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A learning community for teens on a virtual island - The Schome Park Teen Second Life Pilot project

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Summary

Virtual 3D worlds such as *Second Life*² and online gaming environments are attracting educationalists' interest. This paper reports upon the first European *Teen Second Life* educational project for 13-17 year olds: the *Schome Park NAGTY (National Association for Gifted and Talented Youth)* Pilot. This project aimed to collect evidence about fresh approaches to education beyond the existing curricula of formal schooling through exploring the educational potentials and pitfalls of *Second Life*. Diverse quantitative and qualitative data sources are drawn upon to investigate issues relating to engagement, development of domain-specific and knowledge age skills as well as challenges for educators.

Engagement data showed that only approximately one quarter of students accounted for almost all time spent in *Schome Park*. Frequency was associated with high levels of use of the wiki and forum. Evidence from self-reports and documentation on the wiki demonstrated very high levels of *Second Life* skills.

Knowledge age skills were assessed within a framework with four levels for four dimensions. In respect of *Communication*, all students who engaged achieved the first level and a substantial minority initiated and moderated discussions and/or organised events. In respect of *Teamwork*, tensions were evident early on; however, a substantial number demonstrated their abilities to operate at the highest level being actively involved in solving governance problems. With support students moved from hierarchical approaches to the formation of governance groups, each with department officers, thus furnishing evidence of distributed *Leadership* at level one. Evidence from a rich and diverse programme of events illustrates an atmosphere which fostered *Creativity*, permitting explorations, collaborations and the encouragement to risk mistakes.

Our experience suggests the importance of understanding the role of teachers in this kind of innovative environment, not as the possessors of relevant knowledge but as facilitators and promoters of a cooperative ethos. We conclude that, despite multiple challenges, there is evidence to support dramatic new possibilities for pedagogic redesigns. Students who engaged with the virtual island, the wiki and the forum demonstrated higher levels of the knowledge age skills of communication, leadership, teamwork and creativity.

Keywords: digital literacy; environments; learning; skills; virtual worlds; second life; gaming environments; educators; Schome Park; Schomunity; teenagers

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² Second Life and Teen Second Life are trademarks of Linden Research, Inc.

1 Setting up *Schome Park*

1.1 Background: *Schome*

The *Schome-NAGTY Teen Second Life Pilot*, which is described in this paper, was the first European enclosed island for teenagers on the *Teen Second Life* sector of the 3D virtual world *Second Life*. (See below for explanations of "island" and "enclosed" in this context.) The pilot was set up under the umbrella of the *Schome* community, or *Schommunity* as it has become known to its members, which was founded in 2005 by the second author.

The *Schommunity* is a group of people which includes academics, parents, young people, policy makers, educators, and other interested parties. It was established with the aim of creating "a new form of educational system designed to overcome the problems associated with current education systems in order to meet the needs of society and individuals in the 21st century" (Schome Community, 2007). To achieve this aim this virtual community has engaged with a wide variety of perspectives on educational practices and potential educational futures, consistently enacting a view that genuine participation by learners must be instantiated at all stages of planning and operationalizing education.

The *Schommunity* uses a range of online media, including a wiki and forum, to explore a wide variety of perspectives on educational practices and potential educational futures in order to broaden thinking and debate about educational possibilities as well as to gather evidence about the effectiveness of alternative approaches in different contexts.

It is beyond the scope of this paper to participate in the ongoing scholarly discussions of how to define a "virtual community"; [see Barab, Kling & Gray (2004) for an outline of relevant approaches]. With Pea (2004, p. xi) we are more concerned with the work of communities, loosely defined, than seeking a precise definition of "virtual community".

Within the *Schommunity* technology is seen not only as a tool to support and extend practices but also as having the potential to transform ways of representing the world and of supporting learning. It thus has the potential to change what we need from our education systems - though we need to avoid falling into the trap of being technologically determined or driven. The *Schommunity* decided to explore the potential of virtual worlds, considering their capacity to act as spaces in which visions of future practices and pedagogies can be built and experienced, making it "possible to construct, investigate and interrogate hypothetical worlds" (Squire, 2006, p. 19).

