

*Learning in virtual worlds: using Communities of Practice to
explain how people learn from play*

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Abstract

Although there is interest in the educational potential of online multiplayer games and virtual worlds, there is still little evidence to explain specifically what and how people learn from these environments. This paper addresses this issue by exploring the experiences of couples that play *World of Warcraft* together. Learning outcomes were identified (involving the management of ludic, social and material resources) along with learning processes, which followed Wenger's model of participation in Communities of Practice. Comparing this with existing literature suggests that productive comparisons can be drawn with the experiences of distance education students and the social pressures that affect their participation.

Introduction

Although there is great interest in the potential that computer games have in educational settings (e.g. McFarlane, Sparrowhawk & Heald, 2002), and their relevance to learning more generally (e.g. Gee, 2003), there has been relatively little in the way of detailed accounts of what is actually learnt when people play (Squire, 2002), and still less that relates such learning to formal education.

In this paper, a study is described that explores how people learn when they play the Massively Multiplayer Online Role Playing Game (MMORPG), *World of Warcraft*. Detailed, qualitative research was undertaken with couples to explore their play, adopting a social perspective on learning. The paper concludes with a discussion that relates this to formal curricula and considers the implications for distance learning.

Background

Researchers have long been interested in games and learning. There is, for example, a long tradition of work within psychology exploring what makes games motivating, and relating this to learning (e.g. Malone & Lepper, 1987). Games have recently featured in mainstream educational policy (e.g. DfES, 2005), and it has been suggested (e.g. Gee, 2003) that they provide a model that should inform educational practice more generally.

However, research exploring how games can be used in formal education suggests that the potential value of games to support learning is not so easy to realise.

McFarlane *et al.* (2002: 16), for example, argued that “the greatest obstacle to integrating games into the curriculum is the mismatch between the skills and knowledge developed in games, and those recognised explicitly within the school

system”. Mitchell & Savill-Smith (2004) noted that although games have been used to support various kinds of learning (e.g. recall of content, computer literacy, strategic skills), such uses were often problematic, being complicated by the need to integrate games into existing educational contexts. Furthermore, games specifically designed to be educational were “typically disliked” (p44) as well as being expensive to produce.

Until recently, research on the use of games in education tended to focus on ‘stand alone’ or single player games. Such games can to some extent be assessed in terms of their content coverage or instructional design processes, and evaluated for their ‘fit’ with a given curriculum (e.g. Kirriemiur, 2002). Gaming, however, is generally a social activity, and this is even more apparent when we move from a consideration of single player games to a focus on multiplayer, online games. Viewing games from a social perspective opens the possibility of understanding learning as a social achievement, not just a process of content acquisition or skills development (Squire, 2002).

In this study we focus on a particular genre of online, multiplayer game: a Massively Multiplayer Online Role-Playing Game. MMORPGs incorporate structural elements drawn from table-top Role-Playing Games (*Dungeons & Dragons* being the classic example). Play takes place in an expansive and persistent graphically rendered world. Players form teams and guilds, undertake group missions, meet in banks and auction houses, chat, congregate in virtual cities and engage in different modes of play, which involve engaging in various forms of collaboration and competition.

As Squire noted (2002), socially situated accounts of actual learning in games (as opposed to what they might, potentially, help people to learn) have been lacking, partly because the topic is so complex. How, indeed, should the ‘game’ should be

understood - is it limited to the rules, or the player's interactions with these rules? Does it include other players, and all possible interactions, and extend to out-of-game related activities and associated materials such as fan forums? Such questions have methodological implications, and hint at the ambiguities that educators working with virtual worlds might face (Carr, Oliver and Burn, 2008).

Work in this area is beginning to emerge, particularly in relation to the learning and mentoring that takes place within player 'guilds' and online clans (see Steinkuehler 2005; Galarneau 2005). However, it is interesting to note that the research emerging from a digital game studies perspective, including much of the work cited thus far, is rarely utilised by educators researching the pedagogic potentials of virtual worlds such as *Second Life*. This study is informed by and attempts to speak to both of these communities.

