How the Use of Lifeblog Can Promote Reflection in an Educational Setting

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KTH Computer Science and Communication

Master of Science Thesis
Stockholm, Sweden 2009
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Master’s Thesis in Media Technology (30 ECTS credits)
at the School of Media Technology
Royal Institute of Technology year 2009
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TRITA-CSC-E 2009:052
ISRN-KTH/CSC/E--09/052--SE
ISSN-1653-5715

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Abstract

This project was conducted at the Department of Information Systems, The University of Melbourne in Victoria, Australia. The aim was to investigate how Nokia's mobile software, Lifeblog, best could be incorporated into the standard curriculum of two 11th grade multimedia classes to promote reflection and assist the students in their studies. A field study was conducted for a period of three weeks at Wesley College, Melbourne in 2006. 15 Nokia 7610 mobile phones with the latest version of Lifeblog were used by the students during the period of data collection and the use of the phones was restricted to a classroom setting. Each student got the assignment to keep and update an electronic journal, documenting his progress and achievements in the multimedia class, using the mobile handset and the Lifeblog PC software. The Lifeblogs were collected at the end of the study. Observations of the students were made during the data collection period and the project was concluded by handing out questionnaires and conducting interviews with the participants.

The primary findings were that the level of reflection among the students was generally poor. The students who did reflect on their teaching were students who normally do well and get good marks in general.

However, four Lifeblogs were analyzed qualitatively and the analysis showed that there is an opportunity for Lifeblog to promote reflection, if managed correctly in the classroom.

The data gathered formed a base for developing guidelines of how to best make Lifeblog and mobile software a part of the standard curriculum and support the reflective processes in a VET multimedia class.

Keywords: Lifeblog, m-learning, mobile phones

Hur användandet av lifeblog kan uppmuntra till reflektion i utbildningsmiljöer

Sammanfattning

Detta examensarbete är utfört vid avdelningen för Information Systems, The University of Melbourne i Victoria Australia. Projektets syfte var att utvärdera hur Nokias mobila mjukvara Lifeblog kan användas i utbildningsmiljöer för att stödja reflektiv inlärning. En etnografisk fältstudie genomfördes i två gymnasieklasser vid Wesley College i Melbourne. 15 Nokia 7610 mobiltelefoner användes i tre veckor i multimediaundervisningen och eleverna fick i uppgift att med hjälp av programvaran dokumentera sin undervisning och det arbete de utförde i klasrummet. Observationer genomfördes under datainsamlingen och studien avslutades med en användarenkät och individuella studentintervjuer.

Resultaten visade att reflektionsnivån bland studenterna är låg. De studenter som faktiskt reflekterade över sin undervisning var studenter som vanligtvis presterar bra och har goda betyg i allmänhet.

Fyra utvalda Lifebloggar analyserades kvalitativt och analysen visade att det finns en möjlighet för Lifeblog att uppmuntra till reflektion förutsatt att vissa åtgärder vidtas i klasrummet.

Insamlat data formade en bas för framtagning av rekommendationer för hur Lifeblog och mobil mjukvara bäst kan uppmuntra till och stödja reflektion i utbildningsmiljöer.

Nyckelord: Lifeblog, m-learning, mobiltelefoner
Acknowledgements

I would like to give special thanks to a few people that made this research possible: The students at Wesley College and their teacher for their cooperation and enthusiasm. My patient and encouraging supervisor Dr Frank Vetere and the two very helpful and supportive PhD students Connor Graham and Sonja Pedell at the Department of Information Systems, The University of Melbourne. Thank you. And finally thank you Gunilla Carell for proof reading the report.
# Table of Contents

1 Introduction .................................................................................. 1
   1.1 Background .............................................................................. 1
   1.2 Assigner .................................................................................. 1
   1.3 Purpose .................................................................................... 1
   1.4 Aim .......................................................................................... 1
   1.5 Research Question ................................................................... 2
   1.6 Delimitations .......................................................................... 2
   1.7 Target Audience ...................................................................... 2

2 Theory ........................................................................................ 3
   2.1 Education ............................................................................... 3
   2.2 E-Learning .............................................................................. 4
      2.2.1 E–Portfolios ....................................................................... 4
   2.3 M-Learning ............................................................................. 4
   2.4 Reflection ............................................................................... 5
      2.4.1 Definition .......................................................................... 5
      2.4.2 Existing Software to Support Reflection ......................... 6
   2.5 M-Learning Projects .............................................................. 6
   2.6 The Lifeblog Concept ............................................................. 7
      2.6.1 PC Suite ........................................................................... 8
   2.7 Mobile Phone Users ................................................................ 9
   2.8 Gap of Opportunity .................................................................. 10
   2.9 Proposal .................................................................................. 10
   2.10 Theory Criticism .................................................................... 10

3 Method and Implementation ........................................................... 11
   3.1 Original Research Design ....................................................... 11
      3.1.1 Evaluation Paradigm and Approach ............................ 11
      3.1.2 Technologies Used .......................................................... 12
   3.2 Qualitative and Quantitative Methods ..................................... 12
   3.3 Data Collection ....................................................................... 13
      3.3.1 Use of Lifeblog ................................................................. 14
      3.3.2 Time Commitment ............................................................ 14
      3.3.3 Analysis ........................................................................... 15
   3.4 Method Criticism ..................................................................... 15
   3.5 Participant Selection ............................................................... 16
   3.6 Validity and Reliability ............................................................ 17
Appendix 1 – Interview Questions Teacher ........................................ 52
Appendix 2 – Observation Sheet .............................................. 54
Appendix 3 – Questionnaires ................................................ 55
Appendix 4 – Sketch of the Classroom Setting ................................... 56
1 Introduction

This chapter gives the background of the project and states the purpose and aim. The research question and delimitations are also described.

1.1 Background

There is an increasing and unprecedented adoption of wireless technologies in almost every part of the world (Keegan 2003). Wireless technologies are transforming the traditional ways of learning and teaching into ‘anytime’ and ‘anyplace’ education. Mobile phones are used by people in all walks of life and in every possible setting of our society (Keegan, 2005). To bring technology into schools is inevitable and it is important to understand the benefits and the disadvantages of doing so.

The attitudes towards using mobile phones as part of the curriculum are ambiguous. Most teachers and parents see them as an element of distraction rather than a potential tool of assisting the students in their learning. As the area of m-learning (mobile learning) is becoming increasingly popular, it is important to understand in what areas mobile phones come to best use. This project investigates if generic blog software presents an opportunity for encouraging learning and reflection in an educational setting.

The project ended up in recommendations for use of blogging software in a class for future m-learning designers and the educational community.

1.2 Assigner

This project was initiated and supervised by Dr Frank Vetere at the Department of Information Systems at the University of Melbourne, Victoria, Australia.

1.3 Purpose

The software used in this project, Nokia’s blog (web log) software Lifeblog (Nokia, 2006-01-05), though not designed for learning specifically, may provide a useful basis for developing educational software to support reflection. The purpose of this research is to better understand Lifeblog’s strengths and weaknesses with respect to learners’ reflections in educational settings. This project will not be specific to Nokia and the recommendations produced will be generic to blogging software of which Lifeblog is one example.

1.4 Aim

The aim of this project was to investigate how mobile learning software can encourage learning processes in an educational setting from the perspective of reflective storytelling. Reflective storytelling means talking about, writing about and remembering events that have taken place in the past. Reflection is a key element of any type of learning (Reid, 1993). Despite all technological progress, to this date, there is not yet any software with the sole purpose to support reflective learning in a classroom.

The research focused on the learning processes that took place in two computing classes at Wesley College in Melbourne, Australia, and to what extent the Lifeblog software was a tool to assist the students in their studies.
1.5 Research Question
The research question was: How can Lifeblog be a reflective tool in an educational setting? Other questions that were answered to reach the main objective of the study were:
- Is reflective storytelling supported by the software?
- If so, what forms of reflective storytelling are enabled by the software?
- How should the software be incorporated into the standard curriculum to benefit the students’ reflective processes?

1.6 Delimitations
This project comprised the use of Nokia’s software Lifeblog in two VET (Vocational and Educational Training) multimedia classes in Melbourne, Australia. Due to the time limitations and the nature of the study the project did not investigate whether mobile phones, per se, are a good tool in educational environments, nor did it comprise the best suitable area of use for the particular software in schools.

The need for m-learning (mobile learning) in education in general was left out due to the restrictive time frame of this project.

No pilot studies were conducted in this research project since the unique circumstances made it very difficult to access the data collection environment.

1.7 Target Audience
The target audience of this report is Information Systems academics, practitioners and fellow students.
2 Theory

This chapter describes the literature review on which this report is based. It gives a brief description of the area of education in general, and emerge and significance of m-learning in specific.

2.1 Education

The world of education and training is divided into two halves known as conventional education and distance education (Keegan, 2005). The characteristics of the two halves can be summarized as follows:

Conventional Education

- Within the learning group
- By interpersonal communication
- Between the teacher and the taught

Conventional education is also known as traditional education, which is conducted face-to-face, or ILT (Instructor-led-training).

Distance Education

- An individualised form of interaction
- Impersonal communication
- The technology is mediative

In distance education the traditional setting of the learning group is replaced by the individual. Distance education contains both e-learning (electronic learning) and m-learning (mobile learning). To illustrate the position of m-learning in distance education, see Figure 1.

Figure 1, M-learning is the follow-up of e-learning, which for its part originates from d-learning, distance education (Wikipedia, 2006-01-09).
2.2 E-Learning

In the 1980’s there was an Electronic Revolution. Satellites, video conferencing and The World Wide Web created new areas for teaching. For the first time in history it was possible to teach face-to-face at a distance. (Keegan, 2003)

E-learning, or electronic learning, is a wide term used for education that is WWW based (Svenska datatermgruppen, 2005-12-31). Many authors (e.g., Thomas 2005, Keegan 2005) consider m-learning to be the evolution of e-learning.

The first training courses on the Internet can be traced back to 1995 (Nettskolen, Forskning och Utveckling, 2006-05-03). By 1998 learning via WWW was a mature field of education with its own structure, rules and literature. Today, the area of e-learning is one of the fastest growing segments of e-business and is constantly developing.

