'Open Access for All?'
A study of the Employment Service's touch-screen kiosks from the perspective of disabled job seekers

Tara Qavi☆ *& David Wastell*✝

☆User-Centred Design Specialist, tw2.com
The Exchange, 19 Newhall Street, Birmingham B3 3PJ, United Kingdom
Tel: +44 (0) 121 693 6868   Fax: +44 (0) 121 683 6570
E-mail: tara@tw2.com   URL: http://www.tw2.com

✝Professor of the Information Society, Information Systems Institute, Salford University
Salford, Greater Manchester, M5 4WT, United Kingdom
Tel: +44 (0) 161 295 5102   Fax: +44 (0) 161 745 8169;
E-mail: d.wastell@salford.ac.uk   URL: http://www. salford.ac.uk

ABSTRACT

The UK Employment Service launched an initiative in 1996 to introduce touch-screen kiosks in job centres as an alternative to the traditional vacancy display boards. The system itself is called 'Open Access', as it enables job seekers to gather sufficient information regarding vacancies to allow them to contact employers directly, independent of any assistance from job centre staff.

Since the duty to make 'reasonable adjustments' under the Disability Discrimination Act 1995 came into effect in October 1999, service providers such as the Employment Service have been required to enable full access to its services for disabled people. This study focuses upon the usability of the Open Access system with emphasis on the perspective of disabled users. Using a mixed methodology which combined interviews, questionnaires and cognitive walkthroughs, data was collected from a sample of disabled and non-disabled job seekers. From this data, both generic and disability-specific usability issues were identified. These findings are discussed in detail and implications for kiosk design are addressed, in particular to take greater account of the needs of disabled users as well as improving the general level of service provision.

1.0 INTRODUCTION

Since 1996, the UK Employment Service [ES] have been piloting touch-screen kiosks in job centres as a means of providing jobseekers with access to vacancies held on the ES's Labour Market System database. Given its commitment to helping people with disabilities find work, the ES needs to ensure that their methods of service provision are as accessible to disabled jobseekers as non-disabled jobseekers. The duty under the Disability Discrimination Act 1995 (HMSO, 1995) requires service providers to make 'reasonable adjustments' to enable the same level of access to services by disabled as non-disabled people. This came into effect in October 1999 and posed a critical test of the touch-screen kiosks in terms of providing an accessible and usable means for disabled jobseekers to access job vacancies. This study presents the results of a usability evaluation of the kiosks from the specific perspective of disabled jobseekers, and generally looks at how the ES may harness the potential of new technologies to improve service provision to disabled users.

1.1 The 'Open Access' touch-screen kiosks pilot

The ES launched the touch-screen kiosk initiative in an attempt to improve the job-broking services provided to job seekers by exploring more efficient methods of presenting vacancy information without compromising their standard of service (Uebelbacher et al., 1996). The facility provided by the 'Open Access' touch-screen kiosks represents the most significant impact that the use of information and communication technologies [ICTs]has had upon current practice within the ES so far (ES, 1997).

To date, the kiosks have been piloted in job centres within three districts and in two stages. The first stage involved one site, and only a preliminary evaluation of usability. Following this, kiosks were implemented in two more pilot districts, Manchester and Newcastle, where ten job centres were selected overall to participate in the trial. The kiosks were now defined as 'Open Access' as they enabled job seekers to gather sufficient information regarding vacancies to allow them to contact employers directly, independent of ES staff. In order to facilitate this greater autonomy, telephones were attached to terminals and a printout facility was also provided. During the initial period, floorwalkers were also present in many pilot offices to deal with problems and difficulties encountered by users.

1.2 Public Employment Agencies and the use of ICTs

In many senses, the ES in the UK is lagging behind its global counterparts in its use of ICTs as a medium through which services may be provided. The ES has been strongly influenced by the example of its Australian counterpart which, in 1996, installed kiosks in 320 job centres, enabling job seekers to conduct interactive searches for jobs in all the databases maintained by the Commonwealth Employment Service. It has been argued (CITU, 1996) that the kioks empowered users by allowing them control over their quest to find work, and this has promoted a more efficient and mobile labour market. The investment in ICTs has reaped dividends for the Australian social welfare system as a whole, improving the efficiency of services as well as enabling a more proactive approach to the delivery of benefits (CITU, 1996).

