The Digital Workspace in the school environment

Information and Communication Technologies (ICT) offer a whole multitude of options for the rapid circulation of information on a worldwide scale. These new information and communication modes now play a key role in the economic, social and educational sectors, and the school environment cannot afford to ignore them; to do so would risk isolation. As a result, governments (both French and foreign) have examined the opportunity that these technologies offer with regard to creating a more efficient educational system. The implementation of "e-education" applications offers a significant lever for circulating, appropriating and generalising the usage of ICT. It is also an important strategic platform for the definition of regional digital development policies. It would therefore seem interesting to take a closer look in this newsletter at the following three points:

- The Digital Workspace policies in place;
- The various definitions of the Digital Workspace concept: how is it perceived by the different players involved and according to the different usages available?
- The different experiments carried out in France and abroad.

Digital Workspace policies | Definitions and evolution of the Digital Workspace concept | Experiences | Sitography | Bibliography

Warning to readers

- *Most of the links correspond to the relevant files in our bibliographic database, which includes complete references and, where applicable, access to the articles quoted (some offer free access and some require payment, depending on the article and the electronic subscription taken out by your institution);*

- *You can inform us of your reactions to this Newsletter, suggest relevant themes or ask for more specific details by leaving a comment beneath the corresponding post in our blog: "Écrans de veille en éducation".*

Terminology

For the purposes of this newsletter, the French abbreviation *ENT* ("*Espace Numérique de Travail*") and "*environnement*" (environment) have been translated as Digital Workspace. There is no direct equivalent in English, but the following terms all refer to this concept:
- Virtual learning Environment;
- Virtual Education Space;
- Virtual Learning Space;
- Digital Learning Space/virtual;
- Educational Environment;
- Collaborative workspaces;
- Internet based distance-learning environments;
- Computer Environment for Human learning;
- Computer based learning environment;
- Learning Spaces;
- e-learning…

The above list is not exhaustive… We used these terms in order to list the different policies and experiments implemented outside France. The French model is somewhat untypical of the international educational environment, in that it is centralised and essentially controlled by the government itself. Nevertheless, whatever the strategies adopted for implementing and accompanying these technologies in the field, the overall issues at stake are essentially the same. What is required is a modernisation of the educational proposal, better communication between the players involved (teachers, pupils, administrations, families etc), greater autonomy for the pupils, personalisation of the teaching content and development of group work.

1. The Digital Workspace policies

1.1 In France

As a follow up to the "digital schoolbag" project, the French Ministry of National Education is now proposing a more generic term: Digital Workspace. Following the Digital Workspace project tender in 2003, launched by the French deposit and consignment office (*Caisse des dépôts et consignation*) and the French Ministry of National Education and Research, eight implementation projects in France were selected. This project tender was a continuation of an approach initiated in January 1997 and has been extended with another tender launched in 2006.

❑ **Government measures: project tenders**

The French Ministry of National Education has set itself the objective of introducing Digital Workspaces in both school and further educational systems.

On the Éducnet site, two objectives are clearly displayed for the school system:
– To generalise Digital Workspaces in each establishment by 2007;
– To structure this sector with a limited number of platforms and a diverse proposal of services and content.

According to the Technology Department's *Newsletter* n° 23 produced by the Ministry of Research in May 2005 ("Les Espaces numériques de travail"), "*new digital services such as the Intranet, mail, forums, the publishing of Internet sites, access to on-line lessons and databases are an addition to the "traditional" services provided by computers in school establishments*". As a result, all these services must now be federated to form a complete Digital Workspace proposal. With this in mind, the Ministry launched a project tender in 2003 entitled "Digital Workspaces" in order to implement this new approach.

"*This approach has three objectives*":
– *To provide Project Managers, Education Authorities and local administrations with a venue for exchange and sharing;*
– *To build and subsequently circulate a coherent database on the Digital Workspace projects;*
– *To pool all technical, legal and administrative studies*".

A second project tender launched in 2006 by the French National Education ("Accompagnement à la scolarité, égalité des chances et TIC") focuses on ICT to help prioritise equal opportunities (AEF dispatch n° 65760 du 6/6/06). The fact that there were thirty-three responses to this tender provides a clear illustration of the interest generated by such a demand. These applications were sent by "*associations, publishing consortiums for town or district communities, town or department administrations, or National Education structures*". The responses notably included applications from the Active education methods training centre (CEMEA), Paraschool, Odile Jacob Multimédia with Domicours, the National distance learning centre (CNED) and the Association of the student foundation for schools (AFEV).

