SCHOOL-BASED CYCLE TRAINS – REPORTING ON A NEW ZEALAND TRIAL TO ESTABLISH THE 'WALKING SCHOOL BUS ON WHEELS'

Dr Carolyn O'Fallon
Director
Pinnacle Research & Policy Ltd
PO Box 12-483
Thorndon, Wellington
New Zealand

Email: carolyn@pinnacleresearch.co.nz
Website: www.pinnacleresearch.co.nz
Phone: 027-2404196

Krista Hobday
Road Safety Coordinator
Tasman District Council
Richmond
New Zealand

Abstract

A cycle train is an alternative method for children to travel to and from school. Similar in approach to the 'walking school bus', adult volunteer 'conductors' cycle along a set route to school, collecting children from one or more designated 'train stops' along the way. Our earlier research investigating alternative methods for children travelling to school found a high level of interest in the cycle train concept. Because of this interest, we designed and conducted a trial for cycle train networks with funding from Land Transport New Zealand. Internationally, school-based cycle trains are well-established in Belgium and are beginning to appear in the UK. The trial involved 6 schools in Nelson, New Zealand.

Following extensive consultation with key government stakeholders, we developed a set of resources for the trial including information on cycle train safety for parents, children and conductors; guidelines for setting up the cycle train (for use by the person(s) co-ordinating the cycle train(s) within a school) and a one-page synopsis of the skills required for training children to ride in a cycle train, as well as a parent survey and various other forms that could be used by the cycle train coordinator.

Using the process we developed, six cycle trains launched in September 2006. Most of these cycle trains proved to be self-sustaining even after the 2-month summer break. In fact, the programme expanded – another school engaged the process and set up a cycle train; and two further cycle trains were established in the trial schools.

Our evaluation examined the characteristics of each cycle train in the trial, as well as focusing on how well the process for setting up and operating them worked. We also interviewed the coordinator, cycle trainer, parent conductors and child cyclists to find out what they thought of cycle trains. Based on all of this input, we revised the resource material we developed for the trial so that it could be adopted and used throughout New Zealand.

Context

Working with EECA and North Shore City Council (Auckland) on the Travelwise to School pilot project in 2002, we surveyed the parent community to ascertain their interest in various alternative modes for their children's travel to and from school. We found that 87 of 184 families responding would allow their children to cycle to school in a group with another adult supervising their ride. One-third of these families offered to supervise the children on a rostered basis. This suggested that there was a high, albeit latent, interest in the wider community in what we call the 'cycle train', essentially a 'walking school bus' on (bicycle) wheels.

Research on walking school buses in Auckland by Kearns and Collins (2003) found that the average walking school bus (WSB) route length was 1.18 km, and the maximum length from 30 schools was 2.25 km. Similar WSB route lengths have been found in Flanders, Belgium (Canters, pers. comm., June 2007). This suggests that WSBs mainly appeal to those living up to 1km or not much more than 1 km from their school. It is anticipated that cycle trains will be of interest to those living further away, as well as to slightly older children.

Cycle trains (known as "bicycle pools" in some countries, most notably in Flanders, the Dutch area of Belgium) are becoming increasingly common internationally: several schools in the UK now have school-based cycle trains, and Hertfordshire Council has published some very basic guidelines for their development. In the US, bicycle pools have been established for adults, primarily for commuting to and from work. School-based cycle trains appear to be less common.

Flanders, the Dutch speaking part of Belgium is the area where school-based cycle trains are most widespread. During the school year 2001-2002, 172 cycle trains were registered; by the school year 2004-2005 a total of 317 trains were registered, with an average of four trains per school. A typical train contains about seven children. In 2001-2002, 1432 children came to school with a 'bicycle pool' (cycle train). This number increased to 2390 in 2004-2005. Each school has 20 to 25 children riding on cycle trains and five to seven 'coaches' or 'conductors'.

