
Young people and public internet access: A qualitative study of barriers, opportunities and attitudes

By Aleena Chia

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Executive Summary

As the developed world embraces the information revolution, there is growing concern about the emergence of a 'digital divide' which separates those who have access to computing technologies and those who do not. With so many new opportunities becoming available through technology, it is important to identify the inequalities some groups and communities face in order to address the digital divide and to ensure equitable access to computers and the Internet.

One way to bridge the digital divide is to provide the necessary hardware and software to those people who cannot access computing technologies. Public access sites at libraries and community centres are becoming more widespread and can provide a cheap alternative to commercial Internet cafes.

But do public access sites reduce the digital divide? Previous research suggests that young people may not always utilise these sites. It is important to understand how these sites may attract young people, particularly disadvantaged young people who may not otherwise access computers. This will go some way towards ensuring all young people enjoy the opportunities available through computing technologies.

This research was undertaken in response to concerns that some young people are becoming further disadvantaged by their inability to access or use computing technologies and that some young people are reluctant to use public access sites. The aim of the research was to obtain a broad overview of how public access sites help disadvantaged young people to overcome barriers to internet access and use. The research, a qualitative scoping study, was based on three key questions:

1. What barriers to Internet access do disadvantaged young people face?
2. What opportunities can disadvantaged young people gain through their use of computers and the Internet?
3. What attitudes do disadvantaged young people have towards Internet access and use?

The research was based on a review of relevant literature, interviews with young people who access a public Internet service in central-Melbourne and interviews with the managers of three public Internet access sites in Victoria.

The study found that the barriers to computer access and use can be overcome through the provision of public Internet access sites. These sites can also facilitate the development of valuable skills and opportunities for young people including social interaction and connectivity, self-confidence and self-esteem, motivation and interest towards information technology, and career and education opportunities.

The study raises some issues which should be considered in the establishment of public access sites, particularly those targeting disadvantaged young people. Co-locating computing services with a range of other social services encourages young people's continued patronage. Personal motivation is also crucial to young people's continued use of information technology. In light of this, online activities such as chatting and gaming should be taken more seriously as these activities may stimulate young people's interests.

Significantly, in trying to overcome barriers faced by disadvantaged young people, public access sites are themselves confronted by infrastructure barriers such as poor connection. This is a critical issue that needs to be addressed at the level of governmental and telecommunication policy if all young people are to benefit from on-line opportunities.

Introduction

The information revolution

Australia is experiencing significant industrial, economic and social changes through rapid advances in computing and communication technologies.¹ The explosion in the availability and use of computers and the Internet in the past decade is often called the 'information revolution'. There has been astounding growth in the use of computers and on-line technologies in all sectors. Commercial, government and community organisations are increasingly moving information and services online.

The Internet is rapidly becoming the accepted and the desired way to obtain and distribute information.² There is a general feeling that computing technology will make things better, faster and more effective. Information technology is seen as a gateway to a new kind of economy and society.³ The ability to access and use information technology is seen as a source of competitive advantage in many areas of life such as education and employment.⁴ Indeed, it has been suggested that people who do not access communication technologies will have fewer educational and employment opportunities and this may impact on their social and physical well-being.⁵ The ability to access and use information technologies appears a necessary requisite of the 21st century.

The digital divide

However, access to and use of computers and the Internet is unevenly spread across different communities. A recent survey revealed that between 1999 and 2000, the number of Australian households with Internet access increased by 52 percent. However, half of all households in Australia do not even own a computer much less have an Internet connection.⁶ Previous research suggests that 'although Australia is a world leader in Internet/ICT use, the spread of use varies significantly according to social circumstances such as family status, household income, educational levels and geographic location.'⁷ The Internet and computers are ultimately consumer items. This means that those without adequate income may be excluded from the Internet as a channel of communication.⁸

As a result, there is growing concern about the emergence of a 'digital divide' that separates those who have access to computing technologies and those who do not. These groups are often called 'the information rich and the information poor'.⁹ With so many new opportunities becoming available through technology, it is critical that we identify the inequalities some groups and communities face in order to address the digital divide and ensure equitable access to computers and the Internet.

Public Internet access policies

One way to bridge the digital divide is to provide the necessary hardware and software to those people who cannot access computing technologies. Public Access Sites (PAS) at libraries and community centres are becoming more widespread and provide a cheap alternative to commercial Internet cafes. The provision of PAS reflects policies in the government and non-government sectors to ensure equitable access to computers.