Virtual worlds combine a desktop virtual environment with synchronous chat communication. The *Schommunity* particularly focussed on those worlds which share three distinctive features:

1. The illusion of three-dimensional space.
2. Avatars that serve as the visual representation of users.
3. Interactive chat that allow users to communicate with each other synchronously in a "public" way (i.e. with all present avatars) and/or through a private 'instant messaging' facility that may also be used asynchronously.

As videogames, virtual worlds offer "*designed experiences*, in which participants learn through a grammar of *doing* and *being*" (Squire, 2006, p.19, emphasis as original). Squire's notion of a "grammar" here is useful in drawing attention to the repertoire for performance of agency that is less constrained in a virtual world than it is in a videogame, since there is an absence of imposed goals. As Squire implies, there are opportunities and constraints; the chief aim of this paper will be to reflect on the uptake and limits of these as explored in this particular pilot project.

Our initial explorations of the virtual world *Second Life*, a 3D virtual world designed and owned by Linden Lab, led us to believe that it provided the possibility for a "designed experience" that might lead us in interesting ways to combat specific educational challenges:

1. Collective action undertaken to construct, solve problems, and work out socially acceptable ways of cooperating in a virtual world may chime with visions of a collaboratively working citizen working towards a more socially responsible society (Giroux, 2000). The current UK education system may be viewed as being based above all on the achievement of individual qualifications as learning goals, aligning with an ethos of the student as individual consumer chasing individual enrichment, particularly in material terms.
2. Interconnected social milieux offer learning options that are critical, collaborative, creative, and futures-oriented (Lankshear & Knobel, 2008). Students can be severely restricted in the current formal and structured educational system. Their recreation time is spent in environments that are fast-paced, multimedia, multimodal, interactive and digital, creating high expectations of engagement. A traditional subject-based curriculum is inappropriate to the needs of an information society, where key capabilities may be conceptualized as being more to do with skills in accessing, combining and transforming information, sometimes in creative ways, rather than reproducing it.
3. Videogames and online multiplayer game worlds have been documented to be the site of "naturally occurring, intrinsically motivated learning" (Squire, 2006, p. 22; see also Dovey & Kennedy, 2006; Gee, 2003; Steinkuhler, 2007). Embedding a culture of learning is *the* key goal for education, applying from the Early Years (Carr, 2001) throughout at least all years of employment (Leitch, 2006).
4. In a context of constant technical innovation and ever-changing needs and orientations, fostering a learning disposition is equally relevant to teachers as it is to learners and so it is vital that we move into a different conception of the teacher-learner role from that of 'instructor- trainee' to a community of co-learners (Merchant, 2007). Teachers are challenged to become distinguishable through their facilitation and communication skills rather than control of everything that happens. Working together in a cutting-edge, rapidly changing technological environment cannot be a site where anyone can authentically present themselves as the carrier of all relevant knowledge and skills.

The *Second Life* environment and functionality, having no pre-defined objectives allows users to have maximum creative control of the environment. We decided that a project using *Second Life* provided an opportunity to instantiate in an immediate and practical way some of the positive approaches to education we were debating in the *Schommunity*.

1.2 *Second Life* and the context of the origins of *Schome Park*

Second Life is split into two distinct and mutually inaccessible areas. *Second Life* (aka the *Main Grid*) is designed for adults aged 18 and over, while *Teen Second Life* (aka the *Teen Grid*) is restricted to teenagers aged between 13 and 17. Within each area users may move their character, known as an avatar, to different regions known as islands, which are typically owned by third parties. *Second Life* is used in numerous ways for education already, mostly involving adults. (See ReLIVE08 for one collection.)

