EATT

Equal Access to Technology Training

FRENCH LITERATURE REVIEW

Encouraging older people of all abilities into IT training

Service interrégional d'appui aux adultes déficients visuels

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Introduction

It became clear in 1997 that France had fallen behind other European countries in the acquisition of computer equipment, provision of Internet access, and mastery of basic IT skills (IDC France, 2001). Since that time, however, the market has been stimulated by the arrival of personal computers costing less than 600 Euros. The penetration rate of the new technologies has increased to 30% at the end of 2000, which has given rise to markets for CD-ROM products and Internet services.(IDC France, 2001).

Although levels of Internet access in France have not met the expectations of the most optimistic forecasts, significant strides forward have been made. The number of Internet users has risen from 6 million in 1999 to 10 million in 2000, to stand at 11,910,000 people in the first quarter of 2001, or nearly 20% of the French population (Etude Kosmos, 2001).

There are no statistically proven links between age and computer literacy. However, the increased availability of computer equipment in the home may enable a large number of people aged 35 and over to gain experience with information technologies. Similarly, the workplace is an excellent place to acquire computer skills, although the acquisition of such skills depends to some extent on the educational level of the staff. Against a backdrop of massive investment by companies in computer equipment, the percentage of personnel using information technologies at work has gone up from 24% in 1987 to 51% in March 1998 (Cézard, 2000, p.25).

There seems to be a correlation between educational achievement level and access to computer technologies.

> "The use of computer technologies is not dependent solely on position within the company. All things being equal, cultural achievement, of which a degree is one indicator, increases the likelihood of use of computers at work. In 1998, while 19% of non-graduates used computer technologies at work, 82% of graduates of institutions of higher education did so" (Cézard, 2000, p.22).

As for visually impaired people, there is a lack of specific data about the older vision impaired populations use of IT. However, INSEE (2000) found that nearly half of the vision impaired population are unemployed, which may influence their opportunities of becoming computer literate.

By cross referencing different sources we can estimate the French blind population to be 300,000 people or 0.5% (visual acuity < 1/20) and the partially sighted population to be 2.8 million people or 4.7% (visual acuity between 1/20 and 4/10) (INSEE, 2000). Twenty two percent of the VIP are aged under 60 and 76% are over the age of 61 years.

Political initiatives for the development of the information society

To address the slow uptake of Information technology in France, the government of Lionel Jospin embarked on an ambitious policy program in 1997 to promote the information society for all. This policy initiative included elderly and/or

visually impaired people. National initiatives have been undertaken in the areas of equipment acquisition, training in industry, economy and social relations. Some special measures concern the visually impaired population.

These initiatives effectively bridged the information technology gap that separated France from the rest of Europe. The results are apparent in the public and private sectors, as well as in the widespread integration of IT training into overall vocational and professional training programs.

> "In view of the fact that France lags behind others in certain areas, the State must be especially diligent in encouraging the diffusion of IT throughout Society, and in strengthening this vital sector of the economy, while ensuring that all citizens may have access. An all-encompassing approach is needed involving the whole of our society: companies, educational institutions, public administration, and the public at large." in order to make IT accessible to everyone (Pierret, 1997, pp 1-4).

France then launched a program called Preparing France for the Information Society in order to help the country adapt its institutions to the new Information and Communication Society then coming into focus. The main thrusts of development included:

- Supporting the development of e-commerce.
- Supporting the diffusion of information technologies within Small and Medium-sized Companies.

- Encouraging Research and Development specifically for the information society.
- Fostering the development of digital television.
- Pursuing and exploiting experiments on the Information Superhighway.
- Granting a major role in the spread of Internet to the French Post Office.

The government's approach has relied on a strong commitment from the State administration, which accompanies and guides major players thanks to its Program of Government Action for the Information Society (or PAGSI).

To help it in designing and implementing PAGSI, the government has commissioned several expert studies (site du programme d'action gouvernementale pour la société de l'information, 2001):

- The Lassere Report, submitted by the state's Planning Commission (Commissariat au Plan) and its Chairman Bruno Lassere in 2000, found that the state sector had narrowed its information technology gap with the private sector, and that State entities were heavily committed to Internet.
- The Lorentz Report, by Francis Lorentz, will offer a complete picture of the many impacts of e-commerce.
- The Baquiat Report, by Jean-Claude Baquiat, will detail Intranet and Internet solutions for state entities.

