THE ONGOING ICT PROJECTS FOR EDUCATION AND THE ROLE OF LIBRARIANS IN THE 21ST CENTURY: EXPECTATIONS AND A REALITY CHECK

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Abstract

In France, two ongoing ICT projects--the ENT and the learning center, called the 3C--involve teacher-librarians and headmasters whose common purpose is to reinforce information literacy practice by pupils. What do these projects mean to them? How do we overcome the ambiguity of the concepts and the blur in the definitions to manage in a better way these ICT projects? After reviewing the objectives and the main features of these projects, the paper attempts to provide some items of reflection on this topic relying on the Clermont-Ferrand case study. It shows the distance between expectations and realities of ICT projects and determines the shortcomings that need to be focused on in order that all stakeholders would show the same enthusiasm for the e-learning of the 21st century.

Introduction

Within the proliferation of digital environments of knowledge and the accessibility of information either in courses and/or in pedagogic supports, the process of learning has been changing significantly. In France, this process that relies on information literacy depends greatly on teacher-librarians who have both pedagogical and educational missions in schools. They have to facilitate pupils' autonomy and develop their desire of learning and curiosity. So they deal with other members of the teaching staff, general issues related to training, mediation in the field of information and communication. Indeed, the velocity with which the projects of Information and Communication Technologies (ICT) have developed in France may explain the great attention given recently to the development of the teacher-librarians' profession as well as the growing interest in training with ICT. This latter has become a central concern in France.

The growing number of French e-learning projects such as "ENT" and "3C" that have emerged over the last few years is very significant. These two projects involve several partners that have different roles and purposes: pedagogic staff, institutional and political actors, etc. Here is a brief description of these projects.

The ENT

Since 2006, both researchers and professionals in education focus on trainees' practices (Genevois & Poyet, 2009) through ENT. They reveal what trainees do with online services and resources, and how they feel about communication knowledge using these new technological tools.   Besides, we learn from other

recent French research papers that the network of knowledge in communication is widening. Not only are trainees and trainers interacting in a better way using the ENT (Lucisano, 2010), but also parents have access to this new educational platform. In addition, recent research confirms that the ENT plays an increasing role in the sharing of knowledge (Bruillard, 2011). Its online services allow an interactive and real-time production of meaning between decision-makers and remote users, who represent the citizens that require democratic and equal access to information and knowledge (Badra, 2010).

The 3C
Over the last three years, learning center projects called the "3C"[1] have emerged in France that interest both local authorities and decision-makers in education. Research organizations, local actors and economic stakeholders have participated in the development of these projects. Some of these projects involve trainers in secondary and higher education as well.

The study published by the *Caisse des Dépôts* in May 2011 reported the main realizations, objectives and partners of the most ongoing projects that will be achieved in 2014. From this report what emerges is that there is no single model   Despite the existence of convergences, conceived models and the projects in progress vary according to the contexts where they will be implemented.

Thus, the projects of Lille 1 and Lille 2 are the main learning center projects funded by the Pas-de-Calais General Council[2].   This constitutes the biggest operation of the campus plan of Lille and the third most expensive learning centre project in the last decade in terms of libraries in France. These projects should develop innovations and clusters at the regional level in order to sustain urban development Focusing on archeology and information literacy, these projects should mainly promote science to the general public and future students in high school and colleges and stop the growing disinterest of young people for studies and careers in science and technology. They should also strengthen the relationship between enterprises, research laboratories and training.

Another project developed by the Department of Seine Maritime in France will represent the largest equipment of the future Condorcet campus that regroups 43 libraries[3]. It is seen as a common place where scientific experts from different disciplines can interact easily about their research expertise. The Aubervilliers project Learning Centre is dedicated primarily to a specific public (Masters and PhD) in which co-constructed documentation and research is paramount, and where the library represents the scientific heart of this project. This project will permit a central location of circulation on campus, in which collections and users will co-exist.

Beyond the promises and expectations announced by these projects concerning the strengthening of democratic access to information and knowledge through ongoing projects, appreciating the meaning that individuals are giving to these objects under construction is required.

