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The profile of current availability, cost and uptake of 3G phones operating on the Android system.

Android technology and phones have in the space of a year gone from being a niche specialist market to one of the main players in the mobile phone field.

Market researcher Gartner has revealed the worldwide mobile phone market grew by 17 percent year-on-year in Q1 of this year. But the figures for smartphones were much more remarkable, with an almost 50 percent year-on-year increase.

"In the first quarter of 2010, smartphone sales to end users saw their strongest year-on-year increase since 2006," said Carolina Milanese, research VP at Gartner.

"This quarter saw RIM, a pure smartphone player, make its debut in the top five mobile devices manufacturers, and saw Apple increase its market share by 1.2 percentage points. Android's momentum continued into the first quarter of 2010, particularly in North America, where sales of Android-based phones increased 707 per cent year-on-year."

The tables for overall unit sales and for smartphone sales by operating system both make interesting reading. While the market share declines of Nokia, Sony Ericsson and Motorola continue, this is less in favour of other big OEMs than smaller, white-label manufacturers like Hong Kong's G-Five and 'others'.

Worldwide Mobile Terminal Sales to End Users in 1Q10 (Thousands of Units)

Company	1Q10 Units	1Q10 Market Share (%)	1Q09 Units	1Q09 Market Share (%)
Nokia	110,105.6	35.0	97,398.2	36.2
Samsung	64,897.1	20.6	51,385.4	19.1
LG	27,190.1	8.6	26,546.9	9.9
RIM	10,552.5	3.4	7,233.5	2.7
Sony Ericsson	9,865.6	3.1	14,470.3	5.4
Motorola	9,574.5	3.0	16,587.3	6.2
Apple	8,359.7	2.7	3,938.8	1.5

ZTE	5,375.4	1.7	3,369.6	1.3
G-Five	4,345.0	1.4		
Huawei	3,970.0	1.3	3,217.9	1.2
Others	60,418.1	19.2	44,972.2	16.5
Total	314,653.50	100.0	269,120.10	100.0

Having said that, Apple nearly doubled its market share and RIM continues to make gains. Despite this, the big winner in the smartphone OS battle in the past year has been Google's Android. Almost ten times as many Android phones were sold in Q1 2010 than a year ago, and it effectively stole share from everyone except Apple.

Extrapolating these figures, it won't be long before iPhone and Android overtake BlackBerry and start threatening Symbian, which continues to decline. Microsoft lost a big chunk of market share in the past year, while the absence of webOS from this list shows HP didn't buy much market share with Palm.

Worldwide Smartphone Sales to End Users by Operating System in 1Q10 (Thousands of Units)

Company	1Q10 Units	1Q10 Market Share (%)	1Q09 Units	1Q09 Market Share (%)
Symbian	24,069.8	44.3	17,825.3	48.8
Research In Motion	10,552.6	19.4	7,533.6	20.6
iPhone OS	8,359.7	15.4	3,848.1	10.5
Android	5,214.7	9.6	575.3	1.6
Microsoft Windows Mobile	3,706.0	6.8	3,738.7	10.2
Linux	1,993.9	3.7	2,540.5	7.0
Other OSs	404.8	0.7	445.9	1.2
Total	54,301.4	100.0	36,507.4	100.0

Source: Gartner (May 2010)

www.channelhexus.net

It would appear even though there are now numerous Android platform devices out there, the Android Market is still dominated by the Motorola Droid smartphone and Verizon, which no doubt is at least partly due to Verizon's \$100 million Droid campaign.

According to an article penned by Marin Perez of Intomobile, recent data from Chitika shows that the Motorola Droid commands the largest market share along with Verizon commanding the largest market share when it comes to carrier Android distribution.

According to the figures, the Motorola Droid commands 33.5 percent of the market with its closest rival being the HTC Hero with 9.9 percent, and Verizon Wireless commands 48 percent of the market with their closest rival being T-Mobile with 23 percent followed by Sprint at 19 percent.

Following up behind the Motorola Droid and HTC Hero are the HTC Droid Eris with 8.2 percent, the T-Mobile G1, the original Android handset with 8.1 percent, then the T-Mobile myTouch 3G with 6.3 percent while the Nexus One only manages just 2 percent, but is quickly being caught up by the new HTC EVO 4G which sits just behind at 1.93 percent. www.phonesreview.co.uk

Mobile phones available currently (June 2010) in the U.K. using Android technology:

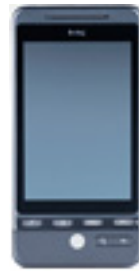
Best Selling Android Phones (2009-2010)



HTC Desire



Nexus One



HTC Hero



T-Mobile Pulse



LG GW620



Motorola DEXT



Samsung i5700



Samsung i7500

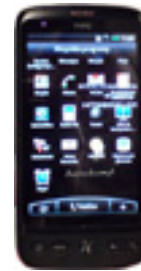
Since the launch of the first Android handset, the popular T-Mobile G1, many handset manufacturers and networks have begun to flood the UK market with a plethora of increasingly impressive Android phones. Here are the current best selling Android phones across all networks and manufacturers:



Nexus One



XPERIA X10



HTC Desire



HTC Hero

A selection of upcoming Android phones that are expected to launch across the United Kingdom during 2010.



LG GW620



Samsung i5700



T-Mobile Pulse



Motorola DEXT



G2 Touch

© 2010 Android Phone.

As this is relatively new technology, the outright purchasing cost or monthly tariff is, compared to other non-android phones, high – possibly prohibitively so. It is of course anticipated that these costs will come down as more and more handsets are introduced to the market. At the time of this research the best deals found on-line ranged from £15 - £35.00 per month from all major networks, and purchase prices of between £230 - £600.

All details in this section of this research document whilst correct as of June 2010, given the fast-paced world of mobile phone technology, will be subject to changes in availability and cost.

What teaching instruments and materials are normally used in independent travel training – is such training provided at all? Who normally provides it?

