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Learning through collaboration: video game wikis

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Biographical statement

Matthew is a PhD researcher and research developer at the Humanities Advanced Technology & Information Institute, University of Glasgow. He lectures on various video game-related topics, and on multimedia systems and web technologies. His PhD research examines the relationship between video games and learning, with a particular focus on how commercial video games may be used to develop graduate attributes.

Abstract

The wiki, wherein community-spirited players meticulously document their gaming experiences for the benefit of others, from simple guides to complex theories and strategies, has become the de facto online reference medium for video game players. This study sought to examine how players learn from one another about the systems that underpin their favourite games and how they engaged with social media – wikis, in particular – to facilitate this collaborative learning. It is argued that in collating, synthesizing and disseminating the often complex behaviours observed in a modern video game, the wiki author is displaying academic proficiency in a non-academic field. Drawing on a series of interviews with gaming wiki contributors and users, the practices of those engaged in using gaming wikis are discussed, together with an account of the research methods used. In undertaking such research, a number of challenges and concerns were encountered: these, too, are described.

Keywords

video games; wikis; collaborative learning; game-based learning; social media; learning environments; research methods; video game research; dark souls; meta-game;

1. Introduction

Whilst not always acknowledged as such, video games are a pervasive and significant aspect of modern culture. According to the Interactive Software Federation of Europe, 32% of all adults in the UK describe themselves as ‘gamers’ (34% of men, 31% of women), while one child in two plays games every day (ISFE, 2010). As an industry, games generate as much

revenue as – or more than – the film or music business, with blockbuster releases such as 2011's *Call of Duty: Modern Warfare 3* out-grossing the last four *Harry Potter* films combined (GFK Chart-Track, 2011). The proliferation of internet-enabled smartphones has fuelled growth in social gaming, and expanded the 'gamer' demographic.

Further, this demographic group is more diverse than ever before, and is no longer dominated by young males. In their annual survey of 2000 US households, carried out over a period of several weeks in early 2013, the Entertainment Software Association reports that women aged 18 or older represent a greater portion of the game-playing population (31%) than boys aged 17 or younger (19%) (Entertainment Software Association, 2013). In the UK, The Telegraph reported in July 2013 that the typical video game player is 35, has one child and earns more than £23,000 (GBP) per annum, based on a survey of 2000 self-identified video game players carried out on behalf of the video games social network Pixwoo.com (Goldhill, 2013). The study of games, and their effects on the broad demographic group who play them, has never been so pertinent.

The learning potential of video games has, in recent years, received some considerable academic attention (see Barr, 2013). Researchers including Jenkins (2006), Gee (2008) and Squire (2011) have been particularly influential in establishing the role video games might play in our educational and cognitive development, with a recurring theme that modern video games are complex experiences: to play them, players must comprehend this complexity, and develop an understanding of the in-game systems. The work described here sought to examine how players work together to learn from one another about the systems found in their favourite games and how they engaged with social media – wikis, in particular – to facilitate this collaborative learning. However, in engaging with social media and game-based research, a number of challenges and concerns were presented: these, too, are discussed in some detail.

1.1 Gaming and social media

Social media enjoys a close, almost symbiotic, relationship with video game culture. In fact, one might argue that the networks that facilitate competition, cooperation and communication between players – such as the PlayStation Networkⁱ, Xbox Liveⁱⁱ or Steamⁱⁱⁱ – are examples of niche or special interest social networks. Outside of these relatively closed communities, however, there exists an abundance of player-generated, moderated and curated gaming information on the Web, much of it

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exposed via social media channels including wikis, blogs, Facebook and Twitter.

Video games increasingly feature direct integration with social networks, with games such as Infinity Ward's *Call of Duty: Modern Warfare 3* allowing players to log into their Facebook accounts from within the game and invite their Facebook friends to play along, to organise clans of players and to post updates on their in-game progress (Official Call of Duty: Modern Warfare 3 - Facebook and ELITE Integration Behind The Scenes Video, 2012). Many other games post game progress updates to external social networks, with Relentless Software's *Buzz Quiz World*, posting 'stories' to the player's Facebook account, for example, and Naughty Dog's *The Last of Us* providing players with the option to populate their in-game factions with Facebook friends, as well as simply checking on their current activity. Further, Facebook itself has developed into a platform for games with a social dimension, with titles such as *Farmville*, *Candy Crush Saga* and *Words with Friends*, tapping into Facebook users' existing social connections to drive their rapid proliferation (Chen, 2009). In 2012, Facebook released data that suggested their platform boasted 235 million game players (Goddard, 2012). On its own, such a figure comfortably eclipses the number of subscribers to more established gaming networks, such as Microsoft's Xbox Live service, which in April 2013 reported 46 million subscribers worldwide (Futter, 2013). While the Facebook figures provide little detail – it is difficult to ascertain how regularly these 235 million users actually play games, for example – there is little doubt that gaming on social media platforms is a significant phenomenon.

1.2 Video game wikis

The wiki, ranging from tailored installations of the MediaWiki software that powers Wikipedia, to third party-hosted sites such as wikia.com and wikidot.com, has become the *de facto* online reference medium for game players. While less obviously social than Facebook, Twitter, or online discussion forums, wikis nonetheless fall under the banner of social media, and typically support an active core of contributors, with a larger proportion of the community consulting the material created and curated by this small central team. On video game wikis, community-spirited gamers meticulously document their gaming experiences for the benefit of others, from simple guides (e.g. weapon statistics, character biographies) to complex theories and strategies (including maps and video captured from the games).