Trial methodology

There were seven steps in our proposed methodology for this trial and evaluation programme, namely:

1. Clarify further the conditions under which cycle trains were introduced in Flanders, Belgium and the UK, and any lessons learned that can be applied in a New Zealand context.
2. Consult with the Police, Land Transport New Zealand, Bikewise, and local authorities to identify New Zealand-relevant safety and liability issues and how they could be addressed in developing the guidelines for the New Zealand cycle train trial. Finalise the process for establishing cycle trains within any given school: i.e. similar to WSB network guidelines process, but including the additional issues vis-à-vis safety, training, cycle maintenance, etc.
3. Based on overseas experience, expert advice from the UK-based peer reviewer (who helped develop the Oxfordshire cycle trains) and Mobiel21, and New Zealand stakeholder consultation, refine the characteristics used to define suitable trial schools.

The information gathered in steps 1, 2 and 3 formed a core part of the draft cycle train guidelines, including a 'risk assessment' or 'cycle train safety audit' completed by the school prior to the cycle train commencing.

4. Develop 'before' survey of school community (parents and children) to facilitate process and impact evaluation.

5. With at least one district / city council, identify up to 6 schools to participate in the trial, taking into account such factors as: the issues identified in steps 1, 2 and 3 above, which may include the target age group (if any), topography and traffic characteristics of roads around the school, the presence of a "champion" in the school community who will assist with the programme, mix of decile schools, and full primary/contributor primary /intermediate school status, and so on.
6. Send introductory letter to school community explaining trial (on Council letterhead). Administer the 'before' survey and trial the cycle train process: survey communities; identify routes – using local knowledge (i.e. through meetings at schools) to identify hazards, etc.; train children and volunteer leaders, obtain signed permission forms, and launch cycle trains.
7. Develop, administer, and analyse 'after' survey to assess short-term impacts and suggest any improvements to the process. To keep within the research programme's one year timeframe, the impacts will be assessed two to three months after implementation.

Based on the overseas material we had gathered, we developed an 'issues' document which attempted to identify all possible risks associated with the different elements of the cycle train (i.e. the cycles themselves, the adult riders, child cyclists, and the route) and how they might be addressed.

Following the input on this first document, including further consultation with our two international peer reviewers, we devised a draft set of documents for the New Zealand cycle train trial. The draft documents included information on cycle train safety for parents, children and conductors; guidelines for setting up the cycle train (for use by the person(s) co-ordinating the cycle train(s) within a school) and a one-page synopsis of the skills required for training children to ride in a cycle train.

Once we outlined the specific details of how we proposed to operate the cycle train trial, there was a surge of interest in the project, and not only from the nine original stakeholder-agencies. A clash developed between road safety goals or targets which appeared to largely pre-empt having children riding their cycles on roads – even if accompanied by adults – and other goals / objectives that supported active transport (such as improving environmental sustainability, protecting and promoting public health, improving accessibility and mobility). According to the project peer reviewers (representing Mobiel21 in Belgium and Sustrans in the UK), similar clashes were experienced in their countries.

Achieving some kind of balance between encouraging children to engage in active transport and ensuring their safety took a few months to resolve, and ultimately involved input from more than 20 organisations. In the end, it was agreed that for the trial:

- The preferred age of children on cycle trains was 10 years or older, but exceptions could be made for younger children (aged 8 or 9) who demonstrated good cycling skills.
- There would be one adult conductor for every 3-6 children. The higher ratio (one adult to six children) would only apply to cycle trains at intermediate schools or where children are all older than 10 years. The ratio would be decided by the families on each cycle train and would vary to suit traffic conditions, confidence of the conductors, and/or the ages of the children.
- Depending on the skills and number of children, a cycle train could operate with only one conductor.
- Police vetting or some other similar vetting procedure for setting up cycle trains was encouraged but not mandatory.

Setting up cycle trains in Nelson

Guidelines for establishing cycle trains

The cycle train guidelines developed for the trial identify ten steps to setting up one or more cycle trains in a school:

- Collect information about what children and parents are interested in participating on the cycle train through a survey for families in the school community;
- Organise reflective vests or backpack covers (for visibility and safety)
- Map routes based on information from the survey;
- Have a meeting with the school community;
- Vet volunteers
- Have a conductor workshop or meeting to 'train' volunteers in their responsibilities as cycle train conductors;
- Conduct a hazard check of proposed routes prior to finalizing the routes
- Have a training session for the children
- Launch the cycle train network
- Have a follow up meeting with conductors, parents and children to check that everything is 'okay'.
- Keep up the interest through special events and activities.