Background

Prevalence of disability and transport difficulties faced by disabled people

In the UK, the Disability Discrimination Act (1995) defines a disabled person as someone who has a physical or mental impairment that has a substantial and long-term adverse effect on his or her ability to carry out normal day to day activities. Estimates of the prevalence of disability are that:

- Approximately one-fifth (9.8 million, 22%) of adults in Britain are covered by the Disability Discrimination Act (DDA).[2]
- Around a fifth (6.9 million, 19%) of people of working age have a long-term disability.[2]

Evidence presented by the Disability Rights Commission (DRC) [4] indicates that disabled people experience considerable disadvantage in terms of transport and travel (DRC, 2003a). For example:

- Disabled people are unable to use 70 per cent of buses and 40 per cent of the rail network.
- 60 per cent of disabled people have no car in the household, compared with 27 per cent of the general population.
- Almost half (49%) of disabled people are totally reliant on public transport.
- Over half (56%) of disabled people said that they would like to go out more.
- Disabled people are twice as likely to turn down a job due to travel difficulties.
- More than half (52%) of disabled people expressed some difficulties in getting to all essential services such as GPs and hospitals.

Findings from the National Travel Survey (DfT, 2007), which asks whether respondents have any disability or other long-standing health problem that makes it difficult to go out on foot and/or use local buses, also show that:

- Fourteen per cent of adults experience mobility difficulties (defined as having any disability or other long standing health problem that makes it difficult to go out on foot or use local buses).
- Mobility difficulties are more common among older people.
- An association between mobility difficulties and low household income is found across all age groups, with around quarter of adults in each of the two lowest income quintiles experiencing mobility difficulties.
- Among people with mobility difficulties only one-third are current drivers.
- Adults with mobility difficulties make a third fewer trips on average than those without. This difference is accounted for by much lower trip rates on foot, as a driver and by rail; people with mobility difficulties make more trips by local bus and taxi or minicab.
- Common difficulties with using local bus services are: getting to the bus stop; getting on or off buses; standing waiting at the bus stop; and, getting to and from the seat.

- People with mobility difficulties also cite identifying the destination, finding out timetable information and communicating with the driver/conductor as reasons for finding bus use difficult.

DRC highlight a wide range of barriers preventing disabled people from making journeys (DRC, 2003b). These include:

- Poor or inaccessible journey information.
- A failure to join up legislation and a lack of awareness of rights and responsibilities on the part of both service providers and disabled people.
- Lack of inclusive transport design and differential standards.
- Poor service levels caused by a variety of factors such as awareness and attitudes of staff, policies and procedures and the structure and organisation of services.
- Financial barriers caused by lower than average income levels, and hidden and, in some cases, higher costs.
- Confidence barriers compounded by negative experiences and a reluctance to travel.

Legislative context

Legislation in relation to rights for disabled people has evolved significantly over the last 20 years. Of particular relevance to this study are obligations placed on transport service providers, transport operators and those with relevant planning duties such as local authorities. The Disability Discrimination Act (DDA) of 1995 requires that transport providers take 'reasonable steps' to make stations and the services they provide at stations, user-friendly to disabled people. Up until December 2006 this excluded services provided on transport vehicles. However, amendments to the Act in 2005 have meant that disabled people have, for the first time, the right to be treated fairly and the right for reasonable adjustments onboard buses, coaches, trains and taxis. This closes what was seen by disability lobbyists as a major loophole in the law as previously, a disabled person could be refused entry onto a bus or train merely because of their disability.

The legislative context relevant to disabled people and transport will continue to develop over the next few years. In the UK, the Discrimination Law Review is set to lead to a Single Equality Act bringing together legal commitments and rights across the six equality strands. At a European level, there are legislative developments affecting the rights of disabled people in respect of air travel and other modes of transport. And in 2007 the United Nations Convention on the Rights of People with Disabilities was agreed by the UN General Assembly.

Policy context

A key strategic aim of transport policy is set out in the Future of Transport White Paper (DfT, 2004): to ensure that 'transport works for everyone'. This involves enhancing access to transport for all, including the most disadvantaged, as a means of tackling social exclusion. Improving personal security, accessibility and affordability in relation to transport are all important factors in meeting this aim.

In addition, the government launched its Independent Living Strategy to promote independent living for disabled people in March 2008. The strategy is a cross-government initiative involving six departments, including the DfT, and aims to give disabled people more choice and control over the support they

need and greater access to employment, transport and mobility, health and housing.

This research is not attached to a single policy area or initiative. Rather, it provides an in-depth exploration of how barriers to travel and transport use operate in practice and what disabled people themselves think can make a difference. This will provide valuable evidence for the DfT and others engaged in putting the legislative and policy commitments referred to above into practice. Previous research has provided evidence in relation to a broad range of related issues. See, for example, research commissioned by the Disabled Persons Transport Advisory Committee on disabled people's attitudes to public transport (DPTAC, 2002) and community transport (DPTAC, 2004). This research study offers a new, comprehensive and in-depth exploration of disabled people's attitudes, experiences and aspirations in relation to these issues at a crucial stage in the policy development cycle.

[1] This report is one of a series of reports presenting findings from qualitative follow-up studies of National Travel Survey (NTS) participants. The National Travel Survey is a continuous survey, funded by DfT, which collects information on people's travel patterns and behaviour. The qualitative follow-up studies are intended to contribute to informing DfT's understanding of the travel and transport needs of different population sub groups. Previous qualitative follow-up studies in the series have explored the attitudes, needs and travel behaviours of older people, young adults, low income households, and teleworkers.

[2] Family Resources Survey 2002/3, see www.dwp.gov.uk/asd/frs

[3] Labour Force Survey 2003, see www.statistics.gov.uk

[4] The Disability Rights Commission (DRC) closed in September 2007. Its responsibility for helping secure civil rights for disabled people has transferred to the new Equality and Human Rights Commission (EHRC).

The research undertaken for this government document drew upon a wide range of people with specific needs. Of particular interest to the Recall research is the group of people involved who have learning disabilities.