❑ **Principal strategic guidelines for Digital Workspaces**

In order to progress with the implementation of information and communication technologies in school and further educational systems, the ministry has implemented numerous measures as part of a clear-cut policy, with two primary objectives: firstly, to ensure that the pupil or student is at ease in the environment in which these technologies are becoming increasingly present; and secondly, to diversify teaching and learning forms in connection with the reforms undertaken in the educational system. The Digital Workspace guidelines produced by the Ministry (12/01/2004) outline, in 57 pages, the definition of a Digital Workspace, the reference documents which these guidelines are based on, the issues at stake, the factors for success, the guidelines' objectives, functions and usages, accessibility, the quality of the Digital Workspace's services, technological recommendations and the impact on organisational approaches in primary, secondary and further education. This report is aimed at becoming an instrument of dialogue between the French National Education and its partners.

From a more global perspective, the ministry's strategic guidelines for information and telecoms systems (S3IT) offer a structural framework at a national level. These guidelines aim to create a level of coherence between the different Digital Workspace proposals, in liaison with the existing secure infrastructures and information systems. A further set of guidelines has also been integrated into this document, entitled Guidelines for Intranet/Internet services/infrastructures at school establishments and schools (SDI/S2i2e). These new guidelines aim to "*give priority to providing the educational community with an infrastructure and services for broadening implementation. Their objective is to ensure that everyone involved, and notably each pupil and each teacher, can benefit from a digital workspace which suits their requirements (virtual offices) with regard to their own specific activities (i.e. teaching or learning, …), and with the necessary assistance. They are also to be used in conjunction with the fitting-out and assistance initiatives, so that man and machine can communicate in all circumstances (standardisation and interoperability of the infrastructures and collaborative tools). The measures initiated to attain these objectives can be divided into three main project categories: Infrastructures, Digital services and User assistance.*"

In parallel with the French government, Politicians outside France (Africa, Asia, Canada, Quebec and Europe…) have been examining these same issues and are implementing measures and systems to boost the usage of ICT in the educational and training sector. These often tend to be regional or local initiatives.

1.2 Educational policies in Europe and abroad

A UNESCO report carried out in conjunction with the IIEP (International Institute for Educational Planning) in 2004 "ICT in education around the world: trends, problems and prospects" written by Willem J. Pelgrum and Nancy Law, examines the principal problems and issues raised by the application of Information and Communication Technologies (ICT) at school. This report summarises the ICT situation in education, the issues at stake and the development prospects. Comparisons are made with regard to equipment levels and school usage on an international scale.

Three roles attributed to the ICT have been distinguished:

1. "Learning about ICT"; specifying that the teaching is focusing on ICT;

2. "Learning with ICT"; referring to the usage of ICT when searching for information for learning purposes;

3. "Learning through ICT"; examining the integration of ICT as an essential tool for teaching and learning.

A study was carried out on indicators that observe the impact of ICT on education. These indicators were examined as part of qualitative educational studies. An improvement can be seen in terms of students': motivation (linked to the pleasure of learning), skills in using ICT, collaborative work, meta-cognitive aptitudes, self-esteem and knowledge of their subject. For teachers, the focus is on better self-esteem, closer collaboration with colleagues, educational skills and the capacity to use ICT. These criteria show a certain 'fashion craze' aspect to ICT. It is less common to find studies that focus on: subjects and management problems, improvements in teacher/pupil relationships and the capacity to teach. In order to improve the integration of ICT, certain aspects deserve to be examined in more depth, such as teachers' and pupils' roles for example (see page 82 of the report).

For a further update on the role played by ICT in international educational systems and the international policy adopted in this area, it is interesting to refer to the document section of the SDTICE multimedia resource centre. This section notably proposes numerous statistics on the usage of ICT.