The Victorian Government has made a commitment to address the digital divide. The Government recognises that:

in moving to a knowledge-based society we – the Government, the Parliament, and the Victorian community – have a choice. We can let new technologies further divide our society into winners and losers – the information rich and the information poor. Or we can harness the potential of the technology to develop the whole state and maximise opportunities for all our citizens.¹⁰

The Government has indicated that it is committed to strengthening Victorian communities by providing better infrastructure, increasing access for multilingual communities and users with disabilities and ensuring more user-friendly online resources. It has also committed to increasing availability and lowering the costs of Internet access for regional and rural Victoria.¹¹ An early initiative is providing physical infrastructure in town halls and Net Access Centres. For example, the

Government funds the E-gaps Program, which has provided \$580 000 to aid local councils in setting up public Internet access sites.¹² The key aim of the E-gaps program is to provide public Internet access to disadvantaged groups who may not otherwise access the Internet.

Community and philanthropic organisations are also endeavouring to bridge the digital divide by funding the necessary resources. For example, Bean Bag Net Centres, an Inspire Foundation initiative, provide PAS in urban locations around Victoria. These centres provide free Internet access in youth friendly locations and also offer computer training. Similarly, the Foundation for Young Australians, in conjunction with other organisations, has launched the BYTE Information Technology Program to provide public Internet access to disadvantaged groups throughout Victoria.¹³ In addition, Reach Out has initiated a tour of regional and rural Australia (Reach Out Regional and Rural Tour - RORRT) to introduce young people to the Internet. The project also aims to install computers with Internet access where this technology is not currently available.

But do public access sites reduce the digital divide? Although PAS do provide one way for young people to access computers and the Internet, previous research suggests that young people may not always utilise these sites. Several reasons have been posited for this including the expense of related costs such as printing, a lack of privacy, the inability to access all websites, limited access hours and the need to book in advance.¹⁴ In addition, PAS, particularly those in libraries and schools, 'are not always appealing ... for some disadvantaged young people.'¹⁵ The rules and prohibitions in libraries, for example, may be unattractive for many young people and PAS staff may not be equipped to deal with the complex issues and behaviours some disadvantaged young people experience. There have been calls for more PAS and particularly for sites that cater for a diverse range of young people.¹⁶ It is important to understand how these sites might cater for young people, particularly disadvantaged young people, to ensure all young people enjoy the opportunities available through computing technologies.

Research questions and methodology

This research was undertaken in response to concerns that some young people are becoming further disadvantaged by their inability to access or use computing technologies and that some young people are reluctant to use PAS. These concerns have been cited in previous research and voiced by members of the Youth Affairs Council of Victoria.

Research has been conducted on disadvantaged groups' barriers to Internet access.¹⁷ Similarly, there has been a growing academic interest in the attitudes of young people towards information technology.¹⁸ However, few studies have concentrated on the particular issues faced by disadvantaged young people in terms of computers and the Internet.¹⁹ This gap needs to be addressed because disadvantaged young people have distinctive needs, barriers and attitudes to information technology. Research has also been conducted on the effectiveness of PAS in overcoming barriers to Internet access.²⁰ However, these studies fail to address the attitudes and motivations that disadvantaged people show towards using these sites. An understanding of attitudes is crucial if needs are to be effectively met.

This research was designed to explore some of the issues that are not covered by the existing literature. Overall, the aim of the research was to investigate disadvantaged young people's attitudes towards information technology and to examine the impact of PAS in reducing the digital divide. The intention of this project was to identify key themes that may lead to further research. Three questions were devised towards these research aims:

What barriers to Internet access do disadvantaged young people face?

What opportunities can disadvantaged young people gain through their use of computers and the Internet?

What attitudes do disadvantaged young people have towards Internet access and use?

In this way, the research examined both access to computing technologies and the motivation behind using PAS and technologies.

A literature review was undertaken to identify previous research relating to young people, technology and PAS. To gain a greater understanding of young people's use of PAS, we conducted interviews with young people who use a PAS, YouthNet, in central-Melbourne. YouthNet is based at Frontyard, a series of co-located services which cater to disadvantaged, most notably homeless, young people. These interviews followed a semi-structured interview schedule and each interview lasted for approximately forty-five minutes (see Appendix 1).

