# SUSTAINABLE TRANSPORT THROUGH ENABLING PARTNERSHIPS

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## ABSTRACT

This paper describes how a mobile application can be used to establish, improve, and maintain walking buses in Cape Town through enabling and strengthening partnerships between local government, organisations, and communities. Walking buses are groups of students that use set routes to walk to school under adult supervision. Previous walking bus initiatives in Rondebosch, Delft, and throughout Cape Town have shown that there is a need for this kind of programme, but many of these initiatives encountered problems in sustaining the walking buses and getting continuous support from sponsors, stakeholders, and partners. This proposed mobile application aims to assist with these challenges. This will be done by incorporating information from schools and parents, such as start times, convenient drop-off areas, and potential routes. Additionally, parents will be able to track their children through the application and volunteers will be trained and given an incentive for participating in the initiative. This application was not piloted or implemented as part of this research.

## 1. INTRODUCTION

A walking bus is defined as a group of students that use a predetermined route to walk to school under adult supervision. The walking bus aims to provide a safe and healthy way of getting learners to school, as an alternative to using a private vehicle or walking alone. The benefits include increased independent child mobility and physical exercise (Muchaka, 2013). Further benefits include safety from crime, and the opportunity to learn basic road safety and build friendships. From an environmental stance there are reduced emissions from private vehicles and reduced congestion caused by vehicles at pick up and drop off times.

In recent years there has been an increase in the number of children, from middle- and high-income households, that are driven by their parents to fulfil their travel requirements. This has resulted in a number of issues including what Whitzman and Pike (2007) refer to as Adult Dependent Mobility (ADM) which results in limited independent child mobility. Additional challenges exacerbated by motorised vehicle trips are congestion, contribution to pollution in the area, reduced physical activity for children, and a limit to their cognitive development.

Child mobility in Cape Town, and South Africa as a whole, is a complex issue, often varying significantly with different socio-economic situations. Learner mobility in middle- to high-income communities has been found to be decreasing, with a shift to private vehicles for school trips as opposed to walking or cycling. In low income areas, trips to school via active transport (i.e. walking and cycling etc.) have increased, and trips by private vehicle

are minimal. Figure 1 shows the changes in transport mode use for school trips in middle- and high-income neighbourhoods in Cape Town for three select years. A survey from a Cape Metropolitan Transport study conducted in 1976 found that most learners (49%) used active transport for school trips, compared to 38% who were driven to school in a private vehicle.

Over a decade later a survey from the same group found that more learners were being driven to school in private cars (52%), compared to 38% who were using active transport. The second survey, from 1992, shows a decline in both public and active transport.

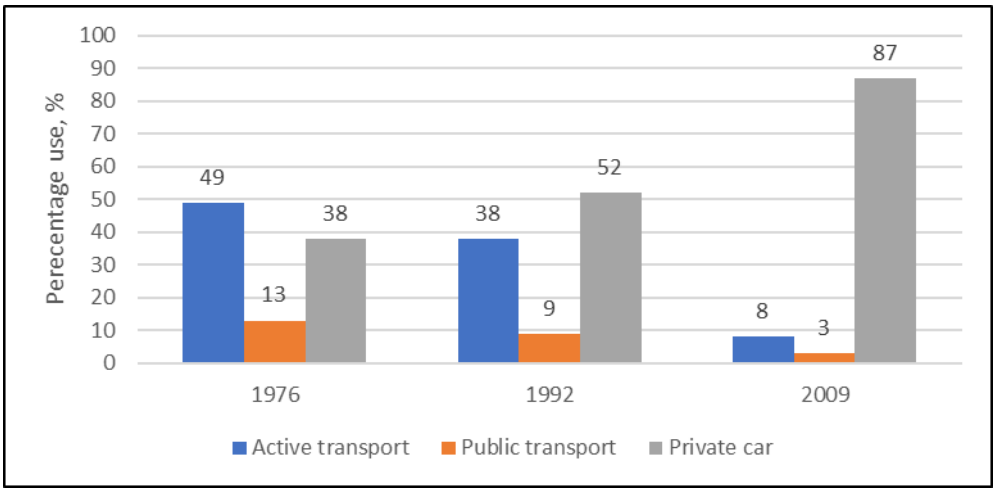


**Figure 1: Changes in transport mode use for school trips in middle- and high-income neighbourhoods in Cape Town**

A more recent survey; conducted by the Centre for Transport Studies at the University of Cape Town in 2009 amongst several schools in Rondebosch (middle to high income area); shows that trips to school by car increased to 87%, while trips by public transport had decreased by 3%, and trips via active transport had decreased to 8% (Behrens and van Rensburg, 2009).

