DIGITAL IMAGING IN SPECIAL EDUCATION – PROJECT DISE

A Case Study of the DISE Project at

Blomfield Special School and Resource Centre, Whangarei

November 2005

www.digiops.org.nz

MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

Project Scope:

In 2005 the DISE project involved the selection of 11 student participants from the school's student population. The students were from the Base School, and all had intellectual disabilities, while some also had physical disabilities. Students were selected to represent a range of disabilities, including autism, cerebral palsy, epilepsy, foetal alcohol syndrome, and global developmental delay.

Staff involved included a core team of four representing management, teaching, and support staff. Beyond this there was a contributing team of 10 from teaching and support staff, who actively worked with the participant students. Input was sought from relevant therapists, as appropriate.

Project Context:

Blomfield School is a decile two special school situated to the south of Whangarei city. The school services the Tai Tokerau region and operates from five physical locations. These locations comprise the base school, and satellite classes at Manaia View Primary, Morningside Primary, the Maunu Centre and Kaitaia Primary. The latter school is approximately 140 km north of Whangarei. For the trial year the project was restricted to only working within the Base School environment.

Over the past decade the school's roll has gradually increased with 76 students currently enrolled at the school. The students range in age from five to 20 years, and are drawn from a large geographical area and varying socio-economic backgrounds. Maori students make up approximately 50 percent of roll.

A number of students are non-verbal, and many have difficulties in social and community situations. Students with intellectual disability have shown to respond well to learning through audio/visual means, (see appendix 1), and focus well on seeing themselves and others they know on video. Digital photography has been effectively used in the school, as has the Picture Exchange Communication System (PECS), which uses picture symbols to support communication.

Teachers at the school often found it difficult to report student progress accurately, without using technical language. Progress can be subtle and incremental. Parents can have difficulties identifying progress and understanding the strategies that staff use to support the learning, when receiving only written and verbal information.

Project Description:

This is a Digital Opportunities Project, a joint initiative between the Ministry of Education, HP New Zealand, Macromedia, EdTech, and Blomfield Special School. The project focuses on the use of audio and visual technologies as tools to enhance students' learning opportunities. The project involves the making of audio and visual resources for our special needs students and their families. This is a three year project: DISE is now ending the first year of the contract.

There are three parts to the project:

Desensitisation:

Production of video clips to prepare students for visits that could be potentially traumatic for them. The students are able to prepare for these visits by working in-class with their teachers, to desensitise them to the challenging environment, and to provide the students with coping strategies. Suggested examples were: a visit to the doctor, the ear caravan, the supermarket, and work experience placements.

Socialisation:

Production of video clips which show students' appropriate social behaviour in a specific setting. The power of visual ideas through technology enables our students to view information for as long as they require, and to re-

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play and rehearse at their leisure. They can use this data to learn how to respond to social stimuli in an appropriate manner.

Digital Diaries:

Production of visual and audio records of achievements and skill development of our special needs students, so they and their families can see their improvements in a number of areas, and measure their progress. This involves teachers making and editing video and digital still photographs, and applying audio overlays. The students prefer to see themselves rather than reading about themselves, as meaningfully decoding print is a skill that most are unable to achieve. As the project develops, digital diaries of the students' lives at school will provide a cumulative record. Parents and relevant others will be able to look at the abilities of the students and reflect on improvements. More able students will be able to prepare segments for themselves and extend their use of ICT to enhance their skills for life beyond school.

Project Participants:

Business partners – a joint project between

- MOE - provided funding for the project.
- Hewlett Packard - supplied laptops and cameras
- Ed Tech - provided video editing training for staff
- Macromedia - supplied software for the project.

In school management of the project was provided by:

- **Bev Topia - Project Manager**

  Bev was responsible for project management, liaising with parents, and directly supervising the socialisation study.

- **Sally Wilkinson - Lead Teacher**

  Sally was responsible for liaising with teaching staff and parents, and supervising the digital diaries study.

- **Brian Baynham - Facilitator**

  Brian was responsible for research, coordination, film editing, staff training, and supervising the desensitisation study.

- **Michele Flood - Technician**

  Michele was responsible for film production, video editing, and staff training.

Other staff were involved with the project at times through the year, mainly with creating and using storyboards, together with staging the filming.

