

# “The Intuitive and Integrated Interface”

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*Keywords: computer games, digital literacy, usability, gameworld, interface*

## **Introduction**

Due to their central role in modern popular culture and in everyday life, modern computer games have received increased attention by researchers, governments, and the public. Some take the games for simple entertainment that occupies too much of people's time, ruining careers and relationships, while others focus on the potentially damaging violent content of many games. However, games have also been subject of a more optimistic and constructive debate where their potential benefits to society have been in focus. These debates have focused on games as a participatory activity where players exercise considerable cognitive skills in order to develop strategies and solve problems to help them progress in the game (Gee 2003, 2006). Another point that has been made is that games tend to be social activities where collaboration, competition and other social skills are demonstrated and rehearsed (Steinkuehler 2007, 2008). These ideas have increased the interest for using games for pedagogical purposes. A different aspect of computer games that have received increased attention only the last couple of years, is how they work as a *push technology* that increases users' confidence and skills in using digital media and thus provides entry into further technology use (Facer & Frulong 2001, Gee 2003, 2006, Lankshear & Knobel 2006, Steinkuehler 2007, 2008). This last point in particular emphasises the idea that computer games may be an important medium in increasing computer literacy.

The aim of this paper is not to repeat the important argument that computer games have considerable benefits in the pursuit of building digital literacy within the general public, but instead to emphasize how this may be amplified and made more effective. This paper will argue that a focus on usability and accessibility is crucial for increasing digital literacy, and that an effective and intuitive game design therefore is necessary. The focus in this paper will be on the design of the *computer game interface*, since this is the player's entry point into the computer game and therefore a crucial aspect of understanding both the medium of computer games and the medium of the computer. Since similar interface concepts are used in all digital interfaces, game interfaces have a lot to teach the user about computer and digital interfaces in general. In addition, computer games may have a lower threshold for access than other digital media, since they are entertainment media that attract players on the basis of their potential “fun” value. Also, important aspects of computer games are already familiar to potential users because of other popular media. More specifically, most modern computer games feature fictional worlds with narrative ambitions, something that players may recognize from film, theatre, television and literature. In the last two decades, films and computer games have also started to borrow aesthetic and stylistic aspects from each other, a point that not only underlines potential players' familiarity with aspects of games, but also emphasises the importance of understanding computer game aesthetics in order to understand the complex aesthetics of modern popular media. In short, today's media literacy includes not only digital literacy, but a more specific computer game literacy in order to fully understand all aspects of the new aesthetics.

Despite of the “cyberkid myth” that assumes that children have a natural and automatic ability to appropriate and use technology (Facer & Furlong 2001:452), it is important to keep in mind that there are both children and adults that find computer games too complex and advanced to even try. For the computer game interface to be successful as push technology that may increase their computer and media literacy, it should be easily accessible so that also novice players would understand how to

manipulate it intuitively. The obvious example of such an interface is the motion sensitive controllers of Nintendo's Wii console, where players simulate real world movements to control the game. An important point in this paper will be on how computer games move from complex to more intuitive interfaces by integrating game system information with the gameworld.

### **What is this "Literacy"?**

Before going on to discuss three methods used by computer games to integrate system information with the gameworld, I will now review some definitions of literacy in order to contextualize computer games into a broader tradition of digital literacy. *Literacy* is traditionally a concept connected to the ability to read and write, but modern dictionary definitions extend the understanding of the term to "the condition or quality of being knowledgeable in a particular subject or field" (The American Heritage Dictionary of the English Language 2006). The fact that the concept has changed from a specific and narrow definition into an open and extensive idea, is according to Carl F. Dons a product of the fact that literacy is closely connected to technologies like the printing press and the computer (2006:60), and therefore associated with media technologies that we use to document knowledge, reflection, imagination and analytical capacities. The modern definition also suggests that there is not one general kind of "literacy", but many different "literacies", depending on field, subject and the specific medium of transfer. As the newer definition suggests, literacy is not limited to reading and writing, but concerns the ability to make sense of the communication practices within a specific domain or discourse.

