

USE AND APPROPRIATION OF VIDEOTRAINING :

AN EMPIRICAL INVESTIGATION

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Abstract

This paper focuses on the evaluation of the use of web-based videoconferencing for e-learning. Internet technology is having a great impact on e-learning. But little is known about the effect of the use of videoconferencing for e-learning.

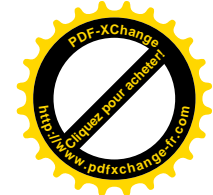
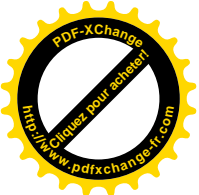
In the first part, through a review of the literature we can present the questions which are specific to the video conference media in the context of training. The evaluation is based on user satisfaction and acceptance models but tries to take into account appropriation issues.

The second part describes the methodology and the protocol for the videotraining experiment in a true situation, set up within the framework of a research contract with a large company which enabled us to closely monitor about twenty sessions of videotraining in the true context of a large French firm. The use of two conferencing tools was observed in detail: the use of an individual computer in what we call a “virtual class” and the use of a distant class.

The third part explains the results in terms of use and appropriation of this new training system.

Keywords

In-training systems, Videoconference, e-Training, e-learning, Information and communication technologies (ICTs), evaluation, ICTs uses, remote training, distance training, appropriation, uses, acceptance.



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INTRODUCTION

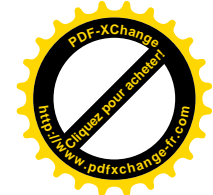
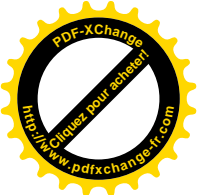
The development of the Internet and personal information systems has introduced new possibilities in the field of training, notably for distance training. In this context, videoconferencing appears to be a promising technical device, for trainers and learners.

Videoconferencing and Meetings

Research on the use and adoption of videoconferencing in French organizations (Gerbaix 1993; 1997 ; 2002) has brought to light the emergence of « video-meetings » for operational or strategic coordination or project-monitoring in the automobile, aeronautics, telecommunications, and electronic sectors. Some of these projects, to the astonishment of their initiators, have led to very little or no use, which would considerably hinder the development of subsequent projects. Research on the reasons for this failure or success has brought to light varying factors :

- socio-technical factors such as problems with malfunctioning equipment in a real distance communication in which non-specialists use technical systems, or such as « network effects » incidences, for an emerging communication technology (Gerbaix, 1993 ; 2002)
- socio-organisational factors (lack of accompaniment and co-ordination between remote sites) (Ologeanu, 2005),
- socio-economic factors (few benefits perceived compared with those expected, both from the point of view of the organisers and users) (Ologeanu, 2005).

Besides, according to research carried out at the beginning of the nineties (Gerbaix, 1993), the success of a video conference depends on the type of communication situation. These communication situations have been characterised by their degree of complexity and uncertainty, estimated from criteria such as : the characteristics of the communication situation (more or less structured, requiring greater or lesser intensity of exchange), the participants (a



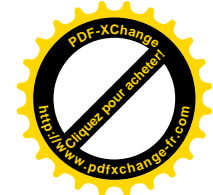
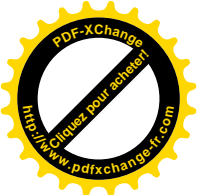
greater or lesser number, forming more or less homogeneous groups), and the organisational modalities of the session (a more or less scattered group, impromptu sessions or, inversely, planned and successive). Research carried out led us to the conclusion that, at least at the beginning of its use, videoconferencing seemed to be better-suited to sessions whose degree of complexity and uncertainty was not too high such, as successive sessions, between two distant sites, involving homogeneous groups of participants.

Videoconferencing and Training

Videoconferencing- supported training, or videotraining, has given rise to few experiments and to even fewer studies being published. Why is this ? Probably because, for some authors, videoconferencing cannot claim to be an e-Training tool since it does not make it possible to deliver knowledge in the absence of a trainer, at any time and any place, according to the classical definition of distance training (Glickman, 2002).

And yet training through videoconferencing has given rise to a few experiments since the nineteen eighties, notably in companies and further education. In spite of the evolution in technical media, however, (videoconferencing by satellite, by specialised links, via the RNIS and IP networks), it has not managed to go beyond the experimental stage and lead onto more generalised use (Ologeanu, 2005). In this context, the few studies that do focus on the videotraining tool are based on two important points :

