What gets Secondary School pupils on a VLE and what difference does their age make?

Acknowledgments

Abstract

Virtual Learning Environments (VLEs) become compulsory in UK schools from 2008. A great deal of public money has been and will be spent on them. Research on VLEs in schools is sparse and research on what makes students use VLEs even more so. This study builds on a practitioner's observation that students of different ages use VLEs in different ways. Through focus groups, a survey and the analysis of VLE access logs, this survey investigates why students use or don't use VLEs and looks for differences and patterns in the uses of students in three different year groups.

Analysis of results shows that there were significant differences between year groups in perception and usage, and that the youngest students were more eager users of the VLE. Communication and homework were found to be two key factors for student use. The study advises that schools take the opinions of pupils into account when designing or procuring VLEs and suggests that more research on what makes a successful school VLE would be invaluable to school decision makers who often have few experiences in this field.

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Introduction:

Virtual Learning Environments

The foundations of constructivism are built on children creating their own knowledge. The now 20 year old vision of Papert saw ICT as a facilitator for this change towards a new style of constructivist learning (Papert, 1980). Socio-Cultural learning can also make use of ICT tools (Ferri, 2007) and help students communicate and learn as a result of efforts to understand the world around them. (Vygotski, 1978). In the UK the government has promised a revolution of learning and personalised learning with VLEs at the core (Becta b, 2005). VLEs though, new in most UK schools, are normally chosen by school managers, maintained by school technicians, and used by school teachers to educate school students. In this jigsaw of educating with VLEs, the learners can end up being the last piece of the puzzle. Though VLEs are built with pedagogical principles in mind, they are controlled environments run by teachers or technicians. As a

teacher in charge of a VLE I want my learning environment to be set up to best facilitate my students' learning. In this study I will be looking at three groups of students of different ages. I will investigate how they have used a VLE. By doing this, I hope to delve deeper into what they currently do on a VLE, what they want to do and why. I hope the results may give an idea of how to best set up and run a VLE with the students at the heart so that they become one of the first corners of the jigsaw not just a finishing piece.

In this study I do not attempt to define the terms VLE or e-learning. There are many pseudonyms and variations of the term VLE. Personal learning environments, managed learning environments and learning platforms are three examples. All of these examples have different meanings and descriptions. When I use the term VLE I use it as an umbrella term to describe these technologies under which there may be sub-categories or variations.

Virtual Learning Environments in UK schools:

Virtual Learning Environments (VLEs) have recently become more commonplace in UK schools. Government directives have meant UK state schools should all be on the path to procuring, creating or implementing a VLE. There are two commonly publicised figures that give an idea of how much has been spent on VLEs in the UK. In England, a significant proportion of a Standards Fund grant of £41 million in 2006/7 was to be spent on VLEs. (Becta e, 2007). In Scotland £37.5 million was spent over 5 years to provide the Glow national intranet for learning. (O'Donnell, 2008). These figures do not specify whether they include costs of training and resources but even without these details the amounts of money being spent are significant.

The DFES (now DCSF) October White Paper gave two points that were taken as targets in relation to learning platforms. This was expanded and formalised in 2005 when the DFES then published a target that "all pupils will be able to access a personalised online workspace capable of supporting an e-portfolio, by 2007-8" (DFES, 2005). Further more ambitious technical and administrative goals were set for later years but most targets lacked detailed explanation. This could be on purpose as VLEs and learning platforms vary enormously (Barajas, 2000). Along with these guidelines, there are government agendas both for increasing use of ICT in the curriculum and for personalisation of learning (Becta b, 2005). A VLE lends itself very well to both of these agendas.

Some schools have been using a virtual learning environment for some time and are on their second or even third incarnation of their VLE (YHGfL, 2007). Most schools however are still finding their feet. In particular some Primary schools are struggling as they do not have the desire, staff, technical support or money to get involved. Many local education authorities (LEAs) have chosen or bought in a VLE on behalf of all the schools in their area. Examples of this include Fronter chosen by the London Grid for Learning (LGFL), Moodle chosen by Cumbria and Lancashire (CLEO) and Uniservity in Rochdale. Some LEAs have just done this for Primary and/or special schools while some have done it across the board. Overall VLEs are new in the eyes of a large number of both teachers and students.

The Problem:

UK Schools are spending a very large amount of money on VLEs. The government has said they are a good thing; research has shown they can be used

in many beneficial ways. However there is generally only anecdotal evidence looking at how students use VLEs. If schools and the government want the money spent on VLEs to be effective they need students to be using them. VLEs are often blank shells that arrive devoid of content or structure. Some commercial VLE providers include some content and personalisation as part of their service. Even then many schools having never ventured into this field before do not know what they want, what their teachers will want or what students will want. Looking into why students go on a VLE is one starting point.

Background to the study:

The school VLE:

In September 2007, as part of my role as e-learning coordinator, I launched a pilot VLE at Rickmansworth School called Rickypedia. Rickypedia was a low cost small scale VLE implementation based on the Moodle open source software. As a school we had no previous experience of virtual learning environments and had only a narrow vision of what it could mean for the school. We knew that we had to have one, and we set out implementing it in what we thought was the best way possible. The school felt a small scale VLE implementation would give us the opportunity to build knowledge and experience in order to make a long term decision by the end of the year. It is important to note that this pilot VLE implementation was not carried out for the purposes of this study. It was in fact a number of observations made during the pilot that lead to the focus of this study.

First Pilot Classes

I started off introducing the VLE to two of my classes, a Year 13 Computing class (aged 17 to 18) and a Year 10 ICT class (aged 14 to 15). The year 13 class was made up of 7 boys and the year 10 class of 11 boys and 5 girls. By the nature of students that choose the courses the vast majority were either very proficient with ICT or at least eager to use ICT. Both classes were introduced to the VLE in similar ways. Task one was for students to fill in and update their profile information including e-mail address, hobbies and interests; task two was for students to create an avatar (a personalised picture to represent the student) and upload the picture to their profile. Some of this work was set for homework. Even at this early stage I noticed different attitudes towards the VLE. In lessons there was a general feeling of excitement at doing something new and different but even for the first activity a small number of students in each class failed to complete the online task. As the weeks went by I used the VLE to set online homework, post class notes and resources and I made a conscious effort to use other features of the VLE such as discussion forums, student generated glossaries, and votes. Again in class all activities were completed with very few problems and little help needed. For work set at home participation seemed to vary. Every homework was set online but for written work I gave students the option of handing in work online or handing it in on paper. Most students handed work in online but some did it on paper and continued doing so. When I tried setting homework where students had to post messages, opinions or work in a class forum participation dropped further, a minority of students would make excellent contributions with the remainder not participating in any way. When students were asked to post work or resources in class all students participated.

Although I was pleased that the VLE was adding to lessons and becoming an invaluable tool, I felt the ideal of students using technology to construct their own learning, (Papert, 1992) or having a space for socio cultural learning and self support was a long way away. I also started to wonder why some students were very eager to use the VLE at both home and school, some just at school and some had no interest at all.

Second stage of Piloting:

As the term went on a few other teachers decided to try the VLE with their classes. One interesting and relevant example was a year 12 English class. The teacher teaching the class went straight into running a synchronous chat on a topic and followed it up with discussion forums where students had to write the introductions to their essays and comment on each others' work. This was started in class and follow up activities were set for homework. The class made some excellent use of the communication tools and according to the teacher thoroughly enjoyed the lesson. Participation in the forums was impressive but even in class not every student participated and although there were some excellent participations in the discussions this was from a minority of students. Some members of the class also discovered the personal messaging feature of the VLE though this wasn't generally used for work but for sending joke messages between students. Again the use of the VLE added to the lesson but use varied considerably between students.

Stage Three – Keystage 3:

I moved my pilot down another age group to a year 9 group. Over the course of the pilot, 3 groups were included with a total of 60 students. In most subjects the group are split into two groups of 30 students but in a few subjects such as ICT they are mixed together and split into three groups of 20. The groups contained; 11 boys and 9 girls, 10 boys and 10 girls, and 7 boys and 13 girls. Because of timetabling, only two of the groups had lessons at any one time. It is worth noting that the overall group was of a high academic ability and generally very computer literate.

I started the groups off with the same introductory tasks of filling in their profiles and creating an avatar. There was an immediate difference to how students approached the task. Not only was there greater enthusiasm for the task but students seemed to take more care and effort personalising their profiles. Students also logged on from home even when they didn't have work to do and started posting messages in a student forum and sending each other personal messages using the system. Some users seemed prolific users, logging on regularly to check and post messages. These same users always completed online tasks set for homework. I was extremely pleased at the general increase in use of the VLE and intrigued as to why the younger students seemed to use it more.

Stage Four – year 7:

The next class was added after a request by another English teacher who wished to run some lessons using features of the VLE. As I also taught the class ICT it seemed sensible to introduce the students to the VLE in their ICT lessons before

they started using it in English. This was a year 7 class, the youngest in the school, and was made up of 14 girls and 16 boys.

Again the class began with the same starter activity and, similar to the year 9 group, they approached the task with enthusiasm and care. There were more technical problems, as students were less proficient with technology, but students made efforts to resolve any hurdles. The class were using the VLE for two subjects so had a greater range of activities and resources though resources were not plentiful. The most notable way this group used the VLE was to send personal messages. Some students would send message after message to friends and for the first time I as the teacher received messages asking for help or clarification. For example, "Hi Sir, I'm at my friend's house, what is the homework?" This was a surprise as I had encouraged the previous groups to ask questions about classwork or homework but hadn't encouraged the younger groups. The younger the VLE reached down the school, the more children seemed to use it.