The project is affiliated in the UK to The Open University, which as a distance learning higher education institution committed to exploring the potentials of flexible learning environments. At the time of the *Pilot* this institution was working with two islands on *Second Life* and holding some tutorials 'in-world'. However, as access to *Teen Second Life* is age restricted, it is more difficult to investigate the educational potential of this environment. In October 2006, supported with funding from National Endowment for Science Technology and the Arts the *Schommunity* purchased an island in *Teen Second Life* called *Schome Park*. *Schome Park* was the first European enclosed island *Teen Second Life*. "Enclosed" here means that use is restricted to children invited to join the project, usually via their schools, with the written informed consent of their parents and schools as well as themselves, plus adult staff members of the project who are individually recruited and have had their credentials checked through the Criminal Records

Bureau Enhanced Disclosure. Avatars once joined cannot leave the island and visit other areas of *Teen Second Life* nor *Second Life*.

Children participating in learning experiences on virtual worlds such as *Second Life* are the subject of dichotomised reactions in mass media, policies and official educational spheres. On the one hand are discourses with strong claims for the benefits of such opportunities. In this pilot project they are conceptualized as '*Second Life* skills' and 'knowledge-age skills'. More broadly, these are sometimes linked in mass media to a sense of early possession of the 'future'. Yet at the same time powerful discourses exist which link even a protected online environment to concerns about dangers to children's well-being. Writing in the Daily Mail the prominent British journalist John Humphrys (2008) wove a picture of activities in online worlds constituted by online pornography, theft, terrorism and encouragement to suicide. He claimed children are liable to be confused about the difference between fantasy worlds characterised by such dangers, and the pleasures and contrasted authenticity of the 'real world.' Some students within this Pilot were blocked from using *Schome Park* from within their schools by two local authorities, who refused to permit access through their firewalls.

Child abuse on the internet is a matter of enormous media and public concern in terms of 'grooming' towards sexual encounters, particularly with paedophiles, government ministers devote public speeches towards their concern with cyber-bullying (Wintour, 2007) and in the UK an organisation called the Child Exploitation and Online Protection was established under the statutory umbrella of the Serious Organised Crime Agency. *Second Life* for adults has also been the target of hyperbole and backlash during the life of this Pilot. Coverage followed that familiar pattern for technological innovations with enormous impact - from extraordinary hype: "an almost mythical nirvana" (Harkin, 2006) to a subsequent spate of deflatory articles e.g. "How Madison Avenue is wasting millions on a deserted *Second Life*" (Rose, 2007) followed by co-existence of the extremes.

Mindful both of concerns for child protection and also the pitfalls that often attend innovative projects including those making use of new, often unstable technological developments, we recognised that various kinds of problems may have to be faced yet should be discussed in the academic environment. A very small number of projects have used *Teen Second Life* for educational purposes, for example Global Kids Inc. an independent not for profit US organisation that works with disenfranchised young people in urban areas to help them develop leadership skills "by engaging them in socially dynamic, content-rich learning experiences" (Joseph, 2007, p. 13). However with the exception of outputs associated with the Global Kids Inc. (see www.globalkids.org) almost no research into the educational potential (and pitfalls) of *Teen Second Life* had been documented or published prior to the launch of the *Schome-NAGTY Teen Second Life* Pilot reported here.

1.3 Project scope and aims

The *Schome-NAGTY Teen Second Life* Pilot operated on *Schome Park*, a closed island in *Teen Second Life*. During the period studied this meant 149 students recruited through NAGTY (The National Association of Gifted and Talented Youth) plus the adults who staffed the project. In the pilot phase participants were all based in the UK. The student participants included a large sub-section of young people from NAGTY's GOAL cohort, actively involving students from socially disadvantaged or ethnic minority backgrounds.

It is important to emphasise from the outset that activity on the island was integrated with activity within the *Schomcommunity* wiki and forum throughout the Pilot. The period discussed here was from March to May 2007; an extension project was subsequently funded by Becta and a redesigned island, *Schome Park II*, opened on 15th June 2007 (and recruited some participants based in the US as well as in the UK).

