of the interaction.
7.4 “The Fun Theory”

The Fun Theory is a concept, developed by Volkswagen, promoting the idea that design can change peoples’ behavior for the better by making things fun. On a website of the same name, it states “This site is dedicated to the thought that something as simple as fun is the easiest way to change people's behavior for the better. Be it for yourself, for the environment, or for something entirely different, the only thing that matters is that it’s change for the better” (thefuntheory.com). A combination of Volkswagen-affiliated and contest-generated entries explore using fun to make the world a better place. The Fun Theory is different from the other case studies because the website itself is not examined, but rather a few of the projects presented there in. These examples do not quite fall under “interaction design” in the screen-based sense of the term. However, the projects are powerful and wonderful examples of why fun is important and how to contextualize fun for other applications.

7.4.1 Piano Stairs

Figure 7.4: Stills from the piano stairs video. From left: before Piano Stairs, installation of Piano Stairs, after Piano Stairs.
Designers wanted to find a way to coax people in the Odenplan subway station in Stockholm, Sweden to use the stairs instead of the escalator. Their solution was to make climbing the stairs fun by turning them into a giant piano. Music fulfills an emotional need, while the ability to make it enables creativity (many climbers try to play tunes or create their own). Clearly the piano stairs provide a pleasant distraction and definitely makes completing a task feel less like a task. Climbing the stairs is usually a physically demanding chore — the piano changes it to a pleasant excursion. The stairs now respond to peoples’ steps (input) by playing notes. If their results are to be believed, adding fun to the stair climbing experience increased climbing by 66 percent.

7.4.2 Bottle Bank Arcade Machine

With this project, the designer wanted to convince people to recycle by turning the bottle bin into an arcade game:
“Many of us return our plastic bottles and cans. Noticeably fewer recycle their glass. Maybe that’s because we don’t get any money in return, as we do for cans and plastic. Can we change this attitude by making recycling glass fun to do? So you are not just rewarded with a good conscience, you also get a smile.” (www.thefuntheory.com)

By making the bottle bank an interactive experience, depositing bottles becomes like a game. By placing a bottle in the correct slots people gain points and receive positive auditory feedback for their participation. They can even compete to obtain the “high score” for bottle deposits. This project creates fun through three of the guidelines. It provides distraction from the day by presenting people with an unexpected experience. It makes completing a task feel less like a task, turning a mundane errand into an engaging, fun experience. Unlike ordinary bins, the game bin responds to user input in a playful and almost silly way. Due to the lack of interaction and other richer guidelines, the repeatability or longevity of this particular item could be questioned, but that doesn’t negate the fun and benefits of it.
7.4.3 The World’s Deepest Bin

This project operates on the same premise as the bottle bank. By turning trashcans into interactive experiences, people can be convinced to throw their trash in the bin and not on the ground.

“To throw rubbish in the bin instead of onto the floor shouldn’t really be so hard. Many people still fail to do so. Can we get more people to throw rubbish into the bin, rather than onto the ground, by making it fun to do?” (thefuntheory.com)

The designer of this project adds a device to the cans that is activated when someone puts trash in the can. Much like a cartoon character falling off a cliff, the accompanying sound produced makes it seem like the trash is falling a long way to reach the bottom of the can. This project provides distraction, makes completing a task feel less like a task, and provides feedback to user input. The repeatability or longevity of this is also in question, but it could prove to be a very good idea.
7.5 Responsive alarm clock

Figure 7.7: Person interacting with responsive alarm clock.

In their paper, “Fun with your alarm clock: designing for engaging experiences through emotionally rich interaction,” Stephan Wensveen and Kees Overbeeke attempt to make the experience of waking up more enjoyable by developing an emotionally sensitive alarm clock. It is their opinion that a product that allows people to use their perceptual-motor and emotional skills in addition to their cognitive skills will result in a more engaging and fulfilling relationship.

The clock
This dome-like clock has 12 sliders that move up and down the sides of the clock. In the center there is a button to set time/snooze. It offers multiple ways to set wake up times, which is done through displacing the sliders around clock. It can be done with one slider or as many as the user can grab.
The experience

The intent of the design was to develop a clock that can respond to the emotional state of the user based on the interaction between the two. “Based on the interaction of setting the alarm…the alarm clock makes a decision about what it believes is an appropriate sound” in which to wake you the next morning (Wensveen 2004). If the user grabs all the sliders and moves them about angrily, creating a chaotic pattern, it results in a soothing wake up sound. If the sliders are set very symmetrically, indicating plenty of time to sleep, the wake up sound is more robust. The clock also takes account of the users snooze button usage and the amount of time between the sounding of the alarm and the pressing of the snooze button and the force with which the snooze button is hit and adjusts the sound. If someone hits snooze a lot, the wake up sound will get more insistent with each snooze. The clock also provides visual feedback. The pattern of the sliders gives visual cues to the user about how s/he interacted with the clock. They can then make an association with the pattern and how the clock responded.