We note through the study of art, that a very special attention is given to the collection development policy and to the library' services. In fact, focus groups of teachers, librarians and headmasters are beginning to form to share their opinions about these projects and reflect together on their implementation.

How teacher-librarians and headmasters experience, perceive, apprehend, understand and conceptualize the ENT and 3C in France? What is the role of trainers in digital literacy who are responsible for trainees' education? After reviewing the relationship between information literacy and ICT projects as analyzed and discussed in the literature, the paper will attempt to provide some items of reflection about these projects' management from the trainers' viewpoint.

The Role of ICT Projects in Digital Literacy

The wealth of knowledge and information disseminated assumes that users are able to identify their information needs, select those that seem sustainable, assess them, and finally use the most relevant to make a better use. The interest for information literacy is not new. It goes back to the 1970's and was officially defined by the American Library Association Presidential Committee on Information Literacy in 1989 (Behrens, 1994). However, ICT looks to be a significant asset for mastering information literacy (Fourgous, 2010). This capacity occupies an important place in the digital age but it is difficult to achieve because of the abundance of the information disseminated in several infrastructures, platforms, applications, software, and data repositories. How could learners in elementary, secondary and post-secondary reap the full benefits of the digital age?

Trainers including teacher-librarians who have usually been considered as the specialists in pedagogy and transmission of knowledge and had been seen as the masters at utilizing these skills are no longer the only actors in these fields.

In the literature, two types of works deal with this topic. The first describes the learning's purpose today that goes beyond reading, writing and counting. As declared in the website of the National Forum of Information Literacy,

> Our rapidly evolving digital universe demands that we all become masters of information literacy practice, moving beyond the traditional literacy levels of reading, writing, and arithmetic while embracing information and digital literacy in the process. (NFIL, 2013).

From now on, information literacy practice must develop critical and creative thinkers who know how to solve problem and what information to use from diverse print and digital resources that lead to successful outcomes (Bruce, 2000). Whatever possible source information comes from (e.g., computer, book, government agency, film, conversation, video, poster), information literacy requires looking at each format with a critical eye (Eisenberg, Lowe, & Spitzer, 2004). So what is the role of teachers, especially teacher-librarians, in digital literacy?

Anglo-Saxons' works present information about literate behavior. Michael B. Eisenberg, Carrie A. Lowe and Kathleen L. Spitzer (2004), for example, who provide an exhaustive review about information literacy definitions, types, characteristics and steps, cited M. F. Lenox and M.L. Walker who noted the conditions to be information literate:

> First, someone must desire to know, use analytic skills to formulate questions, identify research methodologies, and utilize critical skills to evaluate experimental and experiential results identified. Second, the person must possess skills to search for answer to those questions in increasingly diverse and complex ways. Third, one a person what is sought to be able to access it. (Lenoix & Walker, 1993, p. 314).

So how could teacher-librarians support the information literate to be independent and flexible learners, to adapt to change and carry out various functions alone as well as in groups?

Trainers who are new users of these technologies see their professional practices changing. Michel Dubois (Dubois, 2013) raised precisely this point and provided different factors (cognitive, social and organizational ones) that may justify the acceptability degree of ICT. Two behaviors in using technologies are observed by this professor in psychology: conformity and non-conformity. According to Michel Dubois, some users are appropriating ICT that has become for them a source of creativity and enrichment, whereas, others find ICT' use difficult and inconvenient to their professional practices that seem complex and fragmented. So they adopt negative attitudes toward these technologies (diversion, bypass) that are due mainly to the image they have in themselves. How can we develop a collective consciousness and common interests to have active trainers like teacher-librarians in the digital literacy?

The second type of work focuses on the benefits of ICT in education in France. From 2008 to 2010, the center of attention was given to the ENT project (Genevois & Poyet, 2010). Since then it has been moving to learning center projects (Jouguelet, 2009). The evolution of this attention follows the political decisions and purposes in education[5]. We observe from the study of the main works, the difficulty to define clearly these concepts using the same terms (Bouquillon & Pailliart, 2006).