Travel behaviour, experiences and aspirations of people with learning disabilities

Profile and travel behaviour of people with learning disabilities

People in the sample with learning disabilities tended to be living in supported accommodation and were engaged in supported employment which could be paid or voluntary. Examples of supported employment included food preparation, gardening, and helping out at a children's nursery. People regularly travelled to day centres to take part in social and learning activities. People also led active social lives and participated in a variety of leisure activities including swimming, rambling, and going to discos and parties. People were travelling daily and to a variety of places over the course of the week. They used a combination of public, community and private transport and different transport modes in order to make these journeys. The ability to access and use multiple forms of transport seemed important in enabling

these people to reach the wide range destinations that they needed to get to. Different transport used included:

- Community transport buses
- Day centre minibuses
- Public transport (mainly buses but also trains)
- Cars driven by support workers
- Taxis/minicabs

Transport experiences of people with learning disabilities

There were four enablers which underpinned independent travel and transport use for people with learning disabilities. These were:

- travel training;
- accessible transport information;
- a safe street environment and space on transport; and,
- positive interactions with transport staff and other transport users.

Travel training

People in this group tended to have undertaken travel training. This included both being accompanied on and assisted in making new journeys in order to learn the route from end to end, including safe road crossing points, and bus stops, numbers and routes. As people became familiar with a new journey and had established a routine, both knowing their travel route and becoming familiar with bus drivers, other transport staff or fellow passengers, they felt safe and secure in making the journey independently.

In addition, people received training in 'keeping safe' while travelling, learning what to do in the event of something unexpected happening, whether as the result of the behaviour or unwanted attention of other passengers or pedestrians, or when services were disrupted. Where people had received such training, they were clear on what they should do in different circumstances, including telephoning their support worker or speaking to transport staff to ensure they reached their destination safely. Learning and utilising such strategies also gave people confidence and a sense of personal security when travelling on their own (see case study: Ruby).

Case study: Ruby

Ruby is 26 years old and lives in supported accommodation with three other learning disabled people. Ruby is a part-time receptionist a community day centre and also participates in a wide range of social activities such as line dancing, bowling, going to the cinema and friends' parties. Ruby has access to car travel via her support worker and parents. Her support worker drives her and her housemates to the supermarket once a week and her parents come to pick her up for visits to their and other family members' homes. Ruby also uses a subsidised taxi/minicab scheme to travel to and from friends' houses for parties and get-togethers.

Ruby makes most of her journeys by bus and both a bus stop and train station are within easy walking distance from her house. Ruby is able to take public transport on her own, and enjoys being able to travel independently. At first she had felt nervous about using public transport by herself, but with training from her care manager she now feels confident in all aspects of the journeys she regularly makes, including getting to and from the bus stops she usually uses and crossing roads safely. Should anything unexpected happen when

Ruby is making a journey, she is able to use her mobile telephone to ring her support worker to ask for assistance. On occasions this has involved her support worker coming to pick up her by car or speaking to transport staff to explain how they can help Ruby continue her journey or get home. Overall, Ruby is quite confident using local buses and this confidence is aided by the fact that the bus stop is nearby and that she does not have to worry about money because she has a concessionary bus pass which she can use at any time of day. As part of her social care support, Ruby also has a named contact she can call to find about the best routes and transport services to use for new journeys she needs to make.

Overall, travel training was a key enabler for people with learning disabilities to make journeys independently. People expressed a strong sense of pride and self esteem in being able to travel on their own and travel training was an important tool in giving them the skills and confidence to do this. A common aspiration among people in this sample group was to be more independent, and the ability to travel independently was a key factor in achieving greater independence through accessing jobs, services and social and leisure activities. People also felt they could learn more from making journeys by themselves than they would if relying on support staff.

'Before I got the bus to anywhere I didn't use to go anywhere so I just relied on the staff... I just wanted to do my own thing, because I want to go to [places] on my own... I'd like to be more independent because if you [only] go with staff then you won't learn much.'(Female, 36-55 age group, learning disability)

Concessionary travel passes also appeared to be important in giving people the freedom to travel easily and spontaneously, adding to their sense of independence self esteem.

'I've been to loads of different places recently on this bus pass... I [] don't plan it. I just go to places. I just go... I can travel at any time I want to.'(Male, 18-35 age group, learning disability)

Transport information

Being able to access clear, reliable, concise and straightforward information was very important for this group of people in order to plan and make journeys independently. People described accessing information using the Internet, telephone information services, and via named contacts through learning disability support organisations. People commented on having difficulty reading small print timetables and some found using the Internet more accessible for finding out information.

'You know on the timetable, I think the writing should be a bit clearer because they're so small and [I] can't read the numbers properly so I think they should be a bit bigger... On Google [Internet search engine]..., you put '[Local] Bus Company' and then click on search and then click on that and then it will tell you all different timings and about the timetables... I found out about the times and that sort of thing... it's quite simple because... the words were clearer and that sort of thing.'(Female, 36-55 age group, learning disability)

When making a journey it was important that information provided at bus stops or train stations was direct and to the point, whether given by public announcements or via posters or white boards. This was especially important if replacement or diverted services were in operation as changes in the

routine nature of a journey could be particularly confusing or upsetting for people in this sample group.

Street and transport environment

The safety of the street environment, and feeling safe and having enough space when on transport were also key enablers for independent travel and transport use for people with learning disabilities. Bus stops were only accessible if there was a safe and easy to use crossing point so that people could independently make their way to and from the bus stop at both ends of a journey. In addition, if transport was overcrowded, meaning that people could not board a bus or train, or were unable to get a seat, this upset their routine and made travelling more difficult. Having a seat when travelling and not feeling confined or 'crowded' was important for people with learning disabilities. Travelling at peak times on overcrowded transport was experienced as unpleasant or threatening, whereas travelling when it was less busy and people could change seats if they wanted to made journeys much more enjoyable.

"[I] can't be closed in, you know what I mean? On a bus. Phew, you know, can't have it... All the kids getting on buses and all of that... It's not so bad when they're not, it's when they all close in [], that annoys me... It's just a lot of people around. [I prefer a] bit of space." (Male, 56-70 age group, learning disability)

'You can move up and down on a train. You can't in a car. You can't move, change seats in cars. You can in buses, and tubes. You can change seats on the train. That's what I like about the train. You can do that on the train.'(Male, 18-35 age group, learning disability)

Case study: Liam

Liam is 37 years old and has a learning disability. He left home seven years ago and is living on his own. Liam does voluntary work in a local hospice shop on two afternoons a week. He enjoys going to his local pub in the evenings a couple of times a week and is also a keen football fan, regularly going to watch matches. Liam makes many of his journeys on foot, including to the local shop, the pub and for his voluntary work. For these journeys he does not have to cross roads so feels safe and secure as he experiences problems hearing and judging when it is safe to cross the road, especially on busy roads.