Lately, the concept *digital literacy* has received increased attention, and is a term closely related to the modern understanding of literacy. As the modern concept of literacy, digital literacy is a complex term that cannot be reduced to one kind of ability or knowledge. Understanding how to use an mp3 player is very different from understanding how to play a massively multiplayer online game (MMO), and familiarity with one of the communicative formats does not provide an automatic access to the other. In support of this, Lankshear & Knobel (2006) state a critique of the idea that we may define a single digital literacy, and claim that we need to recognize a much wider range of digital literacies that goes beyond the mere understanding of information in computer technologies. While some include even the most basic skill of using digital technology in the definition of digital literacy, others are concerned with meaning making processes and the ability to use different digital technologies for problem solving purposes (2006:13-14). Lankshear & Knobel argue that digital literacy needs to be problematized and made more relative, and emphasize the idea that literacy includes more than mere operational skills. However, they still believe that the use of digital technologies such as mobile gadgets also need to be taken into account, but as "conduits to familiarity and proficiency with digital literacies", and that they therefore are important entry points into a more complex digital literacy (2006:22).

According to the extended understanding, literacy concerns the familiarity with the practices of a certain domain, both in terms of understanding its potentials, its modes of communication, and how to use it both as a consumer and producer. As complex multimodal, semiotic systems, computer games also demand this kind of literacy practices from their users. Understanding a game's physical and virtual interface, the layered visuals, icons and texts and the relationship between them is not something one does automatically or intuitively. Instead computer game players learn this from experience with other games and software systems, and mastering this is prerequisite for being able to successfully play a game (Steinkuehler 2007:300). There is no doubt, then, that computer game skills also should count as a form of digital literacy. However, human-computer interaction skills are not enough in this multimodal situation. Being able to understand the audiovisual information and the representation of a diegetic world are also important parts of a computer game literacy, and these skills are also learned from other media such as film, television and literature. Because of this situation where familiarity with one technological medium cannot be seen as isolated, it is necessary to understand digital literacy as a complex competence that builds on older established forms of literacy. Barbara Gentikow is a supporter

of this idea, and she links digital literacy to media literacy and what she more specifically calls "audiovisual literacy" (2007:79-80). With reference to Joshua Meyrowitz, she argues that media literacy concerns the ability to understand and analyse media content, the ability to understand different media "languages", such as film's visual modes of presentation, and the ability to understand the technological functions of a medium. Specifically relevant for computer game literacy, she asks whether digital literacy should be seen as a variant of competences learned from analogue electronic media. In conclusion, the kind of literacy necessary when playing computer games, and that we may call computer game literacy, proves to be a complex kind of literacy that builds on other literacies. It may seem counter-intuitive that this complex kind of literacy should be a leading push technology and fruitful in increasing digital literacy on a more general level, but as we will see, the combination of other literacies is paramount for the development of computer game interfaces that are intuitive, inviting, and that have the potential of increasing digital literacy and lessening the digital divide.

### **Computer Games as Literacy Amplifier?**

So why this focus on computer games when discussing digital literacy? What is it that makes computer games particularly relevant when it comes to literacy? What techniques may computer games utilize to increase digital literacy? In the introduction, I shortly presented some arguments for why computer games have a special role in building digital literacy. The most important point was games as push technology that increases people's confidence in technology and provides an entry point into further technology use (Facer & Furlong 2001, Gee 2003, 2006, Lankshear & Knobel 2006, Steinkuehler 2007, 2008). For a lot of young children, computer games is the first meeting with computer technology, and research carried out in the US and in Europe points out that the computer technologies that first enters homes tend to be gaming consoles (Steinkuehler 2008:612, Facer & Furlong 2001:466-7). However, for some the threshold for starting to play games may be too high due to complex game systems and advanced game controllers. Even those potential players that are attracted to the entertainment value of computer games may feel alienated because the tools for access seem too difficult to use. This means that at the time being, today's computer games tend to appeal to an exclusive group of users who have an interest in technology above average, or already are familiar with computer games. This is further amplified by the fact that computer game controllers and interfaces are becoming increasingly more complex compared to games of the 80s and the 90s. Newcomers therefore often feel estranged from games when they encounter the complex game console controllers that are equipped with about fifteen separate buttons. This goes against the idea that computer games are a conduit to proficiency of digital technologies, and for computer games to actually become a push technology that increases digital literacy for a larger group of people, they need to become accessible to a larger audience. Making more intuitive game interfaces that are more closely integrated into the game experience is crucial in that respect.

