

Researching Learners' Journeys

STROLL

(Student Reflections On Lifelong e-Learning)

Methodology report

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1.0 Introduction

This paper presents the methodology used for the JISC funded Learners' Journeys STROLL (STudent Reflections on Lifelong e-Learning) project which took place over two years between March 2007 and February 2009. The project's background and the analysis of findings paper are available from the STROLL project site at the University of Hertfordshire (www.tinyurl55)

A major feature of the initial project bid was the planned use of student constructed video and audio diaries to capture undergraduate reflections on their use of technology over an extended period of time and thus to explore the nature of their different journeys through HE and FE and their changing use of technologies to support their learning. The decision to use video diaries was proposed as it built on prior expertise at the University of Hertfordshire. The project has, in the view of the research team provided a unique extended view of students' reflections on their learning. This point is discussed in greater detail in the STROLL project's analysis of findings paper, where examples of the students' reflections on their growing maturity as learners and their increasing use and confidence in their use of technologies to support their learning are given.

1.1 Using video case study material

Video case studies have already been used to share examples of e-learning practise between academics in recent years (e.g. JISC innovative e-learning pedagogy project, (Smart 2005). Video Diaries are defined in the New Media Dictionary (NewMediaDictionary 2001) as:

'Video work in which events are related in a coherent manner. Inspired by written diaries, the video diary can be a personal diary, a travel diary or a diary that tells about a specific event in the author's life'.

Video diaries and similar personal technologies have been used to provide an innovative opportunity to study the learners' reflections on their experiences in a private space and at a close point in time to the original experience. This technology had been employed by both Conole in her 'Learner experiences of e-learning project' under Phase 1 of the JISC projects (Conole, de Laat et al. 2006), and in 2007 at the University of Hertfordshire (Quadri, Bullen et al. 2007).

Conole has noted that:

'Diaries can provide rich data about the day-to-day events and contain a realistic account of the activities undertaken by the learners'.

The current project recruited a diverse range of undergraduate students from both Higher and Further Education backgrounds with the aim of researching the students' experiences of

learning in a technology rich environment and their progression in their use of learning technologies over the two years of the project's timescale. STROLL is a largely qualitative study with students participating from across the University of Hertfordshire (UH) and Hertford Regional College (HRC) by recording their own video and audio diaries of their learning experiences. Using the students' choice of a camcorder, web camera, or digital voice recorder they recorded their daily learning experiences of using technology, including a range of e-learning tools and the University's own MLE (Study Net).

2.0 Data capture for STROLL

In this section we review the general methods employed for formal data capture, including ethics agreement issues, the choices made by students regarding their use of technology to record their diaries and finally we consider some of the informal contacts with the students and how this supported the main project aims and built a rapport over the 2 year project period.

2.1 Video and audio diary method framework

The principal data capture method for the STROLL project was to invite student volunteers to construct four reflective diaries at roughly six monthly intervals through the two year duration of the project. This timescale allowed for a longitudinal view that had been an integral part of the original proposal. In practice the diary data was captured over 18 months between May 2007 and October 2008. This allowed time for setting up the project at the start and for analysis of the data gathered in the final stages. For most students their participation included 2 full academic years and for 20 students who in May 2007 were in Year 0 or 1 of their undergraduate programme or undertook a work placement (4) it included 3 academic years of study.

Students were invited to STROLL project launch events at UH and HRC for a presentation on the project prior to them enrolling for the first set of diaries in May 2007. When a further group of FE students at HRC was enrolled in Autumn 2007 an additional presentation was made to interested students to ensure they understood their commitment prior to agreeing to take part.

The recordings of the students' diaries were typically carried out over a four or five day period. The students collected their diary questions and the technology of their choice to record their diary (camcorder, web camera, and digital voice recorder). Each day's diary consisted of a brief recording in the morning to state the student's plan for the day and then a five to ten minute recording in the evening stating what they had achieved, how they had studied, the number of hours they spent studying and the technologies they used to aid learning. Each day also included a 'surprise' supplementary question which was specifically related to one of the research questions.