Methodology

The purpose of this study was to explore how people learned in such virtual worlds in general. It was decided that focusing on a MMORPG such as World of Warcraft would be practical and offer a rich opportunity to study learning. MMORPGs are games; they have rules and goals, and particular forms of progression. Expertise in a virtual world such as Second Life is more dispersed, because the range of activities is that much greater (encompassing building, playing, scripting, creating machinima or socialising, for instance). Each of these activities would involve particular forms of expertise. The 'curriculum' proposed by World of Warcraft is more specified.

It was important to approach learning practices in this game without divorcing such phenomena from the real-world contexts in which play takes place. In order to study

players' accounts of learning and the links between their play and other aspects of their social lives, we sought participants who would interact with each other both in the context of the game and outside of it. To this end, we recruited couples that play together in the virtual environment of *World of Warcraft*, while sharing real space. This decision was taken to manage the potential complexity of studying social settings: couples were the simplest stable social formation that we could identify who would interact both in the context of the game and outside of this too.

Interviews were conducted with five couples. These were theoretically sampled, to maximise diversity in players' accounts. (As with any theoretically sampled study, this means that no claims can be made about prevalence or typicality.) Players were recruited through online guilds and real-world social networks. The first two sets of participants were sampled for convenience (two heterosexual couples); the rest were invited to participate in order to broaden this sample (one couple chosen because they shared a single account, one where a partner had chosen to stop playing and one mother-son pairing). All participants were adults, and conventional ethical procedures to ensure informed consent were followed, as specified in the British Educational Research Association guidelines.

The couples were interviewed in the game world at a location of their choosing. The interviews, which were semi-structured, were chat-logged and each lasted 60-90 minutes.

The resulting transcripts were split into self-contained units (typically a single statement, or a question and answer, or a short exchange) and each was categorised thematically. The initial categories were then jointly reviewed in order to consolidate and refine them, cross-checking them with the source transcripts to ensure their

relevance and coherence. At this stage, the categories included references to topics such as, who started first; self-assessments of competence; forms of help; guilds; affect; domestic space and assets; 'alts' (multiple characters) and so on. These were then reviewed to develop a single category that might provide an overview or explanation of the process.

It should be noted that although this approach was informed by 'grounded theory' processes as described in Glaser & Strauss (1967), it does not share their positivistic stance on the status of the model that has been developed. Instead it accords more closely with the position taken by Charmaz (2000), who recognises the central role of the researcher in shaping the data collected and making sense of it. What is produced therefore is seen as a socially constructed model, based on personal narratives, rather than an objective account of an independent reality.

Reviewing the categories that emerged in this case led to 'management of resources' being selected as a general marker of learning. As players moved towards greater competence, they identified and leveraged an increasingly complex array of in-game resources, while also negotiating real-world resources and demands. To consider this framework in greater detail, 'management of resources' was subdivided into three categories: ludic (concerning the skills, knowledge and practices of game-play), social and material (concerning physical resources such as the embodied setting for play) (see Carr and Oliver, 2008).

Using this explanation of learning, the transcripts were re-reviewed in order to identify indications of competence being developed. Excerpts that addressed this were identified and gathered, revealing a consistent chronology for all those who participated in the study, moving towards greater competence and responsibility in

managing different kinds of resources. This chronology bore a striking resemblance to Wenger's model (1998) of legitimate participation, particularly the idea of risk being an indication of 'full' participation in a community of practice and the notion of the nexus of multi-membership, which describes how individuals create their identity through managing the competing demands of the various communities with which they identify, even if these are competing. For this reason, rather than develop new concepts that duplicated a recognised theoretical position, we adopted Wenger's terminology to describe the process, as presented below.

Theoretical framing

Wenger's account (1989) of Communities of Practice provided a number of concepts that were useful in explaining participants' interactions in ways that are socially constructed and socially structured. For this study, four concepts proved particularly relevant.

First, there is the notion of legitimate peripheral participation (p100). This kind of activity comprises of three parts. An activity counts as legitimate peripheral participation in the practices of a community if it is:

1. Legitimate; in other words, it is of genuine relevance to the community.
2. Peripheral; which may mean that it is less risky, less intense or more supported participation than is normally the case.
3. Participation; so that it involves interaction with community members.

Activities that do not involve all three elements may be experienced as a form of exclusion, rather than inclusion.