Because of limited time and resources, the sample consisted of seven young people and we employed a 'snowball' method of sampling. This means that respondents were selected based on the build-up of existing contacts.²¹ This method was used because the young people who use YouthNet are often inconsistent in their attendance as it is a 'drop-in' centre. Therefore, it was difficult to make appointments with young people who use the facilities. Although the small sample means that findings cannot be generalised to all disadvantaged young people, the research did enable a broad understanding of the issues disadvantaged young people face in relation to technology and key themes emerged which will inform future research.

Interviews were also conducted with the managers of three PAS in urban and rural Victoria. These were also semi-structured interviews that ran for approximately one hour. These interviews provided an opportunity to examine some of the issues around PAS in more detail and to examine why each PAS was established (see Appendix 2). The PAS were selected because each had a different target group: homeless young people, young people from culturally and linguistically diverse backgrounds and young people living in rural areas.

Review of related literature: the digital divide

Alongside enthusiasm for the 'information revolution', there has been a growing concern about a 'digital divide' which separates those who have access to technology and those who do not. As noted above, previous research indicates that Internet use varies according to demographic characteristics such as geographic region, family status and income.²² This literature review provides an overview of the digital divide and examines the barriers some young people face in relation to using computers and the Internet.

Infrastructure barriers

Expense

On a fundamental level, computers are more expensive than most household appliances. Cost is a significant barrier to Internet access for people on a low-income.²³ A recent survey found that 24 percent of those Australian households that do not possess a computer cited high costs as the main reason for this. In addition, 43 percent of households without a computer had household incomes below \$24,999.²⁴ This barrier is not easily overcome as the cost of computers remains high. To maximise profits, better quality computers are constantly being developed and continue to be sold at a high price.²⁵ Therefore, the cost of computing is unlikely to become affordable to lower income groups. Among low-income groups, homeless people are particularly unlikely to have the resources, the stability or indeed the motivation to purchase and set up a computer with Internet access.

Wired infrastructure: electronic redlining

Another barrier to Internet access is the geographic deployment of telephone and broadband cable lines. Economies of scale tend to dictate the provision of technologies. Since wired infrastructure investments depend on consumer populations, telecommunication companies tend to privilege regions of high-income and high-density households.²⁶ Therefore, wired infrastructure in rural areas tends to be inferior and more expensive. The process by which rural and more disadvantaged areas are perceived to be systematically bypassed by telecommunication companies is commonly known as 'electronic redlining'.

Even if telephone companies are willing to lay higher bandwidth cables in these regions, rural areas may not have the capacity to utilise them. This is because many of the exchanges located in rural areas lack the infrastructure or expertise to handle and maintain digital traffic or higher bandwidth connections. For example, in the Northern Territory, the average Internet connection speed is between 28.8k and 33k, with a high rate of connection loss.²⁷ This is vastly different from metropolitan areas where anything less than a 56k modem is no longer being produced or sold commercially.

To make matters worse, as new broadband technologies are being developed a new digital divide is emerging based on bandwidth. While in the past telephone systems were regulated by universal access policies, broadband technologies are more expensive for both telecommunication companies and users.²⁸ This means that unlike telephone wires, broadband cable wiring is only available to wealthier and metropolitan areas. Therefore, as websites become more sophisticated, users with slower connection speeds will eventually be denied access to a crucial proportion of web content.²⁹

Social barriers

Training and education

In addition to being able to physically access computers and the Internet, the use of these technologies also requires technological skills. These skills are largely determined by an individual's initial exposure and training to computing technologies in primary and secondary education. Not surprisingly, because hardware, software, training, connection and

maintenance are expensive products, schools in poorer or rural areas may miss out.³⁰

Similarly, people learning to use the Internet may have the added barrier of learning how to operate a computer.³¹ This situation is worsened by the trend of training through software³² which may be completely inaccessible to people who are fundamentally unfamiliar with the concept of a computer.³³ This highlights the need for appropriate and relevant training to enable people to develop competencies in the use of computing technologies.

Use and relevance

Access to the Internet does not necessarily equate with use. Information is often difficult to locate depending on the adequacy of search engines. In addition, it is estimated that search engines only cover 20 percent of web-content.³⁴ Therefore, the complexity involved in finding online information may be frustrating for new users and may discourage continued use of the Internet.

Although it is a popular belief that everything can be found online, the Internet has been criticised for its lack of diversity.³⁵ Seventy-nine percent of web content is commercial.³⁶ Low-income groups may not be able to afford services and products that form the bulk of Internet content. Furthermore, commercial sites tend to have high bandwidth requirements, which low-income users on slow connection speeds may find frustrating.³⁷ Secondly, the lack of cultural diversity in online content may discourage people from culturally and linguistically diverse backgrounds from using the Internet.³⁸ For example, in the United States, white students were more likely than African-American students to use a computer at a public access site.³⁹ The irrelevance of web content for many groups may explain the low-level of online participation of people from culturally and linguistically diverse backgrounds.