During the pilot we focussed on our aim with four key objectives. Our central aim was to provide a cohort of students from NAGTY with a valuable learning experience as an extension

to their formal school activities. The objectives were to employ new uses of technology afforded in the SL environment to:

1. enable participants to find out for themselves, both individually and collaboratively, the scope and potentiality of learning opportunities;
2. offer a variety of specific disciplinary learning opportunities (physics, ethics & philosophy, and archaeology);
3. support highly differentiated and self-paced learning;
4. support vertical (e.g. between sectors) and horizontal (e.g. between institutions) collaboration

A full investigation of these objectives and all aspects of using the *Teen Second Life* environment would be beyond the scope of this paper. In particular, setting up the project gave rise to some ethical challenges that are discussed more fully elsewhere (Sheehy, Ferguson & Clough, 2009). Our evaluating activity as reported in this paper set out to examine four key questions:

1. To what extent did the students (henceforth termed SParkers - a name they chose themselves) engage with *Teen Second Life*?
2. To what extent did the SParkers develop *Second Life skills*?
3. To what extent did the SParkers develop *knowledge age skills*?
4. What lessons did we as educators learn about using *Teen Second Life*?

To contextualise our findings we will first outline the kind of activities engaged in by students and staff within the Schome Park pilot.

2 Summary of Activities

2.1 Launch

In January and February the initial form of the island was built in *Second Life* and then mirrored onto *Schome Park* overnight on 15th February. Substantial building works including a temple, Hadrian's Wall, a reception area, Sandbox (area open for temporary experimental building) and *help* facilities were created in the next few weeks while students were enrolled on the pilot. The vast majority of the work was done by the eighth author, Dan Seamans, with additional input from other authors.

Newcomers to *Second Life* initially want to personalise their avatar's appearance, items their avatar can interact or play with and opportunities to start building or scripting (Boellstorff, 2008). In addition newcomers look for help with orienting themselves both socially and 'physically' within the environment. The main arrival/orientation point in *Schome Park* was therefore established as the *Scho-Op*, a large transparent building on two floors, next to the Sandbox, that contained the *help* button and lots of easily accessible collections of freebies. New students or "SParkers" arriving on the island were thus able to collect items on their first visit and use the Sandbox area to experiment with these new 'toys', as well as personalise their appearance with clothes, hair, wings, tails and other artefacts. Pressing the giant red help button sent an email to all staff on the pilot and the first available member of staff would go in-world to respond.

As SParkers were enrolled into the pilot they were able to participate in discussions in the forum and also learn how to contribute to the wiki, which became an ongoing record of the development of the site and those who participate on it. NAGTY provided a comprehensive range of messaging boards for all subscribers over the duration of its existence. Thus the NAGTY students joining the pilot had already had the opportunity to engage with text based forums and some were confident and able forum users.

From 10th March 2007 SParkers began to appear in-world on *Schome Park*. There were initial delays due to problems with the batch registration system, which were soon resolved by Linden Labs. Induction sessions were run for the new SParkers. However, these proved unnecessary for many SParkers who preferred to learn independently, rapidly mastering basic *Second Life* skills, seeking help from in-world staff and peers, or pressing the Help button when they were

having particular difficulties if nobody was in-world who could resolve their problem. (See figure 1.) This was not true of all entrants as shall be discussed below. Whilst SParkers tended to be focussed on using *Schome Park* itself, some also engaged with the forum and began experimenting and creating within the wiki. For example several SParkers started to blog in the wiki about their experiences in *Schome Park*; we referred to these blogs within the wiki as blikis.



Figure 1. The Help button with staff presence boards behind

Most SParkers initially focused on customising their avatar's appearance and obtaining items from the Scho-Op, as anticipated. They started experimenting with building and in some cases simple scripting, rapidly filling the sky with a wide range of objects (some from the Scho-Op and others that they had constructed for themselves). Students rapidly formed friendships and alliances amongst themselves and with staff, where relationships were less inhibited, perhaps as a result of the lack of the many status indicators present in face to face settings.

Very early in the life of the island we experienced one serious 'griever attack' - or act of minor sabotage, in which one individual built boxes all over the island, preventing other people from even moving around. This was an isolated incident that was resolved with the assistance of the person responsible for it. No similar 'attacks' occurred throughout the rest of the pilot.