Secondly, there is the framing of learning as 'coming to participate in a community' (p95). Partly, this indicates that successful participation involves ongoing efforts to

learn. More directly relevant here, however, is the idea of a learning trajectory (p153): people do not just appear inside communities, but start off excluded, and then work to become members. Wenger describes five types of trajectory (p154): peripheral trajectories (which provide community access but never lead to full membership), inbound trajectories (which move from peripheral participation to identification with the community), insider trajectories (the ongoing renegotiation of identity within a community), boundary trajectories (involving participation in more than one community, which may lead to links being established or practices shared) and outbound trajectories (which involve leaving one identity behind in order to take up another).

Thirdly, there is the idea that such trajectories of participation may be struggles rather than smooth progressions. Wenger describes generational encounters (p157), in which 'old timers' find themselves renegotiating identities with newcomers in a way that may lead to conflict or continuity, and which can even fracture communities. Even within stable communities, Wenger notes that there may be conflict and tension; this is a consequence of the ongoing process of maintaining coherence, which necessarily involves excluding non-members and holding members to account for their actions.

Finally, linked to the notion of a boundary trajectory, there is the idea of a nexus of multi-membership. Wenger asserts (p158) that "the very notion of identity entails

1. An experience of multimembership
2. The work of reconciliation necessary to maintain one identity across boundaries."

In relation to this 'landscape' of communities, the simultaneous membership of different groups is framed as inevitable but complicated. Each community holds its members to account, expecting particular kinds of commitment and behaviour; thus

overlapping communities may come into conflict. This can lead to difficulties, such as the feeling that one's identity is fragmented. Work is often required to reconcile different practices, and to maintain a coherent identity. This work might be short-term, leading to resolution, or it may be an ongoing struggle.

Taken together, these ideas provided a useful way of analysing the social process of learning described by participants – specifically, how they learnt to become members of communities, and how they learnt to integrate this with other parts of their lives.

Findings

Developing participation

Understanding full participation in terms of responsibilities was helpful in revealing the structured way in which participants in this study came to play *World of Warcraft*. A pattern emerged from the interviews which, whilst not universal, was typical.

First contact with the game came from one of two sources: either prior knowledge of similar games (e.g. having played another MMORPG) or by being introduced to it by someone already known to the participant (typically, in this case, a partner). Several participants described having introduced other people to the game; playing was spread by personal recommendation.

I started with a group of people from work. One of them was a veteran of other MMORPG games and had been following WoW from when it was announced.

Well I can't answer for [partner's character] as she is out atm but as for myself, I've always enjoyed playing RPG's. The 1st online RPG I played was Guild Wars which a friend had a spare account for. When I met [my partner] she introduced me to WoW. [Interviewer: So your partner was playing first?] Yes, I believe a friend or ex-partner of hers introduced her to it. [...] She described it to me, telling me what it was like ie the Auction House set-up, quests etc etc. Then she let me have a go on her account at creating a new character so I could see for myself what it was like.

Initially, play involved little or no commitment. A common pattern involved people watching a partner play, and then progressing to create their own character on their partner's account. (This meant that they could play without committing to a monthly subscription, managing their own financial risk.)

For those in this study, the next step towards full responsibility involved accompanied play (or, in the case of the couple who shared an account, occasional periods where the more experienced partner would take over). These experiences included being 'chauffeured' to places that were unfamiliar, 'boosted' by having a more powerful character along who would complete quests with them or simply by having someone on hand to provide support such as healing.

[One of my partner's characters] (lvl 58) accompanied me through a early twenties instance (Shadowfang) and before that we cleared out Ferris Isle...that was flow. It was flow like...whoosh, splat.

Normal play involved playing solo, learning how to take on specialist roles in groups (such as 'DPS' – Damage Per Second – responsible for inflicting damage; the Tank, who is responsible for enduring damage and stopping others being attacked; or the healer, who has to keep the other characters alive; further information about the concepts and practices learnt can be found in Carr and Oliver, 2008) and the normal requirements of managing game resources such as money. Socially it also involved making and maintaining friendships with other players, and introducing people to each other (such as introducing the partner to in-game friends).

[Participant:] [My character] and [My partner's] are different in that we neither have experience as Warlocks So we're trying things out and relating our experiences. [Interviewer: And that's different with other pairs you've had?]
[Participant:] A little. Because they are different classes for one thing. [Partner:] Mostly they contrast (like tank /healer).