Leading Australian e-learning figure, Dr Marcus Bowles, Managing Director of the Institute for Working Futures said: “M-learning is the next wave of e-learning. It has always been a component of e-learning but now with greater accessibility to mobile devices we are going to see the impact be far greater than the hype” (Australian Flexible Learning Network, 2006-05-02).

2.2.1 E-Portfolios

Stiggins (1994) defines a portfolio as a collection of student work that demonstrates achievement or improvement (www.electronicportfolios.org). The material to be collected and the story that is told vary depending on the context. Barrett (2005) considers e-portfolios (electronic portfolios) to be portfolios using electronic technologies as containers to allow the learner to organise and select different media types, such as video, audio, text and graphics.

The use of e-portfolios is common in school environments. They are used as a way to make students reflect on their work and achievements as they create their individual e-portfolios. But, there is yet no technology that enables e-portfolios to be updated and kept through a mobile device (Hartnell-Young & Vetere, 2005). This is where Lifeblog can create a possibility.

2.3 M-Learning

With the proliferation of mobile technology in society and business, many individuals and organizations are investigating how to best make use of mobile devices for learning and training (Ally et al, 2005).

It is very interesting to look deeper into the definition of what mobile learning really is. One could argue that mobility in learning is not a recent phenomenon (Laouris, 2005). If mobile learning simply means “learning on the move” what is new? Well, known technologies such as audio tapes with pre-recorded language lessons would then qualify as mobile learning and those are hardly fresh educational tools. When defining mobile learning in this paper, focus lies on mobility. Mobile learning is enabled by devices that can be brought everywhere without any particular effort or preparation. Keegan (2005) defines mobile learning as: The provision of education and training on PDAs/palmtops/handhelds, mobile phones and smart phones. He points out that the devices that are used have some common characteristics:

- People are used to carrying them everywhere
- They regard them as friendly and personal
- They are cheap and easy to use
- They are used constantly in all walks of life and in a variety of different settings
It is also very common to include laptops in the definition of m-learning devices. However, these are not included in this report.

To further understand the differences between e-learning and m-learning we can study the terminology in Table 1.

**Table 1, Terminology comparisons between e- and m-learning (Laouris, 2005)**

<table>
<thead>
<tr>
<th>e-learning</th>
<th>m-learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>Mobile</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>GPRS, G3, Bluetooth</td>
</tr>
<tr>
<td>Multimedia</td>
<td>Objects</td>
</tr>
<tr>
<td>Interactive</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>Hyperlinked</td>
<td>Connected</td>
</tr>
<tr>
<td>Collaborative</td>
<td>Networked</td>
</tr>
<tr>
<td>Media-rich</td>
<td>Lightweight</td>
</tr>
<tr>
<td>Distance learning</td>
<td>Situated learning</td>
</tr>
<tr>
<td>More formal</td>
<td>Informal</td>
</tr>
<tr>
<td>Simulated situation</td>
<td>Realistic solution</td>
</tr>
<tr>
<td>Hyper learning</td>
<td>Situationism, collaborative</td>
</tr>
</tbody>
</table>

### 2.4 Reflection

"Experience is not what happens to a man; it is what a man does with what happened to him." Aldous Huxley

#### 2.4.1 Definition

Different researchers describe the learning process in different ways, but they all agree upon the prominent role of reflection in acquiring knowledge (General Practice Training, West Midlands GP Trainers, 2006-04-01). What is reflection? There are many definitions in the literature of reflection, but most authors think it is an active, conscious process. Here follows a few examples of definitions:

Dewey (1933) defined reflection as: “An active persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends”.

Schön (1987) identifies two types of reflection; these are reflection-in-action (thinking of your feet) and reflection-on-action (retrospective thinking). He suggests that reflection is used when people encounter situations that are unique, and when individuals may not be able to apply known theories or techniques previously learnt from formal education.

Reid (1993) and Kemmis (1985) consider reflection to be an active process rather than passive thinking that it only happens in the head. Reflection is a process of reviewing an experience of practice in order to describe, analyse, evaluate and so inform learning about practice.

The definition of reflection used in this research project is any reference to past curriculum events or activities.
2.4.2 Existing Software to Support Reflection

No matter how exciting and inspirational a learning program is, without some opportunities to reflect, a lot of its potential of learning can be missed (Department of Education, Tasmania, 2006-01-11). So why is reflection important?

One critical goal of reflection is to help students make connections between the service activity and course work (Service-Learning, 2006-01-11).

There are currently different techniques for promoting reflection in a classroom (Sask schools, 2006-01-11). Two of them are:

Learning Logs - A diary that contains short, ungraded and unedited, reflective writing. Learning logs is a venue to promote genuine consideration of learning activities. To be aware of patterns in behaviour and reactions a written journal can be a good solution.

Reflective Journals - Journals can be used to allow students to reflect on their own learning. They can be open-ended or the teacher can provide guiding, reflective questions for the students to respond to. These provide insight on how the students are synthesizing their learning, but it also helps the students to make connections and better understand how they learn.

The softwares available for educational purposes in schools today are mostly computer based. E-learning software, like Blackboard and WebCT, are considered to be a helpful tool to support classroom education (Ally et al, 2005). Schools use WebCT to organise and compile student work and for the students to submit class assignments. WebCT has two interfaces to facilitate both teacher and student needs.

E-portfolios are used in schools to present an opportunity for the students to reflect on their work. The purpose of the E-portfolios is to compile and organise work and does not necessarily offer any chance of annotation. As previously described, journals are also widely used as a tool to create a process of reflection within the educational community. However, there is currently no existing software to support reflection in m-learning. This is an opportunity as well as a challenge.

2.5 M-Learning Projects

Three European projects, M-learning, DfES/Becta PDA Project, and MOBIlearn, investigated wireless technologies in education. The M-learning project addressed the social and educational problems in young adults using handheld devices, and its aim was not to replace traditional education, but rather to reengage those who have left educational institutions (Ultralab, 2006-05-20). This €4,500,000 project funded by the European Committee in Brussels, had an important social dimension (Keegan, 2005). It recognised that there were in the United Kingdom many 16 to 20-year-old youths who were unemployed and had urgent needs for additional training, but who refused to attend a training centre or college. They were unemployable and refused to attend training. They all had, however, a mobile phone which they used constantly. The project, therefore, set out to develop courses for them on their mobile phones in the fields of literacy, numeracy and social skills.

The DfSE/Becta PDA project evaluated the use of small, handheld computing devices for both teachers and learners in schools (Becta, 2006-04-28). The MOBIlearn project, that was completed in the end of 2004 explored new ways to use mobile environments to meet the needs of learners working by themselves, and with others, using the latest wireless technologies (MOBIlearn, 2006-04-28). A further project conducted in Japan described by Thornton and Houser (2004), investigated the extent to which mobile phones were utilised for educational purposes among university learners, and measured learners’ reactions to educational materials developed specifically for mobile phones.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

At the latest m-learning conference mLearn in October 2005, Cape Town, South Africa some emergent themes could be detected according to Bob Harrison, Education adviser at Toshiba Information Systems (UK) Ltd (Ferl first, 2006-05-04). Those themes are presented below:

- There is a need for an agreed definition of m-learning
- It should be recognised that the learner is mobile and that the device is secondary
- There is an enormous potential to address the digital divide by using mobile devices
- Wireless technology is present and will be the future
- There is enormous potential to use mobile and portable learning in developing countries
- Lessons learned by early adopters can benefit later adopters
- There are pockets of innovative and creative use of mobile and portable technologies
- There is little evidence of embedded practice of mobile and portable learning
- There is an urgent need for more research and high quality evaluation and a greater synergy between research, practice, pedagogy and technological developments
- Technology moves faster than pedagogy
- There is a need to develop more mobile capacity in teacher training institutes

2.6 The Lifeblog Concept

The Lifeblog concept incorporates both a mobile handset and computer software (Nokia, 2006-01-05). The handset is a mobile phone with a high-resolution camera, which can be used to take ad hoc photographs of life events. The events on the handset are later synchronised with the personal computer. All photographs and all messages are transferred to the computer and placed on a timeline. These can be manipulated and edited before re-synchronised with the handset. When the synchronisation is performed the phone is emptied of all its multimedia content, which avoids the problem of having a full memory. Special photos or SMSs that are saved in “Favourites” in the PC interface are transferred back to the phone when synchronisation is performed.
Figure 2. The Lifeblog PC interface of Lifeblog shows your multimedia files on a simple timeline and allows you to edit them and add notes.

Notes are added by clicking the pad and pen symbol at the bottom right corner of the interface, as shown in Figure 2, or by clicking on the image you wish to annotate, and select “Add note” from the drop down menu that appears. It is also possible to move images around on the timeline and place them on different days than on those they were originally created.

2.6.1 PC Suite

To enable communication between the PC and the mobile phone PC Suite needs to be installed on the PC. PC Suite (Nokia, 2006-04-28) is a tool to manage the software and data files on the mobile phone. It contains features such as a file manager, application installer, restore and backup possibilities and connectivity wizards. The interface is shown in Figure 3 below.
2.7 Mobile Phone Users

Among the most mature mobile countries in the world you find UK, Italy and Sweden with over 100% cellular penetrations (Australian PC Authority, 2006-05-03). Over 100% means that people have more than one mobile phone or subscription per person. Australia is not far behind. It is estimated that before 2008, the penetration of mobile phones will be exceeding 100%, which means that every Australian that could be using a mobile phone will. So why not take advantage of the everyday technology so many people carry around in their pockets? There are over 1.5 billion mobile phones circulating in the hands of the world’s population and a large number of them in the hands of students (Attewell, 2005). Yet mobile phones are prohibited in most educational settings because of the risk of distraction and cheating.

**Australia**

There were 18.1 million subscriptions in Australia at the last count, June 2005 (Australian Department of Communication, Information Technology and Arts, 2006-01-13), for a population of estimated 20,090,437 people in July 2005 (The World Fact Book, 2006-01-09) enough for catering 89% of the Australian population and is estimated to grow to 19.1 million in 2006 (IDC Australia, 2006-04-05).