The report on Digital Workspaces in education in Spain, carried out by the French deposit and consignment office (*Caisse des dépôts et consignation*) and published in June 2003, shows that Spain is catching up in terms of computer equipment, but that major disparity exists between the different provinces. The decentralisation process has energised the different regions, and notably Catalonia, which is particularly active. The regions themselves finance the educational projects. From an educational perspective, a global response is offered via the new forms of educational management, collaboration, exchange, lessons, exercises and content. On page 6, a summary chart presents a European breakdown of the number of computers per pupil. The best-equipped countries are, in this order, Italy, Germany, Belgium, Ireland, Poland and Holland. Next come Austria, France and Spain…

In Denmark, projects are often the initiative of local administrations or the national institution; and private players are also heavily involved. The "SkoleIntra" project was the work of two teachers who created a company to develop ICT. The sales & marketing and management aspects were then entrusted to the UNI-C Public national research in education centre, which is also the instigator and manager of the "Skolekomé" national project.

In Canada, a study was carried out on Internet access for everyone and its usage (the Internet citizen). The results of a survey entitled "The community world and the Internet: challenges, obstacles and hopes, survey results on community groups" are presented on the Communautique site. This survey examines the current situation with regard to usage of the Internet within different social groups, from various perspectives. According to this study, the Internet has become an essential everyday tool and its usage is having a dramatic impact on communication, training and work organisation. Its impact is variable according to the different regions and social groups. Training in telematics must be reinforced within these groups.

The action plan entitled "No child left behind act" in the United States was implemented by the George Bush administration to generate innovation and improve efficiency in the school teaching sector. ICT have formed the basis of numerous innovations in education and training. A few of the experiments are described in section 3 of this *Newsletter*.

The SchoolNet Africa portal outlines the initiatives and programmes initiated by twenty-three African countries: Angola, Benin, Botswana, Cameroon, the Ivory Coast, Egypt, Gambia, Ghana, Kenya, Lesotho, Morocco, Mauritania, Mozambique, Nigeria, Senegal, Swaziland, Uganda and Zambia… with regard to the integration of ICT in the education and training sector. SchoolNet Africa (SNA) is an independent panAfrican non-governmental organisation set up to promote the usage of ICT in learning and teaching in African schools, in partnership with a network of Schoolnet agents who work in over thirty African countries. It is the very first PanAfrican organisation to promote digital technologies in school education in Africa. This organisation is run by Africans and based in Africa. One can find different pilot projects such as "Un million d'ordinateurs pour les écoles africaines" (a million computers for African schools), enabling the development of computer recycling structures in Africa, and promoting the distribution of software applications and content to integrate ICT in education.

Aware of the major disparities in the development of ICT, foreign governments have mobilised resources to create fund-raising organisations such as the Digital Solidarity Fund (DSF), together with research centres, to attempt to remedy this problem. A world digital solidarity fund was set up with a view to boosting the development of ICT "for the training of human resources and the fight against intellectual migration" in Africa and Asia. "*The creation of an efficient and transparent Digital Solidarity Fund based on voluntary contributions seems to be an appropriate response to the unequal distribution of ICT throughout the world. The vocation of the new Digital Solidarity Fund is to promote and finance structural projects capable of providing underprivileged population segments with a chance to enter the information society era*". The aim of this fund is to halt the ever-broadening gulf between and within the different countries, by promoting and financing structural projects.

2. Definitions and evolution of the Digital Workspace concept

Numerous terms are used to define the same entity or a range of entities: Virtual learning Environment, Virtual Education Space, Virtual Learning Space, Digital Learning Space, Educational Environment, Internet based distance-learning environments, Computer Environment for Human learning, Computer based learning environment or extranet… So how, and on what conceptual, theoretical and educational basis, can one define the Digital Workspace?

2.1 The computer-based learning environment, the electronic schoolbag and the Digital Workspace?

In 1998, Josiane Basque and Sylvie Doré shed some interesting light on the concept of the Computer based learning environment (a term proposed by Salomon as early as 1992) in the *Journal of Distance Education*. They note that this concept has become increasingly present in both English and French literature (the French equivalent being *Environnement d'Apprentissage Informatisé - EIA*). The authors consider that the 'environment' concept refers to both the socio-constructivist theories and to the systems theory (the environment being a place that plays host to one or more systems). They take up the idea presented by Wilson (1996), suggesting that an environment is a "*a place where people can draw upon resources to make a sense out of things and construct meaningful solutions to problems*" (p. 3)

According to Wilson, the term "learning communities" would be even more suitable than the term "environment", in order to highlight the collaboration between individuals. On the basis of this interpretation, such a collaboration would be principally educational. As the Digital Workspace stands today, however, in the National Education environment, collaborations are also of an administrative nature. The 'learning community' concept would consequently not be appropriate for these new Digital Workspaces. This is perhaps one of the reasons why the term Digital Workspace adopts the word 'space' and not 'environ-

ment'. With this in mind, certain teachers (see the end of the School) see Digital Workspaces as merely "*secure extranets, customised to suit the different population segments likely to use them*". The term extranet defines the Digital Workspace as an Internet type network, access to which is reserved for a closed group of users. As a result, the definitions vary according to the population segment and the different perceptions: for example, the term extranet is used to emphasise the services offered in terms of communication between users, whereas the 'environment' concept is used to emphasise the educational sphere evoking the learning communities.