The data gathered from the diaries was supplemented with a set of focus groups at the half

way point of the project, in which 20 of the STROLL student volunteers took part. In addition telephone interviews were used early in the project in August 2007 for clarification and discussion of points raised in the first set of diaries. In addition to the qualitative data gathered, students were invited to complete an online profile which returned a set of quantitative data for separate analysis. This data was forwarded to the Support and Synthesis group for their overall analysis of student participation in LXP2 projects and is available from the project wiki (<https://mw.brookes.ac.uk/display/JISCle2>).

2.2 Student participation - a diverse population

Students were invited to participate in the project through tutors based in each faculty as well as an open invitation broadcast across the University's news on the Managed Learning Environment (MLE) at UH, which is known as StudyNet. The project team were concerned to have as broad a set of participants as possible and did not want to have participation concentrated in a handful of programmes. It was clear early on that while it would have been easy to recruit willing student volunteers from just a couple of faculties so extra effort was needed to ensure a wide and representative sample of students from across the undergraduate experience.

The STROLL project enrolled a total of 54 students (34 female, 20 male), from a broad age range of between 18 and 51 years at the start of the project. The volunteers were studying on undergraduate campus-based programmes based at one of the University's 3 main campuses at Hatfield or St Albans or from Hertford Regional College (HRC), a local FE Associate College of the university. Students were drawn from a total of 18 different programmes of study. In terms of recording the students' ethnic diversity, this was offered as an optional question on the profile but students from 8 different ethnic groups participated in the project. The majority of students came almost equally from White (British) or Black/ Black British (African) backgrounds. 23 students were initially based in FE, following HE programmes that progressed to University of Hertfordshire (UH) degree programmes. The majority of the FE students were initially enrolled on Foundation degrees studying at HRC. 31 students were enrolled on programmes based at UH and would be studying as a minimum from May 2007 to June 2008. 10 students graduated in July 2008 and completed their final diaries post graduation when they had started employment or further study e.g. PGCE.

In May 2007, 28 students completed diaries, in Oct 2007, more FE students were recruited to the project and 47 students completed their diary. In May 2008, 45 completed reflective diaries. In total 40 students completed three or more diaries. In October 2008 numbers participating were 40.

Three students declared a disability to the project team, two were dyslexic and one was wheelchair based and additionally had limited motor control in her hands due to cerebral palsy. Appendix 1 provides details of student programmes of study

2.3 Ethics agreement for a diary-based project

Ethics agreement was an important part of the initial stages of the project. At UH the Ethics permissions applications are initially devolved to the faculties for agreement and an early meeting was held between the STROLL project director and the Chair of her Faculty Ethics Committee. All participating students were required to sign forms agreeing to the terms of anonymity provided by the project and acknowledging the use and analysis of the diary material for the project's research aims.

2.4 Students' choices of technology for recording their diaries

The project team had originally intended that all STROLL participants would use a web camera to complete their diary, with the opportunity once the project had completed that they would be able to keep their web camera. This was included in the funding proposal. However, not all the STROLL students wanted to use a web camera. The team also had access to a small number of camcorders loaned from the UH Blended Learning Unit and a number of digital voice recorders. This enabled a choice of technologies to be made available for the students to feel confident and comfortable recording themselves. For the four reflective diaries completed, the digital voice recorder and web cameras were the most popular technologies for recording. The project team discovered that the camcorder proved to have the best quality of recording, followed by the web cameras and then the handheld digital voice recorders. Two of the FE students preferred to use their mobile phones to record their diaries. This created problems with data transfer and poor quality of the recording for the transcriber.

The number of camcorders used by the students over the three diaries decreased. This was partly due to the reduced number of camcorders available for the STROLL project to use but also the perceived problem of being responsible for a valuable piece of equipment. The project team found that students liked to use the digital voice recorders as these were seen as simple to use for recording and downloading diary reflections and there were no compatibility issues. The team ascertained that some students preferred to use the digital voice recorders so their facial expressions were not seen by others including the research team and they preferred the privacy of recording their opinions without being 'seen'.