Lately, game companies also seem to have become aware of this accessibility problem for new users, and consequently, a number of alternative interfaces have been introduced to the market with new game concepts. These are new game controllers that are more intuitive and seem to have a greater appeal to a broader audience than the traditional controllers (Maestri 2008, Wischnowsky 2007). Nintendo's latest console Wii features motion sensitive controllers that allow players to control the games with actual movements, thereby creating a much more intuitive way of playing games than the traditional controllers. Other examples of new controllers that have spawned computer game interest within a broader audience are the *Sing Star* (SCEE 2004) microphone, the *Dance Dance Revolution* (Konami 2001) dance mat, and the plastic guitar of *Guitar Hero* (Harmonix 2005). These are all game controllers that are understood immediately, and even the *Guitar Hero* controller has a sense of intuitiveness even though few of the people attracted to the game know how to play the guitar. The fact

that these interfaces represent a system that most people already actually have an idea how work gives them an immediate appeal.

This experimentation with new and familiar interfaces is an interesting and important step towards making computer games accessible for a broader audience, and thereby making computer games a push technology relevant not only for a small technophile gaming audience. However, in the remainder of the paper I will argue that the physical interface represented by game controllers is not the only important aspect in this respect. Also the software interface is crucial in this context, and in the same way as the hardware interface, the careful integration between the gameworld and the interface is paramount for success.

### ***The Integrated Game Interface***

So far interfaces have been central in the line of argument, and the paper has introduced but not discussed the difference between a physical or hardware based, and a virtual or software based interface. According to the Merriam-Webster Online Dictionary, an *interface* is “a surface forming a common boundary of two bodies, spaces, or phases”, or alternatively, “the place at which independent and often unrelated systems meet and act on or communicate with each other”<sup>1</sup>. In connection with computers and computer games, we can therefore understand *interface* as the intermediary aspects of a computer system that allow the player to interact with the computer, and the term includes both hardware and software features. So far in the discussion, we have only looked at the physical interface of games, or the physical objects that allow players to interact with the game system. Moving on to the software-based virtual interface, we see that this is often referred to as the graphical user interface (GUI), which Eric Butow describes as “a system for interacting with a computer by manipulating graphics elements and text. These graphics elements include windows, buttons, menus, and icons.” (2007:18). In a computer game, we can extend the virtual interface from the GUI to also include audio and the player’s persona in the gameworld. In order for the virtual interface to make sense in relation to the gameworld, it needs to have a close and immediately understandable connection to the actions and events that take place within that world. This is in accordance with game designers and scholars Katie Salen and Eric Zimmerman’s idea of what constitute *meaningful play*. In addition for the actions and outcomes to be *discernible* in the sense that they must be communicated in a perceivable way, they must also be *integrated* into the larger context of the game (2005:61-2). My argument is that these virtual interface features – GUI, audio and player’s persona – need to be closely integrated into the actions and events of the gameworld, and that the design of these therefore is paramount when it comes to making computer games an effective tool for building digital literacy. In the following I will discuss how the different parts of the virtual interface needs to be integrated into the gameworld in order to be successful.

### **The Avatar – the Player’s Representation in the Gameworld**

In many computer games, the player controls a representation of himself. This is a character present in the gameworld, either presented from a third-person point of view as a visual representation in the game world; or from a first-person view only as a hand, weapon or tool where the camera view constitutes the vision of the character. This player character, which I will call *avatar* in this paper for the sake of simplicity<sup>2</sup>, is the player’s extension of himself into the gameworld, and may be interpreted as tool,

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<sup>1</sup> Interface. (2008). In Merriam-Webster Online Dictionary. <http://www.merriam-webster.com/dictionary/interface>. Retrieved September 8, 2008.

<sup>2</sup> For an elaborate discussion on the avatar, see Klevjer 2007.

embodiment, or the representation of a real-world person in the virtual environment. At the same time, it is an individual existing in the gameworld; a fictional character which lives in and interacts with the gameworld. In any case, the presence of an avatar puts the player into a dual position. The player becomes a real-world person and a game player situated externally to the gameworld, at the same time as he has the power to influence and take actions in the gameworld through his link to the avatar (Jørgensen 2007a:106, 2007b:75). Connecting the real-world with the gameworld, the avatar can be seen as an interface feature since it is a means for interacting with the computer, and which allows the player to communicate with and take action in the gameworld.