2.2 The Electronic schoolbag (or *e*-schoolbag) and the Digital Workspace

The Digital Workspace was developed in 1999 by the Savoie University and County Council (*Conseil Général*). It emerged from the 2003 Digital Workspace project tender and was marketed by the company ERN (*Espaces et Réseaux Numériques*). The electronic schoolbag was initially designed as a services portal for pupils, teachers, the administration and families. The French National Education launched the Digital Workspace project in 2003. The aim, as specified by Nicolas Chung, the Digital Workspace project manager at the French Ministry of National Education (read the article of 21/10/2004) was to extend school establishments into the networks, and propose services to aid communication and collaboration (diaries, absences etc…). In this article, one notes that "*Digital Workspaces are virtual offices that provide pupils, parents and teachers with numerous on-line services. Sixteen Education Authorities are testing this concept and it will be generalised on a national basis as of 2007.*"

On the site of the French Ministry of National Education, further education and research, the concepts of Digital Workspaces, computer-based learning environments and virtual offices are defined as synonymous terms; the objective of the Digital Workspace is to "*favour the implementing of genuine digital workspaces or "virtual offices", consisting of a uniform range of digital services: collaborative work, school and student life, availability and management of digital resources, etc*". In light of all these definitions, it would seem that a Digital Workspace is both a virtual office and an electronic schoolbag.

In addition to the terminological aspects, there are other dimensions that make these definitions even more opaque, and, notably, the projects' ideological dimension. A Digital Workspace is a meeting place that is able to serve as an *educational community* and is no longer just a learning community, according to the Wilson interpretation (1992). This meeting point is a virtual space and also a range of tools.

Following the publication of two reference works in April 2002 and June 2004 (the French Documentation), the "educational" working party created by the Fing (the new generation Internet Foundation) is continuing its investigation into electronic schoolbags and digital workspaces. This work was carried out as part of both the "digital workspace guidelines" (SDET) approach and the joint project tenders launched by the French Ministry of Education and the French deposit and consignment office (*Caisse des dépôts et consignation*). The FING is associated with both these approaches. According to this working party, the major difference between the Digital Workspace and a simple local establishment network can be summed with a single phrase: "*a unique identification common to all applications and both local and distant resources… is a personalised workspace, which is also a community workspace and an instrument of exchange and work shared by a group of people*" (see p. 25-26). The publication entitled *Du cartable électronique aux espaces numériques de travail* (from the electronic schoolbag to the digital workspaces), n° 5 of the *Cahiers Pratiques du Développement Numérique des Territoires*, published in June 2004, summarises the experiences carried out in France and throughout the world (Germany, United States and Spain).

Issue n° 23 (May 2005) of the Newsletter produced by the *Direction de la Technologie* presented a report on digital workspaces and virtual offices, with the objective of shedding some light on the Digital Workspace concept. It outlines, for example, the functions of a Digital Workspace and its simplified architecture.

A presentation of the "Electronic schoolbag' project is provided on the sites of the Savoie and Isère County Councils (*Conseils Généraux*).

To summarise, it seems difficult to provide a precise definition of the Digital Workspace for various reasons, one of which is the fact that these systems are themselves very diverse. They are systems designed to facilitate communication between the administration and pupils' families, teachers and pupils, information systems designed for use between teachers and establishments, and training and learning systems based on educational approaches that vary hugely from one teacher to the next and from one establishment to the next.

3. Experiences

3.1 In France

The FING (New Generation Internet Foundation) proposes a summary by episode of the themes examined over the last year on its blog dedicated to Digital Workspaces in education. Internet users can consequently consult documentary databases and exchange points of view or Best Practices vis-à-vis the usage of digital workspaces in primary schools, secondary schools and further education. A study should notably be carried out on the role played by blogs in Digital Workspaces, on the basis of several educational usages of blogs, such as, for example, the preparation of a cultural trip.

