ARTICLE PÉDAGOGIQUE

VIRTUAL TOOLS AND QUALITY OF LANGUAGE
A PAREA RESEARCH PROJECT 2009-003

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RESEARCH PROJECT : PAREA 2009-003

PEDAGOCIAL ARTICLE

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INTRODUCTION

For the Ministry of Education, Recreation and Sport of Québec (MELS), learning French is a priority. Upon their arrival at the college level, several Quebec students are weak in French writing skills and fail to pass the first of the four mandatory literature courses for graduation (Falardeau and Grégoire, 2005). Improving language skills with its various inherent components is a significant challenge for colleges. Students have several tools to assist them in the preparation of their written texts (both paper and electronic formats). In the context of ICT, there has been little research focusing on the correction and the reflective return on French writing with the use of software and other computer tools.
As we shall see, while some are skeptical of new technologies and are wary of computer dependence, others welcome the new tools that have the merit of stimulating a genuine interest among students. Nevertheless, studies show that students' writing changes with the appropriation of ICTs. Even though software facilitating draft writing is made available to students, they must still learn their features, experiment and effectively integrate their applications. In short they should appropriate those tools in their various writing activities.

Demaizière (2008) 2007), Karsenti et Larose (2005) set out to show that the use of ICTs promotes a better attitude toward learning because students develop a feeling of greater autonomy, confidence, and accomplishment toward school tasks.

Overall, ICTs are changing the relationship of students and knowledge. The correction software can be vectors of influence on the mental processes of learners (Durel 2006a) and offer various ways to review and provide a framework for writing. The use of such tools would foster a better working method, freeing the student of difficulties related to hand writing, as well as encouraging reflection (Académie de Créteuil 2005). A

successful usage of text correction tools depends on prior grammar knowledge, on an intelligent appropriation of those tools, and on a self-motivation for linguistic improvement. However, successful usage of these tools also depends on understanding their limitations, such as the risk of errors due to homophony, punctuation, context, and the inherent complexity of a given text (Berten 2000), Jacquet-Pfau (2001), Piolat (2007). That being said, there is no doubt that the use of correction software can help improve the quality of language and writing. Moreover, this use needs to be included in an integrated pedagogy (Desmarais in Durel 2006b), Karsenti and Larose (2005). According to Perreault (2005) and Poelhuber and Boulanger (2005), ICT favors an approach that places the student at the center of the learning process and makes him more active in the construction of knowledge. In this context, according to the pedagogical framework (e.g., Nault, 2007; Seiler, 2003), the software's technical and functional properties, as well as the students' motivation to learn (Clark and Salomon in Lebrun, 2004) have significant importance for the improvement of language skills. In addition, various factors affect the appropriation of a new virtual product (Rogers, 2003; Zimmerman and Yohon, 2008). These are related to the features of the product (perceived benefits, compatibility, complexity, relative advantage), the conditions of introduction of the product (accessibility, testing and management).Rogers (2003) identifies temporality as a key factor as well as the situational context of use: temporality and context condition the adoption and appropriation of new technology in ICT.

METHODOLOGY

The object of our study was twofold: one on access, use and prevalence of virtual resources of reference tools (descriptive survey), and the other on the impact of their use on the quality of language (technical analysis of evaluative content). Our methodological approach was the survey. Both quantitative and qualitative devices have therefore been applied to assess student practices and perceptions.

Various instruments have also helped gather information on participants. These include identification forms, user questionnaires, trace logs of ICT, individual and group interviews, as well as an analytical framework for the evaluation of the students' papers.

Sample

The population under study includes approximately 1500 students enrolled at College Jean-de-Brébeuf in Montréal. The sample cluster-type consists of 217 students from eight classes / courses of general education subjects (i.e., French and philosophy) and more specific courses (i.e., biology and sociology). Selection occurred during the winter

semester, 2010.
From this sample, a subsample was stratified randomly and selected within each course for an advanced analysis. This subsample took particular account of the diversity of academic performance. The work of 48 students (192 papers) was selected for an analysis of the impact related to use of software correction.