2.2 Student initiated activities

This heading covers activities which were initiated by students although they received a range of support from the staff. Within a very short time in *Schome Park* students had debated, proposed, organised and executed a diverse range of events such as a regatta, a wedding, governance meetings, a murder mystery evening, low prim building classes (constructions that make relatively minimal use of resources), chess matches and more, all with great creative energy and enthusiasm.

2.3 Staff initiated activities.

A wide range of activities ensued around the three core strands: ethics and philosophy; physics and archaeology, as well as a range of others led by staff including research methods, artificial intelligence and machinima (making films within *Second Life*). The three core strands differed in the nature of the activities and how they were organised.

The ethics and philosophy sessions involved the member of staff posting up a question or issue for discussion and then meeting with students (in the Japanese Garden on *Schome Park*) to debate that issue, using what might be described as a Socratic approach, for an hour. (See figure 2.)



*Figure 2. An ethics and philosophy session.
Avatar name bubbles above the heads have been rendered not visible.*

The physics sessions were set up as workshops in which students would be challenged to investigate something, such as the physical forces operating on the island. They would be supported in designing resources to help them test out their ideas, e.g., they built a trebuchet to test gravitational forces on objects of different sizes.

The archaeology sessions tended to involve students being set a research task, locating and evaluating information on the web, and then discussing it in-world. They also used a recreation of part of Hadrian's Wall to investigate our understanding of what it was like, and to experiment with the effects of changing the height of the central wall itself (see Greaves, 2007 for a fuller account).

3 Data collection

The pilot team shared a situated social constructivist perspective, which informed the methodological approach and our underpinning assumptions about the purposes of the research. To explain this very briefly within the constraints of this paper, we make use of the following insights from cultural-historical psychology (see e.g. Chaiklin & Lave, 1996; Cole, 1996; Lave & Wenger, 1991).

1. All learning is situated, so that paying attention to the context of the learning experience is vital.
2. Learning happens within communities and so it is important to examine interactions between people rather than just seek change in the individual.
3. At the level of the individual learning necessarily involves processes of change and therefore entails modifications of identity.

This is a complex view of learning for which an interpretivist framework making use of diverse data sources is best suited. Therefore we collected a wide range of data which we analysed using a range of both qualitative and quantitative methods.

Base line data about the levels of student engagement were collected in the form of "system statistics":

1. sensors on *Schome Park* that once every five minutes recorded the names and locations of all the avatars on the island;
 2. wiki software recorded a history of all edits of any page within the wiki which includes the name of the user, when the edit was submitted and what the changes to the page were;
 3. forum software recorded the number of posts per person.
- Qualitative data were recorded in the form of:
1. chatlogs i.e., records of Internet Relay Chat (synchronous written communications) were automatically kept of any discussion which staff were privy to within *Schome Park* then submitted to a central repository.
 2. postings in the wiki, including the blikis which often contained snapshots taken in *Schome Park* capturing in-world events;
 3. postings in the forum - many of which included discussion about plans and decisions regarding the pilot, and more broadly about the *Schomunnity*;
 4. informal notes taken by students and staff in-world complementing the chatlogs;
 5. notes from staff about events they had organised;
 6. records of informal interviews conducted by both students and staff in which SParkers were asked for their views on their learning experiences within the pilot;
 7. a web-based questionnaire that asked respondents for information about their use of Teen Second Life, and specifically about their 'Second Life skills';
 8. the artefacts created in *Schome Park* itself also represented data about the students' activities and levels of Second Life skills.

The findings we report below draw upon the analyses of these diverse sources of data.

4 Findings

This section is structured according to the four key questions as expressed in 1.3 above.

Table 1. Distribution of SParkers by Time Spent in Schome Park

Hours per SParker (n=149)	Number	%
0	47	32
0.5 to 1	41	28
2 to 5	22	15
6 to 10	11	7
11 to 25	12	8
26 to 50	8	5
51 to 100	7	5
>100	1	1

4.1 To what extent did the Sparkers engage with *Teen Second Life*?

4.1.1 Engagement with *Schome Park*

Table 1 shows the distribution of SParkers in terms of how much time they spent in *Schome Park*. Of the 149 SParkers 102 (68%) logged into *Schome Park* at some stage during the Pilot, with 61 (41%) spending more than 1 hour in-world. 26% of the SParkers accounted for 93% of

the time spent in *Schome Park*. The student who spent over 100 hours in *Schome Park* was at home due to illness for several weeks. She tended to leave *Schome Park* running as a background activity in much the same way that neo-millennials use the television or online messaging. When something interesting happened in-world she would then actively engage with *Schome Park*.