**Sweden**

In June 2005, there were 8,981,000 mobile subscriptions in Sweden including prepaid SIM cards (Öst, 2005) for a population of an estimated 9,001,774 in July 2005 (The World Fact Book, 2006-04-05). 92% of Sweden’s population between the ages of 16-75 years old uses mobile phones.
2.8 Gap of Opportunity

As mentioned earlier, there is today no existing mobile software to promote reflection in educational settings. The Lifeblog concept can be used as an archive of multimedia files and as a resource to organise and compile student work in a new way by using the mobile phone to capture events.

2.9 Proposal

The research proposed to evaluate if and how Lifeblog can support reflection in an educational setting by incorporating the software into the standard curriculum of a school class. The results of the study provided information of how generic mobile software should be managed and used to best support students in their studies.

2.10 Theory Criticism

Wikipidea was used as a source of reference for one of the pictures in this paper. Even though Wikipedia is not considered to be a reliable internet source, the picture used was descriptive and accurate according to involved researchers, and, therefore, it was decided to be included.
3 Method and Implementation

The following chapter describes and motivates the research design of the project. It gives an account of the methods used, the participants involved and the basic conditions of the research environment.

3.1 Original Research Design

3.1.1 Evaluation Paradigm and Approach

In this project a field study was conducted in a computing class at Wesley College, involving two year 11 elective multimedia VET (Vocational and Educational Training) classes. VET means that the class is of practical nature rather than theoretical (IT-teacher, 2006). 15 Nokia 7610 mobile phones were used at every multimedia lesson, in both classes, for a period of three weeks during end of February and beginning of March 2006, the latter part of the first semester of year 11 in Australia. The mobile phones had the latest version of Lifeblog installed on them (version 1.7). A few days before the actual data gathering started, the students were given a brief description of the project and an introduction to the researchers involved. At the same time they were asked to install the necessary Lifeblog software on their computers. That included the Lifeblog PC software, PC Suite (necessary for file exchange between the mobile phone and the PC) and the latest version of Microsoft’s DirectX Driver. Each student went to Nokia’s website www.nokia.com/lifeblog and downloaded the installation files.

There were a number of ethical problems involved in this research. Use of mobile phones in schools is generally seen as a great problem and is rarely embraced by the teachers as a tool for learning (IT-teacher, 2006). It was important to limit the distracting impact the phones might have on the students. That is why it was decided that the phones did not have SIM (Subscriber Identity Module) cards that were connected to the GSM (Global System for Mobile Communications) network. That means the only possible information exchange supported was via connecting a USB cord between the phone and the computer or by using Bluetooth. The students were not able to make calls or send text messages. The students used the mobile phones in the class to perform different tasks and assignments that were handed out by their teacher and conformed to all curriculum requirements. During the three weeks of data collection the students’ curriculum activities consisted of learning the basics of Photoshop.

Since there were two classes involved in the research the students could not keep their individual phones during the data collection period. They had to be returned at the end of the lesson so that they could be handed out in the next class.

To ensure that the teacher fully understood the concept and to involve her even more in the project, she got her own mobile phone to use during the test period. She also kept her own Lifeblog to familiarize herself with the software her students would be using.

The research was conducted in the users’ natural environment which is why a field study was the best choice of method. The distinguishing feature of field studies is that they are conducted in natural settings with the aim to understand the users’ normal behaviour and what impact technology has on those users (Preece et al, 2002). The data consists of qualitative descriptions made from participatory (ethnographic) or non-participatory observations. Ethnography is traditionally studying people belonging to different cultures or groups in society. To understand the people’s behaviour you must understand the culture of which they form a part (Hartman, 2004).

The benefit of a field study over a lab study is the exposure to actual working conditions and the disadvantage is the loss of control over the data collection (Rubin, 1994). To enhance the control over the data collection a number of measures were taken, such as establishing protocols
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

for how to handle the mobile phones during class time and how to incorporate them into the standard curriculum of the class.

### 3.1.2 Technologies Used

#### Student Computers

All Wesley students have access to their own laptops depicted in Figure 4. For an annual fee of 1,000 AUD the students keep their laptops through the three years of high school. The laptops are serviced on campus by the technical department.

The student laptops had the following features:

- **Model:** Fujitsu Lifebook S6240
- **OS:** Windows XP
- **CPU:** Intel Pentium 1.73GHz
- **RAM:** 1GB
- **HDD:** 80GB
- **Lifeblog PC version 1.7**
- **PC Suite version 6.7**

*(The Lifeblog concept is described in chapter 2)*

*Figure 4, Fujitsu Lifebook S6240*

#### Nokia 7610 mobile phones

The mobile phone used in the study had the following key features and is shown in Figure 5.

- 1 mega pixel camera
- 8 MB internal memory
- 64 MB multimedia memory card (MMC)
- Bluetooth and USB connectivity
- 65,536 colour-display, 176 x 208 pixel, 42 x 31 mm
- Up to 10 minutes of video recording
- **Lifeblog mobile version 1.51**

*Figure 5, Nokia 7610*

### 3.2 Qualitative and Quantitative Methods

The most common distinction between different research methods are qualitative and quantitative methods. Qualitative methods use words, pictures or objects as the source of analysis and quantitative methods use numbers. Some argue that the method used is not important, it is the way you analyse the data that determines if the method is qualitative or quantitative (Denscombe, 2000).

Traditionally qualitative methods are action research, case study research and ethnography. Sources of qualitative data are observations, field work, interviews and questionnaires and text documents as well as the researcher’s own experiences and impressions (Myer, 2006-04-28).
Quantitative methods are surveys, laboratory experiments and numerical methods. The source can be anything that is countable or that can be translated into numbers.

The methods are often mentioned in opposition as quantitative versus qualitative (Outdoor Education Research & Evaluation Centre, 2006-05-01), but can sometimes be combined to reach an as accurate interpretation of the data as possible (Corbin & Strauss, 1990). The most common approach is to put emphasis on one of the two methods and use the other to illustrate or clarify the findings.

In this research the data gathered was mainly qualitative, but some quantitative analysis was made to support arguments and deepen the level of understanding of the data.

### 3.3 Data Collection

#### Collection of Lifeblogs

The student Lifeblogs were collected at the last lesson after the three weeks of use. The folder on the laptop hard drive containing the Lifeblog data (NokiaLifeblogData in MyDocuments) was burned on to a CD. The student laptops were equipped with CD burners which made the process of collection quite simple.

#### Observations

The core technique used in field studies is observations (Preece et al, 2002). As stated above the research was conducted in the two multimedia classes for a period of three weeks. The original plan was to observe and take field notes on the students’ discussions within the curriculum setting in a low-interventionist manner, focusing on the reflective processes taking place.

The observations started out as being qualitative non-participatory observations of events and discussions taking place in the classroom. As time went by, this method of observation turned out to be insufficient because of the nature of the practical teaching in the multimedia class. Since the teacher was busy teaching all issues concerning the Lifeblog, the management of the mobile phones had to be taken care of by someone else. The observing role became more of a “teacher’s aid” and required a more active part in helping the students complete their assignments and resolve different issues that occurred during the lesson. A sketch of the classroom setting is enclosed in Appendix 5.

#### Interviews

There are four main types of interviews: open-ended or unstructured, structured, semi-structured and group interviews (Fontana and Frey, 1994 in Preece). The unstructured interview has no predetermined answers and the interviewee can answer as shortly or as briefly as she wishes. It often goes in depth and focuses on a particular topic. Structured interviews are more like a spoken questionnaire. They are a wise choice when specific questions can be identified. Typically the questions are closed, which means they require a specific answer. The semi-structured form combines both open and closed questions. Some guideline questions are planned in advance and the interviewer then keeps asking questions until no new information is forthcoming. Group interviews are interviews that are conducted with more than one interviewee at a time. Different techniques are used depending on what kind of information is wanted.

Interviews are a good way of making participants feel involved in the research and assure them that their opinions and experiences are important (Preece et al, 2002). Interviews performed at the end of a study can also serve as a debriefing forum for the participants and a chance for them to express their thoughts.

Student interviews were performed at the end of the study to debrief the participants and to confirm the findings from the observations, which was why a closed interview form was
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

chosen. The questions were short and clearly worded and the same questions were asked to each student.

The purpose of interviewing the teacher was to gather additional information from an “expert’s” point of view. Since she had previous experience of both teaching and the students, her observations could be able to assist in the process of determining if and how the students’ reflection abilities had evolved during the test period. The interview form was semi-structured and had a mixture of open and closed questions. The interview plan is enclosed as Appendix 2.

3.3.1 Use of Lifeblog

The students’ primary task was to use the mobile software in the class to keep an electronic chronicle of their progress. They were asked to take pictures, write notes and record audio whenever they found fit, to document their achievements throughout the data collecting period. The 15 phones were distributed to the students at the beginning of each class and returned at the end, after synchronising the handset with the PC.

To get the students to feel more responsible for the phones their names were put on them. Since the phones were used in two classes, and sometimes even in pairs, each phone had two names on it. The names were green for class one and red for class two. Each student used the same phone during the whole period of data collection. This made it easier to manage the phones during class time and ensured that the students would be more careful about the equipment.

The two classes consisted of 20 and 16 students, respectively, which created an opportunity to team up some of the students in pairs. The student pairs created a good possibility to observe the use of the phones since team efforts facilitate collaboration and co-discovery (Preece et al, 2004). Previous studies (Rubin, 1994) have shown that working in pairs stimulates the researchers’ ability to gather useful information. As the participants collaborate and discuss their course of action the observing researcher can pick up changes of tone or statements to determine the nature of the processes.

Even if you tell students to perform certain tasks as a part of the curriculum they don’t always do (IT-teacher, 2006). To ensure that the students used the phones in the class, different assignments were handed out by their teacher, where they had to take pictures with the on-board 1 Mega pixel camera. They then imported the pictures into Photoshop by using Lifeblog to synchronise the handset with the laptop. Normally these pictures would have been taken with three digital cameras that the students would share, owned by Wesley College.

The assignments were:

- Take digital photos of other students in the class and then morphing them into a single picture of a new virtual student.
- Take five or more photos of yourself and create an animated picture.
- Create a collage of digital photos.