The concept of the learning centre, for example, was defined differently, despite the existence of a consensus about the purposes of the projects. According to G Bullpitt (2009), "A Learning Centre is about learning, not about collections" (Bullpitt, p. 3). In a technical report written by the International Organization for Standardization (ISO), the learning center is an "area of the library dedicated to the learning objectives of knowledge. It incorporates most library services and new technologies, with in most cases a wireless *network, multimedia equipment* and services for users by librarians or technology specialists" (2008, p. 219). A learning center can be separate equipment, inside or outside of the library, or an integral part of the library. For the leaders of the University of Technology Delft (Netherlands) the

learning centre represents, "Your home when you're away from home!"
(Corlay & Le Postec, 2009, p. 22). The central library of the Imperial College
in London gave another definition: "Learning centre is the meeting of 3Cs
that is to say Computers, Comfort and Cappuccinos" (Corlay & Le Postec,
2009, p.23).

The concept of ENT is defined differently according to the state of the art. For
Leclercq and Boissière (2007), the ENT project becomes a common shared
skill between the State, the educational community and the local authorities as
they are involved in its development. Despite the convergence in the purpose
of its implementation, Rinaudo and Poyet (2010) show the lag between the
expectations of decision makers and the actors responsible for the
implementation of the project that are also users. We find that the concept
itself was represented in different ways too . For institutional actors, the ENT
is a platform, a portal that offers online access to a set of services and
resources such as e-courses, email, etc. It is seen as a digital pedagogic space
that supports the practices of trainers in information literacy and strengthens
the collaboration inside the educational system.

For local authorities, the ENT is the appropriate tool to fight the digital divide
between regions, between schools and pupils. They are attached to some
values mainly the access to citizenship, knowledge democratization and
accessibility to public services. These objectives represent for them the main
reasons of ENT development in their territories.

Why is it difficult to define in a clear way the concepts of ENT and 3C? Is
this situation just due to the difficulty to transpose the Anglo-Saxon concepts
into the French context? How is it possible to overcome the ambiguity of the
concept and the blur in the definitions? These points will be discussed in the
next section.

Meanings of ICT: the Case Study

Although there is significant literature on this topic, it is mainly produced by
experts in education science. The purpose of our case study is to address the
question of 3C and ENT focusing on the perspectives of practitioners in the
field. Teachers and librarians who have been considered for a long time as the
specialists in pedagogy and transmission of knowledge and who have been the
masters at utilizing these skills are no more the only actors in these fields.
In addition, headmasters whose role is to provide a well-rounded learning
environment for pupils must act as a liaison between school board members,
government officials and parents. They provide guidance for teachers and
must be sure that everything that deals within the school is in keeping with
state general policy in education.

Through the multiplicity of ICT projects and the support of the State in
France, we can presume the particular attention that trainers and headmasters
are assigning to new educational practices of knowledge appropriation and
transmission. We can also presume that an agreement has been given to the
purpose of these projects considering the expansion use of these concepts.

Research Method Description

We chose to analyze the behavior of teacher-librarians who are considered as mediators in information and knowledge access because of the importance of their role in information literacy: they facilitate pupils' learning in research and selection of relevant information. They have the status of teachers in schools and colleges in France. We focus our attention on school headmasters too because they ensure the implementation of ICT projects in their schools. So, they are in constant contact with both teachers, other institutional and political actors. The final goal of this study is to compare their mental models and describe their mindsets in order to explain these people's actions.

As rightly pointed out by Senn (1998), the challenge is to learn. This goes beyond an instrumental learning. Do the conceptions and viewpoints of these two actors' profiles converge? And how do their perceptions influence the management of ICT projects?

We conducted a qualitative study based on observations and interviews. We interviewed from September 2012 to October 2013, and at different times of ICT project development, 20 persons whose institutions are concerned with ICT projects: We observed 10 School headmasters in colleges and high schools in Clermont-Ferrand and 10 teacher-librarians who are responsible of training in information research and retrieval.

The study carried out includes gathering qualitative data, feedback and suggestions from participants about the development and implementation of ENT and 3C projects in their school:

1. We checked out of two quantitative surveys obtained by students registered in 2nd year Master of Science in Information programs we directed from 2010 to 2012.