Table 2. Distribution of SParkers by Number of Wiki Edits

Edits per SParker (n= 149)	Number	%
0	91	61
1 to 5	35	23
7 to -25	11	7
26 to 100	9	6
101 to 250	1	1
251 to 500	2	1

4.1.2 Engagement with the wiki

Table 2 shows the distribution of SParkers in terms of how many times they edited the wiki. Of the 149 SParkers, 63 (42%) logged into the wiki at some stage during the Pilot and 58 (39%) edited the wiki at least once. Whilst data is not available on the number of times that SParkers viewed pages in the wiki, these data seem to indicate that the majority of the SParkers did not use it as an integral part of the Pilot - for example, they did not sign up for in-world events on the wiki.

Table 3. Distribution of SParkers by Number of Forum Posts

Posts per SParker (n=149)	Number of SParkers	%
0	112	75
1 to 5	11	7
6 to 25	5	3
26 to 100	6	4
101 to 250	8	5
251 to 500	4	3
>500	3	2

4.1.3 Engagement with the forum

Table 3 shows the distribution of SParkers in terms of how many times they posted in the forum. Of the 149 SParkers 37 (25%) posted one or more messages in the forum. Whilst data is not available on the number of times that SParkers viewed messages in the forum, these data seem to indicate that the majority of the SParkers did not use it as an integral part of the Pilot - for example, they did not join in the discussions related to the in-world events.

Table 4. Time in Schome Park vs Wiki/Forum use

Used	Hours spent in Schome Park			
	0 (n=47)	0.5 to 1 (n=41)	2 to 25 (n=45)	>25 (n=16)
Neither	87%	66%	40%	0%
Wiki only	4%	24%	31%	0%
Forum only	6%	5%	0%	0%
Forum & wiki	2%	5%	29%	100%

4.1.4 Relationship between *Schome Park*, the wiki and the forum

There was a positive relationship between the amount of time spent in *Schome Park* and wiki/forum use. SParkers who used *Schome Park* the most also made greater use of the wiki and forum (see Table 4). Gender did not appear to be a significant factor impacting on the level of engagement with *Schome Park* or the wiki or the forum.

4.2 To what extent do the Sparkers develop *Second Life* skills?

The 28 SParkers who completed the questionnaire self-reported extremely advanced *Second Life* skills. Only one of these students had used *Second Life* prior to the pilot and so in most cases these high levels of *Second Life* skills must have been gained in the two months of the pilot. There was considerable additional evidence of the sophistication of the *Second Life* Skills that the students had developed. The quantity and quality of objects and scripts that were produced within *Schome Park* provided perhaps the clearest picture. This was reinforced by the scripts, snapshots and other information in the wiki (for example about how to make machinima and explanations of codecs). Overall this represented what might be described as both an extraordinary level of achievement and a demonstration of extremely effective informal education.

The SParkers themselves documented their activities within the wiki, and nearly 300 images were uploaded by them which demonstrated that they could: play chess, change head shapes, sit in different places, take self-portrait photographs, make objects, change their appearance, debate through instant messaging and chat, upload signs, create buildings and spaces (on the ground, in the air and under the sea), dance, build a chess set, make clothes, design and sail around a regatta course, cope with random in-world objects, engage in lessons, use teleports, and provide advice and support to each other, including guidance about in-world skills.

The wiki gave more specific evidence of the sorts of things the SParkers were doing and skills they were developing; see figure 3 for an example. A SParker stated during an interview:

I've learned stuff just from chatting to people, and hearing what they have to say. I've also learned that when people rely on you to do something, you have to make sure you do it to the best of your ability, and more often than not it come out really well.