- The Lefas Report, by Patrick Lefas, discusses economic news and information available via Internet.
- The Guillaume Report, by Henri Guillaume, has been assigned the task of suggesting ways to rationalise public financing of research and development.
- The Abramatic Report, by Jean-François Abramatic, will study the circumstances surrounding the development of the infrastructure of Internet in France, as well as responses to growth in the number of connections.
- The Braibant Report, by Guy Braibant, should allow policymakers to take appropriate decisions concerning the confidentiality of private data and the privacy of individuals.
- A report by Bernard Descargues (Descargues, 2000) examines the current situation with respect to accessibility of IT for the blind and the visually impaired.

At the beginning of 2000, The Ministry of Education for Research and Development issued a situation report.

Its main conclusions were:

- Schools, training centres, and universities should be the main vectors of development of ICT.
- IT must serve the interests of French cultural policy.
- IT must serve the interests of information flow and modernization in public services.

- IT is a fundamental tool for companies
- IT must meet the challenge posed by industrial and technical innovation.
- The regulatory framework must be adapted to IT in order to foster the development of effective regulation.

This study demonstrates a genuine awareness of the issues involved, as well as a marshalling of forces to meet the challenge of the Internet and of the future. It defines priorities in terms of IT use, it marshals all means of support for research and innovation and it sets up communication pathways between technical specialists and public institutions, which all too often ignore one another.

A new Program of Government Action for the Information Society (PAGSI 2, 2000) was introduced in 2000 to improve IT training in the higher education sector. This would involve ensuring that all vocational and professional training programs provide IT training. One of the recommendations of this report was to develop applications of IT for people with a disability in the educational system and to promote open and distance learning and self-teaching software. These policies seem to target younger people, those either in the education or in employment. Such a focus only caters for the needs of small proportion of the vision impaired population.

Here are the PAGSI 2 measures **(**Measures 5 to 8 are particularly noteworthy as they encourage the acquisition of computer equipment within the community and voluntary sector)

- For elementary schools, junior secondary schools and high schools: A certification program entitled "Internet and multimedia" is available to students of 15 years of age, and will become available to graduating elementary school students of 10 years of age in 2003.

- For higher education: The aim here is to beef up the training sector handling information technology. An institution of higher learning in Internet will be created near Marseille.

- For vocational and professional training: The government's objective is to ensure that all vocational and professional training programs include training in information technology, multimedia, and the Internet. These training-related measures involve

    - unemployed job-seekers

    - apprentice training centres run by Chambers of Trade (Chambres de Métiers)

    - research and development of new applications for information technologies in the fields of health, disability, biology, telecommunications, computer security, transportation, lodging, education and contents (open and distance learning, self-teaching software)

    - increasing the number of researchers at the publicly-funded National Institute for Information Technology and Automation Research (INRIA). At the National

Centre for Scientific Research (CNRS) a new department for information technologies and communication will be created in 2001.

- installation of Renater 3, which will allow for a 16-fold increase in bit flow over the current Renater 2 (Renater: Network for Education and Research)
- setting up a Technology Steering Committee in autumn 2000, which will pilot strategic decision-making in information technology innovation, research, and development
- public support of research work carried out by the Foundation for the Internet Generation (FING)
- public support at the European Community level for Project GIANT (GEANT) which aims to ensure the interface of research and instruction among Community countries

- Ensuring equal access and use of Internet: This involves the creation or set up of digital public spaces. (Between now and 2003, more than 7000 public places offering Internet access will be opened in local agencies, public libraries, and Youth Information Centres.) The Post Office will also offer various forms of free Internet access. This access should allow all categories of people to become familiar with the offer. Beginning in 2000, the Post Office will offer a free, permanent e-mail address.

Through the following measures, PAGSI 2 also encourages the acquisition of computer equipment within the community and voluntary sector by encouraging public sector donations of computer equipment and reduction of the cost of Internet connections, which may make computer acquisition more affordable and accessible to older vision impaired people:

- Encouraging household and association acquisition of computer equipment: The government will encourage public sector donation of computer equipment to associations.
- Increasing the speed and decreasing the cost of Internet connection
- Strengthening specialist knowledge within state entities located outside the Paris region: The government has decided to set up ICT centres in each of the 26 Regional prefectures as early as 2001.
- Reducing the North-South information technology gap in the European framework: From its awareness of the information technology gap between rich and developing countries, France has made a national priority of its policy of cooperation with developing countries (it is participating in the e-Europe action plan).