This report offers an overview of the measures implemented, and shows to what extent it is necessary to continue the electronic schoolbag experiment with digital workspaces. A progress report was made after a year of practical experimentation on second year (7th grade) pupils and after two years on 3rd year (3rd year junior high) pupils. When asked, "what has the computer improved in your life as a pupil?» pupils often replied: "class cohesion, the pupil/teacher relationship, easier working conditions and the desire to learn", and parents often replied "motivation vis-à-vis school work, curiosity vis-à-vis the outside world and the almost friendly teacher/pupil relationship…»

The Éducnet site lists experiments and feedback from the field with regard to Digital Workspaces in education. One can observe, for example, the Ariandijon project, developed by the Dijon Education Authority to improve the personalised monitoring of pupils.

The Éducnet site proposes usage sheets as a means of highlighting different Digital Workspace usages. For example, a practical application of Digital Workspaces in mathematics. Another site example: that of the Jean-Perrin secondary school (Paris), which presents on-line lessons focusing on the modelling of real actions in physics.

The [Digital schoolbag in Picardy](#) project was evaluated in 2003. Since 2000, two vocational training establishments in Picardy have been experimenting with the digital schoolbag concept. The project has been financed by the 'Prefecture' of Picardy and the Regional Programming Committee (CRP). Pupils in 'BTS' and professional 'bac' classes were initially equipped with portable computers. The two experiments were then [evaluated](#) and the results can be viewed on the site of the 'Prefecture' of Picardy. The evaluation was used to identify portable computer usages, in addition to the initiative's strong points and weak points. Looking at the results, one can observe that pupils' personal usage develops their communication (E-mail, chat etc) and downloading skills. The most used software programmes are those that produce documents and help search for information (Word and the browser). These programmes consequently meet pupils' requirements in a professional situation. The communication functions for collaborative work and learning, however, turn out to be little used (a typology of software programme skill levels can be found on page 5 of the study).

3.2 In Europe and outside France

Europe

[The international study on Digital Workspaces](#) published in August 2003 is a summary of the analyses carried out by [IDATE](#), a consulting firm specialising in ICT strategy and management, in association with TNO (Danish Technological Institute) and Empirica. The countries covered by this project are: Germany, Denmark, Holland and the Flemish part of Belgium. Several conclusions have been drawn on the basis of the usages observed:
−   The level of usage is heavily dependent on both the teachers and the classes;
−   Teachers regularly turn to IT (lesson support media, Internet access etc) without necessary using Digital Workspaces.

In Germany, the Digital Workspace projects are often initiated by the districts themselves, which are responsible for the schools' IT equipment. The [PIK](#) and [Lernstatt Paderborn](#) regional projects were initiated by towns with the support of their respective *Länder* (Bavaria and Rhineland North Westphalia) in association with specialist ICT manufacturers, i.e. Deutsche Telekom and Sun.

In Spain, the Catalonia region launched the [EDU365 project](#) in 2001, which is a content portal aimed at primary and secondary school teachers and pupils. In spite of an average of 20 million visits per month, this tool only represents an occasional work tool for users. It provides pupils with a virtual office and the chance to use educational software for revision purposes, teachers with a means of creating forums and web pages, and finally parents with access to general information on the functioning of the school.

In Holland, [Brainbox](#) is a Digital Workspace developed around the American [e-education](#) software programme, Blackboard. It provides a platform for organising and managing school life and the educational relationship. The objective of the project is to familiarise teachers and pupils with the usage of e-teaching tools and to observe the practices that subsequently materialise. In general terms, the teachers use Brainbox for both preparing their lessons and staging them for their pupils. The pupils use it to prepare and hand-in their homework, and for looking for information. A first progress report shows that users are very satisfied with this tool and that communication between teachers and pupils has been improved. Pupils also show higher levels of motivation. The negative points lie in the fact that training in the tool is insufficient and that users do not have enough time to make the most of the platform.