Another example is provided by the TASS project run by Spanish Social Security which assists in the administration of benefit payments, as well as allowing the public direct access to information and the ability to access some new services (CITU, 1996). Focal to the system is the use of a smart card which prevents impersonation. Tulare County in California has also successfully piloted touch-screen kiosks which process applications from welfare benefit claimants (CITU, 1996). The system was developed so that it would be usable by those with low levels of English literacy, and is able to verify claims for consistency, plausibility and to make preliminary assessments of whether the claimant was eligible.

These three examples, of which many more exist, already indicate the high level of advancement in the use of ICTs as a means for service delivery by public employment agencies elsewhere in the world. Both the Spanish and Californian example make use of functionalities such as the processing of benefit claims. Such potential has not yet been addressed by the ES kiosks which are therefore unable to provide the sort of 'one-stop shop' ideal for job placement and benefit services, although the success of the projects abroad have proven that the use of kiosks in a more integrated sense is viable.

1.3 The ES and the Disability Discrimination Act [DDA] 1995

Since 1999, the ES has been required to comply with the duty under the DDA (HMSO, 1995) for service providers to make reasonable adjustments which enable ready access to services for disabled users. This duty is seen as a cornerstone of the Act and sees a shift from merely avoiding the unfair treatment of disabled people to taking proactive steps which improve accessibility to the services on offer. Failure to comply with this duty without justification can be seen as unlawful discrimination against disabled people. The specific implications of the duty are described in Murray (1999). Both the duty to change practices and policies, to provide auxiliary aids and services, and the need to consider providing services by alternative means are addressed in detail. Whilst it was felt that the majority of ES's *formal* policies and procedures accommodated disabled needs, concerns are raised about whether informal, locally-devised policies and some widespread practices would lead to non-compliance in practice.

1.4 Usability and Context of Use

Regarding the assessment of usability, the framework of Channer and Jennings (1994) strongly influenced the present work. Central to their approach is the notion of *context of use*. Usability is defined as the extent to which a system can be used to achieve specified goals (relating to effectiveness, efficiency, and satisfaction) *within a specific context*. Channer and Jennings (1994) state that the characteristics of the context of use are as vital as those of the system itself in determining usability. Fluctuations in the variables that comprise the context of use can therefore have a direct impact upon the usability of a system. This has significant implications for usability testing where, although the hardware and software of the system embody constant characteristics, the precarious nature of the context of use must be taken into account, as this will affect overall system functionality.

The most important contextual factor in usability engineering is the user, who in turn may be perceived in light of their knowledge, skill, experience, education, training, physical attributes, and motor and sensory capabilities (Channer & Jennings, 1994). These variables may interact with other characteristics of the context of use such as tasks, equipment and, crucially, the environment. Environmental determinants of usability include:

- The wider technical environment e.g. local area network
- The physical environment e.g. furniture
- The ambient environment e.g. temperature, lighting, humidity
- The social and cultural environment e.g. organisational structure and attitudes

(Channer & Jennings, 1994)

The actual measures of usability within this framework correspond to those defined by Shackel (1986), although the emphasis on context stresses the richness of information regarding usability that can be ascertained and then fed back into the design process.

The use of technology by the general public raises unique contextual issues with regards to usability. Conventional notions of knowledge (Eason, 1984) and learnability (Shackel, 1986) are challenged since no prior knowledge and very limited learning time may be assumed. Public kiosks need to be inherently transparent in their functionality, as the general public will include people with highly varying degrees of skill, experience and confidence in using IT, and will have little time to use and familiarise themselves with the system. Context of use

is thus the key to kiosk usability; if the kiosk is not visible, physically accessible, or use is subject to external factors local to the context of use, usability will be affected (Maguire, 1998). Context of use is as critical to the usability of public access kiosks as more traditional constituents of usability (e.g. consistency, flexibility and learnability) and it is vital that this is appreciated by the ES in terms of the design and installation of their public access systems.