The relevance of the web to young people's lives will arguably be crucial in motivating them to access computing technologies. Previous research concludes that 'access to Internet facilities and training is important. But young people will only stay connected if content is relevant, in terms of information, navigation, interactivity and style.'⁴⁰

Implications of the digital divide

The barriers listed above cannot be considered in isolation from each other or from the social and economic conditions from which they emerge. The barriers to Internet access are an extension of existing structural inequalities, such as unemployment and poverty.⁴¹ It could be argued that although information technology has not created a divide between the rich and poor, it has deepened it.⁴²

The ability to access and use information technologies is advantageous in relation to broadening educational and employment opportunities. There is concern that 'young people who do not have access to the Internet and communication technologies will be left further behind, with fewer educational and employment opportunities. This will ultimately affect their social, mental and physical health.'⁴³

Computing technologies also promote connection to the community. For example, although surfing the net may not be a priority for homeless young people, on-line technologies could be an important resource for these young people as a permanent email address may be an important point of contact.⁴⁴ In San Francisco, homeless people actively use email and on-line resources in public libraries to store personal records, communicate with family and friends and to access local social services information.⁴⁵ In this sense, the Internet may be a valuable facilitator to the connection of homeless people to the community.

A major implication of the digital divide is the social exclusion of disadvantaged groups. The Internet is becoming not only the desired but also the accepted way to retrieve, and publish information and services.⁴⁶

Lack of access may contribute to the exclusion of disadvantaged groups from this information, particularly if Internet delivery becomes a substitute for traditional channels.⁴⁷ This occurs as more information and services, such as banking, social services, and educational information, are published online. The Internet is gradually becoming a key means of social interaction between societal institutions and individuals. This implies that disadvantaged groups without access to the Internet may be cut off from a large portion of vital information and services.

Findings and interpretations

The aim of the research was to investigate disadvantaged young people's attitudes towards information technology and to examine the impact of PAS in reducing the digital divide. The following sections outline the findings related to these key questions. These findings primarily relate to interviews with young people.

Barriers to Internet access and usage

Cost

The main barrier to Internet access for young people is the high cost of computers and the Internet. Because of this, most young people could not afford to buy a computer themselves. For example, when asked what difficulties they experienced in accessing the Internet, one young person replied:

I do have a computer at home, but it's still too expensive for me to get an Internet connection. The biggest problem will be that some people, especially if you're unemployed, won't be able to afford computers.

Infrastructure

The main barrier faced by the three Internet access sites was inferior telephone wire infrastructure. Because of this, the PAS managers complained that the Internet connection was slow, unreliable or non-existent. For example, the manager of one site said:

the computers are running on a modem, but the connection is unreliable and slow. It's because the phone lines in this area are very old. The main improvement would be fixing the phone lines and wiring. Hopefully, soon we can link all the flats with LAN.

Another offered:

as of yet, we aren't connected to the Internet, so we download all the relevant web content for young people. It's because the Internet connection in these rural areas tends to be very slow and unreliable.

This is similar to the electronic redlining highlighted in the literature review. It is particularly interesting that both urban and rural areas identified inferior Internet connection as a major barrier. Evidently, electronic redlining is not just a problem for rural areas, but also for metropolitan areas, particularly those characterised by low-income households.

Cultural issues

Issues experienced by young people from culturally and linguistically diverse backgrounds posed another barrier. According to the manager of the Atherton Gardens Training Coordination Project, Vietnamese and Chinese young people were underrepresented at the site because of cultural reasons:

I think it was more of a cultural issue, because Chinese and Vietnamese parents are more protective of their children. And the centre runs till 8 pm 3 days a week. And there's a resistance from the parents to letting their kids out till that late. We tried door knocking to hopefully let the parents know what we were doing. But the parents concern is understandable, because there is a safety issue in this area.

This barrier is not addressed in the literature. Nevertheless, is an important issue to consider when establishing PAS. Establishing a service without the understanding or support of families may provide a hindrance to young people's access to those services.

Effective public Internet sites

Co-located services

Disadvantaged young people usually have more pressing needs than accessing a computer. YouthNet's manager said:

most of them have no permanent housing. . . the disadvantaged young people who come here have no access

to legal services, health services and housing. Some just drop in by chance while looking at other services. They have other more pressing problems to deal with before computers.