Identifying participating schools

The then Safe Journey to Schools Coordinator at Nelson City Council (NCC), Krista Hobday, was very enthusiastic and supportive of the cycle train concept. She approached five schools to participate in the trial and all five agreed to take part. Her relationship with the schools was such that it only took an email to each school to engage them in the project. There were four primary schools (Nelson Central, St Joseph's, Victory, and Nayland) and one intermediate (Nelson Intermediate). Tahunanui Primary School joined the 'trial' in February 2007.

First survey

We developed a 'before' survey for the school community (parents and children) to facilitate process and impact evaluation for the trial. The survey was distributed on each school's regular 'newsletter day' with a covering letter signed by the Safe Journey to School Coordinator. Ten days were given to parents for completing and returning the survey. Completed questionnaires were returned to the school, where they were collected by the office staff. A reminder notice was inserted in the school newsletter to maximise the response rate.

The first parent surveys went out to the five Nelson schools in May and June 2006 – the early days of winter, when the weather was cold and rainy. Also, these were the last 2-3 weeks of the school term. The Coordinator felt that both these factors contributed to a low response rate from all of the schools. She recommended distributing surveys at the beginning of Term 1 (summer term) or Term 4 (spring term), when the weather is generally finer and parents may have more incentive and time to respond. Having said this, Tahunanui Primary School was surveyed early in Term 1, 2007 – during fine summer weather – and experienced very little difference in the overall response rate compared with those schools surveyed during the winter months of 2006.

Eighty-one families across the six schools expressed interest in having their children participate in the cycle trains. 105 potential cyclists and 30 volunteer conductors were identified. Given that more than 2000 children attend these six schools, it can be said that initially about 5% were interested in being on a cycle train.

Sixty-three per cent of the surveys returned to the schools were from families saying that none of their children would use a cycle train if it was organised from their street. I response to the open-ended question about their 'particular reasons' for not using the train, these families stated that their children were too young (the covering letter indicated that 'it is expected that children on the cycle train will be 8 – 10 years or older') or that their children already walked or cycled to school. Fourteen of the 137 families 'not interested' in the cycle train observed that the age restriction (specified as 'the preferred age of children on cycle trains is 10 years or older') meant that their family had one child who could participate and one who could not, so they chose not to have any of their children use the cycle train.

Proposed cycle train routes

The Coordinator took the questionnaires of those interested in joining a cycle train and went through the process of establishing possible routes as identified in the trial process manual. Then she contacted the volunteer conductors to re-confirm their willingness to assist. She found that a significant proportion of adults had changed their mind about being volunteers. In some cases, parents changed their minds about their children participating on the cycle trains In addition, there was a significant mis-match in the availability and location of volunteers that affected the ability to establish cycle trains in areas where there where children willing to participate on them. The net result was that the Coordinator created six cycle trains at four schools in early September 2006.

The Coordinator chose not to have meeting with the school communities because of the small numbers of actual cycle trains and cycle train users arising out of the survey analysis. In retrospect, as researchers, we realise that there were still good grounds to advertise and hold a meeting within each school community, even if only one cycle train could be launched, and intend to recommend this in the guidelines.

Training

Because there were very few volunteers at the beginning of the trial (less than 5), the Coordinator met with each individually to go over cycle train and road rules, routes, what to do in an emergency, etc. rather than having a formal workshop session. Conductors were also encouraged to attend the children's training session in order to meet the children on their cycle train and get a sense of their capabilities, and to address any concerns they had.

A professional cycling trainer led 1-1.5 hour training sessions for the children on the school grounds at each school. In addition, one school had an on-road training session for 1 hour. Because in most cases parents – as conductors – were with their children at the training session (and could ride with their children), the cycle trainer did not have the children ride what would be their usual cycle train route. If larger numbers of children were involved in the cycle train programme at a later date, the on-road training would become a regular feature of the cycle training.

The training session was also used to complete a bicycle safety check for each child. The trainer and Coordinator checked that the seat height was set correctly (with their bottom on the seat, the child should be able to have their tiptoes on the ground); the child's bike helmet fit and was adjusted correctly; the chain tension was adequate; and that the child knew how to start off correctly. Children were also advised about appropriate clothes and shoes to wear when riding on the cycle train.