Summary and Questions raised from pilot:

From the experiences of the pilot VLE there seemed very different patterns of use in each class even when the age difference was just one year. There were many other variables involved such as class size, social makeup of class, and set activities. These will be discussed later on. Even with all these factors it seemed that the younger the students, the more they used the VLE and the more enthusiastic users they seemed to be. This left me with my starting hypothesis.

Why do younger students appear to use the school VLE more than older students?

Investigating the Hypothesis:

Procedure – an overview

As a practitioner this study was carried out alongside my teaching. I did not make any interventions to my teaching for this project. The research does though look at interventions I made in my lessons before the research was started. The procedure I used to investigate and expand on the hypothesis could be described as following the procedure of Action Research (Burton, 2008). This is an iterative method of research done in various stages typically, identification of a problem, planning, implementation, monitoring, analysis, evaluation and recommendations for the next step. These stages happened quite naturally and followed at least two cycles. After deciding on my initial hypothesis as described earlier, the next stage was to read and investigate relevant literature; this stage was ongoing throughout the project. Initially my literature search gave limited results. To clarify my hypothesis I started collecting information from students though focus groups. As a result of these first stages I was able to expand my one hypothesis to a group of research questions and start the cycle again. Further reviews of literature were conducted and were used to create a survey to question students and delve into the research questions. The results of the survey along with the previous stages of research allowed me to make some conclusions about the hypotheses.

Initial Review of Literature:

To investigate my original problem I looked for answers to four questions: why do students use VLEs? What factors promote or inhibit use of VLE? What difference does student age make? And how do people survey and measure attitudes to VLEs? I hoped researching these areas would enable me to plan appropriate data collection for my research and analysis. My initial searches found literature researching ICT use in schools and literature researching VLE use in higher education but none about VLEs in schools. I broadened my search away from journals and to reports by various research groups and government funded agencies. Though some articles and papers were not peer-reviewed they contained valuable resources. Some had results of large-scale national and international surveys, and some had excellent literature reviews which gave me avenues to explore further. Although some of these agencies may have had an agenda when producing their research, most were independent studies and the agenda of technological or social change is not so different from the personal agendas of many educational researchers including myself.

During my research the same issue of lack of research in this specific field arose repeatedly. Most research on VLEs is based on experiences in higher education or on general ICT use in schools. Often this related research was extrapolated to relate to VLEs in schools though it didn't always seem appropriate to do so. There is very little evidence and research on the use of VLEs in schools (Becta a, 2004; Frid, 2001; Korte, 2007; Kastis, 2007) and independent surveys are hard to come by (Hunt, 2003).

I did find many case studies and articles to follow but, as with other literature reviews, I had to look further afield to a small number of studies of schools

abroad and the more numerous studies looking at higher education. (Becta a, 2004; Hunt, 2003)

The studies that did exist, regardless of setting, were criticised for a variety of reasons. First was questionable balance as some were sponsored by developers of VLEs (Hunt, 2003). Second was not looking at attitudes of all users but concentrating on just teachers or students (Liaw, 2007). Some conclusions were criticised for suggesting results were conclusive and transferable to other scenarios despite there being large variations in success across groups of people (Watts, 2000) Some studies were over too short a period of time to make real conclusions (Herring, 2008) Many studies focused on early adopters who are not necessarily indicative of teachers or students in general (Buckingham, 2008) General research methods were also criticised for having small samples, not being systematic and of a lack of reliable evaluation tools (Kay, 2008). As time progresses, more schools start using VLEs and more studies appear, these problems may be resolved. On the other hand, with the pace at which technology moves, the same problems could reappear as new un-researched innovations are introduced.

Why do students use VLEs?

Many studies look at what benefits students gain from using VLEs and imply that because students identified these benefits they are reasons for student use. Students valuing a task can certainly influence their use of a VLE (Sun, 2007) But online, as in the classroom, students may avoid work even if they see it as beneficial. There may also be reasons for use that students identify as fun but not academic so they don't recognise them as benefits even if they enjoy them. One

way of identifying why students use a VLE is to categorise the types of user. One model given describes four common types of user as digital pioneers, creative producers, everyday communicators and information gatherers (Green, 2007) Another way of looking at why and how students use VLEs is looking at the main areas of use. Banyard describes four spaces, personal learning space, teaching space, school space and living space (Banyard, 2008). This separates spaces used for learning with teachers, learning alone, use in school and use out of school. Non users have also been classified into types. There are those with no interest or need, those with no knowledge, those with barriers (time, age health), those without access to a computer and finally the disenfranchised or conscientious objector. Even if students are non-users of technology they are certainly aware of it (Luckin, 2008)

What promotes or inhibits students' use of VLEs?

Studies, primarily in higher education, point to a number of factors that lead to successful VLEs and a number of factors that hinder students from using them. In general, studies do not disagree with each other but do emphasise different aspects. Some reasons for use have opposite reasons for non-use, for example if something is easy to use students may use it if it is hard to use they may not. Most research looked at the positives with not much looking at why students don't use technology (Green, 2007)

The following are reasons for use or non use of technology, ICT and VLEs.

- Technical issues: Technology doesn't always work which can be frustrating for both students and teacher. (Watts, 2001)

- Prior experience of students: For a system to be effective students should be accustomed to using it. (Akkoyunlu, 2006) Where children have limited ICT skills they gain the least educationally. (Watts, 2001) For those without training in a particular system experience of previous internet use can make a difference. (Tsai, 2001) In UK schools, with all students having some experience of the internet, experiences with the internet rather than exposure to it seems a more likely factor. When it comes to attitudes to taking part in online activities, prior experience of any IT can lead to more positive attitudes. (Liaw, 2002) With all students nowadays having previous experience of ICT and the internet, there is a need to look at this in more detail. A recent survey by UK media watchdog Ofcom sums up the importance of technical knowledge describing the new digital divide as "one of access to knowledge rather than hardware" (Ofcom 2, 2008)

- Students valuing tasks: Students valuing the courses they take online as well as their satisfaction with the course can contribute to their usage of a course. (Sun, 2007) (Kay, 2008) Conversely if they cannot see benefits of an activity it is likely to put them off it. (Ramon, 2008) Courses should be designed so students value them (Artino, 2006) This may seem common sense to any teacher who tries to plan any activities online or offline to be appealing and interesting to students. But sometimes the obvious factors are easy to miss when teachers are engrossed in new ways of learning and teaching.

-Teacher attitudes: There is a well documented digital divide between teachers and students both as a result of age and priorities.(Banyard, 2008) This divide can be a problem; in the USA 40% of students surveyed in grades 6-12 named their teacher as an obstacle to their use of ICT (Project Tomorrow, 2008). Aside

from technical difficulties, teachers may not understand the work students do online. Drotner gives two extremes of adults that either celebrate creative and savvy users or ignore their output as trivial. Overall teachers can view the results technology brings as adding little or even taking away from traditional methods of teaching. This along with higher perceived risks makes getting teachers on board harder. (Drotner, 2008) As with anyone leading by example, a teacher's attitude and enthusiasm can affect learners both positively and negatively. (Sun, 2007) This seems a major obstacle to overcome.

-Feedback: There are a number of reasons feedback can make a difference to students' use of VLEs. Checking grades online was the third most common way American students used technology. (Project Tomorrow, 2008) Getting instant feedback about online assessments such as quizzes can also be a big pull for students (Hunt, 2003). The role of the teacher in giving feedback can also be important in a number of ways. Fast responses from Tutors and well developed feedback and feedback mechanisms can make a big difference to student perceptions of a course. (Sun 2007)

- Flexibility – Students appreciate having flexible options to work where and when they want. Students may log on at unexpected times of day if the VLE is available at times convenient to them. (Conole, 2008)

-Design: Design is a broad term that can be used to describe features, layout and content all of which can make a difference to a learner's experience. Each of these can be broken down into many subcategories that could be investigated or researched in some detail. The final four reasons for student use of technology all fit in one or more of these categories.

User interface - Having a good user interface makes a VLE easier for students to use and navigate. Shee and Wang found that users rated a good user interface as the most important reason affecting user satisfaction. (Shee, 2008)

Interaction – Feedback from teachers, one form of interaction, has already been mentioned. Other types of interaction can help users collaborating on tasks which can increase motivation (Kay, 2008) This can also help create a sense of community which is another motivating factor for students. (Prendes, 2008)

Content – Studies mention quality of content rather than the amount of content. Content with graphics and animation was well received by students while content consisting of lots of text could put off students. (Kay, 2008)

Clear Instructions – Much like having an easy to use user interface having clear instructions, both for how to use a VLE and for how to complete online tasks make it much more likely a student will complete a task.(Kay, 2008)

What difference does age make to student use of virtual learning environments?

This was the leanest area of research for school specific scenarios. Surveys of University students were more common and showed varying relationships between age and VLE use or satisfaction. Younger University students were more likely to use and enjoy using a VLE. This could be relevant to schools as the reasons given were that younger students had greater exposure to ICT and were more computer literate. But this depends on the definition of computer literate; in schools the younger students may have learnt about ICT from an earlier age, in common with younger university students, but their overall computer knowledge is unlikely to be greater than older students who have had

more years of computer use and school ICT lessons. To paraphrase Prensky, the younger University students have the edge as they are more likely digital natives with older students possibly digital immigrants. (Prensky, 2001) In schools all students would be defined by Prensky as digital natives, the question is which natives have more experience? A 2004 study found that 82% of Year 7 students used the internet compared to 94% of year 11 & 12 students (Kitchen, 2006). A study of UK children by OFCOM, (the independent UK regulator of the communications industry) found similar differences. Those aged 12-15 were more likely to use a variety of forms of media and communications technology than 8-11 year olds. There were no types of equipment more likely to be used by the younger age group. They also found that use of the internet increases from age 5 to 14 with a slight dip after 14. Older students were found to be more likely to use the internet on their own and to make broader use of the internet. They found a noticeable increase in use of media at age 11. (OFCOM, 2008). Another interesting point noticed by the same study was how patterns and use had changed over the last 2 years. This constant change in students' use and knowledge of ICT is something, as an ICT teacher, I notice with every incoming cohort of year 7 students.