Thus, establishing a computer centre per se may not attract disadvantaged young people. In relation to YouthNet, the provision of a variety of services under the one roof was crucial in promoting disadvantaged young people's continued use of the computer service. Most young people started attending YouthNet after using the other co-located services. For example, when asked how they found out about YouthNet, one young person said: *'I found out about this place through Lifeline, I called them and they referred me here to get housing. And after that I came in here just mainly to use the computers.'* Similarly, another young person replied that *'I found out about this place through Centrelink.'*

In addition to using the computers, most young people continued to use the other services provided by Frontyard. For example, one young person said *'now I mainly use the computers here, and sometimes Centrelink.'* Similarly, another replied that *'I'm just using the computers here while I wait for my turn with the medical service.'*

From these findings, it can be concluded that provision of PAS in conjunction with other services encourages more young people to make use of computing technologies. By first satisfying more crucial needs through other services, YouthNet is able to encourage disadvantaged young people to use the Internet more frequently and more consistently. In this way, the provision of Internet access with other social services is complementary and may encourage continued use of all services.

Managers as facilitators of social interaction

Most young people said that they liked the social and friendly atmosphere at YouthNet: *'the library's too stuffy, but this place is cool, (the manager) is cool the atmosphere here is more friendly and laid-back.'* Ironically when asked if they made friends at the site, this same young person replied that *'I don't really talk to other people here. It's not a social thing for me, I just do my own thing.'* Similarly, another young person mentioned that:

the atmosphere here's good and relaxed. It's nice to have other young people around working and using the computers. Not that I'd go for coffee with any of them, it's just the atmosphere of other people being around I guess... you see the regulars and you just start chatting with them, see how they've been going.

It seems contradictory that young people liked the social atmosphere yet did not actively interact with other people at the site. However, it was clear that most of the young people did actively interact with the manager. The relationship they developed with the Manager was key to their continued use of the service.

From these findings, it can be concluded that the manager was a facilitator of social interaction at the PAS. In this sense, the social and friendly atmosphere that young people liked was a combination of the passive interaction between young people, and the active interaction between the young people and the manager.

Flexible training and mutual learning

There is recognition that some young people do not know how to use computing technologies and that self-motivation and interest is a key factor in promoting use. When asked if she knew anyone who did not use computers, one young woman replied:

yeah, my boyfriend. I think he would like to learn but he doesn't know how, like I'd be surfing on our favourite bands and he'd just be reading off me. I guess either he is embarrassed about it or he just can't be bothered. The most important part about learning is actually wanting to learn - like I stuffed up a lot when I first started - you just gotta be persistent.

Disadvantaged young people liked the flexible training provided at YouthNet, which was a platform for mutual learning and a source of self-confidence. When asked what they thought of the training provided at YouthNet, most young people replied that they did not need training and only asked questions when they ran into problems. For example, a young person offered that *'I didn't really need training. But I ask (the manager) stuff when I get stuck. And he's always there to help.'* Most young people mentioned that the manager helped them with using the Internet: *'(the manager) taught me to build a website.'*

When asked how they learnt to use the computer, most young people said they learnt through exploring their interests at their own pace. For example, a young person said that, *'I learnt it myself a year ago, just fiddling with the computer, scanning and playing with my pictures.'* Drawing together the two elements of flexibility and exploration in the training at YouthNet, a

young person had this to offer:

it's great coz the training is really informal. They just basically let you do your own thing and if you have problems, just ask. It's like a two-way thing, coz the graphic stuff that I'm better at, I sometimes teach (the manager). So we all help each other.

From these findings, it can be interpreted that flexibility (asking questions when needed) and exploration (self-learning) are key elements that encourage independent and mutual learning. The manager reinforced this finding:

the important thing is to show that all of us are learning together... creating a teaching and learning environment. It's better to encourage them to try themselves rather than tell them how it's done, that way they build up self-esteem and confidence.

Managers from the two other Internet access sites said similar things about what young people liked in training: *'they prefer to just do their own thing and then ask any questions that they may have. And from there I encourage them to do more and just steer them in the right direction.'*

Since the young people interviewed often undertake the learning process by themselves, their competency in computers was a source of self-confidence. This self-confidence is strengthened by the fact that the young people developed a level of competency where they were able to give back to YouthNet. For example, one young person explained that *'I even helped (the manager) build a pregnancy web page for YouthNet. I wanted to give back to FrontYard, do something for them.'*

Motivations

Necessity

The young people interviewed felt that all young people needed to learn how to use computers and the Internet. The young people identified four key ways in which the Internet opened up positive opportunities for them:

- As an information resource.
- As a communication tool.
- As a source of vital skills.
- As a source of self-confidence.