United States/Canada

In Canada, a detailed report (277 pages) on Digital Workspaces in education was carried out in July 2003. After an overview of the Canadian situation with regard to information and communication technologies at school, [the report](#) provides an in-depth analysis of four digital workspaces. The French Digital Workspace concept was interpreted to correspond to the realities of the Canadian school system. The authors considered that they were in the presence of a digital workspace when all the resources and services were offered to the pupils of a physical establishment working in a class-group on a permanent and personalised basis. Today, the principal innovations in schools are linked to ICT. This is a very large study. It was carried out on 15,566 schools, representing a total of 2,416,373 primary school pupils and 2,953,343 secondary school pupils. The computer-to-pupil ratio was approximately one to six (see page 17).

In the United States, the same type of Digital Workspace study was carried out by the deposit and consignment office; this study culminated with the writing of a [report in June 2003,](#) which summarises the extent to which schools have been equipped (see page 18). Three cases were studied:
−   The VES platform in Massachusetts. "*The specific objective of this platform is to create a virtual environment that encompasses pupils, teachers, parents and administrators*";
−   The Quaker Valley School District in Pensylvania. The project was initiated in 2001. It involved 2,000 pupils and was based around the distribution and usage of portable computers, which pupils could use at school, at their home or any other place of their choice. The [project](#) adopted the SIF standards (Schools Interoperability Framework);
−   The Virtual High School (IVHS) in Illinois. The IVHS offers pupils the chance to take any course they choose, whatever their location (rural or underprivileged zones).

The "[Virtual Education Space](#)" project created by the Massachusetts education department is a Digital Workspace that is very close to the definition adopted in France. All the resources and applications are accessible from any computer.

A [spectacular initiative](#) was launched by the state of Maine in the spring of 2002 to equip all 7th and 8th grade pupils with Apple portable computers linked to a wi-fi network.

Africa

Various experiments have been carried out in Africa, such as, for example:

−   [ThinkQest Africa](#): this PanAfrican programme set up to promote a new style of teaching and an African educational approach based around the Internet. It prioritises the adoption of methodologies and approaches that improve the educational process through the usage of ICT. The objective is to help African youth develop a critical sense as pupils, think for themselves and perhaps even become future African leaders who will contribute to the development of their respective countries;

– [From arms to computers](): this project involves the launch of an educational programme based on ICT for the children of former soldiers in three African countries: Angola, Liberia and Rwanda. The project is aiming to create a multimedia-training centre based on ICT for these children.

Prospects?

In this *Newsletter,* we have tried to answer the following questions: What is a Digital Workspace in France and abroad? What are the underlying educational policies with regard to the Digital Workspace and what experiments are currently being carried out in France, Europe and abroad? We by no means claim that this research is exhaustive; we have essentially tried to put into perspective the recent information made accessible on these issues by the Internet. The abundant literature on Digital Workspaces raises some interesting questions, which deserve to be examined in greater depth. As an example, we would like to draw attention to two of these:

– Having read all the quoted studies, can we highlight a generic methodology for evaluating Digital Workspaces? Are the different reports and studies evaluating the same thing (usages, equipment, functions etc…)? We have noted that certain criteria frequently return to the fore, such as equipment levels and the type of services provided; others are mentioned much less frequently, such as those that concern the effective practices of teachers and pupils. What are the reasons for this?

– The digital divide is a topical issue that has mobilised a good number of countries throughout the world. What are the solutions provided for reducing this divide?

To find out more about the digital divide…

On its web site, the University of Laval presents a project on the [digital divide]() and proposes a definition of the digital divide: "*There are several debates concerning the roots of the original English term (i.e. 'digital divide'). Nevertheless, the assertion can be made that this concept comes from the United States and that it emerged during the Nineties as a means of describing the gulf that was opening out between those with access to the new information and communication technologies (NICT). At the outset, it was a case of determining which demographic groups in the United States were running the risk of being left out, particularly in view of the increasing popularity of the Internet…»* One can observe three types of digital divide: a divide linked to the country itself (deprived and secure countries, North/South rivalries, and within the country, urban-rural conflicts etc), gender (women tend to suffer more from exclusion than men) and age (older people are excluded to a greater extent).

Also see "[Enjeux de mots : regards multiculturels sur les sociétés de l'information]()" (Terminological issues at stake: multicultural perspectives on information societies), co-ordinated by Alain Ambrosi, Valérie Peugeot and Daniel Pimienta published in 2005 by C & Éditions, together with the article by Jean-François Soupizet "[La fracture numérique : mesures et spécificités]()" (the digital divide – measures and specific characteristics)

Glossary

AFEV: Student foundation association for towns

CEMEA: Active educational methods training centre

CERI: Centre for research and innovation in teaching

CNED: National remote teaching centre

EAI: Computer based learning environment

ENT: Digital Workspace

FING: New generation Internet foundation

ICT: Information and communication technology

ITEMS: International consulting firm based in Paris, dedicated to delivering ICT strategies

ITU: International Telecommunications Union. This is an international organisation and specialist body created by the United Nations to facilitate Pacific relations, international co-operation between peoples and economic and social development through efficient telecoms services.