Concurrent with the implementation of PAGSI 2, Bernard Descargues issued a report on the accessibility of the new information and communication technologies for the blind and the visually impaired (Descargues, 2000).

The Mission Statement issued by Martine Aubry (Minister of Labour and Solidarity) and Dominique Gillot (Secretary of State for Health and Social Welfare) defined Mr. Descargues mission as follows :

> "The rapid development of information technologies, encouraged in particular by the Program of Government Action for the Information Society (or PAGSI), is causing profound changes in the personal and professional lives of all our fellow citizens…
>
> The widespread availability of information in digital form, which is a major characteristic of information technology, offers the visually impaired the hope, for the first time ever, of immediate and independent access to the same sources of information as the rest of the population, in so much, at least, as their particular situation is taken into account by the providers and producers of such information. The government, aware of the risk of exclusion faced by certain social groups, has raised access to the information society for all citizens to the level of a major policy goal.
>
> That is why, with the Prime Minister's agreement, we are asking you to lead a six-month official mission to investigate the conditions of access of blind and visually impaired people to information technology." (Descargues, 2000, p.4)

In his report, Bernard Descargues points out that the visually impaired will only be able to take full advantage of the digital revolution if they have access to adaptive technologies ensuring

a reliable interface with the information source, as well as effective professional guidance to assist them. The author criticizes adaptive technology providers for their sales policy and for their training programs, which he claims are not of a general nature, but specific to the product purchased.

> "Generally speaking, in view of the evident weaknesses of the 'hot line' system and technical services, the user had better be able to rely on family and friends to adapt these tools to the information technology environment, and it is absolutely necessary to acquire a fair amount of technical knowledge to face the inevitable problems posed by systems which remain much more complicated to use than consumer-oriented products. It is also difficult to find people who are satisfied with training in the use of these adaptive technologies and of the office software programs that can be used with them. The training is rather often seen as poorly adapted to the learners, poorly taught, too short, and generally of mediocre quality." (Descargues, 2000, p.17).

Promoting access to IT for adults in general

The Inter-ministerial Committee for the Information Society (CISI) has proposed that the government take appropriate measures to give the opportunity to all citizens, whether young or not-so-young, to develop their computer and Internet literacy. Government efforts on providing IT training have mainly concentrated on the national training centres such as AFPA, the French National Association for Professional Training for Adults, which operates under the remit of the Ministry for Labour and

Solidarity and GRETA, which provides mainstream adult education courses under the Department of Education. Training is provided for people of working age (between 20 to 60 years). Other adult learners who are over the age of 60 have to pay for IT training themselves. AFPA provides professional training to meet the needs of job seekers, employees and civil servants (500 specialities in 300 job descriptions and 30 sectors of activity).

The French government have agreed that the principle focus of AFPA training between 1999 and 2003 is to fight social exclusion (Contract for Progress signed between the State and AFPA). AFPA is responsible for providing training to people with a disability and Agefiph (Development Fund to provide facilities for the integration of people with a disability into the mainstream workforce) provides funding to AFPA if they offer training to a person with a disability.

In Bretagne, in the year 2000, AFPA provided training to 4,500 people of which 385 people had a disability. In Pas de Calais, 15,360 people received training from AFPA in 2001 of this number 651 people had a disability.

The IT sector is growing fast and creating many new types of job. For example, the AFPA of Roubaix offers training up to Technician level in Computerised Data management. This training offers knowledge and mastery of IT through 2 options: one involves the client/server side, and the other the designer/development side of that occupation (AFPA, 2001).

GRETA, an association of public educational institutions, offers further training courses at a local level by using the college's resources and equipment. The training provided by GRETA accounts to 6 per cent of all further professional training provided in France. GRETA offers training to all members of the public within the age group 20 to 60 years, including people who have a disability. SIADV, a community and voluntary organisation, has often offered support and guidance to GRETA, when a vision impaired person requests training, with sourcing local adaptive technology resources and by offering guidance on the appropriate adjustments that should be made to the course.

Technical and professional training leads to a certificate or diploma in most cases, training is usually Centred on the service industries, as opposed to manufacturing industry.

The GRETA's current project involves the creation of a new certificate program called the Internet and Information Technology Certificate B2i Greta. The project, now underway, has the following objectives:

- Literacy in information technology tools (word processing, spreadsheets)
- Internet navigation
- Mastery of e-mail and other electronic messaging services
- Presenting information with any media

It is important to point out that in order to access AFPA or GRETA courses, applicants must pass interviews and placement tests in which previous formal schooling plays a major role. This could present a barrier to vision impaired people who have a lower level of educational attainment.