The following quotes highlight these beliefs:

All the information that I need is all there (on the Internet)... its a really good resource and if you don't take it then you're gonna lose out.

They just gotta learn to get with the program! It's really not that hard (learning to use the Internet). It's reality, coz first of all it's the preferred and cheaper way of communicating.

Even if you aren't going into a computer related career, you still need computer skills in every kind of job.

Any small skill or trade is a good thing, its something positive. Yeah, you know, for self-esteem, they can go off and show off to their friends.

Computing skills were seen as valuable in terms of education and well-being and as particularly valuable for employment opportunities:

young people are just gonna have to learn (to use computers). Like even in big factories, like a Bridgestone tire factory that I used to work at they were using computers to do even simple jobs. Or even in warehouses, you need computer skills for simple data entry work. I think young people who don't know how or don't wanna try to use computers are going to be in trouble, because even if you aren't going into a computer related career, you still need computer skills in every kind of job.

Another young person said:

computer skills are not so much of an advantage but a prerequisite. It's especially so for young people coz any kind of desk job, if you wanna get far in life, requires computer skills or they won't even let you through the door.

In addition, computer skills were a means of direct employment in the information technology sector for some young people. For example, when asked if the Internet helped gain employment, a young person replied *'yeah, definitely in jobs. I'm now working for (a government department) redesigning their website.'*

PAS managers also reinforced the importance of technology in relation to employment:

only a few use the computers to do resumes. But Internet skills do help the young people with finding jobs. It's also the social atmosphere here that helps them talk to others more confidently and will help with future interviews. Some young people come in to find jobs on Internet as well, on JobSeek.

Similarly, the manager of another site said:

we have had people come in to do resumes. And since we do have mobile phones, we can directly set up appointments with employers. We can also link the young people up with Centerlink appointments.

Young people also felt that the ability to use the Internet opened up new opportunities in education. For example, a young person felt that information on the Internet helped in school:

It definitely helps in school. . . my brother, who's 13, uses the Internet to find stuff for his assignments. And it's useful to look up on other schools, training courses or jobs, it's all there.

In addition, for some young people, computer skills provided a pathway towards future study in information technology. One young person said *'I got approached by this guy the other day when I was just fiddling around with the computers outside and now I'm gonna take the TAFE course.'*

Young people also felt that the ability to use computing technologies promoted well being and self-confidence. All the young people agreed that competency was a valid source of self-confidence and well being: *'yeah, its good to get over the first step. And I think its especially important for young people to feel good about themselves, to be good at something.'* Another young person said: *'yeah, learning to do something good, or even learning at all is always something positive. And learning is a big part of life I guess.'*

Leisure vs usefulness

Some young people identified leisure and usefulness as two separate categories. However, the examples they gave for each category overlapped. For example, when asked what they found fun about using the Internet, a young person described chatting online as fun:

it's fun when you get to meet people with the same interests in chatrooms, and when you email each other all the time. There was a friend that I met in a chatroom and we call each other honey and darling and stuff, but that's just for fun. It's not a serious thing.

However, when asked what was useful about using the Internet, this same person stated that: *'email is useful, since I'm thinking of contacting my cousin in Chile, it would be a lot cheaper and faster than if I called or mailed them.'*

The use of computer graphics also highlighted the perceived distinction between leisure and usefulness:

I find online graphics interesting and convenient. For me it's a hobby and a future career. I'm now building up my portfolio, for stuff like designing business cards and the Internet really helps in getting ideas, coz there's so much free graphics online. It just really makes things more convenient.

This leads to a conclusion that the activities young people associated with leisure and usefulness complement rather than contradict each other. This interdependent relationship between leisure and usefulness, implies that young people have a strong personal motivation to use computers and the Internet.

Personal motivation

The young people interviewed appeared to possess a strong personal motivation to use computers and the Internet. Motivation was driven by three interrelating factors.

The first factor is personal interest. When asked about their motivation for learning to use computers, most young people identified interest as the key motivator. For example, one young person said that:

my computer use is good. I learnt from friends who were really into it, and I naturally picked it up. And I was really interested in making electronic music with the computer. I'm pretty good with hardware. I built my mum's computers, a Pentium 4, but I'm not too good with software.