While gaming-related wikis are generally considered to be non-academic in terms of their content, those who contribute to and make use of such websites might be described as engaging in inherently scholarly behaviour. It could certainly be argued that in collating, synthesizing and disseminating the often complex behaviours observed in a modern video game, the wiki author is displaying academic proficiency in a non-academic field. It is the practices of those engaged in populating and using gaming wikis that are discussed here.

Such wikis are, it may be argued, some of the most tangible manifestations of gamers' pseudo-academic engagement with the gaming world, made all the more interesting by the collaborative and social processes that underpin the wikis' creation. For non-gamers or, indeed, casual gamers who have never consulted these online resources, it might appear somewhat improbable to suggest that these wikis or, rather, the endeavours of those who contribute to them, are of academic value. The quality and scale of these wikis may be illustrated by means of the following examples, which demonstrate the lengths to which gamers will go to document their activities for the benefit of their peers.

Bay 12 Games' *Dwarf Fortress*, for PC, is not a mainstream title. Lauded for its "randomly-generated worlds (complete with terrain, wildlife and legends), gruesome combat mechanics and ubiquitous alcohol dependency", it is designed and developed by a two-man team, relying on player donations for support. What the game lacks, subjectively, in terms of aesthetic nuance and marketing muscle, however, it more than makes up for with its innovative take on the role-playing genre and its steep learning curve. The game's challenging difficulty and somewhat impenetrable user interface have resulted in a loyal cult following which maintains an exhaustive wiki devoted to the title.

Take, for example, a flowchart which encapsulates one possible approach to attaining self-sufficiency for the player's in-game fort^{iv}. The subject matter might be considered trivial, but the chart is meticulous in its construction and suggests that its creator has thought carefully about the aspect of the game system he wishes to model, and how to present that model to a wider audience. The *Dwarf Fortress* wiki^v currently comprises 1812 articles, a comprehensive system for quality assurance, and a 'Centralized Discussion' area, where consensus is reached – apparently with success – on a range of content-related issues. In many ways, this

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seems the very model of a collaborative academic project: the data are carefully curated, articles are properly debated – peer reviewed, one might say – and the information is presented in a lucid and coherent style.

From Software's notoriously unforgiving *Demon's Souls* (for PlayStation 3) and its spiritual sequel, *Dark Souls* (PlayStation 3 & Xbox 360), are games seemingly designed to invite users to document and share their in-game findings and winning strategies. The games feature scant guidance to new players in the form of tutorials or training levels (common in most modern titles, to introduce players to the game's controls and conventions), precious little exposition and virtually no explanation of the somewhat arcane in-game systems that govern player progression. The games are also widely considered to be some of the best titles that the current generation of gaming hardware has to offer^{vi}. Much of the satisfaction derived from playing these titles is found in overcoming a series of hugely challenging foes, but the games' many fans also revel in the need to consult (and, in some cases, contribute to) the wealth of player-curated data and game world lore that is collated in the titles' dedicated wikis. A *Demon's Souls* or *Dark Souls* player with the relevant wiki open on a laptop next to them as they play may appear to be cheating, but, especially given that the games cannot be paused, this arrangement might be reasonably likened to sitting an open book examination – another 'academic' analogy. *Dark Souls* was chosen as the focus for this project precisely because its more opaque qualities encourage players to consult or contribute to online resources such as wikis, as they seek to make sense of the world presented by the game.

Collaboratively-edited, wiki-based guides now exist for most modern games and, as the examples here illustrate, represent a significant and perhaps overlooked application of a social media platform that warrants closer inspection, particularly if those engaged in creating and consulting the wikis are engaged in a form of learning. Incorporating features that one might expect to find in more academic environs, the best gaming wikis are highly structured, and provide multiple routes through the information, a variety of appropriate media and a lively discussion element. From the point of view of researchers and academics, increasingly expected to engage with a wider audience, it might be that we can learn from these 'non-academic' projects and the means by which they manage the collaborative process. Certainly, the *Dwarf Fortress* wiki users' ability to reach consensus is a quality some academic communities might envy.

1.3 Research questions

This study's primary research question was: given the near-academic quality of much of the work, and the effort required to produce it, what motivates players to contribute to gaming wikis? And, related to this, what can we learn from how players interact and collaborate on gaming wikis that might be applied in more formal learning environments?

While not central to the study, the interviews also provided an opportunity to explore how the collaborative process was managed in the gaming wiki context, and to ask those who contribute to such resources whether they felt there was any academic value to their efforts.

2. Methods

At the core of the project was a series of online interviews with gaming wiki users to determine how they collaborated and learned from the wiki, as well as from one another. Interviewees were drawn from wiki readers and wiki contributors, founders and administrators, in order to gain their unique perspectives. While the majority of questions related to how and what interviewees learned about the game on which the wiki focussed, questions about how the experience of contributing to the wiki affected them were also asked of those who did so.

2.1 One-to-one interview

Interviews conducted with contributors to, and users of, the *Dark Souls* wiki at <http://darksouls.wikia.com> and were carried out in a number of ways. First, a one-to-one interview was carried out, in real-time, using the 'chat' or 'instant messaging' system built into the wiki.