Liam also regularly uses the local bus service to get to football matches and to visit his parents. Liam prefers to travel by bus in the mid-morning or mid-afternoon in order to avoid groups of school children travelling to and from school. His concerns about travelling on buses with school children arose from a negative experience he had when travelling with a friend who was accidentally knocked over by some school children as they were getting on the bus. Liam particularly enjoys the social aspect of travelling; either chatting with friends that he is travelling with, or if travelling alone, chatting with the transport staff or other passengers. In general he finds bus drivers polite and helpful but has found that when English is not their first language communication could be more difficult.

Liam goes on twice yearly holidays to the seaside and usually takes the train to get there. Liam uses the National Rail telephone enquiry service to access

timetable and fare information. Liam prefers to speak to someone on the telephone rather than using the Internet.

'It's because there's a voice on the other end of the line, whereas if you were to use the Internet there's not someone speaking to you... I think most people I've spoke to on the National Rail enquiry number are polite, whereas if you went on the internet you wouldn't know if there was a scam.'

Liam is excited about the new national concessionary bus pass as it could make his trips to the seaside cheaper.

Interactions with transport staff and other transport users

A key feature of independent travel enjoyed by people with learning disabilities was the opportunity to interact with transport staff and other transport users. Positive experiences of interactions with others while making journeys seemed to be particularly important in sustaining participants' enjoyment, confidence, and sense of security and safety when travelling independently. People explained that what they most enjoyed about travelling and using transport was interacting with others, and people commented positively on friendly transport staff and other transport users, especially when they would take time to chat with them. The approachability of transport staff was important, as was the ability of transport staff to communicate with people (see case study: Liam).

Transport aspirations of people with learning disabilities

People with learning disabilities were keen to continue making journeys independently in order to access employment, services, and social and leisure activities. Of key importance for this group were travel training and the provision of information to assist people in planning and making new journeys. Barriers to independent travel included getting to and from transport, and feeling comfortable onboard transport. Enabling factors included safe road crossing points, and positive interactions with transport staff and other transport users.

Conclusions and policy implications

The preceding chapters have presented the travel behaviour, transport experiences and aspirations of different groups of disabled people. The findings provide an insight into the most salient issues relating to transport use and travel for each group. While the constellation of salient issues was slightly different for each group, as were the ways in which these issues were experienced and their often subtle implications, there was also commonality across the groups in terms of key barriers and enablers which influenced disabled people's transport use and travel horizons. Overall, findings from this research support the findings of the Department for Transport's evidence base review on mobility (Smith et al., 2006) which highlighted the importance of access to transport for disabled people in overcoming barriers to social inclusion:

"Access' is a fundamental issue in realising disabled people's entitlement to achieve the same opportunities as non-disabled people, relating to both attitudinal and physical barriers. Clearly, access to transport and the accessibility of transport are key. However, people with disabilities are less likely to drive and more likely to be dependant on public or community transport, or lifts from family and friends. Public transport is often experienced as inaccessible. Disabled people's travel is limited both by a lack of accessible services, and by a lack of confidence that they will be able to complete journeys without encountering problems. This can be a barrier to social inclusion - making it difficult for people with disabilities to access education and employment, services and social networks.'(Smith et al., 2006: 62)

Key barriers and enablers for transport use and travel

Key barriers and enablers for disabled people's transport use and travel identified through this research provide a useful set of access and equality considerations for policy makers, local transport planners and transport providers. This research has demonstrated that it is as a result of uncertainty or inaccessibility at any point of the journey, from the planning stage, through to the successful completion of a journey, that disabled people's transport use and travel aspirations are constrained. For example:

- For people with physical, sensory and learning disabilities, the route to transport needs to be safe with easy to use and well designed road crossing in order for them to independently access transport.
- For a wheelchair user, their wheelchair needs to be light and manoeuvrable in order to facilitate independent boarding of both public and private transport (including personal cars).
- For deaf people, improved awareness and attitudes of transport staff are important in ensuring they can successfully use public transport.

The research has identified multiple barriers and corresponding enablers, as experienced or suggested by participants, for access to transport and travel for disabled people. These barriers and enablers are summarised below under the following headings:

- journey planning;
- accessibility;
- awareness and attitudes of transport staff; and,
- role of virtual mobility and accessibility.

Journey planning barriers

Box 6.1 below provides examples of barriers experienced by disabled people in relation to planning journeys. Alongside each barrier, a corresponding enabler, as experienced or suggested by participants in this research, is presented. Key issues relate to disabled people's ability to be spontaneous and flexible in their travel planning, the provision of accessible information, and their confidence in making journeys.

Box 6.1: Barriers to flexibility and spontaneity in travel planning and corresponding enablers

Barriers	Corresponding enablers (experienced / suggested)
Disabled people may have to consider the logistics of physical access prior to travel and arrange for assistance or adapt plans as necessary	- Ability and flexibility of transport staff to rearrange assistance when a disabled person's travel plan changes due to unforeseen circumstances
Disabled people can be restricted by cost in choice of travel mode (for example, on days when feeling unable to travel by public transport)	- Extension of eligibility for subsidised taxi/minicab travel and/or confidence training in using public transport
Disabled people may need travel training before making a new journey	- Access to a trained contact who is able to assist disabled people in planning and making new journeys which will successfully meet their needs
Disabled people can experience reduced flexibility in attending work/healthcare appointments etc. because of restrictions on concessionary travel passes (e.g. cannot be used before 9 am)	- Extension of concessionary travel to include peak times to give disabled people greater flexibility in their travel planning
Difficulties accessing services because of lack of disabled parking spaces	- Enforcement of disabled parking schemes and improved location design for disabled parking
Difficulties accessing services because of reluctance to use disabled parking schemes (e.g. due to negative public perceptions of people 'misusing' disabled parking)	- Strategies to overcome reluctance to apply among eligible groups (e.g. older people with chronic health conditions) and education for wider public on importance of disabled parking schemes for wide range of disabilities
Disabled people experience a lack of information regarding accessible transport including frequency of accessible buses on routes, and what they can expect in terms of assistance from transport staff	- Better publicising of accessible services and information about how disabled people's needs are met