- **the quality of training**, envisaged from two aspects : the interest of the students for what is being taught during the video conference (or rather their performance, Enkvist 1994) and the educational efficacy of this technique compared with face-to-face training, leading either to greater interaction (Goodfellow, 1996), or to less crossing-over and better co-operation between learners (Marquet, 2003; O'Conaill, 2003, Rutter, 1987 ; Sellen, 1995) or, finally, to a supply of new knowledge (Enkvist, 1994). In this topic, the "best" videoconferencing seems to be this one which is similar to face-to-face (Ologeanu-Taddei, 2008). For instance, O'Conaill et al (1993) make hypothesis that the devices which produce an optimum quality of picture and sound should produce forms of dialogue close to face-to-face dialogue. In fact, the comparison of face-to-face dialogue with the dialogue that is supported by two videoconferencing devices, of different qualities, shows that the lesser quality device is however the



closest to face-to-face dialogue, without ever equating it. Although videoconferencing device seems to be able to reproduce the face-to-face interaction, these findings show that it has an influence on the processes of communication (Marquet, 2003) while others authors consider that videoconferencing, like other technical systems, is « neutral » and allows various uses (Clark, 1994 ; Collins, 1995). The fact remains that, after technical implement was chosen, it shapes and limits possible uses. (Quéré, 1992 ; Gerbaix 1993, 2002 ; Ologeanu, 2005).

- **conditions for the emergence of uses**, or any eventual moving from the experimental stage to that of generalisation of uses (Gerbaix 1993 ; Moeglin, 1994 ; Ologeanu, 2002). Videotraining is thus envisaged in the perspective of an organisational change required in a process of socio-technical innovation. In practice, it would appear that different participants who wish to generalise the use of videoconferencing (institutional deciders on one side, trainers on the other) pursue aims which turn out to be contradictory : to reduce training costs for some, to improve the quality of training for others.

It is therefore important to analyse the first uses of videotraining under real training conditions, in order to confirm whether or not there are really potential advantages, and to estimate the limits or risks. This paper focuses on the evaluation of the use of videoconferencing for professional training.

In the first part, a review of the literature will enable us to present two types of outcomes model related to the questions specific to the evaluation of video conferencing within the framework of a training course. The second part will describe the methodology and experimental protocols for videotraining in a real situation which we set up within the framework of a research contract with a large French company. The third part explains our results in terms of use and appropriation of this new training system.

1. EVALUATION MODELS FOR VIDEOTRAINING SYSTEM.

We may consider two types of outcomes model, models based on use and models based on appropriation.

1.1 Models based on Use : acceptance vs requirements

In the first perspective, that of use, as presented in Figure 1 below, models are based on acceptance or on requirements.

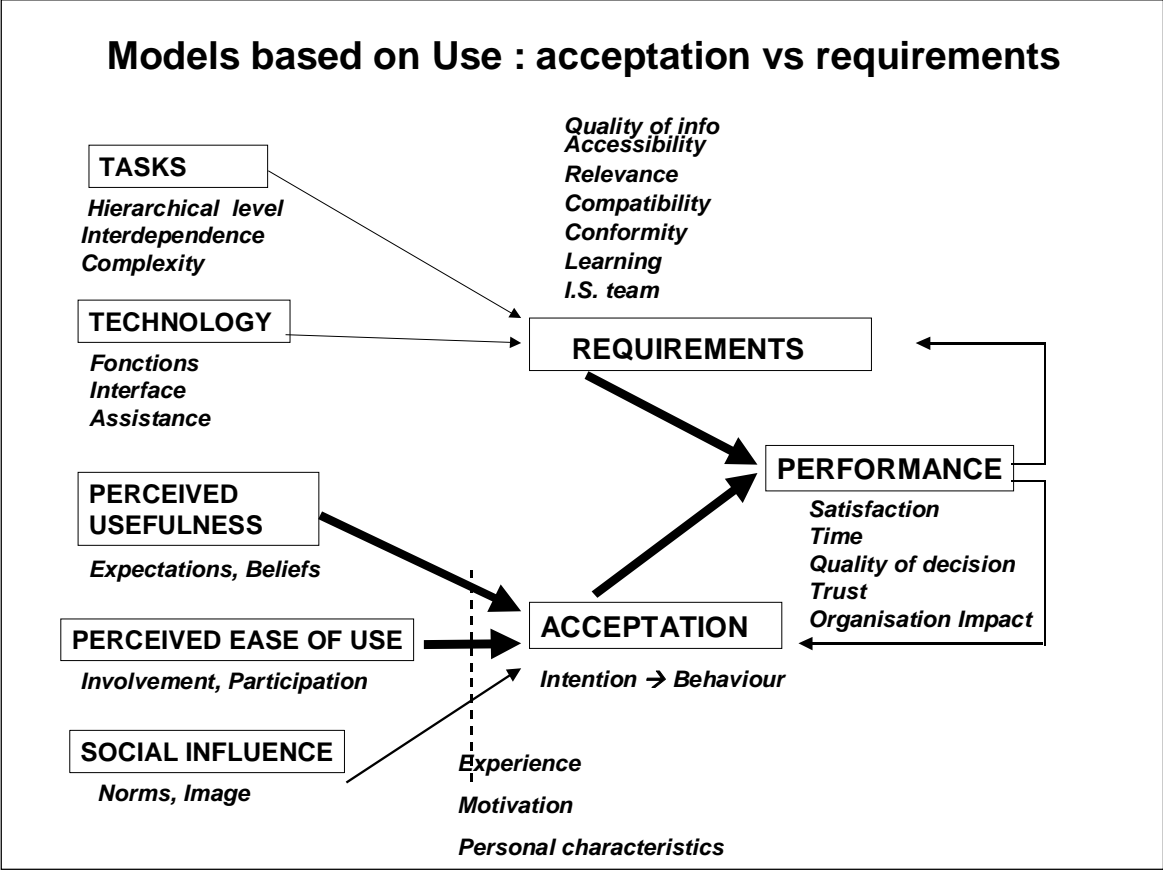
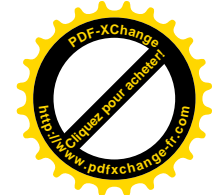
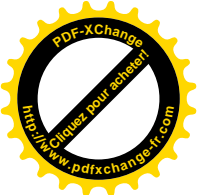