What have I been up to in Second Life? edit

I was a bit late off the mark due to other commitments. However the SNP sounds really interesting and I want to get involved more, fortunately for me the project has been extended!

- Attended some physics sessions
- Attended an AI session, got a chatbot
- Started making by own (basic) chatbot
- Made myself a voice-activated bubble suit...very productive!
- Made myself a voice-activated hat...and alternative head...and arrow
- Participated in the regatta
- Researched [video codecs](#) in Schome Park, made a [machinima](#) page
Really useful page. Thanks for doing this. Fox
- Joined the research group, intervied various people
- Helped build the old AI emporium
- Joined the Scripting department

Extract from a SParker's userpage on the wiki

4.3 To what extent do the Sparkers develop knowledge age skills?

Staff at NAGTY started to develop a *knowledge age skills* framework for use within the Pilot, which was further developed by the pilot team (see Table 5). The framework is concerned with the development of metacognitive skills with an emphasis on personal actions informed by reflection. The rationale underpinning this is that whilst hardware and software are changing rapidly the metacognitive skills required to function in an information age environment will remain the same. An important point within this work is that high order cognitive skills are developed within specific environments and may only later become disembedded from a specific environment, and applicable across different contexts. Therefore for the *Schome-NAGTY Pilot* we focussed only on the skills demonstrated within the schome community website (*Schome Park*, wiki and forum).

Table 5. The knowledge age skills framework

Skill	Level 1	Level 2	Level 3	Level 4
Communication	Selects and uses structures, styles and registers appropriately in a range of contexts. 'Listens' with concentration and understanding.	Adapts communication for a range of settings and audiences	Makes a range of contributions, demonstrating perceptive listening	Takes a leading role, initiating and sustaining conversation, and reflecting understanding
Teamwork	Projects personal characteristics	Receives messages from others, shares goals Develops processes	Values others, understands roles and changes in roles	Joint problem-solves Manages relationships
Leadership	Understands and sets greater goals and purposes	Sets examples, explains	Recognises skills of peers	Applies own and others' skills productively
Creativity	Questions and challenges	Makes connections, sees relationships	Envisages what things might be	Reflects critically on ideas and practice

In respect of *Communication* all students who engaged achieved at least level 1. SParkers sometimes 'failed to demonstrate perceptive listening' eg through ignoring other students' comments at the start of the project but there was a clear shift towards more collaboration towards the end of the *Pilot*, especially on the forum. For example, approximately 25% clearly achieved level 3 and 10% level 4 through initiating and moderating discussions and organising events. In respect of *Teamwork* tensions and power struggles were evident in several early projects however 19 SParkers (13%) demonstrated their abilities to operate at level 4, being actively involved in solving such problems of governance. As might be expected, there was considerable overlap between performance on the *Teamwork* and *Leadership* dimensions; with support SParkers moved from somewhat hierarchical approaches to the formation of seven governance groups, each of which had three 'department officers'. While many active SParkers thus provided *Leadership* at level 1 the numbers who provided clear evidence of working at the higher *Leadership* levels were much lower; however the student who led the development of the governance arrangements was operating at level 4.

There is considerable evidence that SParkers were often engaged in creative activity in an atmosphere of interrogation and enquiry. One of the strengths of the Pilot was the ethos of welcoming explorations, challenging assumptions and making mistakes. The SParkers commented on the difference between the *Schome Community* and in their own schools as they tried out many ideas. Evidence of level 3 *Creativity* was manifest in discussions as to how the *Schome Park* environment might be modified. *Schome Park* gave young people not only

the opportunity for discussing how things might be but the possibility for implementing them, whether through building tornados or developing the development of governance arrangements. Achievement of critical reflection on ideas and practice was relatively rare but the following quotations from interviews conducted inworld using chat manifest some interesting understandings:

...you always get a feeling that you can apply the skills and experience here to RL. just talking to new people too, it builds up confidence ... I learn about rl things here too... you can chat in simulated environments which is much easier then forums i believe ... The avatars kind of give you a face... what i mean is avatars kind of give you a sense of you actually speaking to a real person.. the avatars are just projections of a person.