This duality of the player/avatar is an excellent example of how games integrate interface features into the gameworld, and perhaps the most important and elegant way of doing this. The avatar can be interpreted as a version of the cursor of traditional computer interfaces that has been replaced by an agent that seems to naturally belong to the game environment of which it is part (Klevjer 2007:10). Also, the audiovisual surface of computer games brings associations to other audiovisual media such as film and television, so that the player easily adopts the idea of the avatar as the game counterpart to a fictional character in a film. The combination of the conventions from traditional audiovisual media with those of the computer interface makes the integrated interface of computer games an easily understood and powerful frame of reference. To provide a specific example of how the avatar combines the real world with the gameworld, we can take a look at the use of music in games. Computer games use background music in a way that on the surface reminds of film – the music follows the mood of certain situations, and certain pieces of music also follow certain characters. In a computer game, when the background music suddenly changes, it provides information to the player about a change in state. However, even if the fictional character should not be able to hear this music that is being played from sources external to the gameworld, the actions of the avatar suggest otherwise (Jørgensen 2007b:107). Here, the link between player and avatar enables the avatar as a fictional character to take action based on information traditionally not available to it.

It should also be mentioned that in some genres, the player has no avatar. In real-time strategy games and simulators, for instance, the player monitors and manages a number of semi-autonomous units. Instead of controlling all actions and movements of one entity which is the case in games with an avatar, the player of these games commands his units to take certain actions, but once the command is given, the unit acts autonomously until a new command is given (Jørgensen 2007a:25). In such games, the player manoeuvres the game by the use of a traditional computer interface cursor, while the units are most easily compared to visual representations of different system processes that can be activated. Still, the fact that the units are represented as military or administrative characters, complete with individual looks, voices and abilities, and set in a gameworld, creates a link to audiovisual diegetic representations. Not least, it camouflages the game system and makes the game more intuitive to understand.

## The Graphical User Interface

The graphical user interface of computer games consists of several elements. It is not only the frame of buttons and icons surrounding the space of action that should be called GUI, but also text and numbers that visualize system information and other features not considered part of the gameworld should be interpreted as parts of the GUI. Below is a screenshot from *World of Warcraft* (Blizzard 2004) where we see that the GUI occupies much of the screen. There are several rows of buttons towards the lower and right border of the screen, as well as two text boxes, several avatar icons including bars for health and magical energy, a mini map with additional icons, as well as the icons marking active spells. In addition, fleeting words and numbers are shown in red in the middle of the screen. All these features are parts of the GUI and may for an outsider seem as unwelcoming elements that run the risk of disturbing the engagement in the gameworld. However, they are tightly integrated with the actions and events and

follow the player's interaction with the gameworld closely. The most central role of any GUI is to provide necessary information to the player about the virtual environment and its relationship to the game system. Since computer games are limited to provide audiovisual output to the player<sup>3</sup>, the GUI needs to compensate for the lack of the remaining senses. It is therefore important that the GUI provides usability information such as responses to player actions and warnings on upcoming dangers.



The GUI of *World of Warcraft* (Blizzard 2004)

The GUI is therefore essentially connected to what is going on in the gameworld. All parts of the GUI represent some kind of element such as an action or ability in the gameworld, and even though the icons themselves are not part of that world, the actions they represent are directly linked to specific actions taken in the gameworld. For instance, when the player selects an icon representing a healing spell, he will heal an avatar in the gameworld. Also, the red numbers and text in the illustration above provide the player with information that his avatar has been injured, and by what abilities. Because of this, it is possible to argue that the GUI does not feel alien to the gameworld; on the contrary, it provides more depth and physicality to the environment. Additionally, modern computer games also integrate the GUI stylistically into the specific setting. In *World of Warcraft*, the lower row of buttons has ornamental dragons, which fit well with the medieval fantasy theme of the game. Also, when the player opens the map or the quest log, he will see a map written on a surface that looks like a piece of parchment.