Project Resourcing:

The equipment initially used in the project was video cameras, digital cameras, and laptops. Later in the project a considerable quantity of footage was stored on a server. A large part of the funding for the DISE project was to provide time for staff to produce and edit video footage. During the course of the year it was quickly realised that the amount of time needed to film, edit and store the video footage had been underestimated.

Technician time and ICT time was provided by the board of Blomfield Special School, to ensure the project continued to meet the required deadlines.

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Project Setup:

In December 2004 the school received two video cameras and two laptops; initially the video editing software that came with the cameras was used. A number of staff used the equipment over the summer holidays to gain proficiency in use, but found the editing software was difficult to use. During Term 1 2005, more staff were introduced to the equipment, and in-house training was provided for a number of staff, who also felt that the software was difficult to use. It became apparent that a considerable amount of time was required for all staff to learn how to edit videos.

The original aim for the project was to train a large number of staff to take videos and edit them, however the editing process was too hard for a number of staff to gain a good level of proficiency - this was partly due to the software being used. We changed to Adobe Premiere Elements and EdTech supplied training in video techniques for nine of the staff. The training was excellent, although some staff found that they did not have the time to develop their video skills. The project was later modified so that only two people were involved in the video editing process, with the remainder of the staff producing and filming sequences. One problem this produced was the time required of the two editors increased markedly. Michele was taken off other duties to edit, develop, and store the video footage. The Board employed staffing to release Michele from her teacher aide duties.

The laptops used were excellent for collecting footage from the cameras; however, the hard drives quickly filled and storing data until the end of the year became a problem. The Ministry came to the school's aid and provided a server (to be run in parallel with our existing network server) to be used for storing videos only.

Equipment was needed to show the digital diaries information to the students' parents, as some families did not have the right equipment. The school bought a combination VHS/DVD player and TV so the parents were able view the information produced.

The project was introduced to all staff in December 2004. Many volunteered to be part of the project, but to ensure its quality and effectiveness was maintained, project participation for the pilot year was restricted to students and staff from Base School. Staff were kept up-to-date with the project through staff meetings and weekly information sheets.

Case Study for Desensitisation*:*

The DISE literature review in this area indicated that video modelling on its own was not particularly effective, and needed to be allied to other interventions. A video of a visit to the Ear Caravan (mobile clinic) was chosen to be produced, as one of our students, Nathan, had had problems in the past. Initially we were unsure which of the following techniques to use:

1. **Self Modelling** - student watching footage of himself as he currently reacts in the situation
2. **Peer Modelling -** Using another student as a model
3. **The camera as "an eye" -** from student's perspective

The self-modelling technique was deemed inappropriate given the extremely negative behaviour Nathan presented within the target situation. The peer-modelling was not pursued as Nathan showed little understanding of the relevance of the behaviour of his peers. It was decided to use the idea of the camera as "an eye", where the video camera replicates what the student would be seeing in the target situation.

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The Ear Caravan video was effective; Nathan enjoyed viewing it (footage of Nathan watching the video provides data). Written data indicated that Nathan chose to watch the video several times a day.

Nathan off to the Ear Caravan.

His reaction to watching the video was noted by a staff member:

> *"I had taken Nathan up to the staff room to get the disc and told him it was for the computer and for him visiting the Ear Caravan....He came over and sat down and I asked if he wanted to watch it. He responded by turning his head, laughing and 'Hoooo' (his happy voice sounds) when he heard Jan O's (his teacher) voiceover. At this stage peers could hear it and came to watch, quite excited …this encouraged Nathan; he laughed. …He went to get up but only for a couple of seconds when something caught his eye or ear and he turned back to viewing, and laughed, turned his head, responded in the same way when he heard our "voices" on it...It was wonderful to watch his pleasure."*

Having made the footage available for Nathan's viewing over several months, and reinforcing this with 'normal' teaching about the ear check process as part of his classroom programme, we returned to the Ear Caravan to assess Nathan's progress. While it was clear that Nathan was nervous and showed some discomfort on arrival, he entered the caravan, sat down and listened to the nurse. He was agitated, and did not allow the nurse to examine his ear, but did allow her to touch his ear which was a significant improvement.