The training workshops occurred during regular school hours to ensure that the children were available and took part. The Coordinator and trainer found that other commitments tended to interfere with the children's participation if the session was held outside school hours. The Coordinator tried to ensure that no children were away on school camps or other activities when the training was being held.

Launching the cycle trains

The Coordinator was very proactive in promoting the cycle trains both within the specific school communities – through regular notices and photos in the school newsletters – and in the broader

Nelson area. Before, and at the time, the cycle trains were launched, there were several articles in the local Council newspaper 'Live Nelson' and in a free Nelson weekly newspaper, all of which promoted the cycle train concept and encouraged anyone interested in volunteering to assist with a cycle train or wanting to set one up to contact her at the Nelson City Council.

Evaluating the Nelson trial

A significant component of the cycle train trial is the evaluation of how well they worked. Ideally, this evaluation would be coupled with a quantitative assessment of the potential impact of cycle trains as an alternative method for children to travel to school and as a means of reducing traffic congestion. Unfortunately, too few cycle trains and participants were involved in the trial to be able to do such an assessment.

Our evaluation focused on the characteristics of each cycle train in the trial, as well as how well the process for setting up and operating them worked, and what the participants thought about the cycle trains. To complete the evaluation, we interviewed or met with the Safe Journey to Schools Coordinator; the cycle trainer who organised and ran the children's training sessions; parent conductors from three different schools; and 20 children from Nayland Primary School riding on three different cycle trains.

The cycle trains

There were six cycle trains launched in September 2006. Initially, most trains operated for only one day a week, two of them operating in the morning only (meaning that the children had to make some other arrangement for the afternoon). By late November, some of the trains were operating three days per week and one additional cycle train had been established at Nayland Primary School.

The six original cycle trains could potentially have accommodated about 60% of the 95 children whose parents expressed an interest in joining one. In late November 2006, 34 children (36%) were involved in seven trains, as shown below. We were unable to discover the reasons for the non-participation by some children.

Table 1 Number of cycle trains and child cyclists in November 2006

School	Number of trains	Number of children participating
Nayland	4 (1 started in Nov 2006)	21
St Joseph's	1	7
St Joseph's/Nelson Central	1*	4
Nelson Intermediate	1	2
Total:	7	34

*Central School and St Joseph's schools have a combined cycle train that stops at both schools.

Despite the suggestion in the covering letter and safety guidelines that "the preferred age of children on cycle trains is 10 years or older", Table 2 shows only 13 of 34 children (38%) participating in November 2006 were aged 10 or 11. The remainder were 7, 8 or 9 years old, with 8 years old being the most common age (10 children, nearly 30% of all cycle train participants). Ironically, the Coordinator noticed that the younger children were very conscious of the rules, often telling the older ones off for poor signalling or ill-fitting helmets.

Table 2 Ages of children cycling on cycle trains in November 2006

Age	Number of children
7	6
8	10
9	5

10	8
11	5
Total:	**34**

The cycle trains offered children aged ten and younger, who knew how to ride a bike, the opportunity to practice their skills in a supervised, supportive environment. As recommended by the Land Transport New Zealand "Being Roadsmart" document (endorsed by the Accident Compensation Corporation, Ministry of Education, and the New Zealand Police, among others), children under the age of ten are riding with an adult who has responsibility for their behaviour and safety. Participating on a cycle train ensures that children reaching the age of 10 or 11 are able to independently and safely ride their bikes in an on-road environment.

Some cycle trains operate with a single conductor and between two and six children. One cycle train, where the route is all off-road and some of the children are ten and were already cycling to school on their own, the ratio sometimes goes above six children to one adult. Two other on-road cycle trains operate with two conductors for seven children.

Despite the recommendation in the cycle train guidelines, none of the schools conducted any police or other vetting procedures. All the volunteer conductors were parents of children using the cycle trains, apart from the Coordinator, who worked for the Nelson City Council.

Comments on process

The Coordinator noted having an established relationship with a school made it much easier to 'sell' the cycle train concept to the principal and to gain permission to access the parent community through the school newsletters and to use the school facilities for meetings, training, etc. Teachers were informed about the project but did not need to be directly involved, minimising the impact on school resources.

The Coordinator estimated that it took less than 15 hours per school to go through the process of setting up cycle trains in each school. The biggest time commitment was sorting out cycle train routes and then contacting everyone to make sure they were still intending to participate on the cycle train.