In addition to the training courses open to the general public detailed above, there are also many private organisations offering such training, in return for a fee, in every large French town. Training opportunities are also offered locally, and sometimes on a voluntary basis, by associations and municipally-funded neighbourhood entities.

In fact, many computer clubs have been created by at the local level by individuals or associations, offering beginners' and advanced courses in IT. Even large retailers such as the FNAC (selling books, CDs, and audio and video equipment), or large companies in the IT field (such as Bull) offer training in IT.

Older people very often obtain personalised, local, and affordable IT training from these kinds of sources, rather from courses offered in cooperation with the French government, such as AFTA or GRETA, though quality can vary enormously from place to place.

Finally, mention must be made of training opportunities now made available to adults through the growth of distance learning or E-learning.

"According to estimates made by Andersen Consulting, the E-learning market should account for nearly 12% of French training expenditure in 2002." (Dehais, 2000, p.44).

Promoting access to IT for vision impaired adults

In the Descargues Report (2000, p.20) cited above, the author suggested setting up "training in adaptive technologies and in the software applications that can be used with them. This training should come from occupational therapy institutions or from recognized resource centres. It should not be aimed solely at the computer and office occupational sectors, but should represent a way to help the person genuinely compensate for visual impairment. It must be continuous, that is, refresher courses must be offered on a regular basis to integrate changes in information and communication technologies."

A number of community and voluntary organisations that provide a service to vision impaired people have set up initiatives which provide introductory courses in adaptive technology as part of the rehabilitative process. Provision of such courses does not appear to have been put in place to a great extent as a result of implementation of the Descargues report policies but rather as a result of a demand for them by their target group. There is no national framework, which coordinates local initiatives that have emerged. Initiatives that attempt to provide training opportunities appear to be offered on an ad-hoc basis leading to obvious gaps between different

geographic areas in terms provision of adaptive technology training.

The following section will outline some of the successful initiatives which have been established in France.

Lille: "Remora" (J Lebrun, personal communication, October 2001)

This northern French institution does not offer training for the visually impaired in new technologies directly, but it offers referrals to training providers.

Older people are referred to local resources, that is, the municipal Media Centre of Lille, which offers computer services accessible to the visually handicapped of any age, and which offers beginners' training courses, even though training is not its primary mission. There is also the computer club called "Valentin Haüy".

For people suffering from low vision, an organisation called URBILOG offers training in the use of standard business software in so far as it can be adapted to visual impairment (setting up Windows and MS Office, ZoomText, keyboard shortcuts, and so on). This training is aimed only at professionally active visually impaired people under 60 years of age.

The Assistance through Work Centre (Centre d'Aide par le Travail or CAT) offers a workshop whose aim is to encourage the use of ICT as an educational tool within the framework of an individual education or training project. Sessions are scheduled on average to meet 2 hours a week.

Angers: "Institut Montéclair" (P Belseur, personal communication, October 2001)

The Continuing Training Department at Institut Montéclair is open to blind or visually impaired people, to public or private sector employees, to job-seekers, to students, to individuals, and to professionals.

Services offered vary depending on the visual abilities of the person involved, and on his or her personal and professional needs. Solutions are tailored to the individual in order to guarantee him or her the greatest possible amount of autonomy. The Continuing Training Department offers the following training opportunities:

- IT
    - Screen-readers and screen magnifiers for the visually impaired
    - Screen-readers (audio or Braille) for the blind
    - Scanners and character recognition software
- office
    - keyboard training
    - the Windows graphical environment
    - Word processing (Word) and spreadsheets (Excel)
- Internet
    - Internet Explorer and Netscape

Training courses are short, customised, and given individually or in small groups. They do not lead to a certificate or diploma, but they should allow access to training specifically geared toward IT in the mainstream environment.

Lyon: FIDEV (O Borius, personal communication, October 2001)

FIDEV in Lyon is a certified training organisation offering training in adaptive technologies for vision impaired people. Awareness of and access to adaptive technology is considered to be part of the overall rehabilitative process. These training courses are successful because they are short, customised, and offered individually or in small groups. Trainers are familiar with adaptive technology options. Participants are offered basic computer literacy skills in order to increase the opportunity to access further IT training in a mainstream environment. FIDEV offers support to participants who consequently follow-up this basic training with mainstream professional training. There is no specific IT training for vision impaired people, which leads to a third level degree. An evaluation of this course found that 12 per cent of the participants were satisfied and 85 per cent expressed total satisfaction with the course (source is a questionnaire that is sent on a regular basis to the students to get their feedback).