In summary, the desensitisation study was partly successful. Nathan walked into the caravan by himself and was not physically restrained by adults, which had been necessary before the desensitisation took place. Nathan is resistant to change and can become nervous, agitated and violent in unusual situations. Although he was nervous and agitated, he was much calmer than in previous visits. Unfortunately the Ear Caravan nurse who had taken part in the initial filming had changed jobs, so the nurse Nathan saw after the intervention was unknown to him. Because of the timing of the visit to the caravan, it was not possible for Nathan to visit it in the same initial geographical location, so some parts of the desensitisation video were not as useful as we hoped.

For future desensitisation studies, we will try to reduce the time between making the video and returning to film the final assessment visit, so that changes to the video settings such as location and staff are minimised. Nathan's enthusiastic response to the desensitisation video using the camera "as an eye" has meant that peer or self-modelling techniques will not be pursued.

Case Study for Digital Diaries:

In the digital diaries study, video evidence was collected for nine students during the year. All students were observed in terms of an IEP goal set between parents and staff at the beginning of the year. There were four focus areas:

- Physical
- Communication
- Self Management
- Transition

Two students from each area were selected to minimise the effect of students leaving school during the project. Student selection by staff was considered an important factor in the success of the study.

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The students were selected using the following criteria;

- **Stability of family unit -** was the student likely to remain at this school at least for the year?
- **Support of family -** were the family likely to give consent for the student's participation in the project and utilise the materials developed?
- **Suitability of Individual Education Plan goal -** we aimed for two students who had goals within each of the IEP areas (Physical, Communication, Self Management, and Transition).
- **A spread of students** was wanted from the classes at the Base school, so a variety of staff could be involved, and the workload and learning opportunities could be distributed between them.
- Was the **student engaged** with using video/computer?

To this was added another criterion, which emerged as significant during the course of the study:

- Was the student young enough to change behaviours, and skills?

A student from Blomfield School.

Data collected was stored so that a DVD of the student was available to parents at the end of the trial.

The following summarise some of our major findings from the study:

Communication

Choice of student was important. Severely physically disabled students where progress was likely to be incremental, especially when the student is older, were not the most useful subjects.

Transition

Digital diaries were useful to other agencies that need support to provide leisure/ work programmes beyond school; the diaries demonstrated a range of activities the student enjoyed and provided examples of what they are able to achieve.

Physical

Digital diaries provided visible evidence of progress and could enable other staff and parents to observe and compare techniques to establish best practice when physically assisting students. This relates well to the MOVE® programme that operates at Blomfield Special School.

Self management

Digital diaries proved worthwhile in one case - tracking progress, and in another case - demonstrating appropriate techniques and language to use when working with the student. Both cases have the potential for behaviour management tools for parents and staff.

At the end of the trial, parents were invited into school to discuss the progress towards completion of the IEP goals for their children. This was an opportunity for them to view the completed DVDs, and they were invited to comment on the digital diaries trial. The feedback received was positive and enthusiastic. One parent commented:

> *"It very clearly demonstrates my daughter's progress which was very reassuring, and a very positive feedback."*

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Another parent commented:

> *"Because I work with my daughter every day, changes are not always noticed. The DVD reports this."*

Case Study for the Socialisation Study

The socialisation study focussed on providing a different video model to teach social skills targeted on a specific IEP goal. The student selected, Kahlia, had difficulty with behaving appropriately in a café setting. Her IEP goal was to 'Eat with small bites and wipe her mouth at regular intervals'. At the start of the year her teacher noted that:

> *"Kahlia shows no awareness of when food or saliva is coming from her mouth. She requires constant prompting from staff and a mirror to remind her to wipe her mouth, eat with small bites, and replace food on her plate while chewing what is in her mouth. Kahlia needs to develop self monitoring strategies to make her eating more socially acceptable."*

To support Kahlia's goal, a 'feed-forward' video model was selected, based on the findings of our literature review. This video was produced to show Kahlia eating and drinking in an appropriate manner. This effect was achieved through detailed editing. In a classroom situation, Kahlia viewed the video to internalise the behaviours. She enjoyed watching herself on the DVD and requested it many times. This feed-forward technique allowed the student to observe "perfection".

Kahlia practises her socialisation skills.