The difference in learner mobility behaviour presents different challenges for the various income levels. In 2008, the Youth Risk Behaviour Survey reported that 41.5% of learners do not participate in sufficient physical activities. A study by Armstrong et al. (2006) found that on average, 16% of learners were overweight. These are worrying trends, especially in middle- to high-income areas where learner independent mobility continues to decrease, therefore increasing the potential of children becoming overweight.

In low-income areas, the problems are very different. Research by Muchaka et al. (2011) shows that in Delft; a low-income community in Cape Town; 91% of learners walked to school. The Road Traffic Management Corporation (RTMC) reported in 2017 that 21.2% of pedestrian fatalities occurred between the ages of 0 and 19 (Grieve, 2017). When paired with the data on the percentage of learners walking to school in Delft, a representative of low-income areas, it can be seen that the burden of these pedestrian fatalities is likely to fall on the low-income communities.

The objective of this paper is to introduce the idea of a mobile application that will assist in strengthening the existing relationships established to enable walking buses. The paper will give a detailed explanation of how the application will work, how schools and parents can use it to encourage walking to school among learners, and how it will assist in

establishing and maintaining walking buses in communities. However, the application will not at this stage be implemented or piloted.

## 2. EXISTING WALKING BUSES

Walking buses have been piloted in various suburbs in Cape Town through studies or by NGOs such as Safer Spaces. In the case of a study by Patrick Muchaka, a former PHD student who graduated from UCT, walking buses were piloted in Rondebosch and Delft. These are two vast neighbourhoods, with one being a predominantly high-income neighbourhood (Rondebosch) and the other being a predominantly low-income neighbourhood (Delft).

This walking bus initiative was set up at six primary schools in Rondebosch and five primary schools in Delft. The Rondebosch schools showed a keen interest in the initiative, due to reduced physical activity among the learners, as well as problems with congestion in the morning and evenings due to pickups and drop offs. Parents of the learners at the Rondebosch schools volunteered to supervise the initiative. At the Delft schools, both schools and parents were interested in walking buses due to the crime that learners were exposed to during their walk to school. Volunteers from the Red Cross supervised the walking buses in the Delft area. Initially, the walking buses were successful in both areas, but after a few months, the programme stopped in both areas. In the case of Delft, one reason for the discontinuation of the walking bus was that volunteers from the Red Cross wanted to be paid for their efforts. As the volunteers were not parents of the learners, this was reasonable. In Rondebosch's case, there were initially too many parents volunteering to assist. However, the programme broke down when some parents did not arrive when it was their time to volunteer, which in turn caused other parents to feel irritated and discouraged.

An encouraging observation in the case of Rondebosch is that even after the walking bus initiative ended, many learners who took part in them continued to walk to school, as their parents realised that it was safe and beneficial to do so. Many learners in Delft do not have the option of using private transportation to travel to and from school, so the ending of the walking bus was a loss for them, as they had to continue walking to school under unsafe conditions, often without adult supervision.

The second walking bus initiative, named The Walking Bus Project (WBP), was facilitated by the Department of Community Safety (DoCS) and an NGO called Safer Spaces. The WBP is an initiative by the Western Cape government's DoCS. As per Figure 2, the project has three role players: the government; community and safer spaces. The partnership of the three entities ensures public intervention, community engagement and public participation. The DoCS involves the community because it aims to create awareness that safety is everyone's responsibility.

The WBS was first launched in Wesbank, a small community 30 km outside of Cape Town. After its successful implementation it was launched in 72 more areas in the Western Cape.

The walking bus in this context has been used to try and improve the safety of learners who live in crime ridden communities. The walking buses are supervised by volunteers who undergo police clearance. Some of the challenges that these projects have faced are sustaining the walking buses and getting continuous support from sponsors, stakeholders and partners who can assist with securing relevant equipment.