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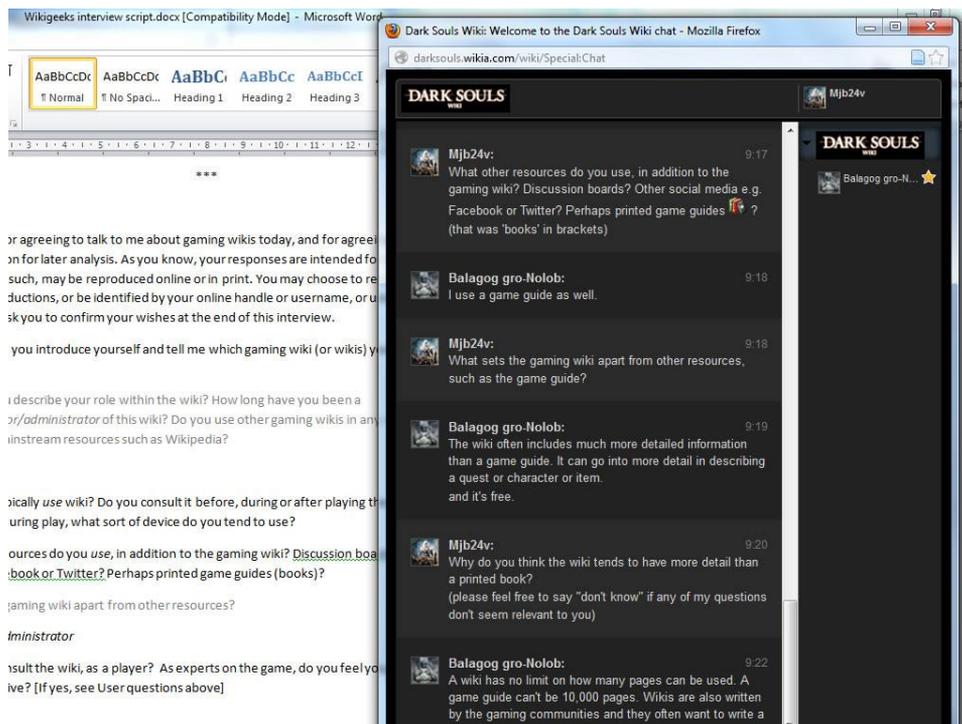


Figure 1: One-to-one interview using the *Dark Souls* wiki's built-in chat system

Aside from finding a mutually suitable time at which to conduct the interview (the interviewee was based in Australia, the interviewer in Scotland), this method of interview was straightforward to administer. Allowing the interviewer to copy and paste in questions from a prepared interview script while still responding to the interviewee's answers and the natural flow of the interview, it also provided an opportunity to hone the questions to be used in subsequent interviews. In addition, it provided the interviewer with a ready-made transcript.

2.2 Group interviews

The chat-based one-to-one interview was followed by a more novel group interview, conducted again within the confines of the wiki in question, but this time using its blogging feature. In this scenario, the interviewer posted small groups of questions as blog entries and asked the wiki's most active contributors and administrators to answer the questions by leaving comments beneath the relevant blog entry. This approach permitted participants to answer in their own time and, not unlike how a focus group can generate additional answers through respondents' interaction, allowed interviewees to reflect on one another's responses. As with the chat-based

approach, blog posts and comment-based responses had the advantage of resulting in a ready-made transcript. While one might have hoped for some wider participation (only one member of the wiki community with whom the interviewer had not previously engaged came forward and left a comment), the asynchronous group interview approach was arguably the most useful. On reflection, a degree of good fortune may have prevailed with regards the engagement of the *Dark Souls* wiki contributors, who remained committed to the interview process until its completion. While providing respondents with the flexibility to respond in their own time had potential benefits for engagement, the converse is also true, as no participant is obliged to complete the interview. Indeed, attempts to conduct a similar interview with another *Dark Souls* wiki were ultimately unfruitful, and a pre-arranged Skype interview failed to materialise.

Such problems are common to research methods that involve remote participants, particularly where no incentive to participate – such as cash reward or voucher – is offered. Another issue that must affect online research is that of knowing with whom you are conversing. For the purposes of this project, for example, ethical approval was sought from the appropriate ethics committee at the researcher's host institution. The ethics application stated that no participant would be under the age of 18, and that all participants would be provided with a digital copy of an agreed consent form. The consent form, which detailed the purposes for which participant responses could be used and who to contact in the event that some issue should arise, was posted online, and linked to from the blog or chat page, as appropriate. However, it is difficult to ascertain that respondents consulted the form or, if they did so, fully understood its implications. Further, it is also impossible to know with certainty that respondents are over 18, which is somewhat more problematic. Both of these issues are exacerbated by the open, online nature of a blog-based interview: any registered wiki user can comment on the questions posed, and there is no guarantee that they have even viewed the initial post which contained the consent form link. Certainly, one unidentified commenter actually stated in one of their posts that they were in high school, so their responses cannot be used directly in any subsequent accounts of the project. There is a solution to this problem, and that is to seek ethical approval for all age groups, but this can be a more difficult and time-consuming process, depending upon the nature of the relevant institution's ethics policies. More difficult to address, however, is the issue of knowing with whom you are engaging: without proof of identity, it is impossible to determine with any confidence just who your respondents are.