How do you survey student attitudes?

There were a few published ways of quantatively measuring student attitudes to ICT and the Internet tailored to different groups. Most consisted of statements about technology that participants would rate on a likert scale. (Oppenheim, 1992) Non-academic surveys of attitudes towards ICT (i.e. surveys by

government agencies or organisations) followed a similar methodology but with a larger variety of questions. When it came to attitudes towards e-learning there does not seem to be a standard methodology. Liaw, Huang and Chen argue that a single methodology is not suitable and an approach that covers many areas is more suitable. They noted that e-learning includes affective, cognitive, behavioural and social components and in their questionnaire asked about demographic information, computer and internet experience and attitudes towards e-learning (Liaw, 2007). Others agreed that measuring attitudes should not be carried out alone and suggested finding out about usage and experiences of media and technology (Kirkwood, 2005). Attitudes to computers and the internet are closely related (Liaw, 2002) and researching these may work well to validate results of VLE attitude questions. Most studies of student perceptions found positive results but most used qualitative evidence which gave over a confusingly large number of reasons for positive and negative attitudes (Kay, 2008)

Data Collection

Focus Groups:

The initial literature review gave me many ideas but no definitive insights on how to further my initial research hypothesis looking at why different aged students used the VLE in different ways. The questions brought up from the research broadened my scope rather than narrowed it to a more realistic question. To try and narrow down my research I asked my students for their opinions. I did this by getting together focus groups of students from different year groups to

discuss why they used or didn't use our VLE. I only chose groups that I had taught as it meant I had easier access to, and knowledge of the students. I decided to focus the study on three year groups, year 7, year 9 and year 10. The year 13 students were taken out of the study for two reasons. First, because they were a very small group of only seven students who would not provide as statistically significant a sample as the younger larger classes. Second, but most importantly, they finished the school year earlier than other classes which wouldn't have given me enough time to complete the research. The remaining three groups provided a varied set of ages and pupils that I could choose from for the focus groups and then expand on later if needed for further research.

The focus groups were done during school time with students taken out of lessons to give their opinions. This was done with the permission of both teachers and students. Because of the time of year and the short duration of the focus group (10 to 20 minutes) this wasn't a problem or disruption for teachers or students. Groups of five students were picked. Groups were used rather than individuals in the hope that students would bounce ideas off each other and delve deeper into the questions. (Oppenheim, 1992) The aim of the focus groups was not to find one answer to the hypothesis but to bring out as many different reasons for student use of the VLE as possible. These could then be researched and studied further. Students were specifically selected who, I felt, would be happy to talk and give an opinion in the group. Of the five I tried to choose about three of the participants who had at some time been a regular user of the VLE, and at least one had only used it minimally. This unequal ratio was chosen because, at this stage, I was more interested in finding out how and why students used the VLE rather than why they didn't. It's worth noting that the amount of

time that had elapsed from the students being active on the VLE varied by each year group as some had used it at the beginning of the year, some year round and some at the end of the year. All focus groups were run by myself, sitting in a circle in as informal a manner as possible to try and make the experience a conversation rather than a questioning.

Groups were asked three main questions; Why did you logon to or use the VLE; Why didn't you log on, or what stopped you from logging on, to the VLE; What would make the VLE better or make you more likely to use it? Other questions were asked in between for clarification, these were different for each group depending on how much prompting they needed. The key results of the questions are in table 1 below. As can be seen, even from just the summary, the year 7 students had a lot more to say than the other groups. The year 7 group lasted 10 minutes longer than the other two groups.

Table 1- Results of Focus Groups

Year Group/Question	Year 7	Year 9	Year 10
Why did you logon to the VLE?	- For checking work - To check Messages (social and work) - To check when work is due in - To look at profile and change profile pictures - To look at random work - To upload work - To look at ICT glossary - To do homework	- Forced to for work - To chat to friends (in lessons) - To do homework - When bored - To look at what other years are doing - To make avatars	- To check homework (if homework planner was lost) - To check homework was written down correctly - To submit work

	- When bored to see if friends are on - To message people		
Why didn't you log on / what stopped you from logging on to the VLE	- Forgot about it - Not been set work on it - No homework to check - No point for chatting as MSN is quicker - There weren't enough people on it - It's easier to phone friends to ask for homework - Takes time to turn PC on	- Forgotten password - Nobody else was logging in - Use MSN to talk to friends quicker and better - No reason to log on - After a while got boring - Was just for homework - Finished homework - Didn't know how to - Confusing layout - Talking was slow	- Nobody uses it - It's work based - Because it's monitored by teachers. - Have better things to do - Go out to see friends rather than talk to them on computer - No internet connection
What would make the VLE better or you more likely to use it?	- More people on. - Comparing work you've done - Educational games to play at home maybe against other people - Being able to customise homepage and personal profiles - Being able to comment on peoples' work - Help pages, on the website and in class. - Regular school news updates - Regular online	- Instant Chat - Games - Jokes - More people - Facility to ask teachers questions about homework - Homework timetable - Catch-up notes for when you miss a lesson.	- Films and games - Easier navigation - Online feedback - Online revision with more content than is currently available.

	homeworks - Different sites for upper and lower school. - Links to websites - Being able to attach Youtube videos		
Other noteworthy comments	- Some technical issues and issues with speed of system. - Felt it was designed better for younger students not older - Felt it was new and exciting.		- We use the computer and the internet a lot but do other stuff like downloading music and myspace

The results of the focus groups brought out some key reasons that students went online to use the VLE. The summary above doesn't show frequency of answers but two motives for going online were repeated by a large number of participants: being in touch with friends or classmates socially, and checking or handing in homework. There was a large contrast between the younger and older students with opinions towards social factors – younger students gave a multitude of social reasons that they may go online, year 10 students were careful to point out that although they spend a lot of time on the computer they prefer to socialise away from the computer. There seemed to be a very different dynamic Criticism of the Results: As stated earlier the focus groups were not meant to provide clear answers to the original hypothesis but to expand on it – thus the results just emphasise some areas that could be researched further. There were a number of problems with this method of research. Each group had a slightly different format of questions dependent on their responses so group answers

cannot be compared directly. All groups are ones that I teach and they may have been eager to please me or loathe to criticise me as their teacher. I did feel that all groups had an honest dialogue but I can't be sure that they weren't holding anything back. Another potential issue is that results were transcribed to paper as I conducted the discussions. I made an effort to write all significant comments down but I may have missed some comments and I may have misinterpreted some comments when it came to reading through the comments afterwards. This was made harder as discussions were left to flow as naturally as possible and some became cyclical, often coming back to previous questions out of sequence.

Revision of hypotheses based on student feedback:

As a result of the focus groups and my experiences in class I identified some key observations that I wished to investigate further. For each area I have explained the area, what brought it to my attention and for some I have mentioned some possible implications.

1. The frequency of VLE use for different age students – my experience in the classroom seemed to be that younger students used the VLE more. This was backed up by the general attitudes of the focus groups. I was interested to quantify this to find out if my observations were accurate. This has implications for schools if they are to go for a staggered introduction of a new VLE to students. They may want to target the group most enthusiastic to use the VLE.

2. That different age students used the communication tools of the VLE in different ways – the focus groups reaffirmed my experience that younger students made more use of the messaging facilities and again I was interested in

quantifying this. This again may change the way teachers decide to use a VLE with different age groups.

3. That older students had access to a wider range of methods for communicating with classmates – the year 10 students made it clear that they had many ways of keeping in touch with friends. This could be a factor in why they used the VLE differently to younger students. It could also play a part in personalising internet usage and safety training for each year group.

4. That younger students are more enthusiastic about innovations in lessons and online and got bored of it less quickly – Older students seemed to find the VLE less exciting and the excitement they did have seemed to wear off faster.

5. That younger students seemed to be more enthusiastic to hand in homework online – as said previously I usually gave students an option to hand in work online. My feeling was that older students were less keen to hand in homework online. Some courses, schools and qualifications are moving towards e-portfolios and paperless assessment and this could become an issue in many places.

6. That where there is online communication via the VLE it is most likely used socially rather than for work – I am interested to see how much students used the communication features to help each other with work and how much was just for fun.

7. That older students are less willing to post messages on a VLE (especially messages to friends) as they are worried they may be intercepted by teachers – This certainly came across from the older students in the focus groups.

Each of these areas was shortened to seven research hypotheses put in the form of statements which I hoped could be proved one way or another.

1. The younger the student the more they use the VLE.

2. Younger students use the VLE more because they use it as a communication tool.

3. Older students have access to a greater range of communication tools.

4. There is more of a novelty using a VLE for younger students.

5. Younger students prefer handing in homework online.

6. Messaging is usually social not about work.

7. Older students are more worried about privacy.

To investigate these hypotheses further I conducted a further review of relevant literature followed by a survey of my students.

Further Literature Review:

Before collecting data to investigate the hypotheses I conducted a further literature review concentrating on the key issues the hypotheses were investigating. Communication was a key feature in the VLE highlighted in the focus groups. I was interested to know what research shows about students communicating online and if this communication is likely to help them learn. Next I was interested in finding out about the "novelty" factor of technology and if there was any way of measuring it. Another issue was students' attitudes, perceptions and understanding of online privacy. Finally I investigated how online homework was received by students. I specifically looked for any results showing differences between age groups or other groups. Unfortunately most results were more general.

How do students use social tools?