The Coordinator noted the importance of the cycle training sessions as a means to ensure that parents do not let children cycle who are too young and/or who do not have at least a basic level of cycling skills. While cycle trains do provide an opportunity for safe cycle training, it is imperative that a child has basic riding skills, including knowing how to stop and use hand signals, prior to going on the cycle train. She noted that there had been several cases where a child was riding to school without having first had any cycle safety training and/or with no adult supervision. The Coordinator thought that the cycle train was one way of ensuring such children gained and developed the appropriate skills to cycle safely to school.

The cycle trainer provided some specific guidance on what to include in future training sessions for children, and these recommendations have been incorporated into the cycle trains guidelines document.

The basic rules established for the cycle trains were:

- ride single file;
- don't overtake;
- keep to the same order. On some trains, older and/or more responsible children were allowed to take turns being at the head of the cycle train;
- keep good spacing not to bunch up; and
- get off bikes to cross roads.

Generally, the children were well-behaved on the cycle trains, and only needed occasional reminders of the operating parameters of the train.

While the cycle train guidelines suggest that conductors carry, at a minimum, a cell phone in case of emergency, the conductors had not focused on equipment they might carry, which might include a cell phone, puncture repair kit, and/or tyre pump. All of the cycle trains are operating in well-populated suburban areas, which may pre-empt the need for emergency equipment to be carried by the conductors.

Accommodating conductors with small children

One difficulty the Coordinator encountered early on was that there were adult volunteers who were keen to help run a cycle train but had younger children, generally pre-school aged and not capable of riding a bike on their own. She found that some schools in the United Kingdom had invested in 'trailgaters', which are devices that attach a child's bicycle to the adult one so they can safely ride together (see Figure 1). With financial assistance from Pinnacle Research & Policy Ltd, the Coordinator purchased four trailgaters from a local bike shop, who agreed to fit them for free. Parents are able to borrow the trailgater from the Council for free, upon signing an agreement for its use and return.

Figure 1 The 'trailgater' joins two bikes together

The trailgaters allow parents who would otherwise be looking after younger children (aged 4 to 7 years old) to bring those children with them on the cycle train. They are relatively inexpensive (approximately NZ$175) and easy to disconnect/re-connect once they have been fitted.

Another possibility investigated by the Coordinator concerns parent volunteers with toddlers, who could perhaps use a 'trailer', which comes with seatbelts and seating for two small children. These are more expensive than the trailgaters (approximately NZ$500). A bike seat that attaches to the rear frame of the parent's bike is another alternative for children less than 4 years old.

What conductors like about leading the cycle train

The three Nayland School conductors interviewed described the cycle trains as "fantastic", especially for children who used to be driven. They observed that 2km was too far for a 7-year-old to walk to school, but not too far for them to cycle in supervised conditions. Other things the conductors liked included:

- parents know their children are safe and supervised on their way to school;
- conductors get exercise themselves;
- a cycle train is an on-road training ground for both adults and children;
- children cycle to school who were not allowed to previously;
- empowers children to get out on to the "scary" road;
- great to get out into the sunshine and fresh air;

- the presence of cycle trains encourages other road users, particularly drivers, to behave better, for example by not overtaking cyclists.

Being on a cycle train provides an opportunity to teach children road rules from an early age and while they are still interested in following such rules. The conductors observed that many children lose interest in being told what to do as they get older, so need to use this 'window of education' to provide good life-long habits and skills. The children are provided with an opportunity to develop and keep practicing on a regular basis the cycle training skills that they have learnt.

What children like about being on the cycle train

Twenty children from Nayland Primary School were asked what they liked best about riding in their cycle train. Responses included:

- making new friends and seeing new places;
- environmentally friendly;
- exercise;
- get to use your bike more;
- get to ride to school;
- get lots of fresh air; and
- [some] get to be leader.

Some children's parents have said the child would be allowed to ride to school on their own now they have been on the cycle train. This is a successful outcome of the project: it shows that by going through the cycling stages – i.e. learning how to cycle, riding on the road in groups – parents and children become more confident about individual cycling.