Disabled people need information to be provided in accessible formats	- Easy to obtain large print maps, concise and straightforward written information provided in a variety of formats (e.g. Braille), clear and reliable Internet and telephone (talk and text) information services
Disabled people need adequate real-time information both on-board transport and at stations	- Wider provision of both aural and visual information to give disabled passengers greater confidence using transport, particularly when services are delayed, diverted or disrupted
Lack of confidence to make journeys independently	- Extension of travel training schemes to all disabled groups, encompassing both confidence training and information about local services and entitlements

Accessibility barriers

Box 6.2 below provides examples of barriers to the physical accessibility of transport. As for the journey planning barriers presented above, alongside each access barrier, a corresponding enabler, as experienced or suggested by participants in this research, is presented. Key issues relate to getting to transport, accessible facilities, and boarding transport.

Box 6.2: Barriers to the physical accessibility of transport and corresponding enablers

Barriers	Corresponding enablers (experienced / suggested)
Problems in navigating the street environment because of poor location or design of crossings, or lack of tactile pavements	- Improved consideration by those with relevant planning duties, such as local authorities, of the needs of disabled people (including people with learning disabilities) in local street design to improve access to and from transport
Lack of accessible facilities at stations and onboard transport	- Improved consideration by transport service providers and transport operators of the accessibility of facilities including ticket offices and toilet facilities, including consideration of lighting and lay out
Problems with boarding, disembarking and getting seated safely and securely	- Improved awareness among transport staff (including on trains, buses and taxis) of disabled people's needs in relation to boarding and getting off transport and getting safely and securely

	seated
Difficulties travelling at peak times or on overcrowded transport	- Improved awareness and understanding among transport staff and other transport users of the additional challenges disabled people may face when travelling at peak times or on overcrowded transport and factors which could alleviate these (for example, giving up seats for people with learning disabilities).
Problems using concessionary passes for younger disabled people and people with less 'visible' disabilities	- Increased awareness and understanding of the range of disabilities which affect people's transport use and mean they are eligible for concessionary travel, including less 'visible' disabilities such as mental health conditions
Difficulties accessing transport with assistance dogs	- Better awareness among transport staff of the role of assistance dogs, designated space for assistance dogs on transport, stickers for 'assistance-dog friendly' taxis

Awareness and attitudes of transport staff

As many of the examples of enablers for journey planning and the accessibility of transport provided above demonstrate, the approach of transport staff is key in minimising or overcoming barriers. Good awareness and positive attitudes of transport staff are critical to disabled people's ability to access transport and their confidence to travel.

People in this research particularly valued an approach which was proactive and personalised. It was important that transport staff asked the disabled person themselves whether they needed assistance, and if so, how that assistance could best be provided. There were numerous accounts of positive interactions with transport staff, where staff had been friendly, patient and helpful. It was these positive interactions which helped build up people's confidence to travel, both in planning journeys, and also feeling that they would be able to complete a journey successfully even if things did not go according to plan.

Overall, disabled people felt they could realise their transport aspirations more effectively if transport staff had better training and awareness of disabled people's needs, including an appreciation of the different needs of people with different types of disability. For example, this research identified difficulties experienced by disabled people because their disability was 'hidden' or less visible or obvious, for example because of their age or the type of condition. Young people with chronic or mental health conditions and people with hearing impairments included in this research often mentioned receiving a less adequate service for meeting their needs because transport staff were not aware of, or lacked understanding about, the nature of their disability.

Role of virtual mobility and accessibility

The role of the Internet was important as a facilitator for travel and transport use, and was used by participants across the sample for obtaining travel information (including finding out whether transport and facilities were accessible) and booking tickets. Participants also used the Internet for a variety of other purposes and activities, including paying bills, accessing home shopping services, health information, and social networking.

It was clear, however, that despite experiencing barriers to transport and travel, disabled people interviewed for this research did not perceive the Internet as a tool which could, or indeed should, act as a substitute for physical mobility. Rather, it tended to be viewed as providing either a temporary solution to reduced mobility, or as supplementary to physical access. For example, participants described sometimes doing their food shopping online when unwell or experiencing increased severity of symptoms associated with their disability. The Internet also made social interaction easier for participants where spontaneous travel was difficult because of their disability. Participants emphasised that while physical mobility could be physically and mentally demanding, it offered key advantages over virtual mobility and virtual access. Not least among these advantages was the importance for disabled people of face-to-face social interaction associated with travelling to and using key services.

Policy implications

Findings from this research have cross-cutting implications for current policy strategies and specific policy initiatives. Of particular relevance are the Independent Living Strategy, the Blue Badge scheme review, and revisions to the codes of practice for train and station design and air travel for disabled people.

Independent Living Strategy

The government launched its Independent Living Strategy in March 2008. The strategy is a cross-government initiative involving six departments. Its aim is to promote independent living for disabled people through giving disabled people more choice and control over the support they need and greater access to employment, transport and mobility, health and housing.

The strategy outlines key areas of commitment through which access to transport and mobility can be improved for disabled people. These are:

- Evidence-based strategies for enhancing personal mobility options and transport choices for disabled people.
- Training of transport providers.
- Information and confidence training for disabled people.
- Local transport plans and accessibility planning.

This research provides evidence for the critical importance of these key areas of commitment in helping disabled people access transport in order to enhance their ability to live independently. For example, this research found that personal mobility options and transport choices were important for disabled people across different disability groups. Notably, the Motability scheme, the Blue Badge scheme, and financial assistance to use taxis or

minicabs were important ways in which disabled people's options for travel and transport use were maximised. An additional issue which could act as a barrier to independent travel (either by car or public transport) related to people's personal mobility equipment and its usability when travelling. Training of transport providers also emerged as a key enabler for disabled people in accessing, and having confidence in accessing, transport (see section 6.1.3 above). The research found that transport staff did not always have adequate awareness to handle different types of disabilities with the necessary skills and sensitivity. An example of promising practice in this area is partnership working between a Mental Health NHS Trust and a transport provider to produce a mental health awareness training film for bus drivers and transport staff. [8] The project involved a series of transport roadshows, and for the film, preparatory workshops with service users, some of who were also directly involved in the filming. [9] Initiatives like these would seem to be particularly useful due to their local focus and engagement of stakeholders, including both transport providers and disabled people.