Toulon: GIAA (personal communication, October 2001)

The Association of Blind and Visually Impaired Intellectuals (GIAA) in Toulon also offers introductory computer literacy

using adaptive technology to members of a computer club who are under the age of 55 and who would like to obtain basic computer literacy skill in order to progress onto further professional training. Courses are tailored to the needs of individual participants and the appropriate adjustments are made.

Bordeaux: GIHIP Aquitaine (M Duguay, personal communication, 2001)

The Association for the Placement of Physically Handicapped People (GIHP) offers two types of training:

- training in adaptive technologies. This beginners' training does not lead to a certificate or a diploma but does have a professional aim. The trainer is blind herself, 7 visually impaired people were trained in 2000.
- training tailored to specific requests from people with no professional objective. This training, also given by a visually impaired person, is offered as part of the CAPAM rehabilitation program (Autonomy Training Course for the Blind or Visually Impaired).

In the Descargues Report (2000, pp 45-47), the author's conclusion includes a list of recommendations designed to facilitate access to IT and to training by visually impaired:

- The general framework of accessibility and training in IT should be created in order to ensure that more professional services are provided (enforce Windows accessibility standards, create a technical guide to adaptive techniques

and guidance services, impose a standard codification for computer Braille, set up a system of evaluation of adaptive technologies, set up training in adaptive techniques…) .

- A legal framework for accessibility of computer data in the public sector should be created.
- The State should have the administrative, technical, and financial means to raise accessibility of information and communication technologies to the status of a major component of electronic data administration.
- Visually impaired people should be involved in improving the Internet accessibility of public services.
- Books and other documents in digital form should be made available.

Recommendations and policies outlined in the Descargues report have not been evaluated in terms of implementation. There is no national framework which coordinates local initiatives that have emerged. Therefore, although policies have been developed, on a practical level there seems to be a long way to go as yet.

Distance learning seems to be the way forward (Dehais, 2000, 44) and it could be adapted for the visually impaired (JY Bouvier, personal communication, October 2001).

The professionals of the SIADV (Interregional Support Service for Visually Impaired People) have noticed that there is a lack of

training in adaptive techniques such as Braille, typing, word processing and adaptive technologies.

On the other hand, it is often difficult to set up training courses for the visually impaired population, because such people are scattered throughout the region and are of limited mobility. There is also a dearth of specialised professionals in these fields of instruction.

It occurred to us that new communication technologies might help to solve these problems, as they could allow training to take place right where people live. For the last two years, we have been working in partnership with the National College of Telecommunications in Brest, in Brittany, to set up a system that would enable distance learning for visually impaired adults to take place.

The idea is to adapt the video-conferencing system to our teaching by creating a "teacher site" and a "pupil site."

Videoconferencing enables a person to be seen in a specific place, to transmit information (text, image, or sound) and, in return, to receive information in real time. The teacher can transmit any information required for teaching, can check the reactions of the student, and can correct the student if need be. The student can also communicate with the teacher and ask questions if they are experiencing any problems. In many respects, videoconferencing is comparable to face to face teaching.

At the present time, we are sure that courses in Braille, adaptive technologies, and so on, will take place partly or completely via these new media. We will then study the possibility of using them in other areas, such as functional vision.

The value of a system such as this one is that it can quickly be moved from place to place, and it is relatively inexpensive because the technology it uses is readily available to the general public.

Making more efficient use of adaptive techniques will enable the visually impaired to more easily join mainstream training courses whenever they choose.

The "Electronic School Bag" is another new initiative, though presently aimed at a younger population, it could be adapted to adults in training (P Belseur, personal communication, October 2001).

The project, called PROJET ETAPE, is a national project directed by the association Braille Net (Braille Net, 2001).

The project was inspired by a similar initiative underway at the Charles de Gaulle High School in Muret (Haute-Garonne), in which students have personal file in the high school server and can thereby exchange files with teachers and other authorised participants.

This is a pioneering project because it is the first of its kind to be aimed at young visually impaired people.

It involves 5 institutions in France (INJA in Paris, EREADV in Villeurbanne, ERDV in Loos-les-Lille, Pierre and Marie Curie University in Paris, and the Institut Montéclair in Angers.)

Each young person will be able to access a certain number of documents via Internet (school books and other documents). Teachers and students will be able to exchange computerised documents, such as classroom notes, homework, corrections, and so on.