Fun guidelines employed

Provides meaningful feedback; responds to user input/interaction

The whole purpose of this clock is to provide meaningful feedback based on user interaction. The clock adapts to the user and then creates multiple “wake up” scenarios. In this way it provides feedback to the user (auditory and visual) about last night’s interaction: “it elicits rich emotional behavior while the user communicates factual information” (Wensveen 2004).

Can be learned by doing and by watching others; no instructions, manual required

The designers of this clock intended that it be learned through interaction and usage.
Fulfills an emotional needs
The alarm clock responds to the emotional need of users by awaking the person with a sound appropriate to how they set the clock the night before. For example, it will use a soothing sound to wake someone who set the clock harshly the night before, thereby hoping to alleviate stress, not add to it. The design of the clock allows the user to express their emotions to the product through an interaction based on touch.

Makes completing a task feel less like completing a task
Setting the alarm clock is a very routine task. The aim of this alarm clock is to engage the user in a new way that evokes curiosity and solicits playful interaction (Wensveen 2004).
7.6 EasyCom: The Joy of Telephony

![EasyCom Interface](image)

Figure 7.8: The EasyCom interface.

In an effort to bring fun into the business phone and communication realm, Hohl et al, developed EasyCom. This interactive application was meant to make using complex phone system functions easier to execute. They based the interaction on a “communication circle.” The user is visualized in the center of the circle; calls are placed by dragging participants from “address books, speed dial buttons, call journals (logs), and so on into the circle. “By directly manipulating the partners involved in a communication situation, even complex telephony functions, such as setting up a conference call or alternating between active and held calls can be handled easily with little or no end-user training” (Hohl et al. 2004, 205). Users can also drop notes to send
emails or share files through the same system. Hohl states that the original goal was easy of use but that the team realized designing for fun and emotion was an “equally important success factor and unique selling point” (Hohl et al. 2004, 206).

**Fun guideline employed**

**Provides meaningful feedback**

“Fun is not designed into the system to distract from the main feature telephony, but to improve interaction and avoid non-transparent situations” (Hohl et al. 2004, 207). In this way, EasyCom is always providing users with feedback on what the system is doing, if they have been successful in making the call, who is part of the call and how to do additional tasks. Animation of avatars is used to indicate the status of call participants.

**Reduces fear of failure**

Complex phone call procedures are typically not attempted on traditional phone systems due to fear of failure (Hohl et al. 2004, 206). EasyCom resolves this problem by avoiding non-transparent situations that keep the user from being frustrated by the unknown. By giving telephone users an effective representation of the communication process, they will be confident that they can complete the actions they wish to accomplish.

**Can be learned by doing**

One of the main intentions of the EasyCom design team was to design something that didn’t require a huge instruction manual. The design of EasyCom is centered around creating an “effective and attractive representation of the communication process” so users can easily learn the system (Hohl et al. 2004, 207).
Makes completing a task feel less like completing a task
The EasyCom system has attractive interaction to reduce monotony and the routine of phone use. Its game-like nature and attractive design make the boring and often tedious task of placing complex calls fun.

User interface can be personalized
The EasyCom interface is customizable. Photos of people can be uploaded to take the place of avatars. Items in the interface can be moved to meet context of use needs.

7.7 Summary
These fun audits represent how various designers are implementing fun in current applications. They also show ways in which the guidelines can be executed.
Chapter 8: Conclusion

This thesis provides designers with a relevant definition of fun. The basis for this definition will be the “Funtinuum,” a qualitative scale of the dimensions of fun. The Funtinuum (fun + continuum) is the visual result of research conducted to provide a qualitative scale of the dimensions of fun. Axes for interaction (low to high) and engagement (passive to active) create the dimensions encompassed by “fun.” By defining fun as a 2-D continuum of interaction level and engagement level, instead of providing a constraining verbal definition, designers have a clearer picture of defining fun in the context of experience. The influence friends have on the “fun-ness” of an activity is discussed so designers can leverage that power whenever appropriate. Existing fun theories from researchers Thomas Malone, John Carroll, Petter Bae Brandtzaeg, Darren Reed, Patrick Jordan, Stephen Draper and Nicole Lazzaro are discussed in relation to the Funtinuum. This provides designers with a clear understanding of fun and context for fun in user experiences. It empowers designers to create successful fun experiences.