More demanding play did exist; this 'expert' play could be distinguished by the level of risk involved, such as managing a guild, taking an active interest in player-versus-player competition or leading instances and raids (multi-member missions, usually technically demanding). Not all players wanted to take on this level of responsibility, not least because of the recurrent time commitments it entailed.

I suppose with me liking PvP, it stems from playing games such as Counterstrike and the like, where as [my partner] has never really played them and is unused to PvP so therefore tends to only enter it when I'm here as backup

It was taking a lot of time. But a lot of that is the social commitment. Especially when you got involved in running two guilds...

Assisting other players could also be understood as 'expert' play, in that it involved monitoring someone else as well as playing competently oneself. In this respect, there was a balancing of responsibility within couples who played together, with the more experienced player needing to take on less responsibility as their partner developed their own expertise and managed more of the risks of playing themselves.

Legitimate peripheral participation

Playing the game was taken to be the 'core' practice, since this was what brought people together socially, for the purposes of this study. Understanding play, however, required situating it in wider social contexts. This is what the concept of legitimate peripheral participation helps to achieve.

Examples of legitimate peripheral participation

Many activities might be classed as legitimate peripheral participation, in that they actively contributed to play without being core to playing itself. To illustrate this in relation to the three categories outlined above, ludic peripheral activities included commenting on someone else's play, buying and selling goods at the Auction House

(to raise money) or developing a knowledge of user interface modifications that could be downloaded to enhance gameplay. (Further information about the concepts learnt can be found in Carr & Oliver, 2008.)

I just practice more, and as you say, am interested in working out the mechanics. Which helps with tactics. So I'll often do things like look up a new UI mod that we can use (e.g. to show group threat), or buy new gear that I think will help people.

Social peripheral activities included chatting with friends or attending to guild administration. Material activities included cooking while a partner played or negotiating whose turn it was to use the 'nice' computer.

[Participant:] I did a few raids where i sat in the kitchen, because the sofa wasn't very comfortable. That was a bit weird because i'd have to shout for [my partner] to be able to hear me [Partner:] There's only one desk in here which means someone gets the sofa [Participant:] usually me :) that's where i am now

Sometimes I want the nice computer, lol [laughs out loud]

Examples of practices experienced as exclusion

Although Wenger signals the possibility that practices that remain peripheral may lead to a sense of exclusion, this was not really described by participants in this study. The impression given was that anyone could move towards fuller participation in play if they wanted to. Examples that did relate to exclusion were more to do with outbound trajectories, and will be described below. However, there were examples of perceived exclusion in relation to specific parts of play, such as feeling like an audience when a player with a higher-level character 'helps' to the point where the other players no longer need to do anything.

We've also had some chauffeuring from a higher level WoW friend. But playing with him can be annoying as we often do instances together and it makes it very boring as he's too high level. But we play with him as we get on well.

Trajectories of participation

Peripheral trajectories

Peripheral trajectories provide community access but never lead to full membership. Perhaps because of the sample – that consisted of players – there were few real examples of this in relation to game play. There were, however, accounts of peripheral involvement within specific in-game communities such as guilds, where different expectations or clashes of personality led to individuals withdrawing from the guild rather than seeking to resolve or overcome these differences. These trajectories were peripheral with respect to that specific guild community, even if they led to fuller overall participation (e.g. in two cases, setting up their own guild). There were also comments about not committing fully to particular guilds or kinds of play because they were too demanding in terms of time.

Too tired! Takes time, and regular play, or you're letting people down.

Inbound trajectories

Inbound trajectories focus on the move from peripheral participation to identification with the community. These followed the pattern outlined in the section on developing participation.

Insider trajectories

These focus on the ongoing negotiation of identity within a community. Some of the examples of this related to the couple's responsibilities developing during play. For example, in one couple, one of the partners often took over during player-versus-player conflicts, as these can be demanding and stressful. Over time, however, the

other partner developed their ability and confidence and needed less help in this respect.

The other major example of insider trajectories concerned role specialisation (a ludic accomplishment). Within team play, individual characters take responsibility for particular actions, and success relies on these being carefully managed. For example, one couple talked about the importance of getting feedback on mistakes, so that they could adapt their play to avoid repeating them. They commented that this feedback was far easier to get in a family-like guild, where there is an expectation that social interactions will persist, than in a 'pick up group' (a group formed of strangers who are matched based on their current objectives) where it is easier to leave and never interact with each other again.