The aim of the Electronic School Bag is to allow these young people to get hands-on experience of new technologies and to make it easier for them to access the information they need (like specific documents or school books).

Although, this project is currently aimed at the younger population, it could be adapted to further training of vision impaired people generally.

Conclusion

There is no doubt that France lagged behind other European countries in IT development. This realisation gave the impetus, as early as 1997, to an official policy of ensuring equipment acquisition and official encouragement of the use of IT. Lionel Jospin's government has undertaken a "crash course" of three years which has allowed this country to bridge the gap with other European nations. The entire population is involved in this movement, even blind and visually impaired people have been brought in (the Descargues Report). Even if equipment acquisition and encouragement thereto in state administrations

is the responsibility of the state, this is not the case concerning households. The penetration of computer equipment into the home is still slower than in other European countries. The IT revolution will have important effects in the political, economic, and social fields. France seems ready in terms of its national infrastructure, though on the individual level there seems to be a ways to go still.

The government has made major efforts in the field of training in a short time. Handicapped people, and in particular the visually handicapped, are now able to receive training in specific applications from specialised services and institutions. Nevertheless, the number of training courses on offer is far below the ever-increasing level of demand for them.

The State's offer of training can be considered 'elitist' in nature (to access AFPA or GRETA training, applicants must pass interviews and placement tests in which past formal schooling plays a major role). The private sector charges a fee for training, which can be an obstacle to access (fees can be prohibitive). That leaves clubs and associations as the only option left, but the visually handicapped person must still be able to join them.

Our conclusion is that there is risk of a digital information gap. In the digital age, continuing training is rapidly becoming the basic source of job security and employability. It is a guarantee of competitive advantage for employees, governments, and employers. It is also becoming the main priority of unions, to

such a degree that the necessity for permanent job training may revitalise union activities in this area.

On a national level, Lionel Jospin, in his project calling for the information society for all people, showed his preoccupation with the looming risk of an important gap opening up between those who have access to new technologies and those who do not.

This risk of a digital information gap between those who are computer literate and those who are not creates a "hot" new issue for handicapped people. It is clear that a population of people who already feel stigmatised, who are already experiencing difficulty integrating our society, run the risk, in the medium term, of experiencing the negative impact of technological advances and the race toward total mastery of IT. These people run the risk of being excluded twice: that is, the lack of computer literacy would accentuate and worsen the already difficult situation of handicapped people in terms of their social and professional integration. Access to IT training would limit the risk of a digital information gap that would accentuate the problems of the visually impaired population.

Bibliography

AFPA, 2001. Available from: http://www.afpa.fr/AFPA.html (accessed 30/10/01)

Braille Net, 2001. Available from: http://www.braillenet.jussieu.fr (accessed 15/10/01)

Cézard, M, 2000. L'ordinateur, outil de travail culturel et bien culturel. L'informatique au travail, 131, p22.

Dehais, B, 2000. L'éducation, nouveau marché mondial. Alternatives économiques, December, 187, p 44. Available from: http://www.alternatives-economiques.fr/moteur/ALHtml.htm (accessed 30/10/01)

Descargues, B, 2000. L'accessibilité des nouvelles technologies d'information et de communication aux personnes aveugles et mal voyantes (on line). 13 October.

Available from: http://www.admiroutes.asso.fr (accessed 30/10/01)

Etre, 2001, Handicap information, dossier basse vision, Sept Oct, 55, pp 24-25.

Etude Kosmos 2001 Internet dans l'ouest, premiers pas vers le haut débit. Available from: http://www.kosmos.fr (accessed 15/10/01)

Greta, 2001. Available from: http://www.education.gouv.fr/fp/greta.htm#4 (accessed 30/10/01)

IDC France 2001, Le baromètre Micro Informatique. Available from: http://www.idc.fr/etudes/barometre_micro.htm (accessed 30/10/01)

INSEE 2000, Project handicap, invalidity, dependency, No. 742, pp. 1. Available from: www.insee.fr (Accessed: 03/09/02)

Pierret, C, 1997, Discours de Christian Pierret, secrétaire d'état à l'industrie à la 18ème université de la communication (on line), 29 August, 1-4. Available from: http://admiroutes.asso.fr (accessed 15/10/01)

Site du programme d'action gouvernementale pour la société de l'information, 2001. Rapports 2000 (on line). Available from: http://www.internet.gouv.fr/francais/index.html (accessed 30/10/01)