The final assessment visit to the café was filmed and Kahlia's behaviour was compared with the baseline. The results of the trial were positive. Kahlia was able to demonstrate the behaviours that were targeted. This success provided a significant step towards the long term goal for Kahlia: positive integration into her local community. The review of Kahlia's progress towards achieving her IEP goal stated:

> "*Kahlia's progress with achieving this goal seems to fluctuate and be related to her levels of wellness and seizure activity. While she still requires both verbal and non-verbal prompts at times, this need has certainly decreased over the course of the year. Kahlia shows that she is aware of the required behaviour and looks for approval when she eats and drinks correctly. She will now take one or two bites and then replace the food on her plate, chewing before she bites again. She will dab her face with a serviette with minimal prompts and at times independently, if it is wet. She is also taking smaller sips of her drink, with minimal or no prompting."*

Project Development and Impact

Outcomes for Staff:

Benefits

A number of staff gained new skills, such as video cameras skills, editing, and enhancing digital photographs, and increased the ways in which they used these technologies in the classroom. During 2006 the number of staff involved with the project will increase. The project also assisted staff to look critically at their teaching methods and modify those methods in the light of the video evidence. This was particularly noticeable when the students were making very small improvements. Collegiality and team work improved because of our new roles in a new project. The video intervention meant staff were more able to help students to visit places in the community that

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previously students had found challenging. Attendance at the U-Learn 05 conference in Auckland in July provided project staff with a rich source of information and ideas. It also provided the school with a Starboard which we were lucky enough to win!

Issues

The time required for collecting data, editing, and storage was grossly underestimated. Some staff were required to be out of class for lengthy periods of time, and this disrupted the consistency of class teams which is so important for special needs students. Initially meetings of the DISE management team were infrequent, which led to a lack of coordination amongst the team. Weekly meetings were instigated in Term 2, and accurate minutes were taken, and kept and reviewed. Meetings for the larger group of staff involved in the project were held twice a term so that there was a consistency of approach. Many staff wanted to be part of the DISE project, and indicated this in their professional development booklets. Our need to limit the number of staff involved as detailed previously in this report meant a number had missed out in 2005, but more staff will be involved in the future.

Modifications to practices

All segments to be videoed are now storyboarded by the staff involved then reviewed, prior to filming by the management team. This has achieved a uniform method that directly relates to the IEP goal that is being measured.

Weekly meetings of the management team have ensured timetables are adhered to, and communication between members has increased.

Two staff became responsible for the editing of videos, which provided a higher level of skill, as they were using the programmes more often.

The project was bigger in scope than the management team initially envisaged. To keep the project manageable, the scale of the project was reduced by not involving a satellite class in the pilot year. This also reduced the number of staff involved.

Use of project resources

Staff used laptops, cameras and software. In-house training was provided, and illustrated the safe and effective use of digital and video cameras. Camera licences were issued to staff members who completed training, which also allowed them to take the equipment home to practise. The increased familiarity with the technologies encouraged staff to use the equipment in learning and teaching situations which were not part of the DISE project, but have educational benefits. One example was in the use of video to show behaviour modification techniques to increase staff effectiveness in managing student behaviours.

Outcomes for Students:

Benefits

The socialisation and desensitisation studies provided an increased number of independent learning opportunities for the students. They were able to view their videos when they wanted, and initial results for these trials indicated some success in achieving goals.

Issues

Before students could participate in the DISE project, the school required parents'/carers' permission to display or publish their child's name and/or image. However, some parents did not want images of their children to be displayed.

The ongoing health issues and resulting absences of some students meant they were not videoed at the right time for the digital diaries study.

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Initially there were only two laptops available, and use by students was restricted, as we had to use them for collecting data.

Modifications to practices

The number of laptops available was increased (thanks HP), and allowed students in the socialisation and desensitisation studies to use the laptops to view videos on a daily basis, voluntarily.

Students knowledge and use of the equipment increased (laptops, cameras both digital and video, and the Starboard.)

An increase in staff abilities has empowered them to teach students to use a wider range of digital equipment. One student used the digital camera to take photographs that were used as part of the project.

Outcomes for Parents:

Benefits

By watching the DVDs in the company of teaching staff, parents were more effectively identifying prompts that staff used with their child - this allowed staff to teach strategies to parents. The viewing of the DVDs improved depth of discussion at MOVE® meetings, and gave more precise evaluation of IEP goals.

It assisted parents to take their child into social situations in the community, and gave them confidence that their child had already successfully experienced what they were going to do. Parents' viewed changes over a longer time span, and identified progress better. At the end of the trial, parents were invited into school to discuss the progress towards completion of the IEP goals for their children. This was an opportunity for them to view the completed DVDs, and they were invited to comment on the digital diaries trial. The feedback received was positive and enthusiastic.