1.5 Research Aims: assessing the usability of "Open Access"

Bergman and Johnson (1995) argue that 'accessibility' is a core element of usability. By definition, software which is inaccessible to a specific individual is not usable by that individual. This ultimately relates back to the discretion of the user in choosing whether or not to use the system at all as the key indicator of usability (Eason, 1984). Vanderheiden (1990) reasons that there are both tangible economic and practical benefits to be gained for the population of users as a whole when designing a system for accessibility.

One argument often levelled against the notion of accessible design is that the costs are economically unfeasible, although this may be countered with the proposition that designing inaccessible systems entail far greater loss (Bergman & Johnson, 1995). The benefits paid to non-disabled users are only part of this argument, the most significant economic incentive being the reduced expense to society through people with disabilities being unable to function at their own optimum (Vanderheiden, 1990). Vanderheiden (1990) argues that over 30% of the disabled population in the USA who want to work are unemployed, whilst Bergman and Johnson's (1995) research suggests that a significant proportion of the disabled population who are employed are still not able to work at full productivity due to poor software accessibility.

The usability of the 'Open Access' kiosks by disabled jobseekers is crucial if the ES is to meet the duties placed on it by the DDA (HMSO, 1996), as well as keeping abreast of other public employment agencies who have already successfully realised the potential offered by ICTs to enable greater efficiency and quality of service delivery, as well as reducing cost. The present research has two linked aims:

- to identify disability-specific usability issues which need to be addressed to ensure ES compliance to the DDA (HMSO, 1996); and,

- to identify generic usability issues which, together with disability-specific issues, can help the ES to optimise the potential offered by the ICTs to mediate its services.

In order to achieve both aims, the usability of the 'Open Access' kiosks will be assessed from the perspective of non-disabled as well as disabled jobseekers.

2. METHODOLOGY

This study aimed to measure the usability of the ES's touch-screen kiosks by users with disabilities. In order to discern to what extent usability was affected by disability, data was collected from both disabled and non-disabled job seekers, thus allowing a comparative analysis of usability, and controlling for errors generic to the system that are unrelated to disabilities.

In accord with the emphasis placed upon the *context of use* by Channer and Jennings (1994), data was collected in a real operational setting in a Manchester job centre over a period of three weeks. This three week period covered two signing cycles, whereby all job seekers claiming allowances are required to attend the job centre and report to an adviser every two weeks for their 'fortnightly review'. As the researcher was present in the job centre on a full-time basis for the three week data collection period, this potentially allowed access to the full client base, and in particular all disabled job seekers using job centre services.

2.1 Sample

Non-disabled jobseekers:

Thirteen non-disabled participants were recruited in total. These participants were approached directly by the researcher at the start of their kiosk session and asked whether they would be willing to participate in the study. A brief explanation with regards to the nature of the research was given, before requesting whether the participant would allow the researcher to remain present throughout the duration of the kiosk session and make observations about the participant's use of the system through both questions and direct observation.

Disabled jobseekers:

Seventeen disabled job seekers were recruited in total. The job centre had recently completed a process of identifying 'people with disabilities' [PWDs] using the job centre services. To respect client confidentiality, the following method of recruitment of participants was devised. A small leaflet publicising the main aim of the research and requesting participation was distributed to the frontline staff at the job-centre. They were advised to distribute the leaflets to any clients identified as PWD who reported during the data collection period, and to refer those clients who were willing to participate to the researcher.

At the commencement of the data collection session, the participant was taken to a seated area within the job centre and given an informal verbal briefing, which involved the researcher introducing herself and describing the nature of the research, as well as what the session was likely to involve. In particular, PWDs were approached about whether they would be willing to participate in a walkthrough (see below) and in instances where they agreed, efforts were made to use a secluded kiosk which was separated from the other terminals, so as to minimise any awkwardness or embarrassment on part of the participant.

2.2 Instruments and Measures

Questionnaire

Data was collected from both PWDs and non-disabled participants using a standardised questionnaire which was completed on behalf of the participant by the researcher; this allowed scope for detailed annotations to be made in addition to quantitative measures elicited by the questionnaire itself. In particular, the questionnaire was utilised as a means to establish a sense of rapport with the participant, by presenting both a professional front on part of the researcher and by initiating discussion through a series of basic questions about the participant's use of the job centre services. The questionnaire also provided statistical data in the form of usage figures of both the job centre and the kiosk in particular, as well as ratings of main kiosk features in terms of usability.