Figure 1. Models for the evaluation of I.S, based on Use

a) The use-models based on acceptance refer to the TAM (Technology Acceptance Model) (Davis, Bagozzi et al., 1989) : the behaviour of an individual is conditioned by his/her intention to adopt, and this depends on two variables, **perceived usefulness and the perceived ease of use**.

Segars and Grover (1993) distinguish six “perceived usefulness” indicators: work more quickly, makes job easier, useful, increase productivity, effectiveness, job performance. Venkatesh and Davis (2000) define perceived usefulness specifically as the extent to which the object of adoption is thought to enhance the individual's performance on the job. Others authors, however, define perceived usefulness as subjective utility to the citizen or consumer, depending on the context (2000, p. 187)



Segars et Grover (1993) distinguish for “perceived ease to use” indicators : easy to use, easy to learn, easy to become skillful, clear (understandable). Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Davis, 1989). Venkatesh, with the unified theory of acceptance and the utilisation of the technology (UTAUT), also brought out the importance of *social influence* and a certain number of *moderating variables*, which would apparently explain 70% of the variance in the intentions of use (Venkatesh et Al., 2003).

b) The use-models based on requirements focus on Task-Technology Fit Theory, according to which IT is more likely to have a positive impact on individual performance and be used if the capabilities of the IT match the tasks that the user must perform (Goodhue and Thompson, 1995). Goodhue and Thompson (1995) developed a measure of task-technology fit what counts ease of use/training, production timeliness and relationship with users.

1.2 Models based on Appropriation : aims and changes

In the second perspective, that of appropriation, the implementation of a new kind of technology is above all a process of human and social change. Appropriation is a concept of the adaptive structuring theory (AST) developed by Desanctis and Poole (1994), with a mutual influence of « social structures in technology » (an institutional spirit, structural characteristics, routines) and « social structures in action » (chosen and explicit interactions and experiences). The reflexive relationship linking *situated interactions* with *social structure* allows us to confirm the duality of a structure, which has both been allowed and created by these interactions). Orlikowski (1992) thus introduced notions about "the duality of technology" and "interpretative flexibility".

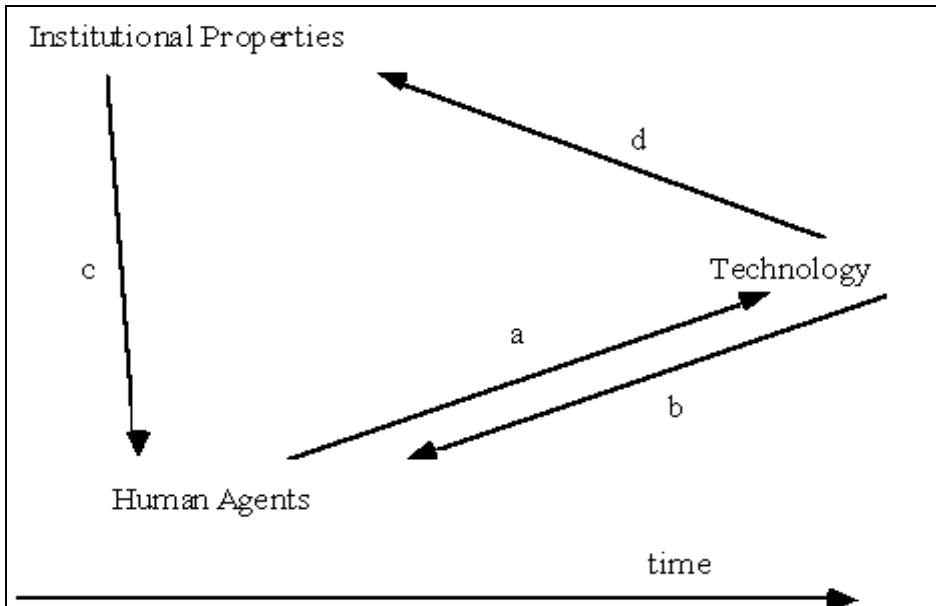


Figure 2. Structuration Model of Technology (Orlikowski 1990).