Similarly, another young person expressed that:

(my computer use is) pretty good. I learnt on my own a year ago from a free computer service in Adelaide. Yeah, I picked it up fairly easily. I was interested in chatting, scanning photos and setting up my own web page.

The second factor contributing to young people's motivation to learn to use the Internet is the willingness to learn. This can also be seen in the above examples where both young people learnt how to use the Internet on their own. If a person is not willing, they will not seek to learn to use the technologies:

I try to tell people about this place, mostly for the other services like housing. But you know young people can get quite defensive sometimes, like they don't want help.

The third factor is the acknowledgement of one's own high competency in the use of computers. This can also be seen in the above examples, where both young people admitted that they were good at computers. This is a significant marker of self-confidence.

Notably, all the young people interviewed identified themselves as being good at computers and as being frequent patrons of the PAS. Therefore, by combining these three findings, it can be interpreted that personal interest, willingness and self-confidence in computer use all contribute to a high level of competence and this leads to the continued use of computers by young people.

Chatting and gaming

Using chatrooms and playing games promotes social connectivity. However, while chatting encouraged online social connectivity, gaming encouraged offline social connectivity based on skill and a positive sense of competition.

Although young people who participated in chatrooms enjoyed the fun and fantasy elements of chatting, they also expressed a sense of caution towards it. For example, a young person commented that:

I've been going to the same chatroom for years, but I don't take it as seriously as before. People put on a lot of personas, and they lie about themselves. Often they abuse each other online. But we had a meet, for all the Melbourne chatters, and some of the people there are not at all like they portray themselves to be. At the core, they're just people, and all the personas and abuses, its all in good fun, nobody takes it seriously anyway.

From this finding, it can be interpreted that chatrooms do promote social connectivity by providing young people with an outlet to communicate with and meet other people. However, chatting is a solitary activity which does not promote connectivity among young people at the PAS itself. In addition, online connectivity may be approached with caution as deception can occur.

In contrast to this, young people who played online games enjoyed the pleasure of achievement from winning online games. For example, a young person commented that:

I'm really into online chess right now, you can play against other people online, like on the Yahoo site. Its great coz some players are regulars and we play against each other all the time. Sometimes it gets really serious, and they're so intent on trashing you. Yeah, I'm not a bad player. I'm somewhere there, in the top ten high scores.

From this finding, it can be interpreted that online games promote social connectivity by providing a safe platform on which young people can compete against and interact with other people. Unlike chatrooms, which are discounted by chatters because of its reliance upon fantasy, online games are held in high regard because they take skill. In addition, because online games are ultimately virtual, failure in the game is not as devastating as it would be in real life. In this sense, online games provide a safe platform for positive competition.

Furthermore, online games may also promote offline connectivity between disadvantaged young people. This is because these games can be played between young people at the same public Internet access site. This point was explained by one of the managers:

the young people here do play a lot of multiplayer games, not over the Internet but on our own LAN connection. Games like Age of Empires and Unreal Tournament. They compete against each other and play in teams, which is great. I mean you could argue both ways: on one hand, it may be violent and encourage fantasy. But it also is a great starting point to get into computers. In my opinion, it generally produces a continued interest and usage in computers and the Internet. Also, the social interaction you get between the players when they compete and when they cooperate is great as well.

Games also provide a starting point to learn about computers. In sustaining interest, games may motivate young people to continually use and learn about computers and the Internet:

I think as far as learning to use the computer, computer games are great, coz not only does it make you wanna do more things with the computer, it also develops your hand eye coordination.

Summary and conclusion

Although the young people interviewed faced barriers to Internet access and usage, these barriers were overcome through the establishment of PAS. The PAS also facilitated the development of other valuable skills and opportunities for disadvantaged young people including social interaction and connectivity, self-confidence and self-esteem, motivation and interest towards information technology, and career and education opportunities.

From young people's attitudes towards the PAS, it is clear that incorporating other social services into the PAS encourages their continued patronage. In addition, the managers of PAS may function as a valuable facilitator of social interaction between young people. Furthermore, encouraging an environment of mutual learning at the PAS may help to foster greater self-confidence and well-being.

Evidently, personal motivation is crucial to young people's continued use of information technology. Therefore, it is important to recognise personal interests when considering strategies to overcome barriers to Internet access. In light of this, online activities such as chatting and gaming should be taken more seriously, as these activities may stimulate young people's interests.