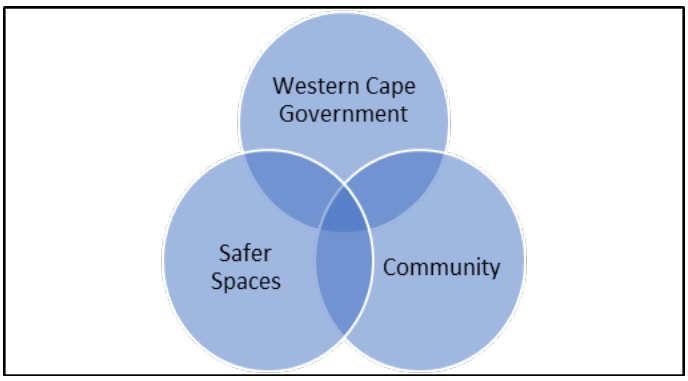


**Figure 2: Three role players involved in the Walking Bus Project in the Western Cape.**

This paper proposes a solution to assist the longevity of the walking buses by enabling a relationship between four role players. The idea is that the application will assist in establishing and maintaining these walking buses for periods longer than it takes to put a learner through high school.

## 3. PROPOSED WALKING BUS MOBILE APPLICATION

The proposed walking bus mobile application aims to deal with the challenges and problems the previously described walking bus initiatives encountered. The mobile application acts as a marketplace where the community (schools and parents), government and NGO's can meet to organise themselves and establish walking buses. It intends to provide a platform that will help ensure that the walking buses continue where they are needed, and to ensure that partnerships between schools, parents, volunteers, and local government are strong and effective. In creating the application, certain initial information and actions will be needed from all the role players. The application will have three login options, which are to login as a school/ organisation, a parent, or a volunteer. All three options will have different interfaces, and different information will be provided to each type of user.

The schools will be responsible for initiating the programme by informing parents of the opportunity to participate. The schools will be responsible for taking up the option to have walking buses for their learners because, as shown in Figure 3, they are central to the relationship between the role players. They will also be responsible for teaching learners and training volunteers about road safety when participating in the walking buses

The mobile application will have a built-in register that schools can keep as record of the learners who participate in the walking buses, as well as the number of walking buses the school is in charge of. The schools will provide the platform with information about the start times of the school day and convenient drop-off locations on the school property.

The parents will be responsible for registering their children onto the platform. When parents register on the platform, they will need to provide information such as how many children they would have participating in the walking buses, their address, and if they are willing to volunteer to supervise the walking buses. When parents register their children on the mobile application the relevant school will be notified about it for record keeping purposes. Parents will be prompted to provide other information such as: contact details, their child's name and grade, and any critical health-related information.

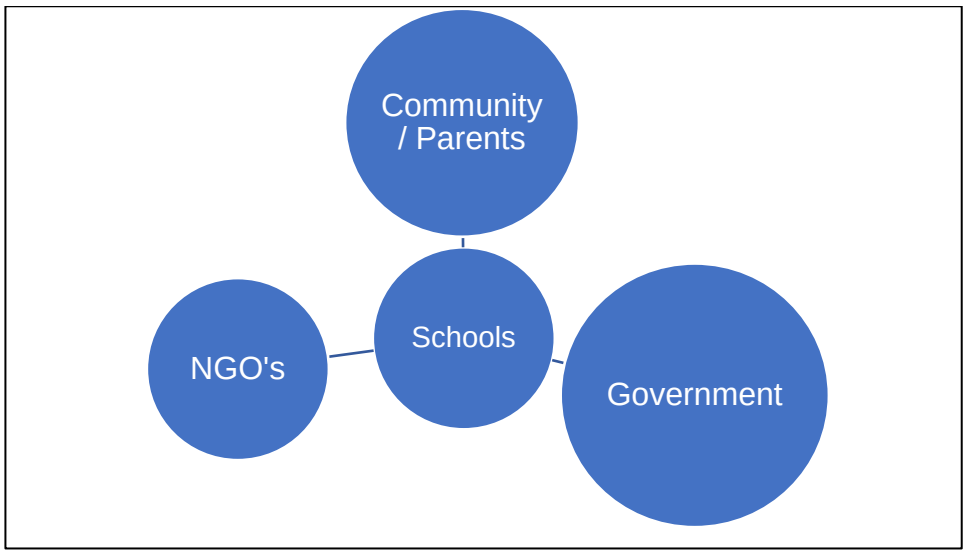


**Figure 3: The schools are central to the relationships established for the walking buses**

From the parent interface, parents will be able to view and track the walking bus routes and view pick-up point locations closest to their homes. They will also be informed of the time the bus reaches their stop and which volunteer will be in charge every morning.