Confidence and a lack of information were also key barriers to travel and transport use which emerged across the disability groups included in this research. Although the factors underpinning confidence and access to information were different for different groups, it was evident that training would enable disabled people across all groups to increase their confidence and ease of using public transport. Such training should encompass both confidence training (for example, coping strategies for dealing with uncertainty and the unexpected) and practical training (such as assistance with accessing information about local services and entitlements). Training should be widened beyond groups which have traditionally been the focus of travel training (for example, people with learning disabilities and visual impairments). In this research, disabled people with hearing impairments and mental health support needs also expressed that training of this nature would assist them in independent travel.

Finally, this research also found that physical access was affected by lack of accessible services, and accessibility relating to the street environment, at stations and stops (including facilities at stations, such as toilets), getting on and off transport and onboard transport. Local transport plans and accessibility planning are important in enhancing the mobility of disabled people through consideration of the 'end-to-end' journey, and access factors which facilitate travel for disabled people.

[8] The partnership involved Birmingham and Solihull Mental Health NHS Trust's Social Inclusion team, West Midlands Passenger Transport Authority (Centro) and Travel West Midlands (now National Express West Midlands).

[9] For further information about the project see:

<http://www.bsmht.nhs.uk/usersandcarers/socialinclusion/publictransport.htm>

As discussed above, this research points to a need to consider the ways in which access to transport for disabled people can be affected at any point in a journey, at the planning stage, through to its completion. Barriers to access might occur as a result of:

- adequacy of equipment and other disability aids;

- lack of accessible information;
- physical access issues; and,
- attitudes of transport staff.

Revisions to codes of practice in relation to access to travel for disabled people need to take account of the many different ways in which access can be restricted. It is also important that disabled people can expect continuity of service from booking to boarding to disembarking, which ensures their needs are considered and met throughout the end-to-end travel and transport experience. Again, the awareness and attitudes of transport staff are key in achieving this.

[10] 'Train and Station Standards for Disabled People: A Code of Practice' and 'Access to Air Travel for Disabled Persons – Code of Practice'

This detailed research document can be found in full at:

<http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/pgr/scienceresearch/social/travelbehaviours>

As is clear from this research, there is a very real need for effective, safe and accessible travel training for people with learning disabilities. Travel training for people with learning disabilities is an essential element of independent life skills acquisition. Journeys that are undertaken regularly – such as to school, college, day centres etc can, with reinforced training, be learnt thus enabling the people with learning disabilities to reach a level of independence whereby they are responsible for themselves and not dependent on carers. As well as the practical and financial implications that this freeing up of carers will have, this new independence acquired will have a huge impact on the self-esteem of the learners.

Research has shown that there isn't a national scheme in operation and there is considerable regional variation.

Currently in the U.K. travel training mainly takes the form of buddy schemes where journeys are undertaken with a carer. As the learner becomes more and more confident with the route, so the carer would gradually withdraw the support and assistance offered. There are also some schemes where people with learning disabilities are trained as buddies to assist other learners.

CoolMove is a web site offering resources, support and advice for those involved in travel training for people with learning disabilities aged 15+. There are many examples on this site from schools, councils and colleges all over the U.K. who have drawn up and implemented their own effective forms of travel training.

For example:

“Hi my name is Lee Dibnah, I work for The East Riding of Yorkshire Council and manage a team who provide a range of supports to people who have disabilities.

One of the areas of work we cover is Independent Travel Training. What we are using in The East Riding is a simple wallet scheme called the Liberty

Wallet. This plastic wallet which has is bright orange and has 10 credit card sized sleeves inside, which people can put whatever information they feel would assist them to travel independently. They can also be used to keep travel passes in so everything they need to use transport is together. Through our Partnership Board Sub group on transport, we have worked with our local transport providers so that the drivers are aware that any person carrying these wallets may needs some additional support / assistance. We are currently working with Hull, York and North Licolnshire as they are keen to implement the scheme within their area.”

Local councils offer advice and support for travel training with many having schemes that are linked in with public transport – for example using a system of highly visual cards that are held up at bus stops etc so that the driver of the correct bus knows to stop.



Organisers of the coolmove web-site are interested in getting the idea of these cards implemented nationally, which if combined with disability awareness training for public transport workers, would ensure that people with learning disabilities would receive the assistance they need when travelling.

“Thanks for all the interest in the idea of a standardised help card. Time to unveil a design. The ones above show that we are not looking for tastefully published works of art, but something that anybody can do inside an easily recognised box.

A yellow background was a good start because it's the clearest background that isn't just plain white. The black triangle on a yellow background appears on directed routes on traffic signs, but I've gone for it because it is the simplest possible shape to draw and to recognise. Would it be seen by a person galloping by on a fast horse? Hopefully, yes.

To make it neat it's in a square frame and the rectangle can feature the name of a training or caring organisation.

Which leaves plenty of room for a clear message underneath. No punctuation makes the words clearer.

Whatever size fits the bill. A4, a folding A3 card might be better, or to fit in a wallet.

You can do the whole thing on a computer and laminate it, or just make blank ones and write the message on in permanent marker.

Remember, the object of the exercise is to get a design (not necessarily this one) adopted all over the country so that any train conductor, bus driver, police officer, traffic warden, bus station operative anywhere will know that a person with a disability needs a moment of their time.”

“The London Borough of Merton have an established travel training programme for anyone over the age of 18 whose disabilities may affect their potential to get about on their own. Trainers use a three-stage programme, beginning with Awareness for Pedestrians and moving on to Safe Travel. Any one who gets through these successfully may be eligible for the next stage, which is Independent Travel. But, according to trainers, the most important aspect is the willingness of carers and their support for the scheme.