a technology as a product of human agency

b technology as a medium of human action

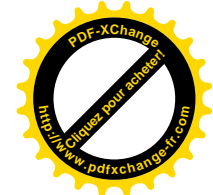
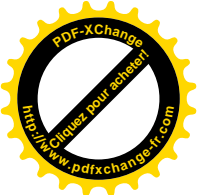
c institutional conditions of interaction with technology

d institutional consequences of interaction with technology

The technology appropriation assumes two levels (de Vaujany, 2000) :

a) First, on the level of the aims of the technology (in which purposes it is used, individually or collectively.) Desanctis et Poole (1992, 1994) suggest a certain number of dimensions to assess this level of appropriation : the appropriation mode (which corresponds to the degree of originality of manners), the attitude towards technology, the sense allocated in technology, the degree of fidelity to the spirit of technology, that is the general purpose thought by the administrators of the system and identified by the final users.

In the particular context of the videotraining, we consider in this paper the degree of the uses originality and the attitude toward the technology, that is how the learners react and “compose” with the videoconferencing system. This dimension refer on the “pedagogical genders” (Fallery, 2006), which are mainly “the transmissive gender” (“traditional course” according to which the trainer is “active” and the learner is “passive” because he don’t “interact” with the trainer and his colleagues), or the



“exchange group genders” (the learners interact between them, they put questions and answer each other without trainer’s intervention) founded on the “collaborative learning model” (Leidner, Jarvenpaa, 1995).

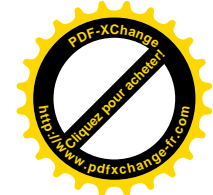
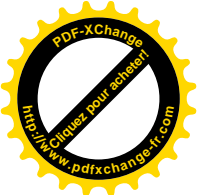
In the videotraining context, we must consider the possible changes of the pedagogical and material distances (Marquet et Nissen, 2003). The pedagogical distance focuses both on the organisational conditions and the evolution of exchanges between participants (interventions by learners and the trainer on modalities for manipulating the camera, microphone etc...), and on the operating conditions for the different forms of co-operation between the trainer and learners to meet the aims of the training : (the trainer’s urging for co-operation, reciprocal co-operation, the evolution of the participants’ attention throughout the different sequences...). The material distance focuses on apprehension about technical problems and the way they are anticipated, experienced and mastered by the different participants at various times during videotraining : errors of manipulation, technical breakdowns and troubleshooting, the conditions of intervention by technicians from outside the class, the quality of transmission etc.... It is expected that technical difficulties accentuate the distance between the trainer and learners.

b) Second, on the level of the process of social or technical structures production and reproduction of structures through technology uses. Uses, as structures in load of their management, are rather copies of structures, at first, before new structures, conventions or specific types appear in second time.

With particular appropriation of a technology by certain participants, new routines for use become standardised, whereas these were not part of the “normal” procedures for the organization or group, arising from dominant characteristics and « minds ». Appropriation is a dynamic process, from the very fact of continuously solving contradictions.

2. CONTEXT AND METHODOLOGY : AN EMPIRICAL INVESTIGATION IN A REAL SITUATION IN A COMPANY

Considering the literature, it was therefore important for our study in a real situation in a company to clearly distinguish two configurations : what we called the « distance



class » (learners meeting together in one room, with a distant trainer) and the « virtual class » (learners, separated on their individual computer set and a distant trainer).

2.1. Context and aims of the videotraining empirical study in a real training situation.

Aims of the empirical study in a real videotraining situation.

Although videotraining has already been established in a few companies, there are not many of them and their use has never been the subject of scientific evaluation. This evaluation is precisely the aim of our study, in a true professional training situation, carried out in a large company. To the best of our knowledge, this is the first study in which the use and appropriation of visio-training could be assessed at the same time by experimenting in a real situation.

In this particular company, with around 170 000 employees, spread across the whole country, the stakes are high for internal professional training with 7 000 000 hours given by the equivalent of about 1 500 full time trainers.

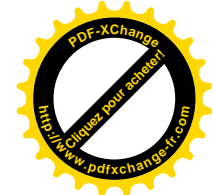
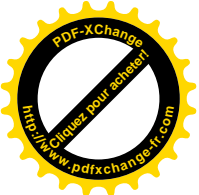
This is why the aim of the solutions retained was to give priority to interactivity and live exchanges, for small groups of learners (and not in an amphitheatre) with the possibility of participants speaking easily, with visualisation of the trainer by the learners and visualisation of the learners by the trainer or by the other distant learners.

Two technical and educational situations were retained for this experience :

- the « distance class » : the learners are gathered together in the same room (10 learners) and the trainer is situated at distance ;
- the « virtual class » : the learners and their trainer are situated at a distance, separated by their individual workstations, each one linked to the others via his computer screen, with headphones and a microphone (with the device retained training sessions could be carried out with 5 distant learners maximum).

In all cases, the learners could « interact » with the trainer (ask questions, request explanations, and make comments) :everyone could see each other and all could participate.