3.3.2 Time Commitment

The data collection took place in the two computing classes for three weeks. Three weeks was estimated to be an appropriate time span for gathering this type of data, since it would both give sufficient material and give the students an opportunity to adapt to the new software and technology, as well as to the presence of an outside observer in the class. The period should still be short enough to keep the assignment interesting and new.

The class was held three or four times a week for 75 or 50 minutes for each class as displayed in Table 2. The student interviews took place during class time and the interview with the IT-teacher took 45 minutes.
Table 2. Rotating two-week schedule for the two classes. The first day of the research period was Monday Day 6. The research continued for three weeks.

<table>
<thead>
<tr>
<th></th>
<th>Class 1</th>
<th>Class 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>9:55am (period 2)</td>
<td></td>
</tr>
<tr>
<td>Day 2</td>
<td></td>
<td>9:55am (period 2)</td>
</tr>
<tr>
<td>Day 3</td>
<td>9:55am (period 3)</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>1:35pm (period 4)</td>
<td>1:35pm (period 4)</td>
</tr>
<tr>
<td>Day 5</td>
<td>1:35pm (period 4)</td>
<td>8:40am (period 1)</td>
</tr>
<tr>
<td>Day 6</td>
<td>9:55am (period 2)</td>
<td></td>
</tr>
<tr>
<td>Day 7</td>
<td>2:25pm (period 5)</td>
<td>9:55am (period 2)</td>
</tr>
<tr>
<td>Day 8</td>
<td>9:55am (period 2)</td>
<td>2:25pm (period 5)</td>
</tr>
<tr>
<td>Day 9</td>
<td></td>
<td>1:35pm (period 4)</td>
</tr>
<tr>
<td>Day 10</td>
<td>2:25pm (period 5)</td>
<td>8:40am (period 1)</td>
</tr>
</tbody>
</table>

The data collection period consisted of 11 classes with class 1 (6 x 75 min, 5 x 50 min) and 10 classes with class 2 (5 x 75 min, 5 x 50 min).

### 3.3.3 Analysis

The method of analysing the data varied depending on the type of data.

**Lifeblog data:** Focus lay on finding commonalities and differences in patterns in the blog data by comparing the individual Lifeblog results. The data was examined with the following guidelines in mind:

- At what time and in what context most entries were done.
- Number of entries.
- How often the software was used.
- How reflective the entries were, meaning if there were references to curriculum activities or past experiences in general. The students were not encouraged to be more reflective than usual by the teacher.

**Observations:** The field notes were coded and categorised to detect emergent themes. The observations were then compared to the Lifeblog data to detect what impact the teacher and the pace of the work environment in the class had on the students’ usage of the blogging software.

**Focus group data:** The data was coded and categorised and the results were used to triangulate the level of reflection among the students.

**Interview data:** The data was transcribed, coded and categorised. The results were used to further understand if and how the students’ reflective processes were affected from an “expert’s” point of view.

### 3.4 Method Criticism

Observations as a data collection technique present a few challenges. The observation data consists only of what the note-taker thinks is important (Preece et al, 2002). On the other hand
the researcher is there to learn about the situation and the first period of observation is usually made to get the ‘feel’ of the surroundings. When performing observations the type of data is subjective, in that sense that the observer selects what to record. Hence participant observations leave the reliability aspect open for doubt (Denscombe, 2000). It can be hard to repeat the study since the data relies on the researcher’s ‘self’ as an instrument of research.

The observations took place in the classroom, which meant that the researcher attended the class. This could have had a negative impact on both the students and the teacher as the presence of a third person in the class can be distracting. As time went by, this effect degenerated as the participants became used to the presence of the researcher. When performing field studies you always form a relationship with the respondents. This is both an advantage and a disadvantage. It is important that the participants feel comfortable with the presence of the researcher and to achieve some kind of relationship is necessary. The problem is not to get too involved and affect the students in a way that bias the results.

The fact that the students knew their data would be viewed by an outside observer could have had an impact on the nature of entries in the student blogs. But, being in a school environment means that the students are constantly being assessed and submit their work to the teacher. They were also only required to write about school work and not about personal things, which would have made them more comfortable.

### 3.5 Participant Selection

Wesley College agreed to take part in the research through an IT-teacher, who is responsible for investigating and bringing new teaching technologies into the school. The students’ approvals were obtained through a written consent form before the research commenced. Although the selection was by convenience (Denscombe, 2000), the participants are representative of this study.

Wesley College has a positive attitude towards mobile learning and mobile phones are widely used among students, which made it a suitable location for conducting the research. All of the students also had access to their own laptop computers through the school. The Lifeblog software was incorporated into the standard curriculum and assessment of the class, which ensured that it did not interfere with the standard teaching.

Wesley College is a private day school for boys and girls in Melbourne, Victoria, Australia and is considered to be an elite school at the top of the range. The school caters for students from kindergarten right through to Year 12. As of 2006, Wesley College introduced a new school structure which saw the Senior School comprising of students from Years 10 - 12, the Middle School from Years 5 - 9 and the Junior School comprising from Prep to Grade 4 (Wesley College, 2006-02-02).

The participants were two 11th grade classes (equivalent to the second year in Swedish Upper Secondary Schools), which means the students were 16 years old. There were 20 and 16 students in each class respectively. The selection was by convenience since it is very hard to get access to a classroom for this kind of study.

In the first class, there were 20 students, two girls and 18 boys. In the other class there were 16 students, 1 girl and 15 boys. There was a difference between the two classes, in terms of atmosphere and manageability. The first class was more quiet and hard working whilst the other class was very loud and distracted in general. The teacher sometimes struggled to keep them focused. A possible reason that the first class was more focused could be that it consisted of some students from year 10. Year 10 students can choose year 11 classes if they have marks that are good enough, which probably makes them more interested and motivated.

The VET classes are generally considered to be easier than other elective subjects among the students. There are over 60 subjects for the students to choose from and they choose from VCE (Victorian Curriculum Education) and VET classes. Some examples of VCE are maths, science,
foreign languages and the VET classes are multimedia and hospitality. The practical classes most often consist of mainly boys that are not doing very well in other subjects as they think they will not have to work as hard in the VET classes because of their practical nature (IT-teacher, 2006).

### 3.6 Validity and Reliability

Reliability is a measurement of if the method used will give the same results on separate occasions but under similar circumstances (Denscombe, 2000). In any qualitative research, the researcher form a part of the research instruments, so it would be fair to rephrase the reliability statement and say: If someone else did the study, would the results be the same? Reliability in ethnographic studies can be a bit hard to ensure. The researcher that gathers the data always has an impact on both the environment and the data collected. The reliability of this study was ensured by strict planning and motivation of the methods used.

Validity is a measurement of if the methods used measure what they are supposed to measure (Denscombe, 2000). There are a number of ways to ensure validity in field studies such as use of multiple data sources (triangulation), identification of biases, explore possible alternate explanations. To ensure the validity of this project a number of different data techniques were used to implement triangulation (Preece et al. 2002)

### 3.7 Ethics

This project involved research with human participants, which in Australia means that it has to be approved by an Ethics Committee. The project was conducted at The University of Melbourne, and had to be approved by both the ethics committee at the Department of Information Systems and by the university ethics committee before the research could commence. The role of the committees is to ensure that projects involving humans do not waste anyone’s time and that the results benefit the community in which the research is conducted.

An ethics application form had to be filled out and submitted to the departmental committee. They reviewed the application and gave feedback before it was submitted to the university committee who gave their final approval. The application stated aims, purpose and justification of the project and explained the nature of the research in layman’s terms. The completion of the ethics application was a big part of the initial stages of this research. For the full version of the ethics application see Appendix 1.

The participation in the research was voluntary and the students were informed that it was not a test. How many students that decided to participate is described in Chapter 5. The participating students and their parents (since the students were underage) signed a consent form stating the aims of the research and what was required by the students. The students who chose not to participate performed the same tasks and still used the phones in the class. They were not formally observed by the researcher and their Lifeblog data was not collected at the end of the study.

The data in the Lifeblogs did not have to be personal since focus was on the students’ studies and progress in the class. However, if they felt comfortable sharing personal information they were free to do so. They were also reassured that they would not be identified in any publication arising from the research and that the data submitted would be treated with confidentiality.

The data collected was stored in locked cabinets at the Department of Information Systems at The University of Melbourne, both the collected Lifeblogs and any written material. Only the researchers involved had access to the information collected from this project. The data is going to be stored for 5 years and then destroyed by the principal researcher Dr Frank Vetere.
3.8 Pilot Studies

Because of the unique circumstances of this research pilot studies were not an option. It was not possible to get access to similar people or settings to evaluate the interview questions to the teacher or the students. The first week of data collection served as an initial testing period and necessary changes to the research design was performed during this period.

3.9 Implementation

3.9.1 Field Study

In the original research plan the Lifeblog assignments were to form a part of the standard curriculum and they would be assessed and marked by the teacher. As the research started, however, the teacher changed her mind and the use of the Lifeblog ended up being not compulsory. The reason for her change of mind was that she felt she could not fit the assignment into the curriculum evaluation plan, which she had previously thought. The students still used the phones as cameras to perform the different assignments that were handed out, but the Lifeblogs were not a part of the standard curriculum.

As explained in Chapter 3, the ethics committee of the University of Melbourne had to approve the research since it involved human participants. The research was planned to commence on 13 February and continue for three weeks. The committee was not able to decide in the matter until a week later, which altered the time plan for the project. The teacher adapted to the new time plan to be able to keep the initial assignments, but she had to change the last assignment, which was to create a collage of digital photos. The final assignment was instead to make a postcard with three or more animals on it. The animals were to be a merge between two or more separate species. This led to that they did not need a camera for this particular assignment.

3.9.2 Focus Groups

A group discussion was held in class 1. In class 2 it was decided, after consulting with the teacher, that individual interviews combined with questionnaires would be more comprehensive. The questionnaires were handed out in both classes to capture the students’ experience of the project and the phones.