The wheelchair student with cerebral palsy found that fine motor skills were required to use the web camera and camcorder and they were consequently difficult to use with accuracy. The digital voice recorder was a better choice as she was *'more in control of it'*. A few students had to resort to blogging for their second or third diaries due to problems with recording with digital technology, it was not their first choice of diary recording and they were away from the university on placement at the time. This is in contrast with some of the students recording diaries of their first year undergraduate experiences for the LEaD project at University of Edinburgh (Hardy, Haywood et al. 2008) who deliberately chose to handwrite or word process their reflections.

A handful of students (3) at UH and HRC struggled with using the web camera technology in spite of the availability of technical support at both UH and HRC. Some of the STROLL participants also claimed to be unable to use the integral webcams on their personal PCs because of the different formats the video was created in which made it hard to edit.

A personally owned computer was not a pre-requisite for taking part in the STROLL project and private recording areas were made available in the Learning Resource Centres at UH and HRC for any students wanting to record there instead of using the technology at home. No-one opted to use these.

2.5 Telephone interviews

In the summer of 2007 telephone interviews were carried out with the students who had participated in the first set of diaries, using a variation of Beetham's Interview Plus methodology piloted by Creanor (Creanor, Gowan et al. 2006) in LXP1. This method is itself a development from Bloom's stimulated recall methodology (Bloom 1953) using details which students had mentioned in their diaries as the artefacts. This gave a deeper insight to specific points made in their diaries. The contact was further beneficial in keeping the students interested and engaged in the project over the long summer holiday.

2.6 STROLL project blog

To maintain a project identity and encourage further reflection in the early months a closed group for the project students only was set up on StudyNet the UH MLE, for the STROLL project. Here the students were updated on project news, and regular questions for discussion were raised, such as what their current favourite technology for learning was. A project blog area was made available for any of the project students or team members to contribute their views by blogging. This acted as an informal contact point between students and the project team. It was used more at the beginning of the project and after the first year use became insignificant. By this time the students were relating well with the project team and contact was made via text message from the project mobile phone, by email or occasionally by the STROLL Research Assistant via her own Facebook account.

2.7 Focus groups

Following the second set of reflective diaries in October 2007 four focus groups were conducted between January and March 2008 by a researcher independent of the STROLL project. The researcher, who had previously taught at UH was familiar with using technology to support learning and with StudyNet. All students who at that time had active participation in STROLL were invited to take part in one of the focus groups, which were held in a central location for an hour at lunchtime with refreshments provided. To facilitate the participation of the FE students based at HRC one of the focus groups was held there. Twenty students in total chose to participate in the focus groups, which is a representation of 38% from the group of STROLL participants. The focus group activity was recorded by the researcher and transcripts in Word™ were compiled from the discussions. This activity further supported the project findings by picking up on specific points from the diaries, and

encouraging group interaction on specific areas where clarification was needed on the student's voice. Specific quotations from the focus groups and how these relate to the overall findings are included through the analysis paper. The focus group transcripts were later encoded into NVivo™ alongside the other diary material

2.8 Informal methods of maintaining contact with students through the project timescale and eliciting their views

It was realised at an early stage of the project development that recruiting students and maintaining their involvement in a longitudinal project such as STROLL would be crucial to the project's long term success. The importance of student buy-in to create the perspective for real learners' journeys i.e. for more than a single set of diary reflections, was vital and so careful thought was given as to how regular contact could be developed and maintained with the student volunteers in the periods between the 6 monthly diaries, when the project team was busy with data analysis but the students were not in daily contact with the project team.

Two critical issues were identified. First of all there was the need to provide an incentive to students to take part by the team to acknowledge the time they were giving up for the project and secondly to ensure that a part of the Research Assistant's role would be to develop and maintain enthusiasm for STROLL with the group of volunteers. So important was this second issue that one of the qualities featured in the advertisement for the post of the STROLL Research Assistant was the willingness to build and maintain contacts with participating students during the project. The successful candidate for the Research Assistant was closer in age to the average student participants in STROLL than the rest of the project team and both familiar and comfortable with e-learning technologies. She was very successful in engaging with the students and preventing them from drifting away during the project because she made sure they knew their views were valued.

Students received their choice of a voucher from an agreed selection of High Street shops for each set of diary reflections completed and handed in, with a bonus voucher for all those who completed the final set of diaries in October 2008.