Issues

The time taken to liaise with parents and to watch the DVDs with them took staff out of class for a considerable time. Equipment to view the data in a private setting was a problem in the early part of the project.

Modifications to practices

As the project progressed, equipment was purchased that allowed parents and staff to view the DVDs in a private area where feedback and meaningful discussions took place.

The feedback from parents about the use of DVDs in the project was enthusiastic; ideas were suggested for filming the students in the home situation so that staff could see the ways that their students behaved at home. One area where parents were keen to see an extension of the project was in the identification and development of behaviour management strategies that could be used at home, so that they were consistent. This will require more teacher time to work with parents and staff, and we have arranged for a teacher to spend time working with staff and parents specifically on behaviour management techniques. Partly this will be funded by the Ministry, and partly by the Board of Trustees. The Board has agreed to support the teacher role as much as possible.

Use of Project Resources:

The DVDs produced were viewed by parents with enthusiasm. The DVDs were also used as a teaching aid, particularly with staff new to the students. The equipment and software have been used extensively in a number of areas besides the DISE project.

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Project Findings and Proposed Changes:

Some changes to the DISE project that were made during 2005 were:

Choice of students

The choice of students to take part in the project needs to be more thoroughly researched, with attention to the specific IEP goals to be measured.

Storyboarding

Each segment to be filmed must have a comprehensive storyboard produced before filming starts, so details such as camera angles, personnel involved, physical setting, and the number and type of prompts given, are controlled. This will lead to better comparisons of the progress made by students throughout the life of the project. Examples of the storyboards that we now use are given in Appendix B.

Information needs to be communicated to all staff

The progress of the project needs to be communicated to all staff so they feel included in the project, and we get as much input as we can from a range of areas: teachers, teacher aides, therapists, and management.

Technician time

Because of the difficulties with all staff learning and using the editing programmes, editing of the videos, manipulation of resources, adding voice-overs, and storage and production of DVDs, has been carried out by two staff. This has led to reduced class contact time for these staff members and problems with continuity of class programmes. In 2006 we will have one person designated as a technician. This will resolve the problem of staff being taken from class on an ad hoc basis, and will ensure better planning and cohesion of the project.

Space to base the project

During 2005 the amount of equipment used increased tremendously, and problems were experienced with its storage and security. In 2006 the DISE project will be based in a lockable room in the transition house in a space dedicated to the research project, with enough space and security that equipment can be securely left.

Group management

The DISE project changed its management style, and group meetings are now held weekly to discuss progress and plan for developments. This has meant that time has to be made available from other duties. Some of the group are senior managers so this impacts on the running of the school. Decisions on storyboards, clips and voice-overs are shared. It is time consuming, but it means we have group ownership of the quality of the project. The review and reporting of the DISE project is also a shared task and has taken time.

Link to IEP cycle process and written report process

The digital diaries part of the DISE project measures student progress in a key area identified as a specific goal in the IEP for that student. The IEP procedure starts in term 1 each year and is a lengthy process consisting of meetings between staff and parents. The identification of students for the DISE project can only take place after the IEPs have been completed, and the results and DVDs are viewed at the end of the year when the IEP goals are reviewed. Some goals - particularly MOVE® goals, are identified earlier, and students can be chosen with MOVE® goals early in the year while other students are left to later in the term. At the parent interview stage, permission is obtained to use their children in the DISE project. Transition digital diaries have a different focus from the other diaries. This has meant that a “CV” type approach has been adopted. Transition digital diaries will therefore start at the beginning of the year.

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New software

The use of video equipment and production of DVDs has meant that learning of appropriate software became critical. There was not enough time at school to develop these skills, so gaining familiarisation with the software at home became imperative.

Planning Days

The nature and complexity of the DISE project, together with the changes intended for 2006, mean that detailed planning is required. To this end it is intended to have two “off-site” planning days for the project management team. This will involve more time out of class, but should enable more efficient operation of the project over 2006.

Appendix A – Blomfield Special School Literature Review Data

Charop-Christy, M. and S. Daneshvar (2003). "Using video modeling to teach perspective taking to children with autism." Journal of Positive Behavior Interventions **5**(1): 12-21.