2. Details were collected on the number of participants, the geographic location of schools, and their involvement degree in the two ICT projects.

3. Observations from participants were solicited at each special focus group in which we participated.

4.   Feedback was obtained by conducting three rounds of telephone or in-person interviews.

The study identified the area of knowledge about ENT and 3C and attempted to determine how the ongoing project management influences professional practices in information literacy.   It gathered a range of opinions about the use of ICT in teaching, the facilities and resources provided and the policies and practices within the institutions. Interviewees dealt with these main aspects, which we analyze and discuss in the following section.

Main Findings: A general assessment

The interviewers were aware of new projects and recent guidelines of the French Ministry of Education for the establishment of 3C. Most of them

indicated they were more familiar with ENT but were not yet ready enough to use the 3C because of the space limitations,
Two thirds (67%) of the participants perceived ICT as very helpful, whereas only less than a third (28%) of the respondents considered them obviously essential to improve information literacy acquisition.

The 67% of respondents, who were in favor of ICT projects, believed that 3C will surely improve the visibility of the library and the role of librarians. They also saw the interest of services and resources provided by the ENT. The users have a free access to this offer that encourages them to be autonomous in their knowledge acquisition.

The remaining 28% focused their viewpoint on the actual situation of their documentary policy that does not promote the transition to the 3C nor the spread of ENT services.

About ICT Projects' Position
All of the respondents agreed about the interest of the ENT and 3C from the logistics point of view. For them, these projects will seriously fill the actual problem of access. They indicated that the number of co mputers in libraries is limited, because of additional multimedia classrooms located in the schools. They observed the massive use of posts which is continuous and without interruption throughout the week. Besides, they said that the recent 3C project will simplify the online access to library resources.

Concerning the benefits of these technologies on teacher-librarians, the opinions differed. In fact, some school headmasters (70%) believed that through these projects, librarians will be able to be more creative while rethinking the design of the space and collections in order to create "dynamic centers." So, documentary collection well be better identified and further identifiable by users. Other headmasters (30%) said that the concept of 3C is still too recent in librarians' minds, which does not allow them to understand the logic of learning centers based on learning, mediation, versatility staff, computerization of certain activities, etc.

However, teacher-librarians did not object this development but they had unwillingness towards computers. In fact, they did not have trust in the ofreliability the system and had not integrated all the features of the ENT until now. They wished that the project of 3C allows more multimedia space, a better network and suitable working conditions for them and users. One of them emphasized that learning centers are not places for gathering documents; it is a resource center that provides learning and culture to users.

ICT Projects and Educational Practice
Concerning the impact of ICT projects on their professional practices, all the interviewed teacher-librarians highlighted their role in mediation for educational purpose and not for leisure perspectives. We noticed that the human factor and the user are central for them. In fact, we asked librarians to rank their missions to pupils in order to better understand the vision they have

of their profession. They mentioned first knowledge diffusion and the provision of information, followed by work and activities of mediation and support of learning.   Cultural action was ranked last,

The analysis of results revealed that cultural action is not a priority and still proposed sporadically while culture is one of the most prominent rudiments of the learning center in which the staffs have to provide cultural openness to the greatest number.

Thereby, almost all the interviewed headmasters of schools (90%) admitted that being involved in the area and in the activities offered by the local cultural facilities as is described in the Learning Center is not developed enough. Meanwhile, the same number of interviewed librarians (90%) did not consider themselves as resources persons in the culture field within their institution. The lack of time and low demand of pupils are the main reasons suggested by the librarians to justify this fact. They considered that culture is devoted to teachers of this discipline.

In addition, teacher-librarians are still much attached to printed collections. They wanted to buy only coupled subscriptions (paper and electronic) or CD-ROM not to risk losing the data at the end of the subscription. They noted that collections available in the libraries are mostly documentaries with a predominance of documents related to the courses given by teachers at all levels and fields.

One of the school headmasters assumed that librarians are not following the logic of the learning centre in which information content must prevail over the support. He added that the librarians are still attached to the book and do not dissociate the container and the content.