2.3 In-game interview

A third research method was also trialled, interviewing a wiki user within a game of their choosing. The interviewee opted to be interviewed via his PlayStation 3 (PS3) console, and suggested Media Molecule's *LittleBigPlanet 2* as the title to play as we conducted our interview, largely because the game was available to both interviewer and interviewee through Sony's PlayStation Plus subscription scheme. The interviewer had access to a digital recording device, designed specifically to capture the audio and video output from a games console such as the PS3.

However, the process of recording the interview – a necessary step for later transcription, especially as both interviewer and interviewee were expecting to play the game as the interview progressed – was not straightforward. First, when engaged in in-game audio chat, only the sound from the game itself (soundtrack and sound effects, which had to be turned down in the game's settings to ensure the interview conversation was audible) and the sound of the remote player's voice are actually played through the games console's audio output. In order to eliminate unnecessary feedback, the local player's voice – that of the interviewer, in this instance – is not played back through their game. Therefore, the interviewer's questions and prompts were not present in the audio mix that was being captured, requiring that it be recorded separately using a digital audio recorder and subsequently dubbed over the rest of the interview. While this approach was more time consuming than anticipated, the end results were acceptable^{vii}. A second issue lay with the challenge of playing the game while attempting to conduct an interview. It was anticipated that the unusual circumstances might affect the interview, but one of the motivations for conducting it in this way was to ascertain what these effects might be. On the one hand, it was hypothesised that the interviewee, engrossed in the game, might enter a 'flow' state (Csikszentmihalyi, 1991) and effortlessly progress through the game while providing honest and insightful answers to the questions posed. However, the opposite outcome was observed: the game was no more than a distraction. A number of important factors appear to have been at work here. First, neither the interviewer nor interviewee was familiar with the chosen game, so both participants' ability to concentrate on the interview was diminished as they simultaneously attempted to fathom the game's mechanics. However, the end result was that the game suffered more than the interview: at times, particularly in the second half of the interview,

game play virtually ceased while interviewer and interviewee instead focussed on asking and answering questions.

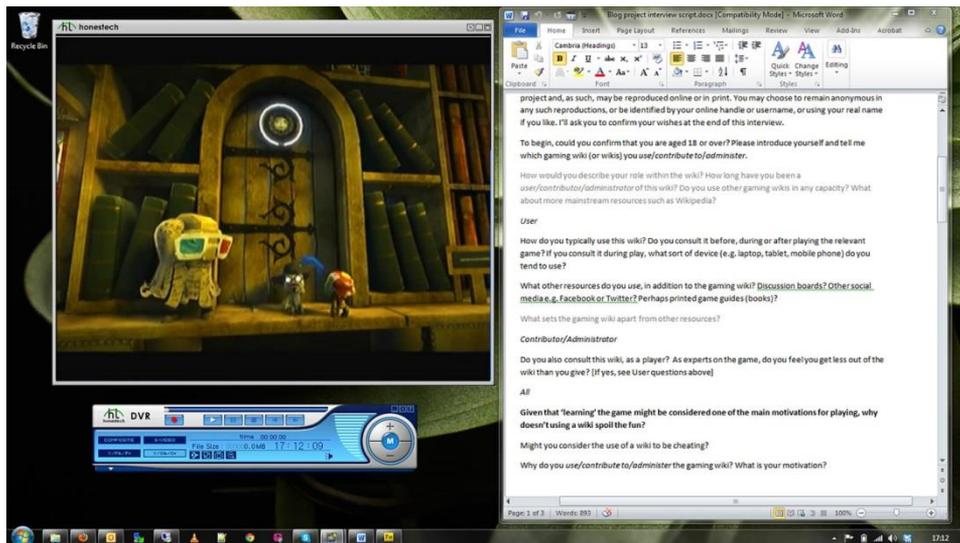


Figure 2: Capturing an in-game interview. *LittleBigPlanet 2* imagery is owned by SCE Worldwide Studios/Media Molecule.

Second, the game was selected for practical reasons alone – it offered voice-based chat, and both parties could access it at the time of the interview – rather than any attempt to align the game being played with the questions being asked. The obvious choice of game might have been *Dark Souls*, as the interview touched upon that title on numerous occasions, and it was the focus of the other wiki-based interviews. However, in keeping with that game’s opaque constructs, it does not permit voice-based communication, and is not a multiplayer game in the conventional sense of allowing one to play with one’s specified friends. Even if the interviewer had contrived to ‘summon’ the interviewee to battle collaboratively through the game – and this process is difficult to control in terms of who may be summoned – players may communicate solely through a small set of physical gestures. Other issues with the in-game interview process, such as the interviewer being forced to play the game through a small window on the laptop being used to record the footage, rather than on a conventional TV screen, and the relatively low quality of the video captured by the device (standard definition, 4:3 aspect ratio) were not, on reflection, critical. Technical challenges related primarily to the recording of footage from a games console, in this case a PS3. Recording footage of games played on a Windows PC, for example,

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can be achieved without the need for additional hardware, using a software solution such as Fraps^{viii}.

While the in-game interview process described here was not entirely successful, a serviceable interview was conducted despite the game's distractions. Further, the approach may not be without merit if the questions asked are more closely associated with the game being played. Drawing on the think aloud protocols used by researchers in the fields of psychology and human-computer interaction (Lewis & Rieman, 1993), interviewees might be asked to describe and explain their in-game actions, to help understand the cognitive and learning processes at work. However, asking questions about an almost unrelated ancillary resource, such as a wiki, appears less useful.