The initial questions were designed to gauge how often participants visited the job centre, how often they had used the kiosks in the past, and how many times they had applied for a vacancy which they had found through using the kiosks. The remaining six questions focused

specifically upon the utility of the kiosks in enabling participants to successfully search for vacancies. The questionnaire data is not presented in this report, but is available in the full study (Qavi, 1999).

Walkthrough

Walkthroughs formed a crucial part of data collection. Participants were observed as they searched for vacancies using the system; they were asked to use the kiosks exactly as they would during a routine session, and look for jobs under whichever categories and locations they usually used. The researcher would ask the participant to explain certain features of the system, if they were felt to present usability issues of interest, and the rationale behind the search in question, and the participant's responses would be noted on the questionnaire. Further responses to the issues raised by the questionnaire were elicited, allowing the participant to expand in their own words beyond the scope of the standardised responses on the questionnaire, and providing a fuller description of the context of use. Detailed notes were taken throughout the walkthrough, from both comments made by the participant as well as direct observation of the system in use, and these were written up immediately after the completion of the walkthrough session.

Interview Schedule

A semi-structured interview schedule was employed for specific use with PWDs in the awareness that not all PWDs would be able or willing to participate in a walkthrough. This comprised questions relating to the following issues:

- The nature of the participant's disability and how it affects their day to day activities
- The participant's level of interaction with the DEA
- Any additional support or service provided by the ES in light of the participant's disability
- How the participant's disability specifically affects their use of the Open Access kiosks
- How the participant's disability specifically affects their use of the traditional vacancy board system
- Other methods of job seeking employed by the participant and a comparison between the usability of these and those services provided by the ES
- Any other issues relating to the participant's disability and their ability to successfully find work

3. RESULTS

The results are presented in two sections, generic usability issues and disability-specific usability issues relating to the Open Access touch-screen kiosks. The generic usability issues were those raised by both non-disabled and disabled participants through the interview and walkthrough process, whilst the disability-specific usability issues are those which were highlighted by disabled job-seekers as impacting upon their use of the system.

3.1 Classification of participants

The ES uses the definition of disability outlined in the Act (HMSO, 1996) in order to identify PWDs. The Act defines 'disability' as an impairment with a long-term effect which affects the individual's capacity to carry out day-to-day activities. These in turn are divided into the broad categories of: mobility; manual dexterity; physical co-ordination; continence; the ability to lift, carry or otherwise move everyday objects; speech, hearing or eyesight; memory or ability to concentrate, learn or understand; and the perception of the risk of physical danger

The PWDs referred reflected a wide range of disabilities, including myalgic encephalomyelitis, dyslexia, arthritis, stroke, heart problems, partial sightedness, spinal injury and back problems. The disabilities could be broadly classified into two groups, of 'physical' disabilities and 'cognitive/sensory' disabilities.

3.2 Analysis of Walkthrough / Interview

Walkthroughs were conducted with all non-disabled participants. Eight disabled participants were unwilling to participate in a system walkthrough for various reasons. However, interviews were conducted with all disabled participants. It was anticipated that the data gathered in the interviews would supplement that gauged from the walkthroughs, and enable those respondents who were unable to participate in walkthroughs to nevertheless raise pertinent issues with regards to the usability of the kiosks. The issues raised by all respondents within the sample were categorised into generic usability issues and disability-specific usability issues. Table 1 summarises the main generic and disability-specific usability issues derived from the data.