However the use of videoconferencing for company training is, for the moment, at the experimental stage (even though videoconferencing is often used for meetings). This is why it is important, during this emerging phase of application, to analyse the first uses in



order to confirm whether or not there really are potential advantages and to estimate the limits or risks.

Aims of the research : acceptance and appropriation of the videotraining setups.

The study has two aims:

- to evaluate **the acceptance** of these videotraining setups by the learners and their trainer,
- to evaluate **appropriation** by the learners and their trainer.

Studying the acceptance means evaluating the way in which the teachers and learners perceive videotraining, judge it and adhere to it or not. It is thus an evaluation of the teachers' and learners' attitudes towards videotraining.

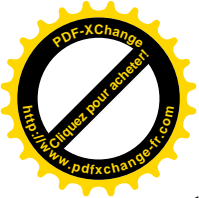
Appropriation of videotraining is defined as being the evolution of efficient use. The evaluation of appropriation focused on the following criteria :

- the uses of a technical system by the learners and their teachers, as well as their evolution throughout the experimental sessions;
- educational practices set up by the teachers in order to adapt the training to the technical tool.

It should be mentioned that the appropriation observed can only be relative, since real appropriation of videoconferencing will only be possible over time in a true, non experimental situation. Besides, the appropriation we are dealing with here can only be appreciated in relation to the videoconferencing solution chosen by the company, and its specific ergonomics. Likewise, it depends on the conditions in which the videoconferences are to be held : choice of room (lighting, acoustics), the place where the room is, availability of a technician to manage the tool, training for those who have to use the equipment...

Experimental conditions in a real training situation.

The experiment was intended to fit into the company's usual training practices and was submitted to restrictions linked to the setting up of a true situation within the organization.



19 two-hour videotraining sessions were carried out (7 in a virtual class and 10 in a distance class), involving a total of 60 learners. The theme for these sessions was internal training of an operational nature. These learners had been chosen according to the same criteria as for the « traditional » training carried out in the company.

From the point of view of availability of premises, connections and availability of a network, the training sessions all took place in the same building. The distance was thus simulated, with the teacher in one room and the learners in another. Due to this experimental simulation of the distance, it is probable that the effects of the distance were made lesser, notably the effects in socio-technical terms (functioning of the network and technical support) and in organisational terms

2.2. Methodological steps for assessing the acceptance and appropriation of videotraining

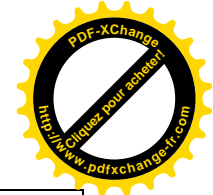
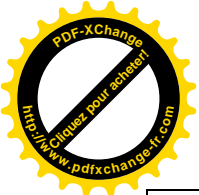
Evaluation of the acceptance by learners and teachers

The idea was to evaluate the perceptions and attitudes of learners and teachers towards videotraining, in both distance and virtual classes.

In order to measure the attitudes better, we retained several indicators. We wanted to measure these and evaluate deviations between their initial measurements before the videotraining sessions were held and the measurements after the videotraining sessions, and also measure any eventual correlation between these measurements.

Considering the TAM model, the pedagogical genders (Le Botef, 1995 ; Raynal F. and Rieunier, 2000 ; Fallery, 2005) and studies about pedagogical ant material distance (Marquet and Nissen, 2003), we suggest the following indicators:

Indicator	Definition
1. Personal characteristics	Age, sex, profession
2. Previous ICTs' experience	Previous knowledge and experience of TIC, distance training, or videotraining
3. Satisfaction	
4. Task-Technology fit	Appropriateness of the videoconferencing functions with training characteristics (e.g. didactics, pedagogical sequencing, educational method, teacher – learner relations)



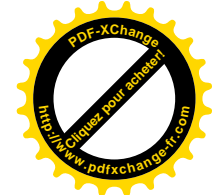
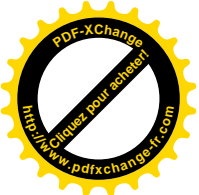
5. Perceived pedagogical and material distance	Perceived pedagogical distance: The distance perceived between the teacher and learners (in a distance class), between teacher/learners and learners among one another (in a virtual class). Perceived material (or technological) distance : here, the distance is constituted by technical mediation. It is expected that the technical difficulties accentuate the distance perceived between the teacher and learners.
6. Perceived usefulness	Timetable management, professional promotion
7. Motivation	Pleasure, self-esteem, integration in the group they belong to (family, friends, colleagues), friendly atmosphere
8. Intention to use	Intention to follow videotraining sessions, at the end of these experiments
9. Perceived ease of use	Efforts related to technical or educational skills required and the lack of informal contacts notably with the teacher

In order to measure these indicators, we used **two methods** :

- a **qualitative method** based on de-briefing (an interview) with the learners, when they came out of each video conference session, with the help of an interview grid, and on the **observing the video conference sessions**, with experiments set up and in the control group, with the help of an observation grid. The experimental conditions have not yet allowed us to make a longitudinal study, which alone would enable us to characterise appropriation by structuring cycles, by learning processes, by solving possible contradictions... Nevertheless the very close monitoring of the conditions for each of the 19 training sessions, and the textual analysis of all the de-briefing after the sessions allowed us to make a first evaluation of appropriation which focused on :

- the uses of the technical system by the learners and by the teachers, and also their evolution throughout the experimental sessions ;
- educational practices set up by the teachers in order to adapt the training to the technical tool.