3. Results & Discussion

3.1 The motivation to contribute to gaming wikis

One of the questions this study sought to answer was what motivates certain players to voluntarily contribute material to wikis in the first place, especially considering the academic quality of the much of the work: could we learn anything from how players interact and collaborate on gaming wikis that might be applied to more academic endeavours? Interview questions were designed to uncover the motivational factors that have inspired those who contribute to gaming resources such as the *Dark Souls* wiki at wikia.com to devote time and effort to these sites.

Broadly speaking, the psychology and education literature refer to two forms of motivation: intrinsic motivation, where the task at hand provides its own reward, and extrinsic, where the motivation is driven by the desire for external rewards such as money or prizes, or recognition from one's peers (Ryan & Deci, 2000). For the most part, as these interview excerpts illustrate, the motivation described by these more dedicated wiki contributors is almost entirely intrinsic: they do it for the love of the game itself, and out of a desire to support the community that has grown up around it.

The first interview to be conducted was the chat-based one-to-one interview with a gaming wiki contributor and admin, Balagog gro-Nolob (also known as 'The Gourmet', in reference to a character featured in Bethesda Softworks' *Skyrim*), from darksouls.wikia.com.

The primary focus of the interview was on gathering Balagog's opinions on the use of the wiki, and initial impressions were that those involved in

running a video game wiki – at least, those involved in the Dark Souls Wiki at wikia.com – are thoughtful and dedicated in their approach. Standards are of paramount importance to these wiki contributors, not just in terms of the completeness and accuracy of the information contained within the wiki, but also with respect to grammar and writing style. Indeed, Balagog indicated that his work on the Dark Souls Wiki had improved his writing ability, as well as encouraging him to learn about more technical aspects of web authoring, such as Cascading Style Sheets (CSS).

The blog-based asynchronous group interview confirmed the emphasis placed on standards. Wiki contributor Brainwasher5 started work on the wikia.com Dark Souls wiki after discovering that he could not correct erroneous information on other wikis devoted to the game:

“I came across this wiki, which was at the time even more woefully undeveloped than it is now. But the only important thing for me was that I could edit it. Dark Souls is a very meticulously crafted game, so it only makes sense that all of its information sources be held up to the same standards, and that’s why I’m here.”

In short, Brainwasher5’s motivation was “to help make this wiki the most accurate and concise information source of this game on the internet”. His love of the game itself is a clear driving force behind these endeavours, as this exchange – which includes a sly dig at the oeuvre of film director Michael Bay – describes:

“One reason I contribute to Dark Souls wiki that I hadn’t brought up before is the fact that there is so much in the game (both lore-wise and gameplay-wise) that you can miss at first glance. This is not a Michael Bay film; things are not shoved into your face. Dark Souls is much more coy when it comes to facts and lore, and it’d be a shame if busier or less attentive players play through this amazing game and miss stuff. So I like to think that when I’m writing here, particularly about elusive or esoteric lore or item facts, I am helping enlighten fellow gamers regarding this jewel of a game.”

Fellow contributor Ltpliers agrees that the quality of the game is what motivates him to devote time to the wiki: “I contribute to this wiki simply because I enjoy the game and, with the information I have, I feel that it’s

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good to give back to the community for such a great game.” Ltpliers continues:

“A wiki I find is a very convenient source of information that saves time and the more extensive we can make our wiki and the more convenient we can sort it, the better off it will be for standard users to allow them to enjoy the game as much as we have.”

So, while Ltpliers doesn’t consider himself an expert on the game, he does introduce the notion of the “standard user”, highlighting the imbalance in wiki user behaviour: a very small minority contribute to and maintain these wikis, while the standard users reap the benefits – a phenomenon sometimes referred to as the ‘1% rule’ (Arthur, 2006) or ‘participation inequality’ (Nielsen, 2006). Ltpliers understandably considers his contributions to be of value to the wiki:

“I feel that writing up the wikia is just as important as using it as not only am I learning information myself but also giving back to the community for such an excellent game. Any time I have some free time I try to get some information updated or try to fix up problems or formatting that we may have missed so that others may find information more conveniently and more thoroughly written.”

When asked to describe his motivation for contributing to the wiki, interviewee Balagog gro-Nolob states simply “to tell the absolute truth, I don’t really know. For some reason I just enjoy doing it.” His motivation, while simply stated, is also clearly intrinsic. By contrast, the in-game interviewee, a user of gaming wikis but not a contributor, found it somewhat “baffling” that anyone would sit down with a game and attempt to determine its underlying logic and statistical characteristics. He could only assume that, in lieu of more tangible remuneration, such wiki contributors were motivated by the acquisition of “community kudos”. Such an assumption suggests that more extrinsic motivational forces are at work. However, evidence gathered directly from wiki contributors does not indicate that the extrinsic reward of receiving admiration from one’s peers is actually a motivating factor.