CATEGORY OF ISSUE	GENERIC USABILITY ISSUES	DISABILITY-SPECIFIC USABILITY ISSUES
PRIVACY	▪ Lack of privacy using the kiosks in a public environment ▪ Lack of privacy when phoning employers from terminals ▪ Confidentiality of phone calls made from the kiosks	▪ PWDs may be less willing to use kiosks in public due to embarrassment of not being able to use kiosks as a result of disability
QUALITY OF INFORMATION OUTPUT	▪ No difference in information on kiosks and vacancy boards ▪ Location names are too vague ▪ Some job categories are vague ▪ Information in jobs list/job details may be inaccurate or misleading ▪ Jobs list does not show full job titles ▪ Terminology and jargon used in job details needs to be explained	▪ Written presentation of information limits access for those with dyslexia or literacy problems ▪ Job details do not contain sufficient information for PWDs to determine their suitability for vacancies ▪ Lack of an hard manuals to support system use
OPEN ACCESS & THE JOB SEEKING PROCESS	▪ Self-submission to vacancies is not a problem ▪ Job seekers no longer receive feedback from employers ▪ ES staff acting as intermediaries in the application process may be more professional ▪ New vacancies should be highlighted on the system ▪ It would be easier to tailor searches by entering personal details ▪ Many employers can not be contacted directly ▪ Vacancies are sometimes out of date	▪ Reduced ES staff interaction may be detrimental to those PWDs who do not want to be a 'burden' ▪ Some PWDs are dependent on ES staff to conduct searches for them because they can not use other methods ▪ PWDs may require assistance with application forms although this is not always available
OPERATIONAL ISSUES [generic] **ERGONOMIC ISSUES [disability-specific]**	▪ Touch-screen is either under/over sensitive ▪ Printers are often not working ▪ Interface is slow ▪ Delay in printing	▪ Ability to use 'standing' kiosks may vary according to day-to-day symptoms for PWDs with physical impairments ▪ Only one 'seated' kiosk in the job

	▪ System prone to crashing/ card jams	centre, which is often occupied by non-disabled users ▪ Vacancy boards may be more comfortable to use for those who cannot maintain a stationary posture ▪ Lack of touch-screen sensitivity may aggravate arthritis in hands ▪ Glare on screen from overhead lighting results in compromising posture ▪ Chair provided at 'seated' kiosk is not ergonomically designed for those with physical impairments ▪ Interface of kiosks in more readable than vacancy cards
FUNCTIONALITY	▪ Maximum of three search locations is limiting ▪ Searches should be conducted over a wider area ▪ Job search categories may not always be appropriate ▪ System should include category for part-time/temporary work	▪ Swipe card should allow kiosks to be adapted to meet special needs ▪ Adaptive software such as voice input/output should be incorporated into system
INTERFACE	▪ 'Touch Here to Select' bar at bottom of search screens not visible ▪ Colour-coding used by the system may not be understood ▪ Non-computer-literate users have difficulty scanning interface ▪ 'Viewed' sign in jobs list not noticeable enough ▪ 'Page Up/Page Down' key in job details not noticed ▪ Function of menu keys not necessarily apparent ▪ Deactivated menu keys should be removed ▪ How to access job details is not made clear	▪ Increased use of symbols would improve usability for those with cognitive impairments ▪ Layout of interface is clearer than vacancy cards ▪ Colours used in the interface are inappropriate for those with cognitive/sensory disabilities ▪ Font size and style should be consistent throughout interface to improve processing for those with cognitive/sensory disabilities ▪ Menu keys are not legible
STRUCTURE & NAVIGATION	▪ Menu keys not used correctly to navigate through system ▪ Labels of menu keys not made clear ▪ Some users ended session and began a new search instead of navigating back through to search options	▪ Users with learning disabilities may find it difficult to navigate through the system

Table 2: Summary Table of Generic and Disability-Specific Usability Issues

4. DISCUSSION

The main findings of the research will now be summarised and the implications for Open Access will be discussed.

4.1 Privacy

The lack of privacy available to users of the system due to the arrangement of the kiosks within the job centre setting was cited as an impediment to encouraging kiosk use. This was particularly the case with disabled participants, some of whom were unwilling to participate in a walkthrough primarily on the grounds that they would be exposed to embarrassment whilst using the system in a public domain. Similarly, users also felt uncomfortable about using the telephones attached to the terminals due to the lack of privacy, given the sensitive nature of some of the information which may have to be given to prospective employers. The perceived lack of privacy represents a significant issue for the ES if the Open Access system is to replace vacancy boards. In particular, the Open Access philosophy surely warrants an increased need for privacy so that job seekers feel that they are in control and are confident when they approach employers.