The project of restructuring will not change librarians' attitude. Another headmaster said: "We need to create a "trigger" among them, through training for example, to move towards more immaterial collections. "

The Actual Requests

From the teacher-librarians' viewpoint, the 3C project will not solve everything. It began ten years ago, was frozen then restarted. Even if they claimed they are willing to move towards more digital resources, the fact is that they do not buy electronic subscriptions enough in addition to the printed documents. Libraries had still frozen spaces with little area (around 20m²). Accordingly, we can say that there are many differences between the ICT projects and the actual organization of schools in Clermont-Ferrand. The teacher-librarians declared that they had a materialistic vision of their profession. They emphasized improved comfort spaces in the proposed restructuring, etc., while the concept of ENT and 3C are more abstract, focusing on learning, human mediation, digital resources, autonomy, etc. We can summarize these two entities as follows: The learning center is a place of life; the library is a workplace.

Technically, schools are not ready yet to evolve towards the learning center and to fully digital design. Until now, schools are partially wired. Internet connection is available at some locations. This situation will be resolved with the restructuring project. However, the only problem that remains is that pupils do not have online resources available outside the schools. The lack of online catalogs specific to the library does not allow them to use more easily and quickly at home the library services such as booking.

Teacher-librarians, who always prefer the acquisition of printed support, believe that collections will be increasingly dematerialized. They are conscious that they have to support pupils who opt easily for viewing digital resources in their research practices. However, they believe that the budgetary and human resources are not sufficient to ensure the transition to all digital. So, more should be done to improve the technique and reliable digital tools to achieve the objective of the proposed facility on digital resources. Furthermore, librarians in schools told us that in theory, the library's locations can be used for internal meetings, conferences, outdoor events, but in practice, this is impossible and difficult to implement because the local infrastructures are inadequate.

According to the headmasters, the library and the librarians must draw to a new logic closer to the learning center concept to advance and support these developments and all these changes.

Partnerships to Enhance
The interviewees gave their opinion about the existing ICT projects in schools and universities. From the headmasters' viewpoint, training with 3C and ENT is a global project that concerns both schools and universities. These two institutions must work together on a common model to imagine the future, exchange and debate about their missions. They believe that the separation between secondary and higher education must also be discussed not only among managers of ICT projects, but also between the teaching teams in schools and universities. One of them said: "The target audience and the objectives are the same. Today's pupils will be tomorrow's students." Another said, "Learning with ICT is the main issue to which secondary and higher teachers should consider because young people are digital native and we should follow the evolution of their practices."

Teacher-librarians who agreed on this idea asked about the means to achieve this objective. They recognize that they are far from the facts as there are few opportunities for collaboration between high schools and universities. These collaborations designed often to inform bachelors of the training offered at university. In fact, it is no reflection on the evolution of common learning processes from school to university.

Conclusion
First of all, we note that the documentation process is and remains the primary mission of librarians. According to school headmasters, librarians fulfilled basic tasks: the provision of documents, the dissemination of knowledge. Cultural action came afterwards. They assumed that librarians do not position

themselves as resource persons at the cultural level. They remain in their missions related to the document and to the student (learning assistance, provision of working tools).

Then, we realize that the priority of most interviewees under discourse analysis is to review the architecture of the buildings. They highlighted the benefits of ICT projects that will lead to the refitting spaces dedicated to the training and support for pupils. They noted very often that the spaces reserved for documentary collections are insufficient and still saturated.

In addition, we noticed that the ICT projects are welcomed because these projects will enhance the image of the school and make them more visible on the Net. School resources and advice on information and training will be available to pupils at any time. Thus, the librarian can fully play its role of mediation.

Finally, we saw that the representations and visions differ regarding ICT projects mainly 3C. We observed that it was not a familiar concept for library while headmasters had better knowledge on this subject.

Toward a New Culture of Digital Literacy in Education

According to David Aymonin (2006), Director of the Library of the Rolex Learning Center, the new concept of 3C cannot be applied if it is not the result of a global reflection, responding to the specific needs of the population it serves and related to local realities. So instead of the term of transposition, it is perhaps that hybridization which should be used.