- a **quantitative method**, hinging on a questionnaire combining open and closed questions. We also issued the learners and teachers with an evaluation questionnaire about their initial attitudes towards videoconferencing, before the video conferencing sessions, and a questionnaire to evaluate their attitudes towards videoconferencing



when they came out of each video conference session in the distance and virtual classes.

2.3. Analysis and data-processing

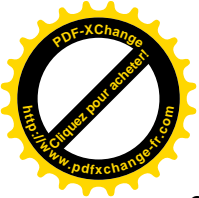
For the questionnaire analysis, five dimensions inspired by different acceptance models were constructed. These five dimensions were constructed from several answers :

The data obtained from issuing the 56 questionnaires were analysed using Sphinx-Lexica data-processing software: 14 questionnaires for a « virtual » class, 42 questionnaires for the « distance » class (the 8 questionnaires for the « teacher present » class could not give rise to a statistical-type analysis).

Three types of processing were carried out:

Simple analyses in percentages, question-by-question. Here we will only give details of the most important results. What we call « dimension » is a fusion between several questions : for example the « *motivation after the experiment* » is a fusion between four questions « *Following this videotraining course was a real pleasure ; I enjoyed the session ; I enjoyed following this training session ; I would envisage videoconferencing in future* »

- Research analyses about relationships, cross-sorted with a first dimension (*for example « distance class/virtual class*) with a second dimension (*for example « strong/weak motivation after the experiment*»). As the questions were not digital, we did not use the correlation coefficient here but the « Chi-squared test ». All the apparently interesting relationships were tested (if Chi-squared is not significant, nothing can be confirmed regarding the presence or absence of a relationship).
- « lexical » analyses used by respondents for the open questions (those for which a comment was required). The frequency of lexical words and their proximity helped to bring out what “what being spoken about”.



3. RESULTS ON ACCEPTANCE AND APPROPRIATION

Following the analysis of quantitative data via the questionnaire and qualitative data via direct observation and de-briefing interviews, we may now present three results on use (evaluated before and after the training sessions) and one result on appropriation (evaluated during the sessions).

3.1 First result, on Acceptance :

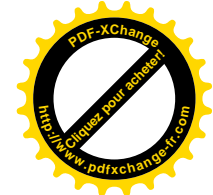
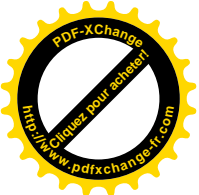
The performance of the « virtual class » configuration is judged to be stronger than that of the « distance class » configuration.

This is an original result, as it would appear to be wrong according to certain conjectures : a transmission which was *a priori* more difficult in the Virtual class configuration did not have the negative effects predicted. This result is derived from the Chi-squared test in crosses between types of configuration (Virtual/Distant) and several dimensions of the performance variable: the perceived interest, the reduction in travel, discussions with the teacher, the efficacy of training, as well as several technical dimensions.

a) There is a strong relationship between the type of class being followed (**virtual/distance**) and the **perceived interest** for videotraining. Dependence is very significant (chi-square = 10.37, ddl = 1, 1-p = 99,8 the virtual class is far removed from disagreement about supplementary interest

b) The interest for **reduction in travel** is stronger for the **virtual class**. The variable « Motivation for work organization » consists of the following variables here 'Will avoid having to travel' and 'Envisage videoconferencing.' Here the dependence is significant (chi-square = 2.83, ddl = 1, 1-p = 90,75%). The virtual class is far removed from disagreement on « motivation after »

c) The relationship is established between the **type of configuration** and the evaluation of **discussions with the teacher**, data in answer to the following question: « *In videotraining, were the discussions with the teacher more direct than for training sessions when he was present in the classroom ?* ». Dependence is fairly significant (chi-square = 4.48, ddl = 2, 1-p = 89.36%). The virtual class is very close to appreciation of direct discussions, and very far removed from the contrary opinion.



d) A difference is established between the **type of Class** and the answer to the question : « This *videotraining course seems to me to have been **more effective** than training with the teacher present* ». The dependence is **significant** here (chi-square = 3.07, ddl = 1, 1-p = 92.04%). The virtual class is very close to efficacy.

e) We are not going to go over all the Chi2 charts here, but the difference is established with the virtual class winning between the **type de Class** and the answers to the questions : « *Do you think videotraining has made a **particularly valuable contribution** to this training course ?* » and “*In a videoconference, I was more **attentive** than when the teacher was present in the classroom*”.

f) In the same way, the difference is established with the virtual class as the winner between the **type of Class** and the **perception of technical Quality** : for **interactivity**, the dependence is very significant, it is significant for **speaking conditions**, fairly significant for **sound and pictures**. On the other hand, nothing can be said about the difference between distance and virtual regarding the perception of legibility of documents.