Questionnaires

Due to the class dynamics in one of the two classes it was decided that a focus group would not be the best alternative. Instead of performing a focus group, questionnaires were handed out to the students at one of the last lessons of the data collecting period. See Appendix 4. It was necessary to collect the students’ individual thoughts and experiences of the project to fully understand in what way they had used the phones. A focus group would not have been as useful for this purpose since many students hesitate to express their opinions in class even when asked directly. The downside is that you only get answers to the questions you ask, which is why the design of the questionnaire is vital. As a complement, individual interviews were held with the students while their Lifeblogs were collected to give them a personal closure to the research project.

The questionnaires were designed with a combination of open-ended and closed multiple choice questions. When designing questionnaires it is often recommended to use closed questions with a range of answers as often as possible (Preece et al, 2002). In this case the goal was to explore the students’ experience of using the mobile phones and what they thought about the project. It was decided that the questionnaires would not be anonymous since the information in them might be useful to compare with the content of the individual Lifeblogs. The downside to this approach is that the students might not respond completely honest since they can be identified. The advantages of data comparison outweighed the risk of dishonest responses.
3.9.3 Interviews

On the last day of the research, when the Lifeblogs were collected, individual interviews were held with the students in one of the classes. The interviews were audio recorded and aimed to gather any additional information that the students might have regarding the project and to give them a clear end to the data collecting period.

The interview with the teacher was audio recorded and conducted after the last lesson of the data collection period. The questions were designed with input from the observations done during the data collection period.

3.9.4 Technical Issues

The first week of the study was affected by a few technical problems. One of the mobile phones had a virus on it, known as Cabir (www.f-secure.com). It spreads itself through Bluetooth and infects devices running the Symbian Operating System and caused a few of the phones to brake down. The virus jams up the infected phone and scans surroundings for other devices to infect, resulting in the battery going flat in a matter of hours. Because it spreads through Bluetooth the radius of infection is limited to 30 meters and the user must have Bluetooth turned on and accept the transmission from the other phone to get infected.

F-secure is a company that specialises in virus protection. They supply a free online download for infected phones and as soon as the virus was identified as Cabir, the phones could be disinfected with the downloaded software.

Student Computers

Many of the students experienced software malfunctions during the data collection period. In one class every student had problems with the Lifeblog interface turning red at times. The program still worked, but this caused unnecessary irritation and frustration. To resolve the issue the program was terminated and re-opened and then worked fine again. A search on the Internet was conducted to track down a possible solution to the problem, but nothing was found. This problem had never been heard of at the Nokia Costumer Care line (phone call 2006-02-27). The possible reason for the red screens could be compatibility problems between the student computers and the Lifeblog software.

Adapting to new technology is always difficult. It is very hard to anticipate the impact it will have on the environment where it is implemented. The preparation of the research was meticulous, but unsolvable problems like software malfunctions still occurred. In most cases the students were able to work around the problems.

The research was conducted in a classroom with students who had to follow the curriculum. It was not possible to take time from their school work to make the necessary preparations, even though it would have been the best solution. Instead, the first week of the study was more or less devoted to solving problems and testing out the phones and the software, and the observations were secondary.

3.9.5 Important Decisions

Managing of the Phones

In the initial research design the phones were to be presented as a natural part of the class and they were meant to be managed by the teacher on every occasion. As the initial excitement among the students to use the phones had settled, it was discovered that only a few picked up the phones at the beginning of each class. It was, therefore, decided to go around in the class and hand out the phones to those who neglected to get them. At the same time, the USB cables, necessary for the data exchange between the phone and the PC, were handed out. This was done by the observing researcher, since the teacher was busy teaching the class.
Unsynchronised Phones

Despite constant reminders from both the teacher and the researcher, the students forgot to synchronise their phones with their computers from time to time. This was problematic since the phones were shared between two classes and the next student who used the phone had someone else’s pictures on it. One student commented on the issue:

“Why is there someone else’s picture on my phone? Na, I don’t wanna do it now…”

It was decided to leave them, as administration of unsynchronised photos would take too much time and be difficult. The students were left to manage the issue themselves, which some did and others did not.

They were informed that they were free to delete any pictures that they had not taken themselves.
4 Results

This chapter gives an account of the results gathered during the data collecting period of the project.

4.1 Primary Findings

The primary findings were that the level of reflection among the students was generally poor. The students who did reflect on their teaching were students who normally do well and get good marks in general. Since the assignment was not assessed by the teacher they did not feel the pressure of performing the task at their best (IT-teacher, 2006).

Despite constant reminders the students forgot to update and synchronise the phones with their computers and even though they were very interested in the new technology that was represented by the phones, the actual Lifeblogs were poorly annotated in general.

4.1.1 Use of Lifeblog

The use of the Lifeblogs was similar in both classes and the manner in which the students were asked to update and synchronise images across were also consistent between the two. That is why the results were treated as a unit instead of two different samples.

In total, 24 student Lifeblogs of a possible 36 were collected from the two classes. This was due to the fact that some of the students were absent without giving notice during the day of collection of the Lifeblogs, or did not give their consent for personal reasons. There were also a few students who were present, but had not kept a Lifeblog at all.

4.1.2 Lifeblogs to Analyse

The Lifeblogs that were collected were very different. The students carried out the Lifeblog assignment very differently, as any other work they would do in class. There are students that are interested and ambitious, and there are others that do as little as possible, if anything.

To categorise the Lifeblogs and decide which ones to analyse they were divided into different categories.

Too Few Entries

The number of total entries was too few to make any evaluation in terms of use or usability. To be classified as a Lifeblog with too few entries the total number of entries was under 20. That meant that the number of entries on an average was less than 2 per lesson for one student, and it was decided to be too low to give sufficient material for any further analysis.

Too Few Annotations

The number of annotations was too few. In this case this means fewer than 10 annotations, which was the average number of student annotations as shown in Table 3, Section 5.1.2. These Lifeblogs often contained a lot of photos and some annotations, but analysing reflective thinking from pictures was not part of this research.

Assignments Only

These students only used the mobile phones as a camera in class to perform the assignments distributed by the teacher. Two of the students had annotated the photographs taken for the assignments, but since the total number of entries was too few, they were discarded.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

No Annotations
Four students had kept a Lifeblog consisting only of photographs. See “Too Few Annotations”.

Did Not Do It
In spite of the teacher’s instructions, some students just did not do what they were asked. The problem with reluctant students who do not do what they are told is a constant struggle for teachers in any school. This category also comprises the students who did not submit their Lifeblogs at the end of the study. They probably shared photos or used photos from the Internet to perform the required assignments in class.

Technological Problems
Three of the students had technological compatibility problems between the Lifeblog software and their laptops. One of the students had problems importing items through Lifeblog, but worked around it using only the PC Suite, and then pasting the pictures into his Lifeblog. One student could not install PC Suite at all on his computer, which made him unable to participate in the research project. PC Suite is required to transfer the pictures from the mobile phone to the PC. The third student had his computer re imaged by the IT department and all his data was lost due to this.

“Good” for Qualitative Analysis
Four of the collected Lifeblogs contained enough entries to be sufficient for analysis and to be able to create patterns of data. Focus of the analysis lay on those four Lifeblogs. The Venn-diagram below illustrates the distribution between the categories.

Figure 6, Illustration of the categorised Lifeblogs

4.1.3 Statistics
To give an overview of the total number of entries and which type of entries that were most common some average numbers were calculated and are shown in Table 3 below.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Table 3, Average number of Lifeblog entries per student

<table>
<thead>
<tr>
<th>Average numbers per student</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total entries</td>
<td>34</td>
</tr>
<tr>
<td>Annotations</td>
<td>10</td>
</tr>
<tr>
<td>Photos</td>
<td>23</td>
</tr>
<tr>
<td>Videos</td>
<td>1</td>
</tr>
<tr>
<td>Days with entries</td>
<td>5</td>
</tr>
</tbody>
</table>

A peak of entries was noticeable during the first day of data collection as shown in Figure 7. The students had a play with the phones and tested out the features on 20 February in class 1 and on 21 February in class 2. There was also a peak of taking photographs when the phones were used for the morph assignments which was on 22 February in class 1 and on 23 February in Class 2. The first assignment was presented only one day after the phones were first introduced and the second assignment was presented on 24 February in both classes.

Figure 7, Overview of Entries per Date

The entries prior to the start date of the research (20 February) were made after the actual date of entry. The students probably played around and moved pictures from one date to another when they first started using the software. The table also displays that there may have been an initial phase of technology fascination that levelled out as time went by.

4.2 How Did the Students Use the Mobile Phones?

Because the phones were restricted and no calls could be made or SMSs could be sent, the main area of use of the phones was as cameras. The use of the phones was also limited to the classroom setting, which led to the fact that the photos lacked variation. The students mostly took pictures of themselves and their classmates, which is interesting since they were asked to document their work and not their surroundings. A few took photos of their computer screen while others managed to import images from the hard drive into Lifeblog. However, most entries are of the people in the classroom.
Some students enjoyed the phones more than others and played around with them instead of doing actual class work. This was confirmed in the questionnaires, described in Section 5.4. One student replied: “It is not work” when asked what the most interesting thing about using the mobile phones had been.

Due to the access to the mobile phone camera and the possibility to upload the pictures right away, the teacher’s first impression during the data collection period was that the students were able to take more pictures and discard the ones they did not like. In retrospect however, it turned out that the variation of the photos was not as good as she had thought. She felt that the quality of the student assignments was not as good as previous years and thought that a possible explanation could be that the Lifeblog experience was making them very aware of themselves and geared them into a mode of self indulgence.

4.2.1 Shared Phones
In the two classes there were four student pairs. The students shared one phone between them. What happened was that, since the phone is emptied when synchronisation is performed, only one student took charge of the phone. It was always the same student who downloaded the pictures and the result was that the other student had very few or no entries in the Lifeblog. The students solved the issue of transferring pictures for the assignments by e-mailing them to each other.

4.3 The Four Lifeblogs
All names mentioned have been altered to protect the identity of the students.

4.3.1 Carl’s Lifeblog
Of the 24 Lifeblogs collected, Carl’s was the most reflective. Reflective in this context means references to past events or experiences. It also contained the second most number of annotations and photos counting 85 entries over 12 days, to an overall average of 33 entries per student for both classes. 49 pictures, 34 annotations and 2 videos were in Carl’s Lifeblog. Carl has Asperger’s syndrome, which is a milder form of Autistic Disorder. The condition means that the person has problems with social interaction and lacks social skills. He/she is often demanding and impatient. Although Carl seemed to have problems concentrating, he is very meticulous about anything he is interested in and enjoys doing according to his teacher. You can tell he was serious and had fun with the Lifeblog project and the phone since he was the only student who took time to update it and annotate it in every class. He was also very excited about it and wanted to show his photos and annotations to everyone.