Boundary trajectories

For this study, boundary trajectories – involving participation in more than one community, which may lead to links being established or practices shared – were a central concern. The focus on couples, who had out-of-game social patterns as well as in-game ones, meant that all the narratives described trajectories in which out-of-game concerns (such as whose turn it was to do the ironing) had to be balanced against in-game desires (such as staying with a group that was taking a long time to complete a mission).

However, much of this particular boundary negotiation involved links being made. A common one was people making friends through play whom they kept in touch with outside of the game. Sharing of practices was less common; people did not normally transfer things learnt through play or outside of the game into the other setting. The

few exceptions to this involved accessing fan site web guides to get advice or information that then influenced play, or else using existing levels of computer literacy to find out about and make use of user interface modifications, such as add-ons that would help monitor prices at the in-game Auction House or give advice about which piece of equipment would best suit particular characters. There were not many examples of things learnt through play benefiting participants out of game; however, one participant for whom English was not their first language described how playing with English speakers was improving their proficiency and confidence.

Outbound trajectories

There were two main examples of outbound trajectories in the narratives of participants. The first concerned leaving guilds; this happened to several participants, and was usually the result of a clash of personalities, conflicting priorities or preferences. Sometimes, people felt driven out. These experiences can be understood as an example of the generational encounters that Wenger described (1998: 157).

I think a few of the members left because of her... and the next thing I knew was they were back and she was gone. So I guess she was kicked [i.e. expelled].

The second concerned a player who had decided to stop playing, while their partner continued. Because this person was reducing the amount of time spent playing, they had begun to sever ties with some of the people they had grown to know through the game, beginning to detach themselves from the community they had been part of.

[that's ok if one of you keeps playing, and the other person tails off?] yes, though i have to cook dinner more often :)

Multi-membership

Conflict across communities

There were plenty of examples of conflicts that needed to be dealt with, many of which concerned the length of time that people committed to playing – and more specifically, to playing in certain ways, or with certain groups of people.

When we were both playing a LOT of WoW, I don't think it was particularly healthy for our real relationship, as although we were playing together a lot of the time, we weren't actually talking all that much in real life [Partner] [emote, smiles] sat typing to each other...

I can get touchy about the RP side that some players extend to eg 'flirting to a degree of explicitness' [Flirting with you, with your partner, or just in general?] Mainly when it involves [my partner], I don't like it in real life and that, as stupid as it may sound, also extends to the game world. I understand the ethics and styles of RP but somehow when people are flirtatious with [my partner] I panic and get defensive/protective.

The most acute examples were about the ways in which the demands of different settings interrupted each other.

I'd have to go afk ["Away from Keyboard"] halfway through an instance to go up and see to a crying child, and [my partner] would have to explain...

Perceived gender was mentioned repeatedly as an example of conflicts between someone's in-game and out-of-game persona.

[Male participant:] My warrior is female :) She's undead and a bit androgenous though [Partner:] and people try to talk to her in greek the whole time. [the male participant] gave her a greek name without realising it [Participant:] yup. her name is [avatar name] and every time I log on I get whispers saying "Greek?" [Partner:] so he gets chatted up by greek men :)

However, most of the conflicts that people described had been successfully resolved.

Again, this may reflect the sampling strategy, and the focus on people who were established players.

Reconciliation of differences

The ways in which conflicts between in-game and out-of-game activities were resolved was particularly important. It revealed both tensions that had to be managed, but also strategies that people had learnt to deal with these.

For example, in relation to the issue of spending time together, some couples developed rules about which characters they were allowed to play when.

Only kind of rule is that we only play [these two] together, for the most part, apart from levelling skills, emptying bags, handing in quests etc.)

Others simply agreed a 'pecking order' of who was normally given favourable access to material resources.

Me and my ex use to argue about the game lol. We were that addicted to it that we had to arrange to spend the same time on it, where [my partner] accepts that i pay for everything and it is a game we both love playing

Playing in the same physical location was uncommon; the situation would be different in cultures where many players use Cybercafés, but for these players, their experience was that most people were isolated geographically and communicated through text and sometimes voice channels associated with the game. However, being together allowed them to manage competing demands on their time.