4.2 Quality of Information Output

Job seekers agreed that there was no difference between the information provided for specific vacancies by the Open Access system and by vacancy cards on the display boards. However, in light of the self-submission process introduced by Open Access, the information requirements of job seekers can be argued to be greater than the scope of what the system is currently able to provide. Participants felt that the search categories and locations were too vague to enable them to search for vacancies effectively, and that in turn, the information produced by the system in response to searches was at times inaccurate or misleading. The presentation and accessibility of information was also compromised by the excessive use of abbreviations and terminology which users did not necessarily understand. Disabled participants felt that the information contained in the job details was insufficient for them to ascertain their suitability for certain vacancies in light of the limits imposed by their disability. Participants with cognitive disabilities were particularly disadvantaged due to their problems with processing written information.

The level of information provided by Open Access needs to be redressed within the concept of 'self-submission', so that system equips job seekers with the tools that enable them to successfully look for work without additional input from ES staff. This is especially vital for disabled job seekers. In particular, jobseekers argued that the availability of supplementary resources such as hard copies of manuals, definitions of any terminology, jargon etc. would amplify their confidence in approaching employers. The refinement of the search options offered by the system would increase efficacy of system use, as well as assure job seekers that they were indeed accessing the sort of vacancies which they would be interested in.

4.3 Open Access and the Job Seeking Process

Although participants welcomed the concept of 'self-submission', the reduced level of ES staff involvement highlighted the limitations of Open Access relative to the support previously provided by staff. Participants complained of the lack of feedback from employers when self-submitting to vacancies, whereas staff had previously been in a position where they could monitor the progress of an application. Some participants also felt that staff acting as intermediaries between the job seeker and employer presented a more 'professional' front, to which employers were more likely to respond. Participants also pointed out that despite the

provision of telephone access, many vacancies brought up by the system did not allow the employer to be contacted directly, thus requiring the job seeker to revert to the traditional mode of application via an ES adviser. This caused frustration, particularly in light of greater amount of time spent looking for vacancies on Open Access in comparison to the vacancy boards.

The reduced level of ES staff involvement may be argued to have a particularly detrimental impact for disabled job-seekers, especially for those who are concerned about being a 'burden' to others as a result of their disability. It was argued that such job seekers may lack the initiative to actively seek help, and thus the reduction in direct staff support would further impede access to assistance by limiting the opportunity for staff to detect any difficulties that the job seeker may be experiencing. This highlights the need for the ES to establish formal procedures to ensure a consistent level of service to disabled job seekers, which empowers them in their job search with the same access to vacancies as that available to non-disabled job seekers. Such procedures also need to reflect the holistic nature of the job seeking process, so that disabled job seekers are able to actually move through the whole application process, and are not limited by their disability further along the line in their search to find employment. Whether this can be achieved via Open Access or whether the ES needs to put processes in place which compensate for the limitations of Open Access by providing human back-up will need to be investigated.

4.4 Operational and Ergonomic Issues

Generic operational problems included complaints regarding the lack of touch-screen sensitivity or over-responsiveness of the touch-screen. The printers were also unreliable, and the system was generally described as 'slow' in several instances. Again, if Open Access is to replace vacancy boards, then such operational issues need to be addressed in order to establish confidence in the system and for the ES to provide a reliable service. In particular, participants in the disabled group, who were generally less familiar with the system than those in the non-disabled group, were more likely to attribute operational problems with the kiosks to their own inability to use the system. This created a vicious circle, where disabled users did not use the system because the kiosks 'don't work' or 'things always go wrong', and where the persistent operational problems continued to reinforce such negative attitudes towards Open Access.

In turn, the disabled participant group raised several issues relating to the ergonomic design and location of the Open Access terminals. The need for more seated terminals was voiced, especially in light of the fact that the single seated terminal available in the job centre was often occupied by job seekers who did not have a disability which would warrant their priority to use a seated terminal over a standing one. It was also pointed out that the chair provided at the seated terminal was inappropriate for those users with physical impairments, to the extent that it was still more comfortable for such job seekers to use the standing kiosk. Glare from overhead lighting increased the difficulty experienced by job seekers with cognitive impairments in reading the interface, and caused discomfort to those with physical disabilities. Such impediments to system use would require minimum effort to eradicate.