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Embregts, P. J. C. M. (2002). "Effects of video feedback on social behaviour of young people with mild intellectual disability and staff responses." International Journal of Disability, Development and Education **49**(1): 105-116.

Hitchcock, C. H., D. P. W.; et al. (2003). "Video-self-modelling intervention in school-based settings: a review." Remedial and Special Education **24**(1): 36-45,56.

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Lasater, M. W. and M. P. Brady (1995). "Effects of video self modelling and feedback on task fluency: a home based intervention." Education and treatment of children **18**(4): 389-407.

Shipley-Benamou, R., J. R. Lutzker, et al. (2002). "Teaching daily living skills to children with autism through instructional video modeling." Journal of Positive Behavior Interventions **4**(3): 165-175.

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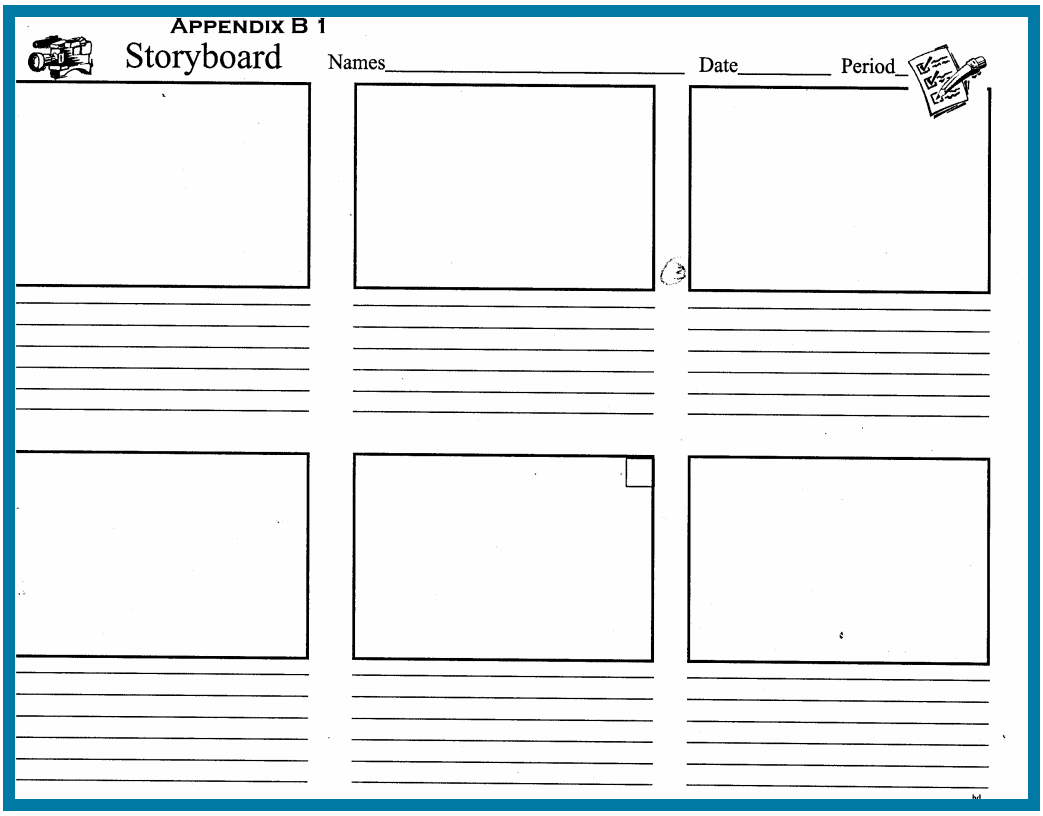
Appendix B

Storyboard blanks and examples



APPENDIX B 1

Storyboard Names_____ Date_____ Period_____

APPENDIX B (2)

Ali - Term 4 2005 - Digi Ops 16th November

Into the Community—local hairdresser's shop, incorporating MOVE, sensory—smells and touch, social behaviour whilst out.

1. Getting out of car onto walker.	2. Walking into hairdressers	3. Transferring to hair wash seat.	4. Head back & positioning
5. Hair wash	6. Head massage with conditioner	7. Transfer to Styling chair	8. Blow drying hair
9. Hair spray	10. Shot of style, taken into mirror to get front & back	11. Transfer to walker	12. Walk to car

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