It allows us too to take over from each other if one needs to pick up the phone or similar stuff

Indeed, this could even give them an advantage, particularly compared to other players who might not be supplementing the game with voice-over-internet applications.

It's very handy in instances/battlegrounds as we do talk a lot, as it's so much quicker than typing (and of course far more natural to do). Also quite amusing

when we're reporting whispered conversations to each other - if that makes sense.

The problems did not all arise from out-of-game demands; sometimes the game itself led to conflict.

I'd say that yes... occasionally arguments occur (mostly due to my fault)... about the game solving any arguments that originated elsewhere... I'm not sure it can [emotes: shrugs] [Mother] This question is a bit complicated, sometimes yes, we have a conversation (also louder) about some facts, but as the elder I sometimes think my part not saying anything.

Some participants reported that such conflicts were resolved in-game – for example, by ‘duelling’ (a competitive, player-versus-player conflict with no consequences).

Others were sceptical about this however.

The game may aid in that it can offer a "release" for some stress or bad mood... but I would not deem it instrumental to the solution of an issue.

We start fighting, [emotes, laughs] we tend to push and bite each other playfully ... bizarre I know but it works, as eventually we stop arguing and have a hug and a kiss lol.

Indeed, some out-of-game developments were seen as positive, not as remedial.

We have had 2 guild meet-ups and have another one planned in January so I have met (and feel I know) several other members [Partner] it's very odd being called [Avatar's name] in real life :)

Discussion

The starting point for this paper was the problem that how and what people learnt from play was not well documented, and that the relationships between any such learning and formal educational settings were even less well understood. The study here permits several developments to be made in relation to these issues.

Firstly, the analysis above constructs what was learnt from play in terms of three categories: ludic, social and material. This delineation makes questions about the

relationship between games and education more tractable. Dealing with each in turn, there may be little direct relevance to formal curricula of the ludic skills and knowledge developed through play. Unless games are designed specifically as curriculum resources, or else considerable support is provided for post-play reflection, relating experiences of play to formal education is problematic. Such strategies are already advocated as being useful when integrating game-based experiences with education (e.g. de Freitas & Oliver, 2006).

The other two elements, however, are rarely considered. The social and material learning demonstrated by couples in this study is strongly reminiscent of problems facing distance learners. For example, in Willging and Johnson's review, students were identified as being more likely to drop out from a distance learning programme if they found it difficult to socialise with other students (in relation to this study, a peripheral trajectory leading to exclusion) or had other commitments that competed with study time. "Students reported that work, family, study commitments, insufficient study time, ill health and study load were reasons why they withdrew from the program" (p107). There are strong analogies with the kinds of tensions that the couples who persisted with playing had to negotiate and overcome. Willging and Johnson go on to note that, "for the dropout students, the much proclaimed adage of 'learning anytime, anywhere' does not seem to apply" (p116); in relation to this study, the material and social tensions that they faced hindered their ability to progress with the content of the programme (analogous in this case to ludic skills and knowledge).

Moreover, it is well recognised that students' sense of identification with their peers is both important to their success and complex (e.g. Haythornthwaite, 1998). Again, this matches the situation with guild and social commitments in game closely. This close

fit is surprising; links between learning from games and the experience of distance learners have not hitherto been made, but this study suggests that such a comparison may be productive.

Conclusions

The study presented in this paper was undertaken to explore the links between game-based learning and formal education. By framing learning as a social process and studying couples who played games together, it was possible to develop a better understanding of both what was learnt and how it was learnt.

These players' learning could be described in three broad areas: ludic, social and material. Of these, the ludic elements have been most visible in previous research on the use of computer games in learning contexts, and yet these remain problematic in terms of their relevance to curriculum objectives. However, the social and material elements that this research has highlighted reveal how people manage competing demands on their time, balancing play (and the learning required to play) with other commitments.

In terms of the learning process, learning could be characterised following Wenger's model of Communities of Practice, taking into account notions of trajectories of participation and the nexus of multi-membership. This confirms the value of this model in both analysing and designing virtual worlds to support learning.

The resemblance between this and existing literature in the field of distance learning suggests new conceptual connections that may be productive to explore. It also provides insights into the *processes* of learning from virtual worlds, as opposed simply to the mastery of content, skills or other outcomes. Issues such as these are

likely to arise for the learners that are encouraged to participate in multi-user virtual environments; it is, therefore, important for educators to be aware of the potential problems their students may face when designing curricula.