First, we must empower librarians already in place to monitor developments and participate in the learning center project. So advocacy, information and support are essential and should be done in connection with the academy. These librarians need more training to develop competences and knowledge in new technologies and better representation about the concept of the learning center. The purpose of this recommendation is to reduce the gap between the goals of the institution and the reality on the ground. It will be required to give further time for staff to adapt and appropriate tools such as e-learning platforms and appropriate the logic of the learning center. Librarians have a clear vision of their everyday job without considering to projects at medium and/or long term.

Besides, we should work together on a common model to imagine the future, exchange and debate about their missions. Trainers must be involved in the management of these projects to move the focus to pupils and learning. The reinforcement of communications should make trainers better informed of new challenges that go beyond changing simply places or information resources. The relationships between primary, secondary, and higher education must also be discussed, not only among managers, but also between the teaching teams. The target audience and the objective are the same.

As Aymonin Davis rightly pointed out, "The library of the 21st century will be a reflection of the Internet, more open, more flexible, and more scalable" (Le Deuff, 2012). It is assumed that the library will follow this direction, and that teachers and professionals will design documentation together for this new living and learning.

We had two profiles of respondents who had different visions and representations. Principals are against a culture of fear toward ICT. They advance the benefits of their deployment (democratic access to knowledge for all pupils and fight against the digital divide), while librarians are very cautious and mindful of the addiction often associated with the Internet and the social networks.

We believe that it is necessary to analyze further how the issues raised by the ICT go far beyond the technological environment in which these technologies are embedded to reach broader concerns about the awareness of trainers so they can find their interest in the use of technology and start applying it in their practices. It is not sufficient to make accessible these tools to trainers quickly.

We should support trainers who are willing to use ICT projects but do not know how to do. We should also identify the factors of reluctance, hesitations and refusal of others trainers. It is essential to be careful with the remarks, attitudes and representation of each trainer because the major role to educate young people to "risk" or learning of life.

It is essential to provide better support for these trainers. This support should be over time taking into account different levels of knowledge and mastery of ICTs. Our survey leads us to see that trainers are willing to move towards more resources to digital media to follow pupils in their developments. They want to play their full role of mediation but do not see concretely how to do. It will dwell on the work changes in relation to the new features and focus as the conditions of inclusion and acceptance among trainers who have knowledge and varied objectives. Indeed, the trainers have to deal with an arsenal of ICT with whom they feel a certain overwhelmingness because they have to train for iCT, find them useful, include them in their work, and connect with other existing and evolving practices. It follows also higher expectations from the guardianship that needs somehow to the image they use ICT more efficient, responsive, proactive, and available. Moreover, the information provided by the managers of ICT projects focuses on reporting of work, financial results, raw data, reports and meeting. This seems insufficient for trainers to adhere to ICT projects and find their interest because problems and hazards encountered are not always explicit or formalized.

In sum, we believe that ICT projects despite the divergent representations will overcome the traditional divisions. ICT offer the resources for collective sharing and managing projects. They are useful for coordinating common actions. However, we remain convinced that it is essential to establish areas of consensus among participants, to build a common representation of learning,

to foster synergies and to establish a mutual trust between trainers and managers.

Notes

1. http://eduscol.education.fr/cid59679/les-centres-de-connaissances-et-de-culture.html
2. http://learningcenters.nordpasdecalais.fr/
3. http://mediat.upmf-grenoble.fr/servlet/com.univ.collaboratif.utils.LectureFichiergw?ID_FICHIER=1343379275904
   http://multimedia.enseignementsup-recherche.gouv.fr/guide_plan_campus/bibliotheque/index.htm
   https://workspace.imperial.ac.uk/library/Public/CL_redevelopment.pdf

References

Badra, L. (2010, March). Contexte institutionnel de l'ENT d'Auvergne. *Espaces numériques de travail* (Final Report). Lyon: INRP. Retrieved from www.stef.ens-cachan.fr/ent/ent_journée_rech_1103219.htm

Behrens, S. J. (1994). A conceptual analysis and historical overview of information literacy. *College and Research Libraries*, *55*(4), 309-322.