## The Game Audio

The use of audio is the most subtle way to integrate interface features into the gameworld. In software interface design, audio is seen as an effective way to communicate usability information, because it relieves the visual system from a range of tasks, and allows the interface to use two channels for presenting information (Jørgensen 2007a:50). In game contexts, audio combines usability functions with the sense of presence in the gameworld by using sounds that merge sounds from the natural world with stylistic elements. This ensures that the sounds clearly communicate the usability message, at the same time as they seem to emerge from objects in the gameworld. An example is the sound of marching feet

<sup>3</sup> An important exception is the vibrating console controllers, such as the Playstation DualShock controller.

when the player selects the barracks building in the real-time strategy game *Warcraft 3* (Blizzard 2002). Even though it may seem strange that we may hear soldiers marching only when the building is selected, it does not sound strange in the gameplay context, since the sound is clearly connected to a specific player action and provides a response on that action.

Another method is to bake sounds with no natural connection to the gameworld into the gameworld, in particular by directly associating the musical soundtrack to usability functions. This means that the music may be used to provide feedback to player actions or warnings about upcoming actions, and is commonly called *adaptive music* (Brandon 2004, 2005:85-91; Whitmore 2003). An example of feedback music is found in the stealth game *Hitman Contracts* (Io Interactive 2004). When the avatar successfully has entered a building after using a disguise to be granted admittance by the guards, there is a short jingle ascending from a lower to a higher pitch. The jingle informs the player that he has been able to complete a goal in an optimal manner, and is a feedback signal about his action. An example of warning music can be found when an enemy approaches the avatar in *The Elder Scrolls IV: Oblivion* (Bethesda 2006). Here the subtle background music suddenly changes into a more aggressive, up-beat melody, informing the player that danger is near. Even though adaptive music does not appear as natural to the gameworld, it is directly related to events in that world. Providing information so closely related to player actions and gameplay, this music is a good example of how games integrate interface features with the presence in the game world.

## **Discussion**

This paper argues that games may support digital literacy through effective game design, more specifically the design of the user interfaces of games. The idea that games are important for building digital literacy is supported by the fact that they should be understood as *push technologies* – that is, attractive technologies that provide an entry point into further interest and use of other technologies. As push technologies, computer games and their developers have a responsibility to create systems that are accessible to as many potential users as possible. An intuitive and inviting interface is one of the most obvious features in this respect. Moreover, all commercially available digital technologies have different kinds of user interfaces that may be hard to use for the digital illiterate, and this makes the push technology interface particularly important.

However, although careful interface design is important, there are specific features of the game interface that has a special role. These are the features that integrate the traditional computer user system elements with the gameworld, more specifically the graphical user interface (GUI), the player's representation in the gameworld, and the game audio. These interface features tend to blend into the gameworld, and makes the interface part of it, at the same time as it makes the gameworld more interactable and responsive. It is important to accept these as unique aesthetic features of computer games that include important operational qualities. This integrated interface meets computer games on their own terms by taking into account gameplay and the game environment as a consistent world. Another issue related to the role of the game interface, is that when it is seamlessly integrated, it has the ability to teach the user a lot about the underlying system of the game and how it connects to the representational surface of the gameworld.

It should also be mentioned that game literacy also is an important part of digital literacy on its own terms. In addition to making users familiar with the use of digital technology and their interfaces, they teach users about modern media aesthetics. First of all, computer games are not only a new media genre that the average media user should be familiar with – many of its aesthetic features are descendants from other media in addition to the fact that other media today borrow many aesthetic features of computer games. Computer generated images (CGI) in film is perhaps the most obvious example of this. However, this aesthetic borrowing goes further. Also camera angles, plots, themes, and character types have increasingly been adopted from games to the big screen. *The Matrix* is perhaps

the most referred film in that respect. The so-called *bullet time* technique that provides the illusion of stopping or slowing down time closely resembles different computer game techniques such as the free camera movements in three-dimensional simulation and strategy games, and the possibility to rewind time in *Prince of Persia: The Sands of Time* (Ubisoft 2003). More recently entire films have appeared as stylistic tributes to computer games and computer game genres, such as the action film *Shoot 'Em Up* that not only features endless "spawns" of enemies, the tactical boss fight, utilizing unlikely parts of the environment to solve problems, a bullet-proof baby as plot hook, and empty characters with no personality. Such examples demonstrate that media styles are not isolated, and that in order to fully understand today's and the future's aesthetic media styles, one also has to know the aesthetics of computer games. Media literacy and digital literacy are getting closer together, and those remaining proficient in one of them only, run the risk of missing out of the new *digital media literacy*.

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