He does not always do what the teacher asks him to. He wants to do other things that he finds more interesting, as for example make music, which he has captured with a photo of his screen.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Photo 27 February

Note: “Just working on some MIDI…”

The teacher told him twice to redo one of the assignments because it was not good enough, but he ignored her completely. He still handed in the assignment without any changes and started working on a Flash animation instead, which he apparently liked better.

Photo 27 February

Note: “I made this with too much time on my hands. It’s a guy between two rocks and a pit of spikes. I hope he gets out.”

Mostly he sits with his work and listens to music working at his own pace. He is also one of the few students who download tutorials from the web and work ahead if he finishes an exercise early, assuming he finds the exercise interesting.

He gets good marks occasionally, usually when he finds a particular exercise to be fun and interesting. The teacher said she would have expected him to have a good Lifeblog, since she thought he found it fun. She based this on her previous experience of his behavior in class and how he often wanted to show her what he had done with the Lifeblog.

Frequency

He updated his Lifeblog in every class, and to work around the issue of which file formats are compatible with Lifeblog, he took pictures of his computer screen instead.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Photo 1 March

Note: “Wierd!”

There is no evidence that Carl was becoming more reflective as time goes by. The number of entries was more or less consistent over the data collection period, with an initial peak on the first day of introduction of the phones. That was hardly surprising since that lesson was set aside for the students to have a play with the phones and to set up the synchronization between the phones and the student laptops.

Contents

The pictures were not only of work he did in the multimedia class, but also from the Flash class he was taking with the same teacher. He described what he had done and what he thought of the end product.

Photo 27 February

Note: ”My latest Kensuke and Hažka related installment. One of them falls into a hole.”

Photo 1 March. Bubble exercise in Photoshop

Note: “Making something bubbly. It'd make a good background.”
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

He saw his Lifeblog as a diary, as the assignment was meant to be, and put down events happening in class. Some entries were personal, as for example when he described an accident that happened to him one day, and took a picture of how he looked when it happened.

**Photo 20 February**

![Photo 20 February](image)

*Note: “My bro kicked me in the vitals yesterday. This is what my face looked like after.”*

When one of the students in the class got expelled he wrote that down next to the picture of the particular student, and explained he was no longer attending the class.

**Photo 27 February**

![Photo 27 February](image)

*Note: “He's gone, Dead, Done for, Dolted, Donged, Outta here. No, not dead, just expelled.”*

**Telling a Story**

The annotations were generally playful, imaginative and sometimes incomplete, but he did a very good job and commented almost all of them, even the captured movies. One of the movies had the annotation: “*I love random, chaotic videos*” and the content of the video was exactly that.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

**Photo 20 February**

Note: “I feel kinda funnyfuzzy and that sorta jazz. Heh heh heh..”. This is an example of a playful annotation.

Sequences of pictures tell small stories and he was showing what mood he was in during the class and how it made him feel.

**Photos 6 March**

Note: “I hate having to wake up early for sports training on Monday AND tuesday. It really sucks. That’s me in a zombielike state.”

Note: “Cup noodles will see me through the days with thier beef flavoured MSG goodness!”
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Note: “This has more Vitamin C than your average orange farm!!”

Assignments
When he took pictures for the assignments, he commented on those too, for example:

Note: ” I used this in the facemorph.
I didn't brush me teeth this morning, I think it was a good idea for the facemelter.”

These photos were used for the animation assignment in class. The students were supposed to take three or more pictures of themselves and make an animation of them using Image Ready.

Photos 27 February

Note:” Blank as paper”

Note: “A smiley”
**How the Use of Lifeblog Can Promote Reflection in an Educational Setting**

*Note:” OH MY GOD! THEY’RE COMING TO EAT MY BRAINS!!”*

*Note: “Duhh... I like eggs”*

*Note: “All these silly expressions are making me tired... zzz...”*

**Fonzie**

He even commented on a picture that he did not take himself. Many of the students had a picture of the TV character Fonzie on their phones, which I still do not know the reason for. Carl’s note was: “Dunno why, but Fonzie is on here. He rocks.”
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Overall Impression
The overall impression of Carl’s Lifeblog was humorous and playful. The pictures did not always have a purpose, but he commented on them anyway, like “This is my foot” next to a picture of his foot. It seems as if he enjoyed keeping it and had fun documenting the class. He probably felt he had time to do it, too.

4.3.2 Tom’s Lifeblog
“Tom is the star” said the teacher when asked about her student Tom. She said he has got a visual talent that is extraordinary and that he is one of the best students she has ever taught. She did not find it surprising at all that his Lifeblog had many entries, since he has got an interest in everything concerning multimedia. She thought he probably would not do very well in theory, but well enough to get through. He always gets the top marks in her class. He is a student who finds out things on his own and does not wait for instructions. His teacher said he works on ahead and is very interested in multimedia in general.

The content of Tom’s Lifeblog was mostly work related. At first he concentrated on showing the work he had done and that was, among other things, before and after pictures of manipulated photographs he had made. The pictures that were in it were of some work that he had done, but not the work that was required for the actual class, such as the morph or Safari assignment.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Photo 16 February

Note: “Old photo – Before”

Note: “Old photo – After”

Frequency

The frequency of his entries was not that good. His last entry was on 24 February, the first week of data collection, but the first was on 9 February, two weeks before the research began. In total there were 97 entries, the highest number of all the blogs. 44 pictures, 49 annotations and 4 videos over 9 days. 19 of the photos were taken with the mobile phone, the rest were imported files. He commented on every entry in his blog, even the two default pictures that came with the installation that are shown below.

Note: “Sailboat…Random”

Note: “See view…Random”

He seemed to be interested in the new technology that the mobiles represented, since the content of his Lifeblog was centred around the initial period of the data collection. He experimented with the phone by making videos. One of the videos showed his wallet and what was in it by taking out item by item. The note said: “Ever wondered what was in a man's wallet?”.

Content

This Lifeblog was possible to analyse because he was diligent with annotations and the entries were many. He made entries from before the research started, where he had imported jpegs of work he did in class. One task seemed to have been the colouring of a scarecrow, which he had a picture of with the annotation “My coloured scarecrow”.
Tom took the trouble to save his work as jpegs and imported them into his blog. The standard format when working in Photoshop is psd, which is not compatible with Lifeblog. He did not take a single photo of his computer screen.

He also video recorded a big part of a lesson, where the students had a guest teacher. Two 10-minute video films show Tom’s computer screen and the different commands he performed during the lesson to create a background, shown by the guest teacher. The notes read: “How to - make bubbly koolness Part 1” and “How to - make bubbly koolness Part 2”.

He seems to have had an obsession with Mini Mokes, which is a small car. There are 12 imported jpegs of different Mokes all on a date prior to when the research started, 20 February. Tom had his first lesson with the mobile phone on 21 February.

**Photo 20 February**

![Photo 20 February](image)

*Note: “New French moke-looks shit”*

The pictures he took in the classroom are of the friends that he sat next to.

**Photo 23 February**

![Photo 23 February](image)

*Note: “Trading Angu, a picture for a picture”*

**Assignments**

The morph assignment was presented in Tom’s class on 23 February. He took a few photographs of his neighbours and commented on them on this date.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Photo 23 February

Note: “He WAS smiling, but Hugo HAD to push him.”

The teacher showed finished assignments from previous years to inspire the students and give examples. One of the assignments she showed was made by a student who was expelled for filming his girlfriend with his mobile phone. Tom took a photo of the assignment and wrote an annotation.

Photo 23 February

Note: “Assignment of the guy who made porno.”

Overall Impression

The impression of Tom’s Lifeblog is artistic and a little bit slack, since he stopped updating his Lifeblog the first week of data collection. Most of the entries are playful and humorous.

Photo 24 February

Note: “White pants and snake skin boots :-)”
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

He also had a lot of pictures that were not from the mobile phone. They showed things he found fascinating or particularly good.

**Photo 24 February**

Note: “OOhhhhhhhhh yeeeeeaaaaaaaahhhh! Snake Skin B00ts are the b0mb!”

According to the questionnaire he filled out he says he added notes to his Lifeblog most classes, which he obviously did not. To the question “Why don’t you add notes more often?” he answered: Usually it’s not what I’m doing, so I’m not in the right state of mind. It seems like he felt the Lifeblog assignment was getting in the way of the work he wanted to do.

**4.3.3 Klara’s Lifeblog**

Klara is the only girl in her class and she is an international student. She is hard working and very structured in class, according to her teacher. She has a methodical talent and gets through thanks to that. She works hard and wants to have a career in multimedia. “Her assignments look good” said her teacher. Klara is also one of the students, who does not wait for instructions but downloads tutorials from the web and goes ahead with the assignments. The teacher thinks that shows interest and she said only the best students do this.

**Frequency**

Klara had 80 entries in her Lifeblog. 40 pictures, 39 annotations and 1 movie spread out over four days, which was the first week of data collection and one day of the second week. When she actually updated her blog she did it thoroughly!
Content
Klara has documented her surroundings on the first day she used the phone.

**Photo 21 February**

*Note: “This is my multimedia classroom.”*

**Photo 21 February**

*Note: “This is my computer. It is pretty good.”*

She described the installation process of the Lifeblog software and what she thought about it.

**Photo 21 February**

*Note: “This is my first time to use the Nokia Lifeblog. There is nothing on it at first.”*

When downloading PC Suite she took a picture of the computer screen and annotated how boring it was to wait for it.
Klara described, with a series of pictures and annotations, how she downloaded and installed the software.

**Assignments**

Klara did not use pictures of her classmates to do the first morph task. Instead she downloaded pictures from the Internet and used personal photos, not taken with the camera phone. But she documented the process of her work.

Even when she did the morph assignment she showed where she took the parts from.