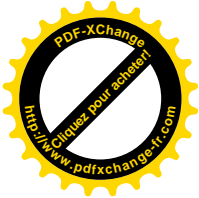
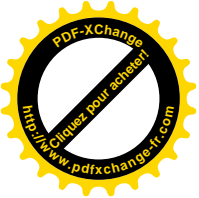
3.2 Second result, on Acceptance :

Real operational gains remain the main argument in favour of videotraining, from the point de view of learners

Again, this is an original result, that it seems to go against certain aims outlined by institutional participants for more strategic gains (such as flexibility, deadlines, access to qualified experts, reactivity of the training system). This result is based on following the analysis of answers to the open questions in the questionnaire. There were several comments, and a lexical analysis was made using Sphinx-Lexica software in order to bring out the most commonly used words.

For each of five questions we give here the occurrence of each of **the most-commonly used words**, the sign # appears in case grouping (grouping for the singular and plural for example) :

a) occurrence of each of **the most-commonly used words** in answers to the open question « **According to you, what are the main interests in training via video conferencing ?** » :



Time (13), #Travel (21), Gain (7), People (6)

b) to the open question « **FOR YOU, what are the advantages in videotraining ?** », there are 14 answers, and the occurrences of the four most commonly mentioned words are as follows:

#Travel (7), #Teacher (6), Time (5), Gain (4)

c) to the question « **According to you what are the advantages of videotraining FOR YOUR COMPANY?** », there are 30 answers, the learners also estimate that, for the company too, like the costs the gains are above all of a financial nature. The occurrence of each of the most commonly mentioned words are as follows :

#Costs (12), Gain (7), #Travel (13), Teacher (6), Time (5), Reduction (5)

d) To the open question « **If you are in favour of videotraining, what are your reasons ?** » : the occurrences of each of the most commonly mentioned words are :

#New (17), #Technologies (11), #Discovery (7)

e) The occurrences of each of the most commonly mentioned words in the answers to the open question: « **If you have been satisfied or very satisfied with the training course, what are the reasons ?** » are :

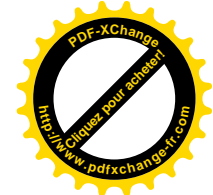
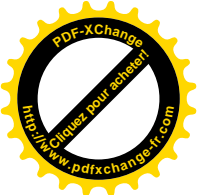
New (12), Teacher (8), Contents (4), Tecnology (4), Pleasant (4)

This result joins others results on the same topic : “operational gains” are the major argument in favor of veido-training (Ruël, Bondarouk, 2006).

3.3 Third result, on Acceptance :

The behavioural intention is linked to the expected benefits, **but not to the efforts to be made**

This is an original result, because it is in contradiction with the TAM model : The **intention to use** is NOT linked to the **perceived ease of use** (expected efforts).



The number of answers to the questionnaire did not allow us to test a structural equation model, so we only tested, one-by-one, each relation of the model envisaged by the chi-square calculations. The **performance** (measured by a variable consisting of 7 questions) indeed appears to be related to **task-technology fit** (measured by a variable consisting of 3 items, chi square 14,59, ddl = 6, 1-p = 97,63) and the **intention of use** (measured by a variable consisting of 5 items, Chi square 21,37, ddl=9, 1-p=98,89).

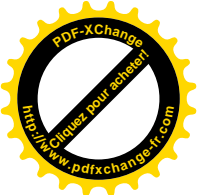
However a link is NOT established (chi-square not significant) between the **intention of use** and **perceived ease of use** (measured by a variable consisting of expected effort, 9 items)

With a view to project management, it does NOT therefore seem very effective to consider the « incentives of discouragement », even though we know that these exist (anxiety about the required technical and educational skills, worries related to technical breakdowns, about fatigue or isolation...). On the contrary one should consider the « incentives of encouragement » for this kind of training (supplementary interest, effectiveness, pleasure, new educational content...).

Taking into account the population and the specific domain of our study (the professional training), we tried to assess perceptible **usefulness** in comparison to perceived performance:

- the degree at which learners think that videoconferencing can be realized in a place closer to their workplace and in a place closer to their home,
- the degree at which learners think that videoconferencing will avoid them in the future of travelling for participate to professional training,
- the degree at which learners think that the videoconferencing use brings an additional interest in training : more efficient than face-to-face training and that contents; relations with peers and with training officer were better than in face-to-face training.

We also inserted items concerning personal motivation, in link with the social influence (that we define as incorporation in the group – family, friends, working colleagues) : the degree at which learners think that, in their firm, the persons who use information systems are better considered and the degree at which learners think that, in their professional, family or friends group, the employees using web-supported training are promoted.



These items were supplemented by the interests and benefits of the videotraining, spontaneously pointed out in comparison by the learners (opened questions).

We defined the perceived **ease to use** by the perceived quality of videoconferencing tool (dysfunctions and technical breakdowns, quality of sound, of picture and of interactivity, legibility of documents at the screen, exchanges with the training officer and with the other learners). In our analyses, the “ease of use” is the antonymous of “efforts required by videotraining”.