Children's awareness of safe cycling rules

The children interviewed were also asked 'what are the rules of your cycle train?' They gave a very extensive list of rules (far more than the basic six rules in the guidelines), thereby demonstrating some of what they had learned by participating on a cycle train. The rules (in no particular order) they gave were:

- wear a helmet;
- check shoelaces are tied and clothes tucked in;
- wear trousers not skirts;
- watch pant legs;
- always be on good behaviour;
- ride single file;
- leave a gap;
- use hand signals;
- have good brakes;
- give way;
- ring your bell to let people know you're there.

Medium-term 'longevity' of trial cycle trains

In February 2007, following the summer break; the Tahunanui School community was surveyed for interest in having cycle trains. As a result, one further cycle train has been established there with the Coordinator acting as conductor, since no parents volunteered.

Some other cycle trains began running again at the beginning of the new school year. However, some older children now want to cycle independently – they don't want to be seen with adults or wearing the high-visibility backpack covers. Apparently, fluorescent is not 'cool' this season.

One option to address the children's concern – if it is a reason that they are leaving or not joining the cycle train – could be to have the adults wear high visibility vests; have some students wear fluorescent backpack covers (probably the younger ones); and allow older ones to wear ankle reflectors or a high visibility sash. The children would be learning that the group needs to be visible and that there are different ways of being visible.

At the same time, some walking buses that were operating in 2006 are starting to convert to cycle trains as the older children now want to cycle to school instead of walk 'on the bus'. At one school, two of the walking school buses are now cycle trains. The parents were quite proactive in working out safe routes, asking the Coordinator for the backpack covers and advice. The children on the new cycle trains are not quite the age where they do not want to be identified as part of the cycle train by wearing the fluorescent backpack covers.

Conclusions

Using the process we developed, six cycle trains were launched in Nelson, New Zealand in September 2006. A seventh one was launched in late November 2006. Most of these cycle trains proved to be self-sustaining even after the 2-month summer break. In fact, the programme expanded – another school engaged the process and set up a cycle train; and two further cycle trains were established in the trial schools.

Our evaluation of the trial shows that the cycle trains have been a success. Ten weeks after September 2006 launch, seven cycle trains involving 34 children were operating at 4 schools. That is, our simple approach using a process similar to that adopted for implementing walking school buses resulted in nearly 2% of the children at the trial schools regularly using cycle trains. A number of these children had previously been driven to and from school. Parents and children alike were enthusiastic about the cycle trains, saying they enjoyed the friendships, exercise and knowing that the children were gaining and developing important cycling skills while getting safely to and from school.

The ability to develop and implement cycle trains will be a useful addition as a tool within the school travel plan 'toolkit'. Cycle trains can be seen as a complement to walking school buses, because they appeal to a slightly older age group – walking school buses are most popular with younger children (aged 5-8), while cycle trains appear to be more popular with children aged 8-10 or 11. This is similar to the experience overseas: the ages of children on cycle trains in Belgium is generally 8 to 11 years old.

Cycle trains provide a developmental stage before independent cycling. If children can be trained as confident cyclists both on- and off-road, it provides them with greater choices for their travel as they go through life. This project has shown that by going through the cycling stages – i.e. learning how to cycle, riding on the road in groups – parents and children become more confident about individual cycling, and that children who otherwise would not be allowed to cycle, were able to do so after participating on the cycle train.

Cycle trains are also more suitable for children who live further away at a distance where walking becomes less of an option.

Within the wider community, cycle trains help to raise awareness of cycling and, in particular, raise the profile of children cycling on the roads. Increased awareness and acceptance of cycling in the general population will facilitate its growth as a transport mode overall.

Guidelines for cycle trains

Based on the results from the Nelson trial, we refined the guidelines for establishing cycle train networks. Because of New Zealand-wide interest in the project, the booklet "The Cycle Train – A Guide for Parents and Teachers" is available to anyone interested in establishing one or a whole network of cycle trains.

The guidelines outline a clear and simple process for setting up cycle train networks, or even just one cycle train. They also provide helpful hints for successful cycle trains, tips on how to keep a network going and where to go for help. The booklet contains all of the forms required in the process, including a letter introducing the cycle train concept to parents, a survey form for the school community to gauge interest in cycle trains, and route scheduling forms. We further simplified the forms we used in the trial, taking into account the evaluation feedback.

The guidelines are available on the Pinnacle Research & Policy Ltd website (www.pinnacleresearch.co.nz).