Returning to those who choose to contribute to gaming wikis, Brainwasher5 offered some final thoughts which underline the general consensus (among his fellow contributors) that working on a wiki – even

one devoted to something as apparently trivial as a video game – is a worthwhile experience:

“I think that editing wikis can be a very rewarding experience. Even if you don’t learn anything yourself, enlightening others is, to me, highly fulfilling. Hours spent editing and creating pages on this wiki are worth it, as long as people read them and learn something new. I highly recommend ANYONE, not just gamers, to try out editing a wiki and see what they can do to improve it.”

3.2 Academic engagement with gaming wikis

Brainwasher5’s comments hint at the learning potential that working on a wiki, even one devoted to a video game, can offer. While none of the interviewees could recall contributing to a wiki in an academic context such as school or college, such practice is common (Engstrom & Jewett, 2005; Wheeler et al, 2008). However, the collaborative nature of wikis makes attributing work, and therefore credit or grades, to individuals’ contributions problematic (Trentin, 2009). A solution suggested by these interviews might be to rely on peer assessment; a technique which, if administered appropriately, can have positive formative effects on the students involved (Topping, 1998). Driven by their interest in the topic and a desire for high standards, the wiki contributors described here – from the formal peer discussion area used by those who administer the *Dwarf Fortress* wiki to the less formal but by no means less rigorous approaches taken by those on the *Dark Souls* wiki – are effectively engaged in peer assessment. In fact, peer assessment, or peer review, is central to the quality control processes on which these wikis rely. On the *Dark Souls* wiki, for example, the page relating to the Knight Artorias^{ix} – one of the game’s ‘bosses’ – has been composed by means of over 100 edits by 25 contributors (including anonymous users, identified only by IP address)^x. The page also features over 200 comments which, in addition to musings on the Artorias character and his backstory, also comprise suggestions on how the page might be improved: what the title of the article should be, which sections need further work, and whether aspects of the character’s lore are accurate. The *Dwarf Fortress* wiki’s ‘Centralized Discussion’ area^{xi} is organised into three areas of peer discussion: ‘Content’, ‘Administration’ and ‘Article-specific’. Discussions which have been inactive for more than one month are automatically archived, but remain available for consultation. Under ‘Content’, for example, there are sections that document the discussion around topics

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such as redundancy, article consolidation, and the quality labelling system used by authors' peers to review articles^{xii}.

Supporting evidence for positive academic engagement with social media can also be found in the existing literature. Achterman (2006) identifies a number of features of wikis that make their use in education appealing. These features include the ease with which student contributors may create and edit articles, and the in-built facilities for collaboration, reflection and metacognition through comment and discussion. The study here demonstrates that these features are just as important even when learning outcomes are not expressly identified. Contributors to the *Dark Souls* wiki, for example, rely upon these facilities in order to produce a better standard of work: that the work is not linked to their formal studies is irrelevant – they are engaging in 'academic' activity, regardless.

That the work carried out by contributors to gaming wikis is self-regulated is another important consideration for educators. Social media or 'web 2.0' tools such as wikis – including gaming wikis – might be considered personal learning environments (Dabbagh & Kitsantas, 2012), in which learners may create, organise, and share content. A wiki provides scaffolding for the learning experience (Norton & Hathaway, 2008), allowing the contributor, or learner, to carry out their work with autonomy. However, somewhat contrary to the prevailing notion in the literature that a teacher must play some part in the construction of such scaffolding and the development of a collaborative ethos (Rick & Guzdia, 2006), video game wikis are entirely self-regulated; the requisite collaboration is a spontaneous outcome of a shared interest in the subject matter.

3.3 A learning “meta-game”

Another emerging aspect of video game wikis with particular implications for game-based learning was that of the meta-game which such wikis facilitate. This idea was perhaps hinted at in the wiki-based interviews – these respondents clearly enjoyed their work on the wiki, which, for them, was an extension of the game itself – but it was during the in-game interview that the term “meta-game” was coined. The in-game interviewee suggested that the associated processes of documenting and consulting online resources such as wikis and Facebook groups made playing the games a “collective experience” or multiplayer meta-game. Rather than spoiling the game, consulting such wikis could “enhance players' enjoyment”, as they “appeal to the ‘completionist’”. In common with

those who took part in the group interview, the in-game respondent reported that he consulted gaming wikis before, during and after game play to find out more about aspects of the game that might otherwise elude him. However, the interviewee did concede that it might seem counter-intuitive to derive pleasure from learning about a game through a “separate text” and that one must tread carefully when consulting such resources for help with more story-driven games, as the story itself may be spoiled by “reading ahead”. Games, he stated, support a multimodal approach to understanding and enjoying them, in much the same way that one might wish to read reviews of a film before or after watching it, or view a documentary about the making of the film. Continuing with the film analogy, the respondent noted that there were basic, functional requirements for enjoying a film (ensure you are facing the screen, that you can hear what is being said, that subtitles are switched on, if required, etc.) but that these functional requirements, and the necessary understanding of the underlying systems they imply, were much more complicated for interactive entertainment such as modern video games wherein control schemes, rules, conventions and even software bugs must be understood before the player can advance. The learning meta-game is about working to understand these systems and requirements, collaboratively.