Bouquillion, P., & Pailliart, I. (2006). Le déploiement des Tic dans les territoires - Le rôle des collectivités locales, PUG, Col. Communication en plus.

Bruillard, E. (2011). Le déploiement des ENT dans l'enseignement secondaire : Entre acteurs multiples, dénis et illusions. *Revue française de pédagogie* (INRP, 2011), *4* (177), 180.

Bruce, C. S. (2000). Information literacy research: Dimensions of the emerging collective consciousness. *Australian Academic and Research Libraries (AARL), 31*(2). Retrieved from http://eprints.qut.edu.au/46274/2/46274.pdf

Bullpitt, G. (2009, June). Les learning centers: De nouveaux espaces pour une nouvelle façon de travailler avec les étudiants, ENSSIB. Retrieved from http://www.enssib.fr/bibliotheque-numerique/document-40663

Corlay, B. & Le Postec, V. (2009, April). Learning center en Auvergne, bibliothèque intégrée à l'enseignement et à la recherche (Report of Collectif Project). Clermont-Ferrand: Département métiers de la culture, 82,

Dubois, M. (2013, March). Les usages des TIC au travail. Retrieved from http://mutudocnum.wordpress.com/archives-journees-detude-mutudocnum/animations-scientifiques-a-venir/presentation-des-thematiques-de-la-journee/conferences-invitees/

Eisenberg, M. B., Lowe, C. A., Spitzer, K. (2004). L. *Information literacy: Essential skills for the information age* (2nd ed.). Westport CT: Greenwood Publishing Group,

Fourgous, J.-M. I.(2010, February). Réussir l'école numérique, Rapport de la mission parlementaire sur la modernisation de l'école par le numérique.

Genevois S., Poyet, F. (2009). Les usages pédagogiques des ENT d'Isère et d'Auvergne. Report, INRP.

Genevois, S., & Poyet, F. (2010). Espaces numériques de travail (ENT) et «
    école étendue ». Vers un nouvel espace-temps scolaire ? *Distances et
    savoirs*, 8(4), CNED, Hermès Lavoisier. Retrieved from
    http://eductice.inrp.fr/EducTice/projets/usages/apparent/enquete2009

International Standard Organization.(ISO). *Qualitative conditions and basic
    statistics for library buildings: Space, function and design* (ISO Technical
    Report 11). Geneva: Author.

Le Deuff (2012). Entretien avec David Aymonin sur le learning center.
    Retrieved from
    http://www.guidedesegares.info/2012/02/02/entretien-avec-david-
    aymonin-sur-le-learning-center/

Lucisano, H. (2010). L'enquête en ligne sur les pratiques professionnelles des
    enseignants documentalistes.

Leclercq J.M., & Boissière J. (2007, December). Le projet ENT : Bâtir un
    système scolaire numérique de confiance pour toute la communauté
    éducative. in "*L'ENT et l'Ecole étendue*", *Les dossiers de l'ingénierie
    éducative*, '-4-760. Retrieved from
    http://www2.cndp.fr/archivage/valid/93838/93838-15542-19530.pdf.

Lenox, M.F., & Walker, M.L. (1993). Information literacy in the educational
    process. *The Educational Forum, 57* (2), 312-324.

Jouguelet S. (2009). *Les Learning centres, un modèle international de
    bibliothèque intégrée* à l'enseignement supérieur et à la recherche. MESR.
    Retrieved from http://media.enseignementsup56 recherche.gouv.fr/file/
    2009/33/6/Rapport_Learning_Centers_7-12_RV_131336.pdf

National Forum of Information Literacy (NFIL). (2013). Workplace
    information literacy. National Forum on Information Literacy. Retrieved
    from
    http://infolit.org/workplace-information-literacy/

Rinaudo J.L., & Poyet F. (2010). Introduction. des recherches sur les
    environnements numériques en milieu scolaire. Lyon, INRP, collection
    technologies nouvelles et éducation.

Senn Breivik. P., & Senn, J. A. (1998). *Information literacy: Educating
    children for the 21st century*. Washington, DC: National Education
    Association.

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