Independent travellers are now getting themselves to work placements and are able to apply successfully for jobs as a result of training. Those who are not going to travel completely on their own can be fixed up with a buddy or use Dial-a-Ride, which is a route to semi-independence and free at the point of service.

Working from the Jan Malinowski Centre in Mitcham, the team currently have twenty two clients, five of whom they expect to achieve independence soon. But there are surprises, and some people go on to be independent quite unexpectedly.

The team receive funding from the Learning Disability Development Fund and the Council.”

Further examples of travel training schemes throughout the U.K. can be found at www.coolmove.org.uk

Further information on travel training available in the West Midlands can be found at: networkwestmidlands.co.uk:

<http://www.networkwestmidlands.com/travelwise/Training.aspx>

Birmingham City Council:

http://search.birmingham.gov.uk/search?q=travel+training+learning+disabilitie&client=bcc_web&filter=p&num=10&numgm=5&output=xml_no_dtd&proxystylesheet=bcc_web&site=bcc_web_content&sort=date%3AD%3AL%3Ad1&entq=0&oe=UTF-8&ie=UTF-8&proxyreload=1&ud=1&masthead-search-go=Search

With the rapid rise in availability of and capabilities of mobile technology, such as mobile phones, ipad etc, the idea of using such devices to offer travel training for people with learning disabilities has arisen. GOET's RouteMate and the Recall project recognised the potential of this and are currently working to develop and mainstream the application.

Further along this road, there are electronic devices already in use: **Halliday James** have developed and implemented a mobile device:

"Travelling, whether to and from work or just to the local shops is often an area of concern for people with learning difficulties and considerable resources are put into travel training. AbleLink Technologies have recently introduced a GPS based program, **Wayfinder**, to help people travel independently. Using information about their location, audio/visual prompts are used to guide a user through their journey."

More information about this device can be found at:

<http://www.hallidayjames.com/learning-difficulties/travel-training.html>

This device is currently available at a cost of between £800 - £1000 presumably with monthly usage fees on top. This high cost means that it is prohibitively expensive particularly for people who may be living on DLA, jobseekers or other benefits.

Empirical Research of RouteMate.

Profile of user group:

GHI tested RouteMate with a variety of students presenting a wide range of different needs, abilities and impairments. The majority of our testers had mild learning disabilities; some had moderate learning disabilities; some had learning disabilities and physical disabilities; some had mental health issues; some had sensory impairments.

Our testers were all post 18 with the majority being aged over 25.

Varying degrees of independent living were represented with some of our testers living at home with parents, some living in supported accommodation and a few living independently. Those with higher levels of need were currently not able to travel independently and were either driven by parents, community transport or relied on help from carers if using public transport.

The majority of our testers were very keen to be able to travel independently and welcomed the assistance that would be offered by a fully functioning system such as RouteMate. However, our research has shown that whilst there is a great deal of interest in the idea of the Route Mate application, in its current form and availability it would be unworkable and inaccessible. The limitations and high cost implied by the exclusivity of the Android system mean that it would be out of the affordability range and usability of this client group.

Trainers and carers were perhaps a little less enthusiastic regarding independent travel. Concerns for students' safety, their vulnerability to bullying and abuse, road safety awareness, likelihood of becoming distracted and/or lost etc were prevalent and valid.

During trials of the current RouteMate application, many questions were raised relating to the availability of the app. for other types of phones. In general, the students we tested the phone with, did have mobile phones, but they tended to be older more basic units. Whilst some of the younger more I.T. aware students were happy to use and indeed did already own, touch screen phones, some of the older less I.T. skilled testers were very wary and reluctant to try.

Concerns were expressed by both students and carers that the fact that the technology needed to run the application necessitates a high end very expensive and desirable phone, means the person using the phone would be very vulnerable to robbery.

The possibility of RouteMate being linked into public transport was raised by a number of students and carers, with the point being made that this would greatly extend the potential for longer journeys as it was felt that in its current form it is limited to short walkable distances.

Concerns expressed by carers and trainers about RouteMate included the fact that the nature of the client group for whom it is intended is such that their vulnerability would necessitate 100% confidence in the functioning of the application, which given the problems encountered in the testing was felt to be a long way off.

Ensuring the safety of users whilst out independently was felt to be of prime importance. It was felt that RouteMate in its current form does not do enough to encourage and ensure safety when crossing roads for example, and it was recommended that some kind of safety alert should be activated when a road needed to be crossed or any other particular hazard was encountered.

The skills needed to operate both the Android phone itself and the RouteMate application were beyond both the students themselves and some carers and trainers. It is a form of mobile technology that a lot of people are wary of and we did encounter technical issues both with the phone and with the application. (See Redesign Specification for Recall Methodology UK Group 1 results(09-06-2010) document for further details)

Attribute	Functional Implications	Desired Product Characteristics	Actions Required
Age Range: 18-50	Device must not be "child-like"	Application should be usable on wide range of phones to allow for personal choice.	Research possibilities of using other operating systems.
Gender 2 female 3 male	Application must be gender non-specific	Look and feel of device and application should not favour either gender.	
Capacities: 2-MLD 2-MLD + physical disabilities including fine motor skills impairment 1-MLD + visual impairment	Students were struggling to operate the phone. Students found it difficult to navigate between screens.	Instructions need to be much clearer and more simple. Ongoing and precise instructions needed – (tell you which key to press to return to screens)	Instructions on screen + manual As above

	<p>Tester with visual impairment struggled to see the text and images.</p> <p>Phone is very delicate and sensitive for people with physical disabilities.</p> <p>Keyboard very small in portrait mode.</p> <p>Selection boxes out of line in landscape mode – (although keyboard is larger and easier to use)</p>	<p>Font and images should be larger for people with visual impairment. Audio track not working at either time of testing.</p> <p>Possibly make application workable on more robust and accessible phones</p> <p>Use in landscape</p> <p>Redesign to ensure format is maintained</p>	<p>Ensure audio track is functioning. Produce alternative/large font keyboard?</p> <p>Research alternative hardware for better accessibility features</p>
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Educational Range: Pre-vocational Further Education			
Socio/cultural economic status: Mixed. Mostly unemployed and on benefits. Some in low skilled/low paid employment	Users have low income and no extra cash for luxurious high-end phones	Application to be downloadable and usable on a wide variety of phones	Application should be redesigned to be accessible on phones not using android system as cost is prohibitive.
Size of Group: 5	More phones needed to enable more efficient testing.	More funds needed to allow purchase of further units	
Assessment of Motivation to Use: Initially fairly enthusiastic, became disheartened and anxious when application failed to work properly.			