3.4 Limitations of this study and further work

While small in scope, the project outlined here elicited a range of interesting responses from a limited number of wiki contributors, primarily related to the game *Dark Souls*. However, a more broad analysis of the collaborative forces at work in gaming wikis might be carried out by means of a larger study, comprising interviewees from a wider range of wiki communities. The *Dark Souls* site was chosen as the focus for this work, as noted above, due to the game’s apparent reliance on an associated wiki: further studies should consider wikis related to games from a range of genres and platforms to ascertain if the high quality of contributions and adherence to standards is replicated across other titles. Further, wikis relating to interests and pursuits other than video games must be examined: it is likely that the intrinsically motivated and self-regulated efforts that games elicit may be replicated in other communities of practice.

Another limitation of the study was in the implementation of the in-game interview, documented here in order to share an account of less successful practice. The choice of game in which to conduct the interview was left to

the interviewee, and constrained by certain practicalities, detailed above. The interviewee chose a game which was unfamiliar, and, as a result, the context in which the interview was conducted was not entirely suitable for this study, which otherwise focused on activity motivated by an intrinsic interest in a particular game. As an experiment in the use of novel interview techniques, and the practicalities of conducting an interview via a games console, the endeavor was of some value. However, any further work involving in-game interviews should be embedded within a game in which the interviewee is personally invested.

In terms of further work, a logical next step would be to pilot a gaming wiki-based project within an academic context; that is, to attempt to determine the learning outcomes that working collaboratively on a game-related wiki might produce in a group of students, in a more formal learning environment.

4. Conclusions

The intersection between games and social media provides a rich seam for research. Games are important, or, at least, significant, to those who play them, and they are inherently social: it could be argued that it is their sociability that makes them ideal conduits for collaborative learning. Social media is increasingly integrated into modern video games, in many different ways, from the simple posting of high scores on a player's Facebook page, to the complex collaborative meta-game that is played out around popular games on social media platforms such as wikis. In the case of some titles, such as *Dark Souls*, learning from one's fellow players is very much part of the game.

The work here was founded on the premise that through studying the means by which non-academic users interact with social media such as wikis, students, educators and researchers can obtain a fresh perspective on their own academic activities: fastidiously maintained gaming wikis and their social media adjuncts (tweets, Facebook posts, discussion groups, and so on) currently thrive while more academic efforts to engage with social media are often hampered by concerns that such engagement might have a detrimental effect on how educators are perceived (Mazer et al, 2009) or that the privacy of students or the integrity of their work might somehow be jeopardised (Moran et al, 2011). This study suggests that while such concerns may be valid, there is tremendous potential for educators to engage with their students via social media tools such as wikis, under suitable circumstances. Achterman (2006) also acknowledges

the privacy concerns that educators, and learners, may have about working in a web-based environment as suggests that the wiki software be installed on a school server, behind the institutional firewall. While this approach requires some resource and technical expertise, it offers an effective solution to the problems of privacy, and security.

What motivates gaming wiki contributors is a love of the topic, while wiki users and those who contribute to more private gaming resources, such as Facebook groups, derive enjoyment from the meta-game that these social interactions comprise. If educators could harness or emulate some of the enthusiasm players possess for documenting, curating and discussing video games on social media, opportunities for real engagement in collaborative academic projects would surely arise. Such projects, even if their topic, such as video games, is one not yet routinely taught in schools and colleges might see students work to improve their writing skills, hone their ability to critically analyse one another's contributions, and collaborate with their peers to produce better work. The implication for educators is, perhaps, that by allowing students the autonomy to work with social media in their own way there is much they can learn about working collaboratively, while immersed in a tangible piece of work that is relevant to them.

However, wikis alone – even well-maintained, content-rich video game wikis – do not elicit contributions from the masses to the extent that other forms of social media can. Educators must be cognizant of the effects of participation inequality: a small number of key contributors effectively run such wikis, with others choosing to engage in game-related discussions elsewhere, such as in private Facebook groups. Others, still, may choose not to discuss even their favourite games with their peers. Video game wikis, then, offer an interesting insight into how suitably motivated players voluntarily commit to collaborative, high-quality work that might be considered academic in nature. Nevertheless, despite the popular appeal of the topic being worked upon here, there is an imbalance in players' engagement with such wikis: for educators seeking to emulate the learning meta-game that surrounds video game wikis, a broader approach, encompassing a range of alternative opportunities to contribute and collaborate – such as private discussion groups or forums for personal reflection – should be considered.

Acknowledgments

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References

Achterman, D. (2006) 'Beyond Wikipedia', *Teacher Librarian*, Vol. 34 No. 2, pp.19–22.

Arthur, C. (2006). 'What is the 1% rule?' *The Guardian* [online] 20 July. <http://www.theguardian.com/technology/2006/jul/20/guardianweeklytechnologysection2> (Accessed 30 July 2013).

Barr, M. (2013). 'Computer games and learning: the current state of play', in Bigl, B. and Stoppe, S. (Eds.), *Playing with Virtuality: Theories and Methods of Computer Game Studies*, Peter Lang GmbH, pp.229–312.

Chen, S. (2009). 'The Social Network Game Boom' *Gamasutra* [online] April 29 http://www.gamasutra.com/view/feature/132400/the_social_network_game_boom.php (Accessed 24 July 2013).

Csikszentmihalyi, M. (1991) *Flow: The Psychology of Optimal Experience* (Reprint), HarperPerennial.

Dabbagh, N., and Kitsantas, A. (2012) 'Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning', *The Internet and Higher Education*, Vol. 15 No.1, pp.3–8.

Engstrom, M., and Jewett, D. (2005) 'Collaborative learning the wiki way', *TechTrends*, Vol. 49 No. 6, pp.12–15.