A rationale for the importance of “fun,” its tangible benefits to end users, and appropriate contexts for fun in design are discussed. Including fun in an interactive experience can help a designer create something that increases or enhances a users cognitive abilities, enabling them to become a better creative thinker, a better problem solver, increase retention and spend more time engaged in the experience (Norman 2004, Isen 2001, Isen 2003). The commonalities between fun and flow theory are
considered. There are many striking similarities such as need for challenge and intrinsic motivation that make fun and flow seem closely related. Also revealed is why visual communication is a key component to a fun experience. It provides many benefits including the Aesthetic-Usability Effect and attractiveness, creating a powerful first impression.

This study examines appropriate and inappropriate applications for fun. It serves to point designers to key applications for fun. Following this are guiding principles for producing fun experiences through interaction design. These are not a guarantee for fun, but rather needs that should be met to enable the opportunity for fun. The guidelines are broken into 2 groups: guidelines to prevent barriers to fun and guidelines to enhance fun within an experience. If elements outlined in the prevention of barriers guidelines are not met, the enhancement guidelines will not be effective and will not guarantee fun. These guidelines can be used for both creating and evaluating fun experiences.

**Guidelines for designing fun experiences**

**Prevents barriers to fun**

1. Meets functional usability requirements
2. Provides meaningful feedback; responds to user input/interaction
3. Eliminates or reduces fear of failure
4. Can be learned by doing and from others; no instructions, manual required
5. Provides distraction from daily burdens; takes user out of current situation
Enhances fun

6. Fulfills an emotional need(s)

7. Multiple opportunities for interaction depending on user
   (flexible interaction)

8. Enables creativity and discovery

9. Makes completing a task feel less like completing a task

10. User interface can be personalized or customized

Case studies of current “fun” products and applications are explored in the context of these guidelines to provide further explanation on how to create fun experiences and as a means of illustrating how one might implement said guidelines.

This thesis serves as an answer to the complex design problem for fun. It is expected that interaction and experience designers are provided a rich understanding of fun and why it’s important. Designers, clients and users are given a means for articulating what fun is to them by providing a common “language” around creating fun experiences. The Funtinuum provides a clear understanding of the dimensions of fun, and serves as an aid for choosing the appropriate type of fun for a given project. The Funtinuum, introduced in this thesis, fills a void in the current fun literature by presenting a complete model for the broad range of fun experiences in the context of interaction design. It is hoped that the guidelines become a widely used tool for guiding and creating fun experiences.

By providing an in-depth rationale for why designers should care about and utilize fun in our experiences, fun will earn a respected place in design and research, no longer relegated to an afterthought or only for children, rather a powerful tool for engaging
and aiding users in a variety of complex settings. There is a place for fun outside the context of games and play; fun can be useful in many other arenas, such as when learning and retention are vital to the experience.

The methods presented for conducting fun research validate the use of qualitative research methods when exploring qualitative ideas like fun. Not all topics are best served by strict scientific rigor and statistical data. To properly explore fun, sometimes “messy” or “looser” methods generate the most inspiring and useful results. It is hoped that future fun research can build upon the methods and techniques outlined in this thesis.

Finally, this thesis brings together the many pieces and parts of fun’s complex puzzle and finally builds a complete picture of fun that was lacking. It serves to inform and guide current designers trying to manage fun, to inspire future research to build upon what we know and to further illuminate the intricacies of fun. In this way, we can build the much larger body of knowledge this topic deserves.

8.1 Future research directions
There are many avenues for new research that have become apparent from the research done in this thesis. I suggest that more exploration is needed on specific applications for fun and specific instances where fun should or should not be included, specifically where fun can act as a distracter in certain situations.

Formal studies on the effectiveness of the guideline are warranted. Further research will be necessary to definitively state fun will result. I suggest studies where applications are designed using the guidelines and then tested their fun-ness.
There are several possible research directions around fun and flow theory. Based on the research, I speculate that fun and flow are linked, especially in high engagement fun activities. Which comes first may in fact be a “chicken and the egg” problem. It seems apparent that one can be in a state of flow, but not describe it as the same experience as having fun. Maybe this indicates that fun can lead to flow. Additionally, fun cannot be attained if there is a fear of failure or mistake. The key question, though, is does fun lead to flow because fear is eliminated in a fun experience or is it the other way around? It would be interesting to further investigate both of these questions in future studies.


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