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References

Carr, D. & Oliver, M. (2008) *Tanks, Chauffeurs and Backseat Drivers: Competence in MMORPGs*. Paper presented at the Future Reality of Games Conference 2008, October 17th-19th, Vienna. URL: <http://learningfromsocialworlds.wordpress.com/competence-in-mmorpgs/>

Carr, D., Oliver, M. & Burn, A. (2008). *Learning, Teaching and Ambiguity in Virtual Worlds*. Proceedings of ReLIVE08. Open University: Milton Keynes. URL: <http://learningfromsocialworlds.wordpress.com/paper-for-relive-08-at-the-ou/>

Charmaz, K. (2000). Grounded Theory: Objectivist and Constructivist Methods. In [Norman K. Denzin](#) & Yvonna S. Lincoln (Eds.), *Handbook of Qualitative Research*, 2nd edition, 509-535. Thousand Oaks, Ca.: Sage.

de Freitas, S. (2006). *Learning in Immersive Worlds*. Bristol: Joint Information Systems Committee. URL http://www.jisc.ac.uk/eli_outcomes.html.

de Freitas, Sara and Oliver, Martin (2006) How can exploratory learning with games and simulations within the curriculum be most effectively evaluated? *Computers and Education*, 46 (3), 249-264.

DfES – Department for Education and Skills (2005). *Harnessing Technology: Transforming Learning and Children's Services*. Nottingham: DfES Publications.

URL <http://www.dfes.gov.uk/publications/e-strategy>

Galarneau L. (2005) Spontaneous Communities of Learning: Learning Ecosystems in Massively Multiplayer Online Gaming Environments *Proceedings of DiGRA 2005 Conference: Changing Views – Worlds in Play*. Vancouver. URL

<http://www.digra.org/dl/db/06278.10422.pdf>

Gee, J. (2003). *What video games have to teach us about learning and literacy*. New York: Palgrave MacMillan.

Glaser, B. & Strauss, A. (1967). *The discovery of grounded theory: strategies for qualitative research*. Chicago: Aldine.

Haythornthwaite, C. (1998). A Social Network Study of the Growth of Community Among Distance Learners. *Information Research*, (4) 1. URL

<http://informationr.net/ir/4-1/paper49.html>.

Kirriemuir, J (2002). *A Survey of the Use of Computer and Video Games in Classrooms*. Internal report for Becta (British Educational Communications and Technology Agency). URL www.becta.org.uk

Malone, T. W., & Lepper, M. R. (1987). Making Learning Fun: A Taxonomy of Intrinsic Motivations for Learning. In R. E. Snow & M. J. Farr (Eds.), *Aptitude, Learning and Instruction: III. Conative and affective process analyses*, 223-253. Hillsdale, NJ: Erlbaum.

McFarlane, A., Sparrowhawk, A. and Heald, Y. (2002). *The role of games in education, A research report to the DfES*. TEEM: Cambridge. URL <http://www.teem.org.uk>.

Mitchell, A., & Savill-Smith, C. (2004). *The use of computer and video games for learning: a review of the literature*. London: Learning and Skills Development Agency. URL www.lsda.org.uk/files/PDF/1529.pdf

Pelletier, C. (2005). Reconfiguring Interactivity, Agency and Pleasure in the Education and Computer Games Debate - using Žižek's concept of interpassivity to analyse educational play. *E-Learning*, 2(4), 317-326. URL <http://dx.doi.org/10.2304/elea.2005.2.4.317>

Steinkuehler, C. (2005) *Cognition & Learning in Massively Multiplayer Online Games: A Critical Approach*. URL <http://website.education.wisc.edu/steinkuehler/thesis.html>

Squire, K. (2002). Cultural framing of computer/video games. *GameStudies*, 2 (1). URL <http://www.gamestudies.org/0102/squire/>

Willging, P. & Johnson, S. (2004). Factors that influence students decision to drop out of online courses. *Journal of Asynchronous Learning Networks*, 8 (4), 105-118. Available online: http://www.sloan-c-wiki.org/JALN/v8n4/pdf/v8n4_willging.pdf