In one survey the top seven reasons for children being online were all social in some way (Luckin, 2008) so social and communication tools have a lot of potential for getting students on a VLE. Goldman splits tools for communication into two groups of social technologies and cultural technologies. A given example of a social technology is a group mind map where technology focuses attention. Cultural technologies are described as "formal tools that organise the processes for communication in specific settings" (Goldman, 2008). I have split my research into three more simple categories; social networks, messaging and using social activities for learning.

Social Networks:

Social tools include amongst other tools, social networks (SNS), messaging and forums. Although VLEs may not be designed as social networks they share many features of these networks. Rickypedia the VLE being researched had spaces for profiles and messaging. There is no reliable data on exactly how many people use SNS (Boyd, 2007) but the numbers amongst young people are certainly high. There are significant differences in numbers of users of different ages and genders. In the USA, 45% of children aged 12-14 used SNS compared to 64% of 15-17 year olds (Lenhart, 2007) Across the genders younger boys were marginally more likely to participate than younger girls but older girls were significantly more likely to participate than older boys. (Lenhart, 2007)

Students use social networks for a variety of reasons. The 2007 Pew survey found that 91% of teens use SNS to connect with friends. (Lenhart, 2007) These friends are usually pre-existing ones. (Boyd, 2007; Boyd, 2008) School VLEs connecting a ready made group of classmates could certainly fulfil this role. There are benefits of these connections shown in many studies. Social interaction between students and teachers is related to course satisfaction and social collaboration and dialogue can help users to reach their goals. (Contreras-Castillo, 2006) A learner's performance can have a direct relation to their social learning networks offline and this could also be true online (Cho, 2007). Having social activities within learning can also make learning seem of a higher quality and be a motivating factor for students (Tung, 2006) Social networks as well as communities of interest are very important factors for getting students online (Green, 2007) which could translate to getting them on a VLE. There are however many hindrances for using SNS for education. Just as SNS may support pre-existing relationships they also tend to support pre-existing behaviours. (Boyd, 2007) Thus if a student is likely to behave badly in a physical classroom they may also do so online. Similarly social problems can also happen online with arguments in a classroom migrating to virtual spaces (Luckin, 2008) and possibly to outside of school hours. Kreijns created a "social space scale" which successfully measured positive and negative group behaviour but the tools for doing so were beyond the scope of my study. (Kreijns, 2007). Teachers wishing to make use of the benefits of SNS should heed a few warnings. It can be tempting to construct social learning spaces to fit in with traditional education and a teachers preferred style, this is likely to reduce or restrict informal learning. (Contreras-Castillo, 2006) Students may not always use a system as intended and

develop their own strategies for working their way through environments (Boyd, 2007) which may spoil a linear learning path setup by a teacher. In lessons, teachers should be aware that students are more likely to use more features and activities at home than at school where messaging is the preferred use.(Boyd, 2008)

Messaging:

Messaging is an important tool in SNS and VLEs. Messaging with classmates about assignments was named as the 5th top activity in a USA survey of ICT at school (Project Tomorrow, 2008). Messaging can be a key to creating a good community of practice as it can provide regular interactions about work. (Daele, 2007) When students work on challenging tasks communication using messaging can help them persist and succeed with the task. (Frid, 2001) Pupils using VLEs or SNS for learning expect instant communication with peers and tutors on demand (Conole, 2008). In online courses this communication can make a large difference. One way is by increasing informal interactions which can improve course satisfaction and performance (Kirkwood, 2005). As well as personal messaging public messaging using chat and forums are usually received positively by users (Hunt, 2003). Two of three key factors for success of a Primary online learning programme in Australia were related to interaction with others. (Sun, 2007)

Using social activities for learning:

Measuring academic progress through social learning is an area that needs much exploration. (Horizon, 2008) Teachers will need to develop ways of learning and assessment to make use of these tools effectively. Using communication tools just for fun is not the most effective way of learning but linking them with other activities with a purpose could be a good start. (Kirkwood, 2005).

How long does the novelty effect last for and how can it be quantified?

I found almost no reference to a "novelty effect" on students. It is certainly something I see with myself and with all new tasks in the classroom where students are initially excited by something new but eventually get bored of it. A recent research project on Web 2.0 in schools found that boredom could occur when students lost interest in a potential site. One way of solving this was for a critical mass of interesting users to be on the site. (Luckin, 2008) Unfortunately no way of working out this critical mass or of measuring boredom or novelty was found.

Privacy Online:

I found a number of sources of views and discussion on privacy of teens on the internet. There were some worrying and interesting findings but also many positive findings. A number of students who don't use web tools cited safety as a reason why (Luckin, 2008). On the internet, in general, students often want to

protect privacy but engage in behaviour that does the opposite. Most though vary the amount they post depending on how much they trust a website (Boyd, 2007). The Pew internet survey in the USA found the 66% of those with online profiles do not have them open to all users and of those that do 46% have some false information on their profile. (Lenhart, 2007). This suggests that teenagers do think about what they post even if they don't always make the "right" decisions. In school and home environments students do think about privacy. Public and private may mean different things at home, at school, and in general. Many children have tactics to keep their internet use private or secret from their parents. (Livingstone, 2005) One project researching a school VLE noted a child who used a data stick for storage rather than the VLE as he wanted to avoid the school monitoring systems. (Banyard, 2008) When it comes to posting school work on a VLE there are mixed feelings. Students seem to prefer work to be visible to a limited group of people such as their class rather than to a wider audience. (Luckin, 2008) This may be because they are worried what people they don't know will think about them. Pupils and teachers have different worries about privacy with teachers worrying about internet safety while students worry about their online identity and looking good. (Luckin, 2008)

Despite the issues and problems there is a large amount of positive evidence about online privacy of children. They are aware of privacy threats and make efforts to stay safe (Boyd, 2007). Very few children have been upset about photos or text that others have put about them on the internet (Luckin, 2008). There is also a view that students creating personal spaces and information can be a healthy stage of adolescent development as it helps them create their own identity. (Stern, 2008)

Online Homework:

The use of technology for homework came high in the American Project Tomorrow survey. The number one use of technology was for writing assignments (74%), with checking assignments or grades online coming in at number three (58%) (Project Tomorrow, 2008). This fits in with the results of my focus groups. Online homework can be flexible and offer a variety of forms of assessment for the teacher (Sun, 2007). One example is online assessments that give instant feedback, such as quizzes, which can be great for building student confidence. (Hunt, 2003) There is always a debate in school over the merits and purpose of coursework. There is an argument that homework needs to be radically changed to be brought up to date with modern skills. (Green, 2007)

Discussion of methodology to test hypotheses:

To further examine the hypotheses I chose to run a survey of the groups. I also had access to the logs from the server holding the VLE but wasn't sure if it would be possible to interrogate these to garner any useful information. The plan was for the survey to be sent out to the same three year groups that were used for the focus groups. Again this provided a good spread of ages and experiences. The three classes were all classes that I had taught which, from a practical view, made it easier to get them to take a survey. A useful side effect of this was that it removed the factor of instructor motivation and attitude which can make a difference to student attitudes. The year 13 group was again left out for the same

reasons as previously mentioned. The year 9 group had two classes that had used the VLE and the others had one each. The approximate numbers I hoped to survey were 30 in year 7, 40 in year 9 and 16 in year 10. The surveys were run during lesson time to make access to the students easier. Because of the timing of the research towards the end of the school year and after examinations this was not a problem as the pace of work in lessons tends to slow as the long Summer holidays approaches. The surveys turned out to be a pleasant reflective activity for classes to start their lessons with before progressing onto other tasks.

Questionnaire Design

I decided to use online survey software to complete the research. A disadvantage of this is the need for access to PCs but as all my lessons were in ICT suites this was not a problem. I experimented with a variety of survey creation tools and frustratingly found that none met my requirements exactly. In the end I chose Google Forms which gave me a balance of some flexibility in question styles with easy accessibility to the survey and good formatting of the results in a downloadable spreadsheet.

The questionnaire was designed to test all seven hypotheses without having to rely on the server logs in case they weren't accessible. Questions were initially created in an order corresponding with the order of the hypotheses. Most questions were quantitative, some used 5 point likert scales to measure regularity of use or attitude, some used custom scales to measure more specific frequencies of use, a number used yes or no questions and one question asked participants to rank items in order. Although the questionnaire and questions took inspiration

from research encountered in the literature reviews it is hard to make direct comparisons as none of the research encountered was aimed at secondary school students, different age groups and the specific areas I was researching. The questions were therefore primarily constructed using my knowledge of my classes along with the outcomes I was expecting to see from the questions. Once all of the questions had been formulated they were arranged into an order that would be more user friendly and logical to the users. (Oppenheim, 1992) Some easier questions were placed at the start to ease students into the process. (Oppenheim, 1992) Some questions of similar types such as questions with a likert scale or questions with yes or no answers were put together. At the end information about the students' year group was requested to allow for comparisons to be made. There wasn't time or a natural opportunity to run a pilot version of the survey to check scales, instead the survey was passed to different groups of people for commenting and feedback. The original survey was reviewed by a number of volunteers from varying backgrounds (see acknowledgments). Between the reviewers I was given ideas for a few new questions to add, ideas for changing some of the scales (some of them conflicting) to make them clearer and easier, and ideas on how to collect some qualitative data. By the final revision I had added some extra questions, revised scales to make them more consistent across questions and asked for students' first names at the end of the questionnaire. The names gave me the option to compare student perceptions from the survey with actual use from the server logs. Significantly I also added a comments box at the end of every section of questions where students could write any opinions or further information to

clarify their answers. This potentially gave me a wealth of qualitative data to supplement the quantitative results.