As mentioned before, the volunteers will be trained by the schools on road safety and managing the walking buses. The authors propose having the volunteers undergo criminal clearance, that will be facilitated by the relevant NGO in the neighbourhood, before being accepted to facilitate a walking bus. Only volunteers who have had a successful background check will be provided with login details. Volunteers will need to fill in their contact details and other relevant information. The volunteers are encouraged to be transparent about their availability to facilitate the walking bus. Volunteers will have access to their allocated route, time, and pick-up points, as well how many learners (along with their parents' contact details) have signed up for the relevant walking bus. Furthermore, a panic button will be incorporated in case an emergency occurs during the walk. The volunteers will be prepared through training to respond to emergencies, especially criminal acts that learners in low-income communities are exposed to. From the parents' perspective, they will be notified if an emergency occurs and because of the ability to track the location of the walking bus, they can respond to the emergency as per their discretion.

This feature allows parents to feel less panicked about the safety of their children while encouraging their independent mobility. The volunteers will not be compensated monetarily, because assigning value to the time spent tends to introduce debate over whether the amount is appropriate and can lead to them feeling undervalued. Therefore, the compensation for participating will be a reference letter generated by the mobile application for job applications. Parents and schools will be allowed to rate the service of the volunteers, which can be referenced to generate the letter. To protect the volunteers, the built-in register will allow parents to confirm dropping off their children at the bus stop every morning.

The mobile application will use all the provided information to identify the shortest and safest walking routes based on the location of the learners and schools. The aim of the application is to help deal with the challenges that existing walking buses have encountered. The development of the application will be facilitated by local government, who will also maintain and apply any changes that may be required at later stages. The

schools will assist in identifying the safest pedestrian routes surrounding the area. Using this information, it will be able to calculate the closest bus stop for each user for pickups in the morning. The mobile application will also generate walking buses and ensure that the learner to volunteer ratio is kept at one volunteer for every ten learners (Muchaka, 2013). No routes longer than 2km will be considered, as that is the longest learners can walk in the mornings (Muchaka, 2013).

## 4. CONCLUSION

In recent years studies have shown a trend of decreasing physical activity among children. One of the many reasons for this is the decline in independent child mobility particularly in middle- to high-income households as the safety and security of children has become a specific concern. In response to this, parents have fallen back to driving their children in private vehicles to satisfy travel demand. This includes trips to school in the morning and afternoon, and a recent study found that 87% of learners from middle- and high-income households were driven to school in private vehicles. This was a 43% increase in private vehicle trips to school in 2009 compared to 1976. These challenges are not a reflection of what happens in low-income communities where learners are still highly dependent on active transport to make these trips, however without adult supervision. Based on this, a study by Muchaka (2013) was conducted to adopt walking buses as a solution to the challenges mentioned above.

The mobile application intends to assist schools and communities with increasing physical activity among learners and ensuring that parents' concerns on safety are met. Schools will be responsible for the establishment of the walking buses as they central to establishing and maintaining relationships between all role players. Each role player has a fundamental role because their participation ensures that walking buses are established and maintained over the long-term.

The existing walking buses discussed in this paper were from two sources, a study by Muchaka (2013) and a programme by Safer Spaces. Walking buses were introduced to different communities as an attempt to increase active transport trips for school purposes. However, walking buses are not without challenges. Existing walking buses have faced various challenges that have made it difficult to maintain them in the long-term. These challenges include inconsistency among parent volunteers which caused frustrations, dissatisfaction with no monetary compensation from the Red Cross volunteers and getting continuous support from relevant role players.

The mobile application aims to assist with the abovementioned challenges by incorporating information from the schools, such as start times and convenient drop-off areas. Parent will be able to track their children through the application, this way they are comfortable with participating in the walking bus. The volunteers will be trained and given an incentive for participating in the initiative.

This paper has discussed how the introduction of a mobile application can assist in strengthening these existing relationships in Cape Town. The walking bus application aims to facilitate and strengthen partnerships between schools, parents, volunteers, and organisations such as Safer Spaces. The application will provide a platform for all the above-mentioned parties to participate in and manage the walking bus programme in the long-term.

## 5. REFERENCES


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