One thing that I'm really grateful to Schome Park for doing is making me feel more confident about trying new things, and also about helping others if I know something they don't, through communication. Learning certainly doesn't have to be a pen and paper - I much prefer learning through the Schome way, because it has much more bearing on RL than a load of stuff I will have forgotten in a year's time.

4.4 What lessons did we as educators learn about using *Teen Second Life*?

4.4.1 *Role of educators*

Our experience has borne out the claims made by Joseph (2007, p. 15): "You do not need to know something in Second Life in order to teach it - you just need to know how to connect your students with people who do. As a social network, information and people are ever-present and fluid; educators who can navigate these networks and train their students to do the same need not rely on being the expert importing knowledge but become facilitators connecting students and information."

As teachers become facilitators, and teens specialize and their skills stratify, learners are able to teach one another, not necessarily in a formal manner but informally, when required. Rather than isolate learners from one another, or discourage side conversations, the interactions between students can be where some of the best learning takes place, for all involved.

We studied the games used and created during the pilot and discovered that the most advanced achievements happened during the mini projects that were student initiated. For example a member of staff created a fully functioning 'sudoku' (number puzzle presented on a grid) which students quickly learned to operate, sometimes combining together to do so. However, the project of building a chess set demanded both high level technical skills and considerable levels of teamwork and leadership. During this, the students decided to range themselves along the sides of the boards rather than at the ends, a measure of their indication of awareness of the levels of collaboration that the project demanded (see Schome Community, 2007).

Combining the communication channels has been extremely important: those students and teachers who use the forum and wiki gain far more from their *Second Life* engagements. During the pilot we learned more about the practical issues involved in this. For example, one thread chiefly advertised its events through inworld posters and although there were 'sign up' pages on the wiki too neither of these were very much attended to. The pilot taught us the importance of a single, well-maintained events calendar to which other wiki pages and forum threads link.

The project has provided some support for arguments made by prominent advocates of learning through gaming such as Gee (2003) and Squire (2008) while also emphasising the importance of using a pedagogy that fits the environment.

4.4.2 Ethical issues and challenges.

The project was established with all the apparatus of ethical research projects including consent forms, acceptable use policy (AUP) and statements of intent and process. (See Sheehy, Ferguson & Clough, 2009 for further details.) Staff have a bubble above their avatar head saying 'logging chat' to remind the students that their interactions are being logged when the member of staff is involved or present. This does not prevent private interactions between students.

A significant challenge faced by staff on the pilot was dealing with breaches of the AUP. For example if a student broke the AUP by being deliberately rude or provocative to other members of the community it became necessary to impose sanctions. Issues were always dealt with openly within the community, usually by discussion within the forums, and difficult decisions were debated with input from staff, students and the individual at focus.

5 Conclusions

The experience of the *Pilot* gave us great encouragement to continue to develop this environment as a space for new opportunities and even freedoms in educational practices. Students who engaged with the island, the wiki and the forum demonstrated higher levels of the knowledge age skills of communication, leadership, teamwork and creativity. These skills included the ability to organise, co-ordinate and work creatively with others to set up and run inworld events, the ability to collaborate constructively with others in the creation of joint outputs such as wiki pages and other resources and the ability to self-regulate both as individuals and on the day-to-day running and policing of the community. Such skills are readily transferrable to other environments such as higher level studies and workplaces in which the ability to collaborate effectively is essential. However not all students engaged fully with the Scheme Community. The study reported in this paper was conducted during phase 1. Subsequent phases used the lessons learned in phase 1 to attempt to improve engagement (Twining, 2009).

At the time the *Scheme Community* was founded the UK government set out prescient aspirations for young people:

to develop the skills you need for participating fully in a technology-rich society ... [you need to be] spending more time learning in groups, working with other learners, being creative, learning through challenging, game-like activities and materials ... and with clear personal goals that you help to set. (DfES 2005 p.11).

On balance we concluded that evidence supported progress towards this vision and suggest that despite multiple challenges there are dramatic new possibilities for pedagogic redesigns.

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