Criticisms of the questionnaire:

There are certainly criticisms to be made of the questionnaire. The first one was that it was too long, this was a result of asking questions on 7 hypotheses and making sure plenty of data was collected for each hypothesis to make some conclusions. It was also long as a result of feedback during the reviewing stage. Each reviewer had made good suggestions, many of which I incorporated. Another criticism is that the scales were not properly tested as there was no piloting with students. Getting a good distribution of results was down to my judgement of the students. Some of the non-parametric data collected made my data analysis more complicated. Third, I should have spent more time with the server logs to try and get them to work before I had run the survey, this would have allowed me to remove a few questions. Finally my lack of experience and knowledge in surveying and research meant that I hadn't put enough detail into thinking ahead to evaluating results. This process was not made easy by the way I collected some of the data. Overall, despite the problems, my survey collected a lot of interesting data. A copy of the survey is in appendix 1.

Results:

At the end of my data collection I realised I had collected more data than I could deal with. There was probably enough to sustain more than one research project. The download of the server logs left me with a spreadsheet of 50,000 entries. The

questionnaire collected 77 columns of answers, or other data, per student. In this section I will display and try and explain the key results from the data. I will describe the server logs first. For the survey results I will go through them as I go through each hypothesis giving the data relevant to each one. Any relevant qualitative data will also be presented with each hypothesis.

Server Logs:

Despite initial worries I was successfully able to interrogate the server logs of the VLE. The VLE stores logs of all actions undertaken by users in an online database. I downloaded this database as well as the database of user-ids and names. I linked these two tables up in a database on my computer which let me query actions by date and by teaching group. Initially I had problems converting the date to a readable format but I found a simple calculation in the VLE help forums to fix this. Analysing the data had to be done group by group and date by date but the whole process was quite fast and gave very accurate results as to how often different students used different parts of the VLE over different periods of time. External factors that may have affected the results will be discussed along with the hypotheses. Aside from these there is only one minor discrepancy in the data. In year 7 and 9 there were a small number – a maximum of four students that used the VLE in extra curricular activities. As far as possible these extra were removed from the final results. Due to the overall numbers of pupils, the small number of extra activities and the many other external factors that may affect the data this factor should not be critical to the overall results. An action, as recorded in the data, is any activity a student may undertake, this includes, logging on, logging off, sending a message, reading a forum message or

downloading a document. A student who logs on and sends 5 messages in a session will perform three times as many actions (6) as a student who just logs on and logs off (2). As different year groups had different numbers of students and used the VLE for different periods of time I have presented the total actions divided by students and days alongside the actions to make for easier comparison. The results will be discussed with the relevant hypotheses.

Table 2- Server Logs - Total and Proportional Actions by Students per year group

	Year 7	Year 9	Year 10
Number of students	30	60	16
Days used	77	243	296
Number of logons	956	465	417
per student per day	0.414	0.032	0.088
Total actions	10569	7636	3208
per student per day	4.58	0.52	0.68
Personal messages written	1256	846	18
per student per day	0.544	0.058	0.004
Forum Posts	11	61	1
per student per day	0.0048	0.0042	0.0002

Table 3- Server Logs - Actions per year group and actions per person per month.

	Actions in month 1	Actions in month 2	Actions Per Person Month 1	Actions per person Month 2
Year 7 n=30	8284	2215	276	74

Year 9 n=40	3420	1666	86	42
Year 10 n=16	1558	300	97	19

Chai Square = 10.58 p = 0.005

Analysis of results of survey by hypothesis:

Unless otherwise stated n (year 7) = 26, n (year 9) = 26, n (year 10) = 10

Hypothesis 1. **The younger the student the more they use the VLE.**

There are three methods I have used to measure this hypothesis. Two measures were from the server logs looking at the number of logons (Table 2) and the total number of actions (Table 3). From the questionnaire I have used the question where students were asked how many times a week they logged onto the VLE when they first started using it.

Table 4: When you started using the VLE how many times did you login a week?

Number of VLE logons a week	Year			Total
	7 (n=26)	9 (n=26)	10 (n=10)	
7-13	15%	0%	0%	6%
5-6	12%	0%	10%	6%
2-4	46%	15%	30%	31%
<2	27%	85%	60%	56%
Total	100%	100%	100%	100%

Kruskal Wallace Test : p=0.001

All three sources show similar results. In table two the number of logons per student per day were 0.414 for year 7, 0.032 for year 9 and 0.088 for year 10. In table three, in the first month of use year 7 student had performed an average of 276 actions, year 9 86 and year 10 97. In table four 27% of year 7 students thought they logged on 5-13 times a week compared to none for year 9 and 10%

for year 10. These figures all agree that the year 7 students were by far the most active followed by year 10 and then year 9. Thus the hypothesis was not fully proved as although the year 7 students performed more actions as predicted the year 9 students were behind year 10 on all three measures. For a more optimistic result, if I just look at usage in each groups' second month (see table 3), when arguably use has settled down the figures show a very neat slide from 74 actions per person per month (year 7) to 42 (year 9) to 19 (year 10).

Result: Hypothesis 1 is partially proven.

Hypothesis 2. Younger students use the VLE more because they use it as a communication tool.

Again to investigate this hypothesis I will use some data from the server log and some from the questionnaire. Table two shows the mean number of messages sent per student per day for each year group as well as the total number of forum posts made. The number of messages is 0.004 for year 10, 0.058 for year 9 and 0.544 for year 7. This shows clear differences for each year group by around a factor of 10 between year 7 and 9 and again between year 9 and year 10. Although year 9 students didn't send as many messages as the year 7 they did make 61 forum posts compared to 11 of year 7. Dividing these by the number of students and the number of days year 9 usage works out almost the same (0.0006 away) as year 7 but still 20 times that of year 10. Table 5 shows the student perspective of how often they read and send messages to and from friends.

Table 5- How often do you read and send messages to and from friends on the VLE:

	Year 7	Year 9	Year 10	Mean

Least often 1	12%	50%	100%	42%
2	38%	35%	0%	31%
3	23%	12%	0%	15%
4	23%	4%	0%	11%
Most often 5	4%	0%	0%	2%
Grand Total	100%	100%		100%

This follows the same pattern. Year 7 are much more likely to send messages than year 9. Year 10 recognised that they hardly make use of the messaging facility. While this clearly proves that younger students are more likely to use the communication features of the VLE it doesn't prove that is the main factor influencing their use. To investigate this I asked students to rank a list of 10 possible reasons for logging into the VLE. There are many possible ways of analysing this, I chose to do so by looking at the numbers of students ranking an option in position 1 or 2. The results of this were very similar to the mean value for each option.

The top three reasons for year 7 seven went to "Handing in homework", followed "by changing profile details" and then "messaging". For year 9 it was "messaging", "checking homework", and "changing avatar". Year 10 chose "checking homework", "checking when homework is due in" and "messaging".

Table 6: Top reasons for logging into VLE (percentage ranked one or two of 10)

	Reason 1	Reason 2	Reason 3
Year 7	Hand in homework (42%)	Change Profile (38%)	Messaging / Checking homework set (both 35%)
Year 9	Messaging (38%)	Checking homework set (35%)	Changing avatar (31%)
Year 10	Checking homework set (60%)	Checking homework due / Messaging (30%)	See reason 2

Changing profiles and avatars could be seen as part of the communication process as students do these to present an image to their friends. (Boyd, 2007) Reasons to do with homework were the other reasons making up or taking the

top spot in the list. It may be that the question – "what is the most important reason for you to log into Rickypedia" was interpreted as most important for progress in school work. An alternative wording for the question which may have elicited different responses could have been "what are the most likely reasons why you would logon". Overall both reasons related to homework and messaging and can be said to be the most important reasons that students from all year groups log on. Backed up with the server logs which show such a high proportion of year 7 actions were related to messaging and a much higher proportion of year 9 compared to year 10 it is fair to say the hypothesis is true. Result: Hypothesis 2 proven.

Hypothesis 3. Older students have access to a greater range of communication tools.

To survey this students were asked how often they communicate with their friends using a variety of communication tools. Landline, mobile phone, text messaging, e-mails, instant messenger, social networking websites and internet telephone. As the hypothesis talks about having access to the tools it makes sense to look at which of these technologies students say they never use to communicate with their friends. Table 7 shows clearly that older students are less likely to communicate by landline (p=0.002), 40% of year 10 students say they never use landlines to communicate with friends. I would class a landline as the least technological, mobile and private method of communication so this result supports the hypothesis. Table 9 (p=0.038) shows that 27% of year 7 students, 16% of year 9 and 10% of year 10 students never communicate using instant

messenger software. Again this supports the hypothesis although looking at students who say they always communicate shows 60% of year 9 students communicate very regularly by instant messenger, much higher than the other year groups. Year 7 are also have a higher proportion of regular users than year 10.

Table 10 (p=0.025) gives a clear indication that the majority of year 7 students, almost 70%, don't use social networking sites, year 9 are very heavy users with only 23% never using social networking whereas 40% of year 10 never use social networking.

Table 8 showing e-mail use did not show statistically reliable results (p=0.069) but nevertheless makes interesting comparisons to tables 7 and 9. Year 7 and 9 students chose similar options with most not using e-mail regularly whereas year 10 students were split fairly evenly with those using and not using e-mail.

Result: Hypothesis 3 is partially proved as the youngest students have less access to communication tools.

Table 7: How often do you communicate with your friends via phone (landline)

		Year			Total
		7	9	10	
Phone	Never	4%	15%	40%	15%
	Rarely	24%	50%	40%	38%
	Sometimes	32%	19%	20%	25%
	Often	28%	4%	0%	13%
	Always	12%	12%	0%	10%
Total		25	26	10	61
Kruskal Wallace Test : p=0.002		40	16	0	23

Table 8: How often do you communicate with your friends via e-mail?