**Photo 24 February**

> Note: “I took the girl at the left hand side’s eyes to be the new girl’s eyes. And I took my own mouth in this photo as well”
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

The pictures for the animation assignment are the last entry in her Lifeblog. That was on the first day of the second week. She has annotated the six pictures with: “Image for ImageReady”.

**Overall Impression**

What was interesting about Klara’s Lifeblog was that the pictures and annotations of each day were related in series. Every time she updated the blog she told a little story.

**Photos 24 February**

*Note: “Before....After.....”*

*Note: “Today i am going learn how to make a background that is very special. At first, I need a use gray background.”*

*Note:” After added some now shap in it, then I can change it back to RGB, so I can change the colour.”*
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Note: “Keep changing the colour to find the best colour I think.”

She did not save her work as jpegs, but took pictures of her computer screen to show her work and how it progressed in class. She was very good at this, particularly in the class where they did backgrounds, as shown above.

The last annotation, as said before, was on 28 February. The pictures she took then were for the animation assignment in ImageReady. After those pictures there are no more entries in her blog.

4.3.4 Mark’s Lifeblog

Mark is visually talented and always does a good job with his assignments. His teacher says he is creative and quite good at IT, which makes him perfect for the multimedia subject. He is outgoing and can seem a bit distracted in class, but gets his job done.

Frequency

Mark’s Lifeblog had a total of 50 entries. 24 pictures, 21 annotations and 5 movies over 6 days. The entries were mainly done during the first week of the data collection period, 41 of them. After the first week he only made entries on two more days, both during the last week.

Content

One of the movies he recorded contained the teacher presenting the morph assignment. He recorded the entire presentation of the assignment and the annotation read: “Teacher talking”. The first week he documented his surroundings and what went on in the classroom, both by taking pictures and recording movies. None of his pictures are work related. He took photos of classmates and of the people in the classroom.

Photo 24 February

Note: "Let’s go to work."

The photos had annotations like: “Simon”, “Dan at work” and “Teacher".
Assignments
He took four photos of classmates sitting next to him in class to create the new student that was the morph assignment. He seems to have used the digital camera when he took pictures for the animation assignment. The file format was jpg, which indicated that they were imported from somewhere other than the phone. The photos had no annotations.

Photo 7 March

Overall Impression
Mark had taken pictures of random things as his classmates and surroundings to update the blog. It seemed like he just photographed what was nearby to make entries. He got the job done just like his teacher said he always does, but no effort was actually put into the blog. He also asked when the student Lifeblogs were collected “Is this OK?” and quickly showed what his blog looked like.

The only annotation with a touch of reflection came with a short movie of the classroom and read: “2nd last class of the term”. That was also his last annotation.

4.4 Questionnaires
The questionnaires were handed out at the beginning of one of the last lessons of the data collection period and were collected at the end to ensure a high response rate. 29 questionnaires were filled out and returned. Below is an account of the questions and the answers.

1. Describe the sort of things you do with the mobile phone and the Lifeblog software.

This open-ended question gave a few different responses. All students mentioned taking photos or uploading photos as one area of use. Interesting enough, only 8 of 29 respondents wrote annotations to this question. 4 students included video recording as an activity they did with the phone.

2. Circle the words that describe how you feel while using the mobile phone and Lifeblog.
How the Use of Lifeblog Can Promote Reflection in an Educational Setting

Fun, 11
Creative, 5
Challenging, 0
Boring, 5
Frustrating, 7
Easy, 15
Interesting, 8
Cool, 5
Confusing, 3

Figure 9. Results of question 2 in the questionnaire

11 students circled one word. 10 students circled two words. 8 students circled three or more words.

Why did you choose these words?

The words the student chose are shown within brackets.

12 students were positive to the experience and answered things like:

“I love taking pictures and transfer them to my PC” (Fun)
“I enjoyed importing and editing the photos. It was creative cause I could choose the photos. It was not complicated to use” (Fun, Creative, Easy, Cool, Interesting)
“It was easy to use and creative in the sense of the photography and the narration of each picture” (Creative, Cool)
“It is easy” (Easy)
“It was fun to take pictures and see them on my computer in a matter of 1 minute” (Interesting, Fun)

7 students gave direct negative responses to this question. Examples of answers given:

“There is not much use in using the phone and Lifeblog in class” (Boring)
“You only take photos and make notes which is so easy, no new experience learning” (Boring, Easy)
“I don’t see it much other than upload photos, so I think it’s boring” (Boring, Confusing)

The rest of the 10 responses were both positive and negative or just not very informative:

“At times it was difficult to make proper use of the Lifeblog application. It is interesting because it creates a new interface between the phones and computers” (Fun, Frustrating, Interesting)
“It has a very simple layout which makes it easy to use. But the software has some problems where the screen goes red” (Frustrating, Easy)
“Because they are true” (Frustrating, Easy, Confusing)
“Because I can” (Creative, Easy, Interesting)
3. Do you ever update your Lifeblog outside of the class?

Yes: 2  No: 26  Don’t know: 1

4. How often do you add notes to your Lifeblog?

1 student did not answer the question.

Figure 10, Results of question 4

5. Why don’t you add notes more often?

Even though this was an open-ended question the answers can be placed in different categories. Most students answered that they were busy with class work and they did not have enough time to annotate more often.

Figure 11, Results of question 5
In the category “Other” there were two students who replied they never used Lifeblog at all. One had problems with the technology and the other was a member of a student pair. Two students answered that they simply forgot to update during class and yet another one said it was hard to add notes. The students who did not feel like updating replied things like: “Not interested”, “could not be bothered” or “the image already has meaning”.

6. **What do you like most about using the mobile phone and the Lifeblog software?**

<table>
<thead>
<tr>
<th>Easy to use</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera/video</td>
<td>6</td>
</tr>
<tr>
<td>Transfer phone-PC</td>
<td>5</td>
</tr>
<tr>
<td>Annotate</td>
<td>4</td>
</tr>
<tr>
<td>Different from other work</td>
<td>3</td>
</tr>
<tr>
<td>The Lifeblog timeline</td>
<td>3</td>
</tr>
<tr>
<td>No answer</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>

6 students answered “the simplicity of using the software” or similar to this question. That included answers like “Easy to use”, “Very straight forward” and “Easy to create a Lifeblog”.

6 students thought that the phones features, such as photo taking and video were the most enjoyable. One of these students said the quality of the pictures was the best thing.

5 students wrote that they enjoyed taking photos and putting them on their computer.

4 students liked making comments and annotate the pictures the most.

3 students liked the fact that it was different from other things they usually do in class and wrote things like “It’s not work”, “it’s different”.

3 students liked the way Lifeblog organised their pictures and the overview it gave them over their multimedia files.

7. **What don’t you like about using the mobile phone and the Lifeblog software?**

<table>
<thead>
<tr>
<th>Bugs and connectivity problems</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing</td>
<td>6</td>
</tr>
<tr>
<td>Boring or not interested</td>
<td>4</td>
</tr>
<tr>
<td>Negative in general</td>
<td>4</td>
</tr>
<tr>
<td>Functionality of the software</td>
<td>4</td>
</tr>
<tr>
<td>The phone</td>
<td>2</td>
</tr>
<tr>
<td>No answer</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>

8 students replied that they did not like the technology problems that occurred while using Lifeblog.

6 students did not dislike anything and 1 explicitly said that it was fun participating in the project.
4 students felt that the task was repetitive and boring. “Not very exciting” and “Not too much to do with it” were answers they gave.

4 mentioned the screen turning red and the rest had connectivity problems between their laptops and their mobile phones.

4 students gave specific examples of features they did not like about the Lifeblog software. They were: “When I upload the pictures to Lifeblog they are gone on the phone. I can’t choose which photos to upload”, “You can’t edit photos in Lifeblog”, “Only one person can download the pictures” and “It is all very solid and large. It would be better if it was on the phone itself”.

The 2 students who were generally negative wrote “I like my privacy” and “I don’t know anything about computers.”

The students who thought the phone had problems said: “The phone” and “The camera is hard to hold”.

8. Has your work in the class changed since you started using the mobile phone and the Lifeblog software?

In the original design of the questionnaire question number 8 was phrased as above. When distributed in the first class it was discovered that the answers were unsatisfactory. Most students answered “No” and nothing more to this question. Before handing them out in the second class the question was rephrased to: “How has your work in the class changed since you started using the mobile phone and the Lifeblog software?” to make the students elaborate and explain their answers.

Those who thought their work had changed in a positive way answered:

“It has been more interesting and made me use my creativity”
“I’ve been able to take pictures and put them into my projects”
“Much change. I used pictures from the Internet before”
“I’m organizing my pictures better”
“We make much more interesting pictures quicker and easier”
“It’s a lot neater”
“It has really improved my life”

17 answered No/Not really/Nothing has changed. 3 answered “yes” to, if their work had changed and left no further explanation to how it had changed. 1 student said: “Only that I have something else to use”, presumably he meant the additional use of technology in the class.

4.5 Student Interviews

In one class 10 individual interviews were conducted and no group discussion was held. 1 student did not agree to do an interview. The interviews were of informal nature and due to time limitations short and open. The results of the interviews showed that none of the students had blogged before and everyone had a positive experience of the research project.

In the other class principal researcher Frank Vetere assisted when the group discussion was held. Three students were also interviewed individually as their Lifeblogs were collected.

The results of the group discussion showed that the students were a bit confused by the meaning and in what way they were to use the mobile phones in the class.
5 Discussion

This chapter describes the analysis and interpretation of the data collected during the research period. It answers the research question and gives an account of what contribution that involves.

5.1 General Conclusions

The purpose of using blogs and ePortfolios in schools is to create a deepened level of self-awareness among the students (Helen et al. 2005). The students write about themselves and the work they do, by creating an archive of their progress, by compiling work and annotating it. The self-awareness that the creating of the Lifeblog archive generated among the students had a negative impact on their assignments (later described in section 5.4), but does not mean it was negative to their learning experience. On the contrary, an awareness of self is considered to be reached only after reflection (Hoegland-Smith, 2006-05-12).