Additional strategies which contributed to the success of keeping students engaged with the project included the RA's use of a project mobile phone to send texts to students to keep them up to date with project progress and remind them when the diaries were starting up every 6 months and her use of Facebook to keep in touch informally with those students who were happy to join a social networking group. These strategies were successful to the point that participants started texting the project in September 2008 to find out when the next set of diaries were going to take place.

3.0 Data analysis methods

The project director developed a 6 stage methodology for the video and audio diaries to

provide an assured research basis for the project which is shown in Table 1. The majority of the data which the project team collected was derived from the students' video and audio diaries and the project predictably generated large amounts of qualitative data to be analysed. The decision was taken early on to transcribe the diary material so that the research assistant became more familiar with the content and the transcripts could be shared for reading.

In total the diaries resulted in over 790 pages of transcripts to analyse. To assist the analysis post-transcription, the data was colour coded according to the main project themes. Mind maps were created using MS Visio™ for each student's diary detailing their reflections on learning from the transcripts. Further colour coded maps of quotations relating to the research questions were then created from the transcripts. The benefit of mind maps to the project team has been the quick visual guide to each student's reflections and the summary from the mass of diary data. Finally NVivo™ 7 was used to support and track the large quantities of data and as a means of ensuring that data could be checked by another researcher to confirm it had been reviewed thoroughly. NVivo™ 7 which was later updated to version 8, which can manage video data, was only purchased half way through the project when its possibilities for manipulating data had been demonstrated and explained. It did not really shorten the timescale for analysing the data as the decision had been taken to use transcripts but it did provide a very fast search facility for summarising points made by students and particularly for searching on words and phrases used across the different diary stages by the students.

Finally the team invited another researcher to check the use of NVivo™ to provide some inter-rater reliability and to ensure that the coding had been carried out reliably and accurately.

Table 1 6 stage method for analysing the STROLL diary data

Action	Reason	Outcome
1. Video/ audio diary/focus group compiled by student and watched by researcher	Check content is relevant and technology has worked and student has given relevant answers	Initial understanding of answers to free-flow questions
2. Compile transcript (using Dragon Dictate™) in Word™.	To ensure a checkable transcript which can be used for comparison with others	Set of student transcripts from their diaries over 18 month period
3. Check transcript against original recording and make changes if required	Ensure all extras and possible vagaries have been accounted for	Set of reliable student transcripts from their diaries over 18 month period
4. Highlight student words in transcript in colour and construct a concept map for the student diary using their own words	2 nd stage review to become familiar with the material in the individual diary and to cluster it into sections according to phrases used	Set of colour coded transcripts and explanatory mind maps showing initial data analysis
5. Upload transcript into NVivo™ and check and then code data into nodes according to broad research questions	The use of NVivo™, which is a data coding and analysis software package was introduced in August 2008 to speed up data analysis from the full set of transcribed materials	The students' comments are now easily searchable and can be viewed and compared electronically as necessary Quote mind maps were created from the NVivo™ queries which speeded up the time
6. NVivo™ data analysis checked by independent researcher to ensure accuracy of coding	Inter-rater reliability is used to ensure that the researcher is not trying to read into the data what does not exist nor that they have ignored potentially useful information	Agreement that samples of the NVivo™ coding had been completed accurately.

4.0 Conclusions – critique of a video and audio diary methodology for the STROLL project

The data collection and analysis method described above explain the choices made for a medium sized project with a very large and rich set of data. The benefits of the diary methodology have been the way it allowed students to record their thoughts and reflections on the research questions with a sense of immediacy, which may be lacking in interviews. Interviews have to be recorded at a mutually convenient time and place for both parties. The experience of the STROLL team was that students would record anytime and anywhere and that many of their most valuable insights were right at the end of the day, when it would have not been possible to capture these in an ordinary research programme typically running between 9-6 on weekdays. Using the technology to record their diaries enables the

students to reflect in their own time and space and the video clips on the project website show the ease with which many of them relaxed and reflected on their learning.

Members of the STROLL team already had experience of using video diaries and so had already refined their methodology prior to the project in terms of the outline process. The use of mind maps, which was very successful for sharing summaries of student quotes, was developed by the Research Assistant after the first set of diaries and then used in subsequent data analysis to present findings.