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<p>Gender</p> <p>2 female</p> <p>3 male</p>	<p>Application must be gender non-specific</p>	<p>Look and feel of device and application should not favour either gender.</p>	
<p>Capacities:</p> <p>2-MLD</p> <p>2-MLD + physical disabilities including fine motor skills impairment</p> <p>1-MLD + visual impairment</p>	<p>Students were struggling to operate the phone.</p> <p>Students found it difficult to navigate between screens.</p> <p>Tester with visual impairment struggled to see the text and images.</p> <p>Phone is very delicate and sensitive for people with physical disabilities.</p>	<p>Instructions need to be much clearer and more simple.</p> <p>Ongoing and precise instructions needed – (tell you which key to press to return to screens)</p> <p>Font and images should be larger for people with visual impairment. Audio track not working at either time of testing.</p> <p>Possibly make application workable on more robust and accessible phones</p>	<p>Instructions on screen + manual</p> <p>As above</p> <p>Ensure audio track is functioning. Produce alternative/large font keyboard?</p>

	<p>Keyboard very small in portrait mode.</p> <p>Selection boxes out of line in landscape mode – (although keyboard is larger and easier to use)</p>	<p>Use in landscape</p> <p>Redesign to ensure format is maintained</p>	<p>Research alternative hardware for better accessibility features</p>
<p>Educational Range:</p> <p>Pre-vocational Further Education</p>			
<p>Socio/cultural economic status:</p> <p>Mixed.</p> <p>Mostly unemployed and on benefits.</p> <p>Some in low skilled/low paid employment</p>	<p>Users have low income and no extra cash for luxurious high-end phones</p>	<p>Application to be downloadable and usable on a wide variety of phones</p>	<p>Application should be redesigned to be accessible on phones not using android system as cost is prohibitive.</p>
<p>Size of Group:</p> <p>5</p>	<p>More phones needed to enable more efficient testing.</p>	<p>More funds needed to allow purchase of further units</p>	
<p>Assessment of Motivation to Use:</p> <p>Initially fairly enthusiastic, became</p>			

disheartened and anxious when application failed to work properly.			
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Functional issues identified during testing phase.	Stakeholder Implications	Redesign Implications
<p>“Photo saved but cannot be displayed” message appeared twice during plan stage</p> <p>THIS MESSAGE APPEARED EVERYTIME DURING OUR FINAL FRUSTRATING TRIAL!</p>	Route guidance not effective or personalised without landmark photos	
Phone kept displaying previous set points	Caused panic and confusion for some testers. SAFETY ISSUE	
Phone didn't vibrate when at set points	Testers could easily have gone off course. SAFETY ISSUE.	
Photos didn't pop up at set points	Testers could easily have gone off course. SAFETY ISSUE.	
Didn't give final destination alert x 1	Testers could have carried on without realising they had reached destination. Major confusion potential.	Sensitivity adjustment needed.
Final destination alert came far too early x 1	Testers could have gone to wrong place thinking that they had reached destination. Major confusion potential	Sensitivity adjustment needed.
Route direction arrows	Testers could easily	Programming?

didn't show up	gone the wrong way.	
No audio	Testers with limited reading ability need the audio for guidance.	Check audio application on phone.
Black bar appeared across map	Confusing and distracting for testers.	Programming issue?
Fingers obscure time when setting start and end time.	Users with any degree of visual impairment would not see small display.	Increase time display size?

Additional Comments and Suggestions (Students)

Need arrows pointing or sound telling you which way to go.

Useful to show you the route before setting off.

Very worried about losing the phone or having it stolen.

1 student not able to use it because he uses a walking frame so is unable to hold the phone.

Would be useful when it works properly!

2 students commented upon how anxious and panicked they would be if they were on their own and the maps didn't work or directional arrows showing the way to go.

Can this be used on my ordinary (Nokia) phone.

I would never be able to afford a phone like that!

Additional Comments and Suggestions (Trainers)

Preview of the route before setting off would be a useful feature.

Should tell you how many photos to take.

Application needs to be much simpler to use – only a geek would know how to use this particular phone without much clearer instructions!

Having a “reverse route” button to enable the student to do the journey back without having to re-enter the set points would be useful.

Is it designed to be route guidance or route learning?

Perhaps develop a side-by-side application that isn't dependent on Google maps and instead just has the set point photos popping up to reinforce route learning rather than map-reading skills.

Useful if application could estimate journey time?

Need to be very careful when taking photos of set point landmarks – issues around privacy, child protection etc.

Is it possible to have the facility to lock the screen so that the application isn't accidentally disturbed if phone is put in pocket?

Users are very vulnerable with such a high end expensive phone.

Useful tool in theory but carers and trainers would need to feel 100%

confident in its reliability or it could be counter-productive and put this vulnerable user group in danger.

Might be useful to have a headset with audio offering road safety alerts and warnings.

Phone is cool and desirable for many of the students, but way too expensive!

Suggestions for additional applications:

Panic button available to allow user to contact carer immediately in an emergency without having to go back through the various screens to find the help button.

Alarm facility to alert carer if user goes off course or doesn't arrive at destination within a set period of time.

Can it be linked to public transport to allow for longer journeys not just short pedestrian routes? This would increase its usability considerably.

One of our testers accurately summed up the overall attitude towards RouteMate when he commented that once all the teething troubles and technical problems had been sorted out it would be really helpful but only if he could get it to work on his old (cheap!) Nokia phone, as he wouldn't be able to afford to buy one of these "touch screen fancy phones" and wouldn't be able to use it anyway!

Over and over again during our testing this was a recurring issue – the expense of the phones, along with the technical skills needed to operate RouteMate was prohibitive, particularly for this client group.

However, we anticipate that as the costs of the phones come down and RouteMate is refined, some of these concerns will be allayed, and these barriers to usability will be removed.