Even though the students were supplied with technology and asked to keep the journal that Lifeblog formed, they did not do what they were asked, as the average number of 5 updated days shows. Five is under half of 11 and 12 possible occasions respectively in both classes to update the Lifeblogs.

They were also very distracted by the fact that an additional female person was in the classroom and that did not settle until the very last week of data collection. Several students found it amusing to take pictures of the researcher and getting to know the new person.

Even though the intention was for the students to annotate their pictures, they still reflect and capture their surroundings by taking photos. To an outsider the pictures can be hard to interpret and put in context, but to the student who took the photos there will be a certain level of reflection and remembrance. “The pictures already have meaning” as one student expressed in the questionnaire.

The students who were negative to the use of Lifeblog felt that it was boring to document the class because of the lack of variation. Some did not understand what was expected of them. Bored students will always be a problem in schools and teachers struggle with keeping them interested and on schedule all the time. It is not at all surprising that students cannot be bothered doing class room work and the Lifeblog assignment was presented as that, even though it was not assessed. The students’ general attitude towards mobile phones as being a source of entertainment (Lonsdale et al, 2005) also contributed to the negative responses. Because of the restrictions that were implemented for the use of the phones, the students felt frustrated that they could not use them as they would use a private mobile phone. A few mentioned that they did not like the fact that there were no games on the phones.

One positive thing was the use of the mobile phone as a research tool. Instead of using a digital camera the phone presented a very discreet data collecting tool that blended in very well in the classroom environment.

5.2 Timing of Research

The teacher expressed during the interview that she would have liked the research to be conducted later in the year. She felt that the atmosphere and dynamics in the class would have settled and that she would know the students better and they would know each other better. In that way they could focus more on the assignments without getting too distracted. What she forgot to take under consideration is that, if the research had taken place later, the classroom protocol would already have been established. The students would have got used to the routines
and pace of the class and the Lifeblog assignment would have been an addition to an already established class. The advantage of conducting the research at an early stage was, that it was presented as a normal part of the class. The semester had gone on for three weeks when the research commenced and the students were getting to know each other and the teacher.

### 5.3 Managing the Phones

An issue that had a considerable impact on the Lifeblog assignment was the lack of time to update it. The students were busy doing work in the class and did not feel they always had time to annotate the pictures or synchronise the handsets with their computers. The students got reminders 10 minutes before the class ended to synchronise the phones and update their Lifeblogs.

During the observations it was noticeable that the students who finished off their assignments early took time to update their blogs at the end of the lesson. Since they could not bring the phones with them outside the class, they did not update them at all, if they did not find the time during class, with a few exceptions.

Many students put the Lifeblog assignment off until the very last days of the data collection, which can be classified as typical student behaviour and is not uncommon (IT-teacher, 2006). This led to the fact that they annotated many pictures from different days at the same time just before submitting their Lifeblogs. The level of reflection was, therefore, not very good and they stressed through the Lifeblog and just put down something to make it look better.

### 5.4 Use of Individual Cameras

The unique component of this research and what differentiates Lifeblog from traditional e-portfolios is the use of the mobile phones. The possibility to capture and transfer pictures to the Lifeblog archive using the individual handsets is a feature that presents an additional layer to the act of keeping an educational journal.

The fact that each student had access to an individual camera through the mobile phone, made them get through the assignments much quicker than previous years (IT-teacher, 2006). This allowed more time to perform the actual work using the pictures from the Lifeblog. Yet, many students felt that the reason for them not to update their blogs was the lack of time, according to the questionnaires. They were busy with the assignments and felt that they could not set aside enough time to keep and update the Lifeblog, despite reminders from the involved adults in the classroom.

They did get through the exercises a lot quicker than previous years, though, thanks to the use of the individual cameras the phones provided. The teacher normally administers three digital cameras in the class, and makes the students team up in groups of five students. They then take pictures of each other within the group and use them for the assignments.

According to the teacher the student morph assignments were not as good as previous years. She found that the students mostly took pictures of themselves for the morph assignment and did not make any effort to use several and varied pictures of their classmates.

### 5.5 The Static Environment

The students also felt that the restrictive use of the phones to the classroom had a negative impact on their interest of updating the Lifeblogs. However, this concentrated the photos and annotations to the class environment and left them with fewer options as to what to write about. This forced them to take pictures of and annotate about class matters and left them with fewer distracting options.
5.6 Nature of VET

The practical nature of the VET class made it suitable for the use of Lifeblog. It was possible to walk around as the students had a go at the different assignments presented by the teacher. Any questions they had on the Lifeblog software or the use of the phones could be dealt with in an unobtrusive manner and no unnecessary disturbance of the class occurred. The assignments in the VET class are an emerging product, which develops as the students work on them. Changes are noticeable and can be documented with the camera or by importing images directly into Lifeblog.

5.7 Contribution

The initial research question was: How can the use of Lifeblog support reflection in an educational setting? The main objective was reached by answering a few sub questions.

- Is reflective storytelling supported by the software?

The opportunity of telling stories by using Lifeblog is definitely present, as some of the analysed Lifeblogs showed. Some of the students found it natural to take sequences of pictures and creating small stories of trivial things happening in the class, for example, to download software, as previously described in Section 4.3.3.

- If so, what forms of reflective storytelling are enabled by the software?

The Lifeblog concept does in fact create a good possibility to tell digital stories. The portability of the mobile phone and the ease of transferring pictures across from phone to computer, create a good possibility for Lifeblog to assist reflective processes. It is a matter of structure and what the teacher wants from the students which decides in what form and how the stories develop. The need for structure is important and the students have to be controlled to reflect upon curriculum activities rather than things outside the class.

- How should the software be incorporated into the standard curriculum to benefit the students’ reflective processes?

A few recommendations based on the results of this research were developed and are presented in Chapter 6.
6 Recommendations

This chapter comprises recommendations for how Lifeblog can be used as a tool for supporting reflection in a classroom. It discusses what can be done in the future to make better use of Lifeblog for students.

For Lifeblog to serve as a reflective tool structure is vital. However, if not managed properly it is no different than to handing the students a more advanced form of a pen and a piece of paper. The software does not in itself promote reflection but can be a useful tool for supporting reflective processes if some simple guidelines are followed. They may not be unique rules to adapt to a classroom setting but are important and will affect the level of reflection consequently better support the students in their studies. The

So what can be done to make it better next time?

Here follows a few guidelines for how to make Lifeblog better support reflection in an educational setting based on the results in this research. Since only four of the collected Lifeblogs were analysed the guidelines are specific to this study.

- The Lifeblogs need to be a part of the standard curriculum and be evaluated and marked by the teacher.
- Set tasks of what to write in the Lifeblogs each day. Reflective questions like: “Write about what you did today and how you did” or “Upload pictures and write about what you thought about today’s lesson”.
- Allow time at the end of each lesson to update the Lifeblogs.
- Strict protocol for picking up the phones at the beginning of the class
- Bluetooth connection for easier synchronisation of the handset and the computer. The USB cords formed an additional rather annoying management issue.
- Clear examples of how the Lifeblogs should look like after a few weeks.
- Available technical support if issues of technical character should arise.
- Incorporate the phones as a natural part of the class as early as possible, preferably right from the first lesson.

6.1 Future Research

To take the mobile phone out of the classic learning environment and bring it along to, e.g., excursions would be interesting to look at. Students could take photos of the field trip and annotate and reflect on their experiences when they later come back to the classroom.

It would also be very interesting to look at how Lifeblog could function in a more theoretically based class, e.g. math or English.
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**Tables**

Table 1, LAOURIS YANNIS, E. N. 2005. We need an educationally relevant definition of mobile learning. Mlearn 2005, South Africa
Appendix 1 – Interview Questions Teacher

General
Begin with a short introduction of yourself and your teaching background.

What is your role here at Wesley?

How come you were interested in participating in this project?

Can you describe the two classes that are involved with this project?
In the year 10/11 class. Who are year 10?

They are elective multimedia VET classes. What other subjects can they chose from?

Would you say there is a typical student that chooses this class?
Describe him/her.

How do the students normally reflect on their teaching?

Project
What is your general opinion of this project?

What were your expectations of this research project?

Have you noticed any changes in their behavior in the class during these 3 weeks?

Do you think this project has affected the students’ ability to reflect?
How/In what way?

Do you think that Lifeblog has been a good tool to use in the class?
Why/Why not?

How was it different from the first weeks of the semester? Both regarding your teaching and atmosphere in the class?
How can you say about the assignments they’ve done this year compared to previous years? Are they different in any way?

How do you think the use of individual “cameras” affected the assignments?

How was your teaching impacted by introducing the phones?

How do you think the students liked using the phones in class?

Tell me about the following students
Carl
Tom
Hans
Klara

Thank you for your time. Is there anything else you would like to add?
Appendix 2 – Observation Sheet

Was any verbal references made by the students to previous lessons or events?

What was covered during the lesson?

How was the class room dynamics?

Was the phones passed around to show pictures or other multimedia content?

Who picked up the phones?

Did the students synchronise the content across from the phone to the laptop?
If they did not, why?
Appendix 3 – Questionnaires

LifeBlog - Questionnaire

Name: _______________________________ Class: ____________________

1. Describe the sort of things you do with the mobile phone and the Lifeblog software.

_____________________________________________________________________

_____________________________________________________________________

2. Circle the words that describe how you feel while using the mobile phone and Lifeblog.

Fun    Boring    Challenging    Frustrating    Creative    Easy    Cool    Interesting    Confusing

Why did you choose these words? _____________________________________________

_____________________________________________________________________

3. Do you ever update your Lifeblog outside of the class?

☐ Yes ☐ No ☐ Don’t know

4. How often do you add notes to your Lifeblog?

☐ Every Class ☐ Most classes ☐ Sometimes ☐ Occasionally

☐ Never

5. Why don’t you add notes more often?

_____________________________________________________________________

6. What do you like most about using the mobile phone and the Lifeblog software?

_____________________________________________________________________

7. What don’t you like about using the mobile phone and the Lifeblog software?

_____________________________________________________________________

8. How has your work in the class changed since you started using the mobile phone and the Lifeblog software?

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

Thank you!
Appendix 4 – Sketch of the Classroom Setting

How the Use of Lifeblog Can Promote Reflection in an Educational Setting