4.5 Functionality

The functionality of Open Access may again be seen to be at odds with the job seeking process and the increased requirements of job seekers as a result of self-submission to vacancies. In a sense, Open Access has liberated job seekers by giving them independence and responsibility in their search for work, yet at the same time, the system continues to

restrict users by imposing constraints and conditions on where and how they look for work through its functionality. The maximum of three search locations in just one segment of a regional district no longer reflects a labour market which is increasingly mobile, and compromises the ES's own pledge to accommodate this trend as expressed in 'The Way Ahead' (ES, 1999). Similarly, the job categories offered by the system as search options were not felt to be an appropriate reflection of the sort of jobs that job seekers necessarily wanted. Kiosks have vast potential for customisation to the individual user, yet this has currently not been realised. Many participants saw the benefit in being able to tailor searches automatically to their own personal profile, be it through information contained in a smart card or through input directly into the system. In turn, the kiosks could be tailored in their functionality to meet the special needs of disabled users, for example switching to speech input/output through the telephone when a visually impaired or dyslexic job seeker first inserts their swipe card into the terminal.

4.6 Interface

The interface used by the Open Access system constricted the effectiveness of use by employing conventions which were unfamiliar to many job seekers. A recurrent problem was the layout of the interface itself, where users missed vital pieces of information simply due to the way that it was arranged in relation to other items. Less computer-literate participants experienced difficulty scanning the interface in such a way that they absorbed the information that was crucial for successful system use. The standardised use of menu keys assumed familiarity with their purpose, although this clearly may not be taken for granted with a public access kiosk. The lack of consistency of presentation of information on the interface caused significant problems for those with cognitive/sensory disabilities by multiplying the degree of cognitive processing involved. The design of an interface to be used by non-expert users, indeed computer-illiterate users, cannot assume that the usual conventions of interface design will be understood. Disabled job seekers in the sample experienced greater difficulty with interface. Many had no impairment which actually affected them more than non-disabled participants, yet due to their unfamiliarity with computer interfaces they were less likely to have made significant use of the system. This raises pertinent issues regarding the future of Open Access, and whether it will continue to maintain the present interface. Both non-disabled and well as disabled users suffering from lack of computer literacy will be disadvantaged in their search for work as things stand.

4.7 Structure and Navigation

The structure and navigation of Open Access was vital due to the search limits imposed by the system, which meant that many users wished to conduct several searches within the same session in order to access all the vacancies which they were interested in. However, users experienced difficulties navigating their way through the system using the menu keys, often because the purpose and function of these keys was not apparent. Instead, users would resort to ending the session and commencing a new one in order to carry out a new search. Navigation may pose a particular problem for those users with cognitive impairments. Although the structure of the Open Access system is relatively simple, it appears that the tools, i.e. the menu keys, provided to enable navigation are inappropriate. Here it is a simple case of making the label and functionality of the menu keys explicit. Again, users could benefit from supplementary resources such as hard manuals or instructions that would allow them to grasp the structure of the system and how they can navigate through it.

5. THE WAY AHEAD FOR OPEN ACCESS

The issue of designing for non-expert users warrants particular attention in light of any proposals to rollout Open Access on a national basis. It should be noted at this juncture that the socio-economic profile of the client base at the job centre where this research was conducted is likely to be relatively prosperous in comparison to other those of other job centres. The area itself is regarded as a highly 'desirable', and therefore expensive, part of south Manchester, and it populated by a significant proportion of young professionals, who in turn are more likely to be computer literate due to increased exposure to ICTs through education and employment. It could therefore be argued that the sample in this study were more computer literate than the population as a whole, and thus not representative of the ES client base at large. This caveat only serves to underline the importance of the findings of the work, and the need to address the various usability issues that have been identified.

Despite the impact of the both generic and disability-specific usability errors identified, the introduction of Open Access still represents a step forward for the ES. The system has brought significant advantages to all users by allowing them clearer access to information in comparison to the vacancy boards. The vacancy boards had also previously disadvantaged job seekers with physical and sensory disabilities due to their physical arrangement and the limitations that this imposed on access. Most importantly, Open Access offers immense potential to improve access to the services provided by the ES to disabled job seekers, whilst the vacancy boards were extremely limited in their scope for improvement.