Another original result is that there is a link between perceived ease to use and par la perceived material and pedagogical distance (Marquet et Nissen, 2003). More material or pedagogical distance is perceptible, the more this distance is envisaged as a disability or a quality loss in comparison with face-to-face training.

In our study, perceived usefulness and ease-to-use every of both videotraining configurations (virtual class and distance class) were assessed in link with the intention of use (intention to follow videotraining courses at the end of videotraining) and with videotraining satisfaction (defined according to two aspects: contentment in comparison with the monitoring of an innovative training and contentment in comparison with pedagogic outcomes of videotraining courses).

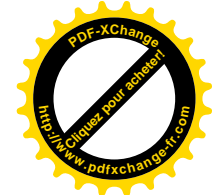
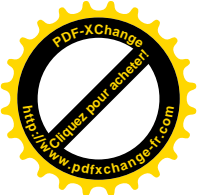
3.4 Fourth result, on Appropriation :

Although they soon adapt to the technological distance, **the evaluation of « good » videotraining is different**, according to the learners or the teacher

The results already demonstrate a difference between the teacher and learners with respect to appropriation throughout the sessions :

- Pedagogical distance et pedagogical genders

A teacher **prefers to master interactivity and exchanges** (by using different pedagogical genders for example Exchange, Talks, Examples, Demonstration...), whereas learners prefer



exchanges between participants, notably **“best practice” exchanges** (with types of didactics like Testimony, Debates, Troubleshooting...). A scenario must therefore be established, including a chain of pedagogical sequences (talks, rounds of question and answer sessions, demonstration,...) and associated tools (video transmission or Power Point presentation by the teacher, the use of a DVD or specific software ...).

- **Pedagogical distance and technological distance.**

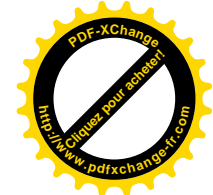
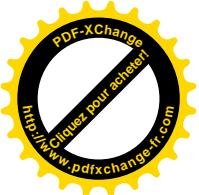
The pedagogical distance focuses not only on the conditions of organization and evolution of the exchanges between participants (interventions by the learners and teacher on the modalities for manipulating the camera, microphone etc...), but also on the conditions of implementing the different forms of co-operation between the teacher and learners in order to meet the aims of the training course: (the teacher's urging for co-operation, reciprocal co-operation, evolution of the participants' attention throughout the different sequences etc...).

Technological distance focuses on apprehension about technical problems and the way in which they are anticipated, experienced and mastered by the participants at different times during their videotraining: manipulation errors, technical breakdowns and troubleshooting, the conditions of intervention by technicians from outside the class, the quality of transmission etc....

Whereas the learners can easily perceive the pedagogical distance between each other, they do not perceive any great technological distance. It therefore seems that the technical tool is not perceived as an obstacle in educational communication. Most of the learners rapidly integrate the technical restrictions **and become used to them**. Besides, one may note that the more the videotraining was appreciated, the less the **pedagogical distance** was felt, both between the learners themselves as well as between the learners and the teacher.

CONCLUSION

The main question in this article is how to evaluate this communication technology, videoconferencing, used for distance training.



Due the restricted amount of specific research on this kind of IT supported training, the theories on IT evaluation, in general, have been mobilised by joining together two complementary perspectives; the perspective of Use with different acceptance models and the perspective appropriation by resorting to complementary methods at the same time.

Indeed, due to the experimental conditions, a longitudinal study to analyse the process of appropriation could not be made. Besides, this videotraining was established with a system of accompaniment which should also be taken into account, as this may have modified the conditions of use and appropriation.

However, by closely following about twenty videotraining sessions we were able to highlight results such as :

- Satisfaction determined by the expected advantages and motivations, the appropriateness with the situation rather than with the efforts to be made.
- An appropriation of the technical system with integration of the diversity of “pedagogical genders”.
- Contrary to expectations, a preference for the « virtual » class set-up rather than the more classical « distance class » solution. This preference illustrates a form of technology «bypass ».

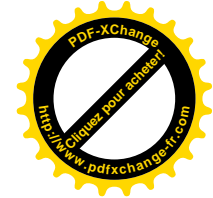
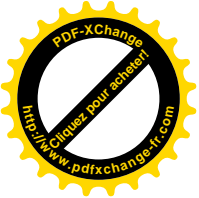
These results tend to form a link between evaluation of use and the process of appropriation.

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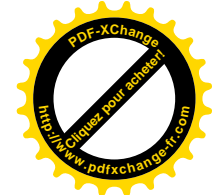
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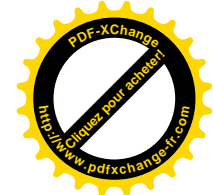
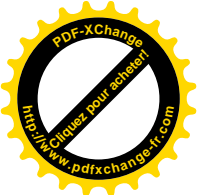
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