		Year			Total
		7	9	10	
Email	Never	31%	27%	20%	27%
	Rarely	42%	38%	30%	39%
	Sometimes	15%	23%	20%	19%

	Often	12%	12%	20%	13%
	Always	0%	0%	10%	2%
Total		26	26	10	62
p=0.069		12	12	30	15

Table 9: How often do you communicate with your friends via Instant Messenger?

		Year			Total
		7	9	10	
IM	Never	27%	16%	10%	20%
	Rarely	15%	4%	20%	11%
	Sometimes	19%	8%	30%	16%
	Often	12%	12%	30%	15%
	Always	27%	60%	10%	38%
Total		26	25	10	61
Kruskal Wallace Test : p=0.038		39	72	40	53

Table 10: How often do you communicate with your friends via social networking sites?

		Year			Total
		7	9	10	
SocNet	Never	69%	23%	40%	45%
	Rarely	8%	19%	30%	16%
	Sometimes	8%	8%	0%	6%
	Often	4%	12%	10%	8%
	Always	12%	38%	20%	24%
Total		26	26	10	62
Kruskal Wallace Test : p=0.005		16	50	30	32

Hypothesis 4. There is more of a novelty using a VLE for younger students.

To attempt to measure novelty I have looked at how often students use their PCs and the Internet. I assume that students who use the internet less often are less used to online tools and environments and therefore find the VLE more novel. Students who use their PC less are less likely to have experienced as many online tools as those who do. Table 12 shows that the percentage of students using the internet for over an hour a week is 58% for year 7, 73% for year 9 and 70% for

year 10. The older students are certainly heavier internet users. When asked how many times a week students used their PCs, 38% of year 7 students used their PC more than 7 times a week compared to 66% of year 9 and 70% of year 10 students. It is hard to say definitively whether this hypothesis is true as it is hard to measure novelty. When it comes to internet use, older students are certainly more regular users than the youngest age group.

Result: Hypothesis 4 partially proved.

Table 11: During an average week how many times do you use your PC

	Year			Total
	7	9	10	
14+	19%	31%	50%	29%
7-13	19%	35%	20%	26%
5-6	27%	27%	30%	27%
2-4	31%	8%	0%	16%
<2	4%	0%	0%	2%
Total	26	26	10	62

Kruskal Wallace Test : p=0.025

Table 12: During an average week how much time do you spend on the internet?

	Year			Total
	7	9	10	
2Hrs+	35%	27%	30%	31%
1-2 Hrs	23%	46%	40%	35%
31mins-1hr	8%	19%	0%	11%
10-30 mins	23%	8%	20%	16%
less than 10 mins	12%	0%	10%	6%
Total	26	26	10	62

Hypothesis 5. **Younger students prefer handing in homework online.**

Table 13 (p=0.001) shows that only 27% of year 7 students and 23% of year 9 students prefer handing in work online. Though a large percentage is still undecided there is no evidence to back up the hypothesis. On the contrary the

reverse of the hypothesis seems true with 60% of year 10 students preferring to hand in homework online.

Result: Hypothesis 5 disproved.

Table 13: Do you prefer handing in homework on Rickypedia to handing it in on paper?

	Year 7	Year 9	Year 10	Grand Total
Don't know	42%	38%	10%	35%
No	31%	38%	30%	34%
Yes	27%	23%	60%	31%
Grand Total	100%	100%	100%	100%

p=0.001

Hypothesis 6. Messaging is usually social not about work.

Table 14 (p=0.005) shows that for all year groups messages are normally just social and not about work. Out of 60 students 10 said they used the messages equally for social and work while only 2 used it for, mostly or exclusively, chat about work. Based on students' own perceptions I am confident that this hypothesis has been proved.

Result: Hypothesis 6 proved.

Table 14: What do you normally use the messaging feature to talk about?

		Year			Total
		7	9	10	
What do you normally talk about?	Social	5	4	4	13
	Mostly Social	13	18	4	35
	Equal Mix	5	4	1	10
	Mostly Work	1	0	0	1
	Work	1	0	0	1
Total p=0.005		25	26	9	60

Hypothesis 7. Older students are more worried about privacy.

To investigate this question I have looked at it in three ways. First for comparison I've looked at how many students have sent messages that were meant only for friends and how many have posted messages publicly on the internet. This gives an idea of how often these students perform these kinds of activities as well as their prior experiences. Those that have posted a variety of types of message are more likely to have encountered and learnt about privacy from personal experiences. Table 15 shows that the majority of older students have posted messages to friend while a minority of year 7 students have. When it comes to public messages the differences are more pronounced. Year 9 and 10 groups show lower numbers using public messages compared to private messages but still show 70% and 50% respectively who have posted messages in public forums. In year 7 81% of students hadn't done so, an even more marked difference. Year 7 students are certainly less likely to have had experience posting on the internet.

Table 15: Have you posted messages on the internet just for friends to read?

Have you posted messages on THE INTERNET that are: Just for friends to read?	7	9	10	
No	58%	23%	40%	40%
Yes	42%	77%	60%	60%
Grand Total	100%	100%	100%	100%

Table 16: Have you posted messages on the internet for anyone to read?

Have you posted messages on THE INTERNET that are: For anyone on the internet to read?	Year 7	Year 9	Year 10	Grand Total
No	81%	31%	50%	55%
Yes	19%	70%	50%	45%
Grand Total	100%	100%	100%	100%

My next measure was checking pupil understanding of the VLE messaging system and the pupil perceptions towards messages not being private. Table 17 shows the results of the question, "Would your whole class be able to read a

message to your friend sent via the VLE". The correct answer was no. In year 10 almost all of the pupils answered correctly, in year 7 almost three quarters but in year 9 only half. This may be because year 7 were more familiar users of the messaging system than year 9 students (as shown in Table 2). The oldest students certainly had the best understanding. This trend was reversed in the results of the question "would your teachers be able to read a message to your friend" (Table 18). The correct answer was yes. Year 7 had the best understanding of this with 73% (as in Table 17) while less than half of the other groups chose the correct answer. Year 7 students certainly seemed to have a better overall understanding of how the VLE messaging system works.

Table 17: If you wrote a message to a friend on the VLE would your whole class be able to read it?

If you wrote a message to a friend ON RICKYPEDIA would you expect the following people to be able to read it? Your whole class:	Year 7	Year 9	Year 10	Grand Total
No	73%	50%	90%	66%
Yes	27%	50%	10%	34%
Grand Total	100%	100%	100%	100%

Table 18: If you wrote a message to your friend on the VLE would your teachers be able to read it?

If you wrote a message to a friend ON RICKYPEDIA would you expect the following people to be able to read it? Your teachers:	Year 7	Year 9	Year 10	Grand Total
No	27%	54%	60%	44%
Yes	73%	46%	40%	56%
Grand Total	100%	100%	100%	100%

Table 19: If you wrote a message to a friend on the VLE would be happy for your class to read it?

If you wrote a message to a friend on Rickypedia WOULD YOU BE HAPPY for the following people to read it? Your whole class:	Year 7	Year 9	Year 10	Grand Total
No	65%	42%	60%	55%
Yes	35%	58%	40%	45%
Grand Total	100%	100%	100%	100%

Table 20: If you wrote a message to a friend on the VLE would you be happy for your teacher to read it?

If you wrote a message to a friend on Rickypedia WOULD YOU BE HAPPY for the following people to read it? Your teachers:	Year 7	Year 9	Year 10	Grand Total
No	54%	61%	60%	58%
Yes	46%	38%	40%	42%
Grand Total	100%	100%	100%	100%

Tables 19 and 20 show whether students would be happy for personal messages to be read by their whole class or by their teachers. Year 9 were the only group where the majority were happy for their whole class to read messages to friends, in the other two groups 60% to 65% would not be happy with this. When it comes to teachers reading personal messages (Table 20) no classes had the majority of students happy with this. The percentage of year 7s happy with this went up 11% to 46%, year 10 stayed the same at 40% and year 9 dropped 20% to 38%. Year 7s were the only group happier for their teachers to read messages than their peers. This may be because, being more frequent users of the messaging system, they understood that teachers could read messages (see Table 18) while older students not expecting messages to be read were less happy to see them being read.

Looking at the results overall it seems different year groups have different worries about privacy. Older students are more experienced web users and happier to share messages with peers and the public but less happy to share with teachers. The youngest users had a better understanding of messaging via the school VLE but less experience of the internet. They were happier having messages read by friends but more worried about sharing with their peer group. The hypothesis that older students are more worried about privacy on cannot be

proved based on these results. There are signs it may be true but the strong feelings expressed in the focus groups are not replicated by the quantitative data. Result: Hypothesis unproven.

Summary of results:

1. The younger the student the more they use the VLE.

Result: Partially proven – the youngest students (year 7) were the most active users but year 9 students were not unambiguously more active than year 10 students.

2. Younger students use the VLE more because they use it as a communication tool.

Result: Proven. The oldest students used it for communication the least and the youngest the most.

3. Older students have access to a greater range of communication tools.

Result: Partially proven – the youngest students had the least access to communication tools but year 9 students used some tools more than year 10 students.

4. There is more of a novelty using a VLE for younger students.

Result: Partially proven – the youngest students had less access to the internet and therefore exposure to online tools.

5. Younger students prefer handing in homework online.

Result: Disproved – year 10 students preferred handing in work online with the other year groups preferring not to or undecided.

6. Messaging is usually social not about work.

Result: Proved for all year groups.

7. Older students are more worried about privacy.

Result: Unproven – results were mixed and it was difficult to make concrete conclusions.