Nonetheless, there is much potential that has not been realised which could truly empower disabled job seekers by allowing them to search and apply for vacancies as effectively as non-disabled job seekers. The example of providing speech input/output functionality through the telephone receiver already attached to the provides a good illustration of this. Similarly, the increased use of symbols in the interface and an option of colour scheme would greatly improve usability for those with cognitive and sensory impairments. The ability to adjust the angle of the screen, the provision of more kiosks equipped with ergonomically designed chairs, and the eradication of factors such as glare, noise etc. would greatly benefit users with physical disabilities. Indeed, such provisions would improve system usability for all users. The incorporation of such features is technically quite feasible and is essentially a fundamental requirement on the part of the ES in light of the provisions of the DDA (HMSO, 1999).

Previous evaluations of Open Access have failed to identify specific issues affecting the usability of the system. This is because they have focused rather narrowly on feasibility issues and have not evaluated the kiosks with real users in a real working context. Although the findings presented in this study may be argued to be unsurprising, they represent the true quality of the user experience, which is shown to be one dogged by poor consideration of the context of use, as well as impediments to usability and accessibility inherent in the design of the interface and the functionality offered by the system. It is this 'user experience' that will determine whether both non-disabled and disabled jobseekers choose to, or are able to use 'Open Access'. In order for the ES to meet the requirements placed upon it by the DDA (HMSO, 1999), as well as successfully integrate Open Access into its core business functions, a comprehensive usability evaluation such as the present one is crucial. More importantly, such evaluations need to constitute a key part of the whole pilot process, where the findings are fed back into system design. User testing, including testing with disabled users, is fundamental to such a process. In particular, this needs to be conducted within an

operational context, so the impact of environmental factors and the ability of the system to correspond to the organisational process of job seeking may be ascertained and accounted for in system design. Formative evaluation together with iterative design is simply good practice, and needs to constitute the basis of any ICT initiative embarked upon by the ES, particularly in light of the agenda detailed in 'The Way Ahead' (ES, 1999).

6. REFERENCES

Bergman, E. & Johnson, E. (1995) "Towards Accessible Human-Computer Interaction"
In 'Advances in Human-Computer Interaction', 5, ed. Nielsen, J., Ablex Publishing Co.

Channer, R. & Jennings, D. (1994) "Usability: how users can help us assess it"
UK Employment Service, Department for Education and Employment, Psychological Services Customer Report No. 456
http://www.workstation.org.uk/djassoc/usable.html

CITU (1996) "Green Paper on the Electronic Delivery of Government Services, Nov 1996"
Cabinet Office, Central IT Unit
http://www/citu.gov.uk/greenpaper

Code of Practice (1999), Disability Discrimination Act 1995
Department for Education and Employment, HMSO Publications

Disability Discrimination Act 1995 (1996)
Department for Education and Employment, HMSO Publications

Eason, K. D. (1984) "Towards the experimental study of usability"
Behaviour & Information Technology, 3 (2), 133-143

Employment Service (1999) "The way ahead – towards 2000"
UK Employment Service, Department for Education and Employment, public information document

Employment Service (1997) "Full self-service terminals: evaluation strategy"
UK Employment Service, Department for Education and Employment, Job Broking Process Review Pilots

Maguire, M. C. (1998) *"A review of user-interface design guidelines for public information kiosk systems"*
http://www.lboro.ac.uk/research/husat/eusc/g_design_kiosks.html

Murray, C. (1999) "Access Rights"
UK Employment Service, Department for Education and Employment, Disability Services Division, ESCOM circular 400 series

Qavi, T. (1999) *"'Open Access' for All? A study of the usability of the Employment Service's touch-screen kiosks from the perspective of disabled job seekers"*
University of Manchester, John Rylands Library

Uebelbacher, A., O'Malley, J., Yeomans, W., Rosseau, N. (1996) "Jobseekers' characteristics and behaviour: Implications for accessing vacancies using an IT system"
UK Employment Service, Department for Education & Employment, Occupational Psychology Division customer report no. 527/3

Vanderheiden, G. C. (1990) "Thirty Something (Million): Should They Be Exceptions?"
Human Factors, 32 (4), 383-396

Vanderheiden, G. C. & Law, C. (1998) "EZ Access Strategies for Cross-Disability Access to Kiosks, Telephones and VCRs",
CSUN '98, Los Angeles, C A,   http://www.dinf.org/csun_98/csun98_074.htm