Entertainment Software Association. (2013). *Essential facts about the computer and video game industry* [online]. ESA, London.

http://www.theesa.com/facts/pdfs/ESA_EF_2013.pdf (Accessed 16 July 2013).

Futter, M. (2013) 'Xbox Live Subscribers Number Over 46 Million' *Game Informer* [online].
<http://www.gameinformer.com/b/news/archive/2013/04/18/xbox-live-subscribers-number-over-46-million.aspx> (Accessed 18 April 2013).

Gee, J. P. (2008) *What Video Games Have to Teach Us About Learning and Literacy: Revised and Updated Edition*. Palgrave Macmillan.

GFK Chart-Track. (2011). *COD Almighty!* [online] 14 November
<http://www.chart-track.co.uk/?i=1215&s=1111> (Accessed 20 January 2012).

Goddard, L. (2012). 'Facebook gamers now number 235 million, 15 percent more than last year' *The Verge* [online] 14 April.
<http://www.theverge.com/2012/8/14/3241577/facebook-games-app-center-statistics> (Accessed 24 July 2013).

Goldhill, O. (2013) 'Average video game fan is 35 years old'. *The Telegraph* [online] 4 July.
<http://www.telegraph.co.uk/technology/news/10159917/Average-video-game-fan-is-35-years-old.html> (Accessed 7 July 2013).

Interactive Software Federation of Europe. (2010). *Industry Facts* [online]. <http://www.isfe.eu/industry-facts/facts> (Accessed 21 January 2012).

Jenkins, H. (2006). *Convergence Culture: Where Old and New Media Collide*, New York University Press.

Lewis, C., and Rieman, J. (1993) *Task-Centered User Interface Design: A Practical Introduction* <http://hcibib.org/tcuid/index.html> (Accessed 30 July 2013)

Mazer, J. P., Murphy, R. E., and Simonds, C. J. (2009) 'The effects of teacher self-disclosure via Facebook on teacher credibility', *Learning, Media and Technology*, Vol. 34 No. 2, pp.175–183.

Learning through collaboration: video game wikis

Moran, M., Seaman, J., & Tinti-Kane, H. (2011) 'Teaching, Learning, and Sharing: How Today's Higher Education Faculty Use Social Media', *Babson Survey Research Group*, April 2011 [online] <http://eric.ed.gov/?id=ED535130> (accessed 12 August 2013).

Nielsen, J. (2006) 'Participation Inequality: Encouraging More Users to Contribute' *Jakob Nielsen's Alertbox* [online] 9 October. <http://www.nngroup.com/articles/participation-inequality/> (Accessed 30 July 2013)

Norton, P., and Hathaway, D. (2008) 'On its way to K-12 classrooms, web 2.0 goes to graduate school', *Computers in the Schools*, Vol. 25, No. 3-4, pp.163–180.

Official Call of Duty: Modern Warfare 3 - Facebook and ELITE Integration Behind The Scenes Video. [online] <http://www.youtube.com/watch?v=wzvM0lvIXrY> (Accessed 24 July 2013)

Rick, J., and Guzdial, M. (2006) 'Situating CoWeb: a scholarship of application', *International Journal of Computer-Supported Collaborative Learning*, Vol. 1 No. 1, pp.89–115.

Ryan, R. M., and Deci, E. L. (2000) 'Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions', *Contemporary Educational Psychology*, Vol. 25 No. 1, pp.54–67.

Squire, K. (2011). *Video Games and Learning: Teaching Participatory Culture in the Digital Age*. Teachers' College Press.

Topping, K. (1998) 'Peer Assessment Between Students in Colleges and Universities' *Review of Educational Research*, Vol. 68 No. 3, pp.249–276.

Trentin, G. (2009) 'Using a wiki to evaluate individual contribution to a collaborative learning project' *Journal of Computer Assisted Learning*, Vol. 25, No. 1, pp.43–55.

Wheeler, S., Yeomans, P. and Wheeler, D. (2008) 'The good, the bad and the wiki: Evaluating student-generated content for collaborative learning' *British Journal of Educational Technology*, Vol. 39, No. 6, pp.987–995.

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- ⁱ <http://uk.playstation.com/psn/>
- ⁱⁱ <http://www.xbox.com/en-GB/Live>
- ⁱⁱⁱ <http://store.steampowered.com/about/>
- ^{iv} <http://dwarffortresswiki.org/images/e/e6/FlowchartDF.png>
- ^v <http://dwarffortresswiki.org>, accessed 30 July, 2013
- ^{vi} Both titles currently hold an 89% rating on review aggregation site, Metacritic. See <http://www.metacritic.com/game/playstation-3/demons-souls> and <http://www.metacritic.com/game/playstation-3/dark-souls>
- ^{vii} See <http://www.youtube.com/watch?v=NQqwlvAPEXQ> for an excerpt of the in-game interview
- ^{viii} <http://www.fraps.com/>
- ^{ix} http://darksouls.wikia.com/wiki/Knight_Artorias
- ^x http://darksouls.wikia.com/wiki/Knight_Artorias?action=history
- ^{xi} http://dwarffortresswiki.org/index.php/Centralized_Discussion
- ^{xii} http://dwarffortresswiki.org/index.php/Dwarf_Fortress_Wiki_talk:Quality