Though results were mixed some results were particularly significant. Communication is obviously a big draw for students especially younger students. Most students though said their communication was not about work which may put off teachers from making use of these tools. This social communication seemed to be a driving factor behind student use of the VLE with privacy issues not playing a major part. That younger students had less access to other communication tools seemed to make them more likely to use these features on the VLE. The results around online homework were surprising. Though handing in homework online was classed by all age groups as a major factor for using the VLE a large number of students were not positive about doing so. From the comments given this is partly due to the perceived difficulty of handing in work online and a mistrust of the system. As one student said, "If I hand my work in to my teacher I know they have got it." Overall across all the questions there were definite and significant differences between age groups. This is probably the most significant and certainly most transferable finding.

Criticism of results:

Without looking at the implications of the results or trying to extrapolate them to other scenarios there are a number of weaknesses in the methodology and analysis. Although all students were taught by the same teacher for the same

subject, comparing different age students brings in many variables. Each class was set different tasks to do using the VLE. Year 10 students used it for an extended period of time during which all homework was made available online. Year 9 used it for a period of time but for irregular short tasks. Year 7 used it for a shorter period of time for an intense project across two subject areas. The second literature review highlights the importance of social tools for learning. The three classes had very different social makeups with students in the younger groups together for most of their lessons while the older students were in a class just for one lesson and in a smaller group. The year 9 students had also known each other for two to three years compared to less than one year for year 7 students. When it comes to creating a social group which may affect the use of messaging or social learning the makeup of the groups could have an effect on the results. The design of the questionnaire has already been critiqued but the analysis could also be more thorough. It was down to my judgement as to how to interpret the results and though I tried to be honest and fair it is impossible to be so completely when not an impartial observer.

Conclusions

There is currently little research looking at how different age children use technology in different ways. Many of the first VLEs were designed for University students and found themselves being used in Secondary and Primary education. Only recently have VLE providers started producing systems that are personalised towards Primary or Secondary children but even then, differences are minor and a one size fits all attitude is prevalent. The description of a digital divide or the descriptions of digital natives are terms too vague to describe how

young people today use technology where all students have experience of the internet and have grown up with computers. This study shows that there are large variations in type of use, experiences and preferences between different year groups in a single school. In the rest of life we don't assume that children of different ages have the same needs, why then in technology for education? The commercial world have long produced different products aimed at different aged children, from sweets and toys to the myriad of television programming available on satellite TV channels. Many websites, commercial or otherwise are aimed at children. These products are not aimed at the wide age ranges of 4-10 year olds or 11-18 year olds but specific subsections of these age ranges. Why then are school VLEs expected to cater equally for all year groups? In terms of design, content, features and pedagogy each age group has different needs. It is certainly worth taking the ideas and opinions into account when designing VLEs or even going a step further and making students an integral part of the running of a VLE.

Two factors that this study found were most commonly used by students on VLEs were communication tools and online homework. Not all students were excited about these tools and some students didn't use them at all. In particular a large number of students were not excited about handing homework in online. Communication tools and messaging was not usually used for work related activity. Using new technology can be daunting for teachers and when not all students are enthusiastic about it or not using it as the teacher requires it can be even more daunting.

Students who don't use a VLE are easy to notice on a computer and this can be off putting for teachers. If we look to a classroom to see which students participate in every task it may only be a minority. If a student isn't listening it's up to a teacher to detect it in their face or actions but on a computer we can see straight away if someone isn't logging on. Maybe there are too high expectations and underdeveloped strategies of pupil participation in online tasks. It takes an expert teacher to involve all students in a class discussion. Even in a normal lesson a good teacher will have a range of differentiated activities and a range of strategies to involve students. Maybe in VLEs despite the promise of personalised learning we are currently delivering a less personalised approach as both teachers and students find their feet. Teachers too may be trying to drop existing activities into an online framework where for better results they need time and expertise to develop and evolve their pedagogy and teaching styles. Research shows there is much potential for learning using social features, social networks and communities of practice but it may take time and practice for these to become embedded in school VLEs.

Suggestions for further research:

There is a general gap in research on the use of VLEs in schools but this may be rectified as more research passes through lengthy peer review and publishing procedures. There are three areas that would have been particularly useful to my research and practise. First looking at well established school VLEs and what has made them successful both in the eyes of staff and students. Second looking at how different but close age groups differ in their opinions and attitudes towards

technology and VLEs. Finally looking at how online communication tools can be used effectively and safely in schools.

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Appendix 1: Questionnaire

Below is a copy of the questionnaire used to survey students.

ICT Survey

Please read the questions carefully and take time to think about your answers. Some questions have special instructions on how to

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answer them so read them carefully. If you are stuck please put
your hand up.

Thank you for your participation.
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Is there a computer at your home?

- ☐ Yes
- ☐ No

Is there internet access at your home?

- ☐ Yes
- ☐ No

Where is the computer that you usually use situated? for example which room in your house or maybe somewhere not in your house [   ]

How often do you use the following to keep in touch with your friends? Telephone Calls (landline) Please select a number on the scale.

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

How often do you use the following to keep in touch with your friends? Telephone Calls (mobile phone) Please select a number on the scale.

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

How often do you use the following to keep in touch with your friends? Text Messages: Please select a number on the scale.

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

How often do you use the following to keep in touch with your friends? E-mails: Please select a number on the scale.

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

How often do you use the following to keep in touch with your friends? Instant messenger: (eg msn or aol messenger)

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

How often do you use the following to keep in touch with your friends? Social Networking websites: (eg myspace, facebook & bebo)

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

How often do you use the following to keep in touch with your friends? Internet telephone: (eg Skype or other voice chat)

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

What do you normally talk about?

- ☐ Just social chat
- ☐ Mostly social chat
- ☐ An equal mix of social chat and chat about work
- ☐ Mostly chat about work
- ☐ Just chat about work

If there's anything else you would would like to say about how you communicate with friends you can write it here:
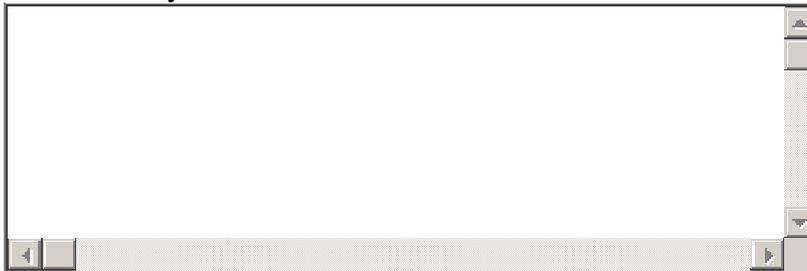
During an average week how much time do you spend on the internet? Try and estimate the time you spend.

- ☐ Over 2 hours a day
- ☐ Between 1 and 2 hours a day
- ☐ 31 minutes to an hour a day
- ☐ 10 to 30 minutes a day
- ☐ Less than 10 minutes a day

During an average week how many times do you use your home computer? This includes the weekend.

- ☐ 14 times a week or more
- ☐ 7 to 13 times a week
- ☐ 5 to 6 times a week
- ☐ 2 to 4 times a week
- ☐ Less than 2 times a week

When you were FIRST given access to Rickypedia how often did you log in?

- ☐ 14 times a week or more
- ☐ 7 to 13 times a week
- ☐ 5 to 6 times a week
- ☐ 2 to 4 times a week
- ☐ Less than 2 times a week

AFTER 1 MONTH using Rickypedia how often did you log in?

- ☐ 14 times a week or more
- ☐ 7 to 13 times a week
- ☐ 5 to 6 times a week
- ☐ 2 to 4 times a week
- ☐ Less than 2 times a week

If you have any other comments to write about how often you used Rickypedia you can put them here
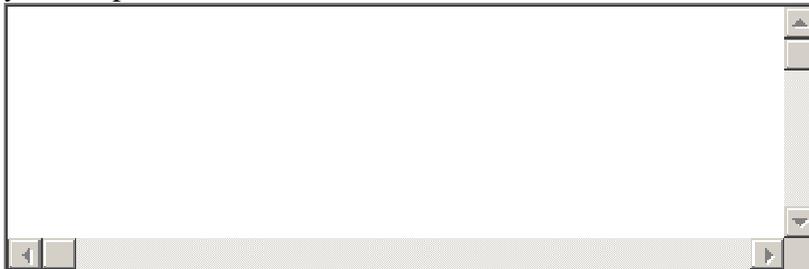
Have you used Rickypedia to hand-in your classwork?

- ☐ Yes

- ☐ No

Have you used Rickypedia to hand-in your homework?

- ☐ Yes
- ☐ No

Do you prefer handing in homework on Rickypedia to handing it in on paper?

- ☐ Yes
- ☐ No
- ☐ Don't know

Do you prefer handing in classwork on Rickypedia to handing it in on paper?

- ☐ Yes
- ☐ No
- ☐ Don't know

If you have any other comments on handing in work online you can write them

here
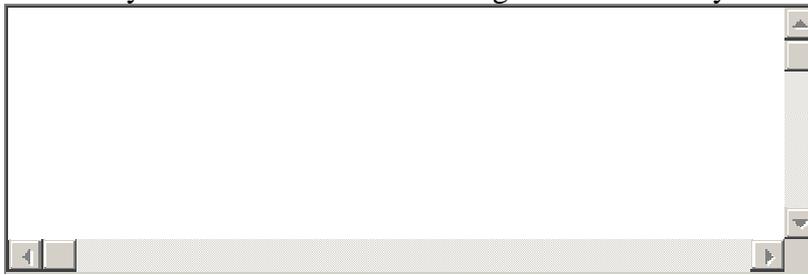
Since you started using Rickypedia how often have you done the following?
Changed your profile information: Please select a number on the scale.

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

Since you started using Rickypedia how often have you done the following?
Read and sent messages to and from friends: Please select a number on the scale.

	1	2	3	4	5	
Never	☐	☐	☐	☐	☐	All the time

Since you started using Rickypedia how often have you done the following?
Checked what homework has been set: Please select a number on the scale.