DSF: Digital solidarity fund

NICT: New information and communication technologies

ORBICOM: Network of UNESCO Chairs in Communication. This network provides consulting services for the United Nations Economic and Social Council. It includes 26 Chairs in communication and over 250 associate members in 73 countries.

S3IT: Strategic guidelines for information and telecommunications systems

SDET: Guidelines for Digital Workspaces

SDI/S2i2e: Guidelines for Intranet/Internet infrastructures/services at schools and school establishments

SIF: Schools Interoperability Framework

ICT: Information and communication technologies

ICTE: Information and communication technologies in education

Sitography

- Asia-Pacific forum on science learning and teaching: http://www.ied.edu.hk/apfslt/
- Australian council for educational research - The ACER provides state-of-the-art educational research, products and services: http://www.acer.edu.au/
- The electronic schoolbag: the key to school and university integration:
http://www.snv.jussieu.fr/inova/publi/cartable.htm

- The digital schoolbag in the Isere region – The County Council (*Conseil Général*): http://www.cg38.fr/pages/index/id/4349
- Digital divide network - Communauté de chercheurs autour de l'Internet : http://www.digitaldivide.net/
- From the local network to the intranet, from the intranet to the Digital Workspace – Bibliography, selective webography – The SCEREN site: http://cndpll1.hosting.cri74.org/article.php3?id_article=328
- Digital networks and spaces - Site of the company ERN (*Espaces et réseaux numériques*): http://www.ern.fr/
- Basic indicators on the integration of ICT in European educational systems – Eurydice 2000-2001 annual report: http://194.78.211.243/Documents/TicBI/fr/FrameSet.htm
- Insight, Observatory for new technologies and education – Current situation of the ICTE development policies in the principal European countries: http://insight.eun.org/ww/en/pub/insight/index.htm
- iEARN, International education and resource network. Started in 1988 is the world's largest non-profit global network that enables teachers and young people to use the Internet and other new technologies to collaborate on projects that both enhance learning and make a difference in the world : http://www.iearn.org/
- ISTE, International society for technology in education - ISTE provides leadership and service to improve teaching and learning by advancing the effective use of technology in education. ISTE is the trusted global leader in building capacity and disseminating best practices for appropriate and ubiquitous use of technology for all learners in a dynamic international learning environment: http://www.iste.org/
- International – The role and issues at stake with ICTE – A report by Éducnet, the ICTE portal for education: http://www.educnet.education.fr/dossier/international/default.htm
- Digital schoolbags and manuals – Éducnet: http://www.educnet.education.fr/dossier/manuel/biblio2.htm
- Observatory on the Information Society – Observing the evolution of the information society towards the knowledge society – UNESCO: http://www.unesco.org/cgi-bin/webworld/portal_observatory/cgi/page.cgi?d=1
- SchoolNet Africa Portal – A portal that lists the initiatives and programmes of 23 African countries: Angola, Benin, Botswana, Cameroon, Ivory Coast, Egypt, Gambia, Ghana, Kenya, Lesotho, Morocco, Mauritania, Mozambique, Nigeria, Senegal, Swaziland, Uganda and Zambia…: http://www.schoolnetafrica.net/
- Selection of sites and works concerning ICTE - Document produced by Éducnet: http://www.educnet.education.fr/documentation/default.htm
- Information and Communication Technologies in Education – the OECD site: http://www.oecd.org/topic/0,2686,fr_2649_34519_1_1_1_1_37441,00.html
- Statutory texts on the ICTE – Produced by Éducnet: http://www.educnet.education.fr/textes/reglementaires/1998.htm
- European and International monitoring of the development of ICTE: http://www.educnet.education.fr/documentation/veilleinter.htm
- ICT Webography, European network: http://www.educnet.education.fr/documentation/europe.htm
- Webography covering "the local network to the intranet, and the intranet to the Digital Workspace": http://cndpll1.hosting.cri74.org/article.php3?id_article=328

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