It may be useful to consider these factors when establishing new PAS. Since disadvantaged young people face issues such as poverty, homelessness and poor health, that take priority over Internet access, it may be useful to address these needs in conjunction with providing Internet access. Furthermore, computing is not simply an end in itself. Communal use can produce outcomes such as positive social interaction.

Significantly, in trying to overcome barriers faced by disadvantaged young people, PAS sites were themselves confronted by infrastructure barriers such as electronic redlining. This is a critical issue that needs to be addressed at the level of governmental and telecommunication policy if all young people are to benefit from on-line opportunities.

To conclude, this research has attempted to uncover broad themes and patterns in disadvantaged young people's use of and attitudes towards public internet access sites. Due to limitations in the methodology, this research is only the first step towards achieving concrete findings. However, it is obvious that as the digital divide widens, it is critical to address the barriers that groups of disadvantaged people face. The implementation of PAS is one answer to this growing divide and further research will help to determine how these sites can best cater to the needs of young people.

Appendix One:

Interview schedule

1. Why do you come here? How did you find out about this service?
2. What do you think of the computer & internet connection here? (Reliability, speed, availability, improvements?)
3. What do you think of the training provided in this facility?
4. What about the atmosphere?
5. How often do you come here?
6. Do you use the internet for Information, services, communication?
7. Do you find the internet fun, boring, useful, convenient?
8. If you didn't have access to the internet through this facility, what would you miss out on?
9. Do you think the information/skills learnt from the internet helps people in their jobs/education?
10. Do you think the world will become more computerised in the future? What effect will this have on young people who don't use computers?
11. Do you know anyone who is reluctant to use computers?
12. What difficulties do/did you have in:
 - a. Accessing internet facilities?
 - b. Using the internet?
 - c. Learning to use the internet?
 - d. Accessing services and information available only online?
13. Do you use chatrooms/ play online games? What do you think of them?

Appendix 2: Public access sites – case studies

Managers from these three public access sites were interviewed as part of this research.

YouthNet

YouthNet is a free Internet access site which targets homeless and disadvantaged young people. YouthNet is part of Frontyard, a co-location of youth services located in central-Melbourne. Frontyard provides a range of services to disadvantaged young people including Melbourne Youth Support Service, which provides statewide housing information, referral and support, and the Young People's Health Service which provides free physical and mental health care to young people.

YouthNet provides six networked computers with Internet access. In addition, a scanner and printer are available. The service receives funding for its computers from various organisations.

Software programs such as Microsoft Office, Adobe Photoshop and other multimedia programs are available for use. The computers offer simple games such as solitaire and chess which young people can also play online against other players.

Informal training is also available for young people who want to learn how to design websites. In addition, YouthNet has a website (<http://www.mcm.org.au/youthnet>) which hosts web pages created by young people who use the service.

Atherton Gardens Training Coordination Project

The Atherton Gardens Training Coordination Project is a training program set up to improve access and computer literacy among young people living in the Atherton Gardens high-rise estate in Fitzroy, Melbourne. The community at Atherton Gardens is characterised by cultural diversity and low-income households. The project, part of the BYTE Information Technology Program, is run by the Foundation for Young Australians and jointly funded by Lucent Technologies and The International Youth Foundation.

Atherton Gardens Training Coordination Project provides eight networked computers for young people to use the Internet for surfing and emailing. In addition, a scanner and printer are available.

Software programs such as Microsoft Office and Macromedia web building and animation tools are available. The site also provides computer games such as *Age of Empires* and *Unreal Tournament*, which young people can play cooperatively or competitively with each other over the local network.

Semiformal training is also provided to young people who want to learn about web page and graphic design.

The Big Red Bus

The Big Red Bus is a mobile youth service that provides counselling and information to young people living in rural Victoria. The Bus does a circuit of state schools in Moira Shire and students can use the services during specified times arranged by the schools. The Bus also attends FReeZa events. This project is part of Cutting Edge Youth Services.

The focus of this program is to provide information and counselling to young people in rural Victoria through web pages, brochures and the youth workers who staff the bus.

The Big Red Bus provides eight laptops. Since the laptops are not connected to the internet, web pages which are of interest to young people are downloaded onto the laptops and young people can then surf through these web pages. Information on TAFE courses and job guides are also available.

Software programs such as Microsoft Office and other multimedia programs are available as is a printer.

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- ²¹ For example the first contact gained was the manager of a public Internet access site. Consequently, the manager provided more possible contacts/respondents among those who were at the site at that time.
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