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

Since you started using Rickypedia how often have you done the following?
Checked when homework is due in: Please select a number on the scale.

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

Since you started using Rickypedia how often have you done the following?
Handed in your homework online: Please select a number on the scale.

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

Since you started using Rickypedia how often have you done the following?
Changed your avatar: The avatar is your profile picture

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

Since you started using Rickypedia how often have you done the following?
Looked at friends' profiles: Please select a number on the scale.

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

Since you started using Rickypedia how often have you done the following?
Looked at discussion forums: Please select a number on the scale.

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

Since you started using Rickypedia how often have you done the following?
Looked for classwork or revision: Please select a number on the scale.

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

Since you started using Rickypedia how often have you done the following?
Added words to a glossary: Please select a number on the scale.

        1   2   3   4   5

Never ☐   ☐   ☐   ☐   ☐   All the time

If you have any more comments to make about what you usually do on Rickypedia you can write them here
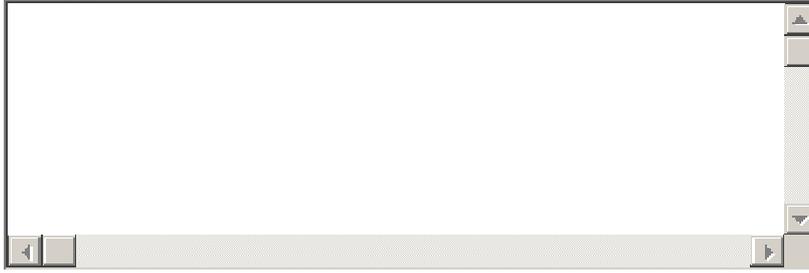
What is the most important reason for you to log onto Rickypedia? For the next 10 options you need to rank the following reasons for logging into Rickypedia from 1 to 10 where 1 is the most important. Please give each option a different number. You may put more than one option as 10 if you feel it is not relevant to you. Look through all 10 options and decide what order to put them in.

1. Changing your profile Look at all 10 options below before choosing the position.

2. Reading and sending messages to and from friends

3. Checking what homework was set

4. Checking when homework is due

5. Handing in homework

6. Changing your avatar

7. Looking at friends profiles

8. Looking at discussions

9. Looking for classwork or revision

10. Adding words to a glossary

Are there any other important reasons to log onto RIckypedia apart from the 10 on the list?

Have you used the messaging feature on Rickypedia?

- ☐ Yes
- ☐ No

What were your messages about?

- ☐ Just for social chatting
- ☐ Mostly for social chatting
- ☐ An equal mix of social chat and work chat
- ☐ Mostly chat about work
- ☐ All chat about work

Read the following questions very carefully and answer yes or no. ☐

Have you posted messages on THE INTERNET that are: Just for friends to read? ▼

Have you posted messages on THE INTERNET that are: For your whole class to read? ▼

Have you posted messages on THE INTERNET that are: For your whole school to read? ▼

Have you posted messages on THE INTERNET that are: For your teachers to read? ▼

Have you posted messages on THE INTERNET that are: For anyone on the internet to read? ▼

If you wrote a message to a friend ON RICKYPEDIA would you expect the following people to be able to read it? Just your friend: ▼

If you wrote a message to a friend ON RICKYPEDIA would you expect the following people to be able to read it? Your whole class: ▼

If you wrote a message to a friend ON RICKYPEDIA would you expect the following people to be able to read it? Your whole school: ▼

If you wrote a message to a friend ON RICKYPEDIA would you expect the following people to be able to read it? Your teachers: ▼

If you wrote a message to a friend ON RICKYPEDIA would you expect the following people to be able to read it? Anyone on the internet: [▼]

If you wrote a message to a friend on Rickypedia WOULD YOU BE HAPPY for the following people to read it? Just your friend: [▼]

If you wrote a message to a friend on Rickypedia WOULD YOU BE HAPPY for the following people to read it? Your whole class: [▼]

If you wrote a message to a friend on Rickypedia WOULD YOU BE HAPPY for the following people to read it? Your whole school: [▼]

If you wrote a message to a friend on Rickypedia WOULD YOU BE HAPPY for the following people to read it? Your teachers: [▼]

If you wrote a message to a friend on Rickypedia WOULD YOU BE HAPPY for the following people to read it? Anyone on the internet: [▼]

If you posted a message to A DISCUSSION FORUM on Rickypedia would you expect the following people to be able to read it? Just your friends: [▼]

If you posted a message to A DISCUSSION FORUM on Rickypedia would you expect the following people to be able to read it? Your whole class: [▼]

If you posted a message to A DISCUSSION FORUM on Rickypedia would you expect the following people to be able to read it? Your whole school: [▼]

If you posted a message to A DISCUSSION FORUM on Rickypedia would you expect the following people to be able to read it? Your teachers: [▼]

If you posted a message to A DISCUSSION FORUM on Rickypedia would you expect the following people to be able to read it? Anyone on the internet: [▼]

If you posted a message to a discussion forum on Rickypedia WOULD YOU BE HAPPY for the following people it? Just your friends: [▼]

If you posted a message to a discussion forum on Rickypedia WOULD YOU BE HAPPY for the following people it? Your whole class: [▼]

If you posted a message to a discussion forum on Rickypedia WOULD YOU BE HAPPY for the following people it? Your whole school: [▼]

If you posted a message to a discussion forum on Rickypedia WOULD YOU BE HAPPY for the following people it? Your teachers:

If you posted a message to a discussion forum on Rickypedia WOULD YOU BE HAPPY for the following people it? Anyone on the internet:

Thank you for answering all the questions, there are just two more left so we can check who has filled in the survey. If you have any extra comments to add to your answers you can write them in the box below.

Please select your year group

Please put your first name and initial of your surname. eg if your name is Peter Pan you would put Peter P

Appendix 2: Student Comments

Below are a selection of comments made by students in the survey. (Comments are taken directly from results so haven't been altered including spelling and grammar)

How do you communicate with your friends?

Year 10:

- We talk a lot about things we would rather you didn't know.

- I communicate using ventrillo and me and my freind have set up our own server we only use it to talk socially because chatting about work is normally quite boring

Year 9:

- i talk to my friends on mmorpg games...

- I use smileys. =] 8D <<< like that

- myspace =]

- We normally talk about weird stuff.

- Mainly we just tak to eachother.

- We talk to each other.

Year 7:

- i talk to them alot

- face to face

- internet games eg.world of warcraft runescape

- I mainly text message

- I can meet my friends around the park and public places.

- face to face

- i meet witth them

- i use web cam to talk to my family who live far away or in another country.

- i also talk to them face to face.

Comments About Rickypedia

Year 10:

- it would be good if there was more fun stuff to do and if more customisation of

your profile could be done. However, as it is always monitored by teachers, i will

always rather use Myspace or MSN

- Don't really use it all that much.

- I found rickypedia useful for only homework as everything else on it i used

other places or did not use them at all

Year 9:

- Completely forgot about it.

- I don't really use it

- could be a bit more exciting

- I liked using rickypedia but i think it can be a bit updated..

- I think it can be updated and made more teenager friendly

- I would use it more if i got used to it so i need to use it now

Year 7:

- nothing rickpedia is good fun

- its good for homework.

- I barely ever used it at all, i dont go on it anymore, if i do its once every three or

four weeks

- "I Only logged on when i had homework or something i had to do on it.

- i sometimes go on it just for fun to play the games."

- I hardley use it now because we mostly used it for the english project we were

doing but we have finished it now

- not that often, as i do my homework in my work

- we have not used rickypedia or had much to do with it for the last month or so

and i think that why i haven't been on rickypedia for a while.

Handing in work online:

Year 10:

its easy

If you hand something in on paper, you can be more sure that it is received by

your teacher.

i have only ever used rickypedia to hand-in and find out about homework the other uses seem to be good but i do not need them

Year 9:

- It usually doesnt send and thsi is annoying

- could be told how to hand it in via rickypedia

- I like working online as it is quick and easy but i think that it could be a bit better and easier to access and more fun to do so it didn't feel like a chore to do the homework or classwork.

- i dont use rickypedia although i think i should. i think rickypedia should really replace the school land.

- i prefer handing them in online because i always forget to print stuff off. even so rickypedia isn't always easy to find the homework on.

- if all the teachers looked on rickipedia then yes but sometimes it doesnt send proarly and if the computer has a virus everything could be lost

- i have never tried it online as i find it easier to hand in in person

Year 7:

- I couldnt send my homework on rickypedia

Are there other important reasons (not listed) for going on Rickypedia?

Year 9:

- seeing who else has it and what other people have been talking about :)

- Because you are told to

Year 7:

- going on the english site

- socialise

- To have fun!

Other comments?

Year 9

- I wouldn't post anything on the internet that I wouldn't shout in the street or something

Appendix 3: Description of Tools

The following tools were all used in the Rickypedia VLE and are part of a standard Moodle implementation. Many are mentioned in the study and survey.

Avatar – A profile picture viewable to other users on user profiles and when contributing or posting.

Profile – A partly customisable information page about a user viewable by other users. Users can choose to keep some information private. On Rickypedia there were categories for users to share their favourite books, film and hobbies.

Forum – An asynchronous discussion area.

Chat – A live synchronous discussion area.

Personal Messaging – Messages sent from one user to another, asynchronous but almost instantaneous to arrive if both users are logged on.

Glossary – An area where students or teachers can post definitions of words. Students can also post comments on definitions.

Assignments – Online homeworks that can be set in different forms and marked online.

Blog – An online journal or writing space for students and teachers.

Wiki – An editable webpage which can be contributed to by all participants.

Database – A customisable database where students can share information or files and comment on what other have put.