A benefit to developing the transcripts within the team was that the team members became familiar with the content of the video and audio. This benefit would have been lost if they had proceeded straight to using NVivo™8 for data analysis from the recordings. The use of Dragon Dictate™ was invaluable for transcribing the data but in the team's experience the software is not always easy to train to individual speakers' voices.

Students enjoyed recording their video and audio diaries and took a personal interest in the project outcomes. This kind of project culture is difficult to build and the team believe it was due to a number of practical and personal factors in the methodology and project management.

- A Research Assistant familiar with the technology and study style of the university
- A central place on campus for students to call into to collect their diary materials or alternatively the option to take the materials out to the students at HRC
- Regular contact with the students between the diary periods through a variety of media (mobile phone, StudyNet, Facebook)
- The students' choice of vouchers from a selection offered via an online retailer
- Readily available technical support at both institutions meant that when students failed to record the first time through technical difficulties they were soon helped out
- Sharing of project outcomes and an invitation to drop into the STROLL team anytime

The project team reflect that using video and audio diaries requires some knowledgeable technical support and a willingness to engage with the students who are being asked to take part. Their participation and buy-in has been essential to achieve the project's aims of capturing an authentic set of learners' experiences.

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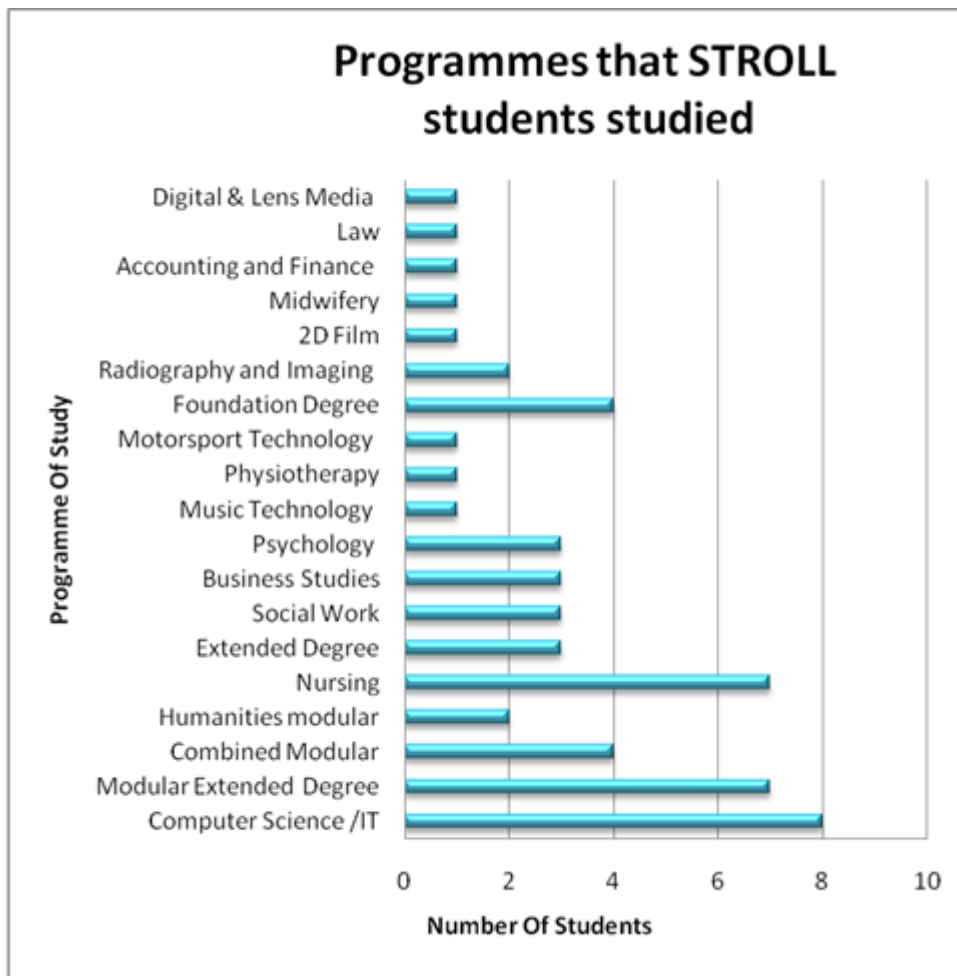
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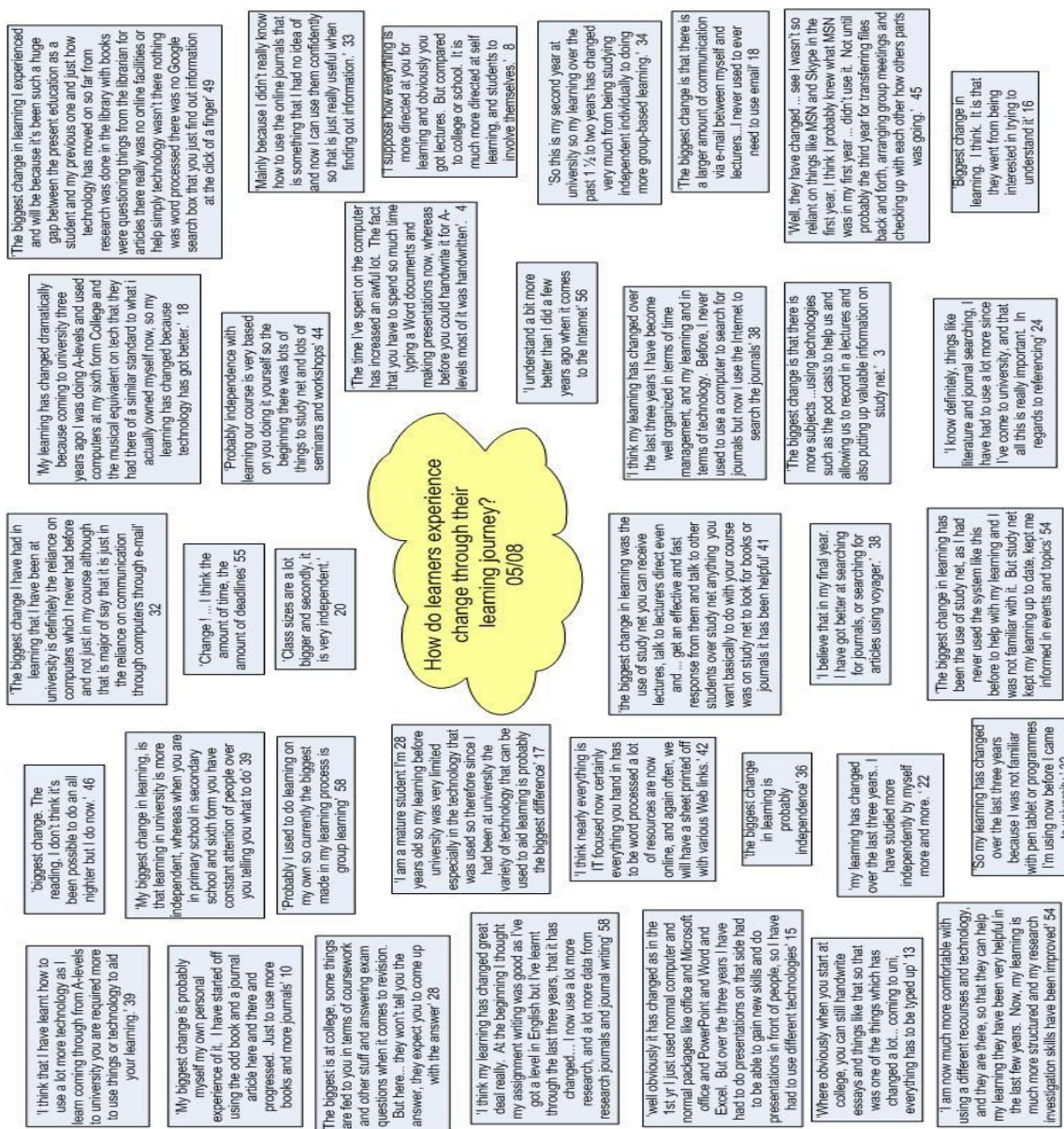
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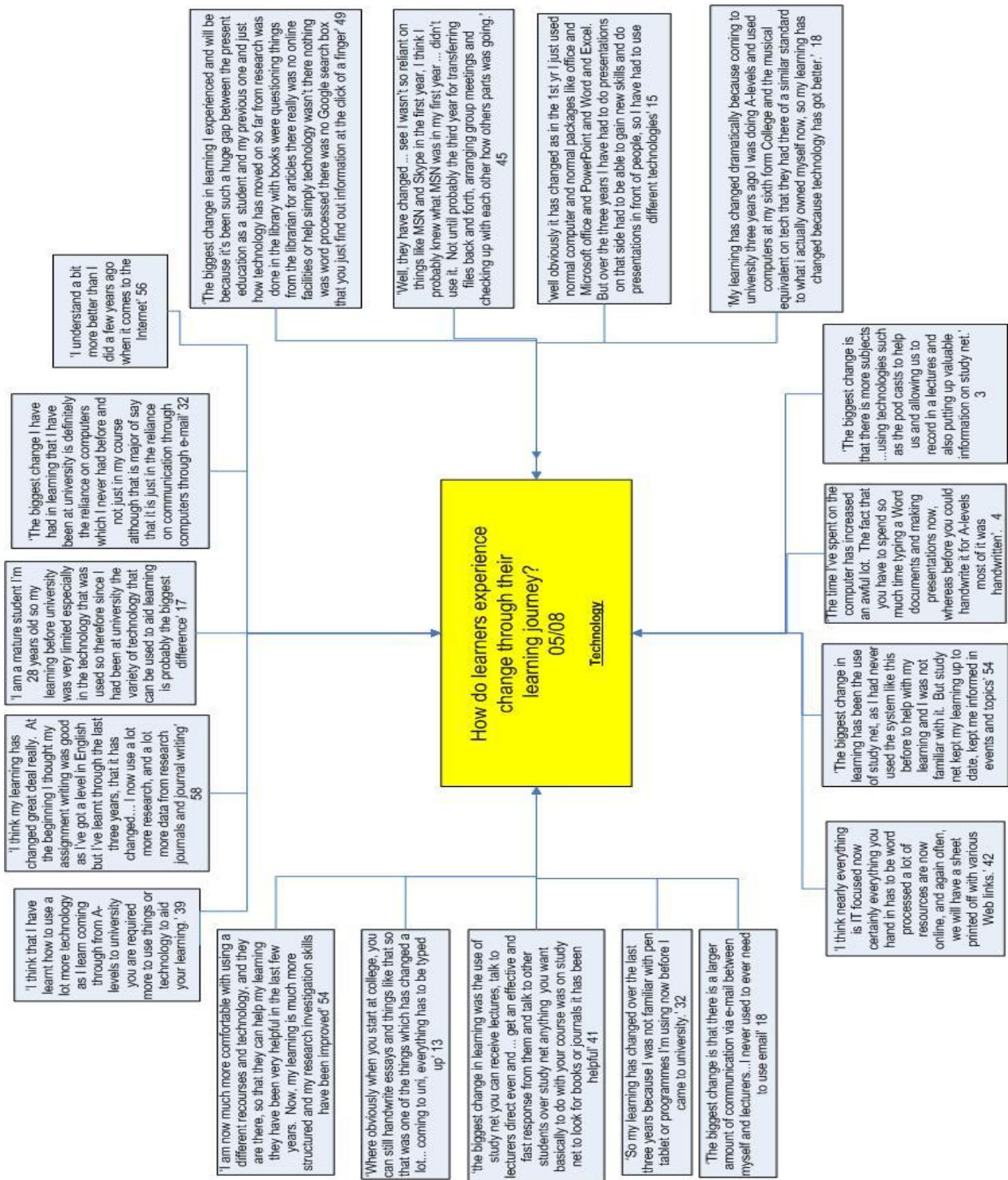
Appendix 1 Programmes on which STROLL students were enrolled



Appendix 2 Selected mind maps from STROLL

'How do learners experience change through their learning journey' May 2008





How do learners experience change through their learning journey?
05/08