Methodological approach

Students, after having signed a consent form and questionnaire (user and socio-demographic data sheets), were invited to write four texts: first, a hand written exercise in class and without language tools; second, at home with a computer and without instructions; third, at home with the computer and instructions to use a language tool corrector; and finally, in the laboratory with the correctors integrated in Word and Antidote. For each written text, a register of used tools was held. At the end of the session, a questionnaire on students' perceptions was administered and interviews were conducted with students and staff. The texts of the sub-sample of 48 students were subjected to a closer analysis for the quality of the French.

Quantitative data from responses to questionnaires and the perception of the functionality of the tools used were processed using SPSS software and analyzed using statistical tests, such as the Pearson test, Chi-square, ANOVA, t-test and Manova. Correcting the 192 papers from the sub-sample was transferred for correction to a French professor in the Department of Letters at the College after validation of the scoring grid with two members of the research team. This was done to ensure uniformity in its application. The qualitative data of the experiment were processed using indicators and comparative tables on the appreciation of the contribution of virtual tools for the quality of language in the sub-sample papers. Finally, the trace log was codified and treated quantitatively and qualitatively.

RESULTS

Socio-demographic profile

All students in the sample were registered in a pre-university program. The majority of the students were in natural sciences or social sciences. Students were divided into two comparable groups of first and second year students. There were slightly more girls than boys in our sample. The vast majority of students were born in Quebec and live with their parents. Approximately 40% of fathers, or mothers, of the students were born outside of Quebec. More than two-thirds of the parents have a university degree. It is

rare that our college students have a part-time job or engage in extracurricular activities. Instead, they spend their time studying and engaging in social activities. They use the Internet more in their leisure time than for activities related to their studies.

Linguistic profile

Almost all of the students speak French and nearly one-quarter of the students speak English at home. About one-third of students speak at least two languages at home. Students also speak another language at home and with their friends. With friends, close to one out of two students use English and French, while the other half uses French only. Students almost equally read a lot in English and French on the Internet, but they read little in other languages. Still, most read English texts in paper format. They write more e-mail messages in French than in English or other languages.

Profile of user of electronic tools

Students in our sample are generally familiar with electronic language correction tools. Prior to their arrival at the College, two-thirds say that they have already used such tools. The Word corrector is the best known among them, while Antidote is part of the resources of one-third of the students. Overall, students show relatively little interest in error correction tools. Their concern for the quality of the language is more related to the standardized French test and the importance that professors give to the quality of French in their feedback. In addition, students adjust their use of error correction tools based on the contexts of writing behaviour and requests of their professors. For example, a research report receives more linguistic attention than e-mail messages. Students willingly give some confidence to the error correction software with the intention to improve their language production in all categories. Finally, the answers given at the end of the experiment indicate a slight increase in the use of virtual correction tools.

The most used tool by students is the Word corrector followed by Antidote. A variety of electronic dictionaries were used. The most frequently used were those available for free on the Internet. The Word corrector and Antidote were mainly used for grammatical errors, spelling, punctuation, and in some cases syntax. Paper versions of dictionaries (e.g., Petit Robert and Petit Larousse) were the most used, but only by a quarter of the respondents. Among them, 16% said they used dictionaries of synonyms. Grammar tables of conjugation were very rarely used.

Perceptions of virtual correction tools

Students find that Antidote was the most useful tool to improve the quality of their French, especially in the categories of grammar and spelling. Word comes second followed by the help of a proofreader. According to the students, Word is particularly useful for spelling and grammar, and proofreading by another person is more useful for

syntax and grammar. Depending on the tool used, the comments of appreciation of students are mostly positive for the technical aspect of the Word Corrector and the linguistic aspect of Antidote.

Interviews with students indicate that they prefer traditional correction tools (paper tools and personal assistance). We can explain this preference by their accessibility and the fact that these tools have transcended time. In addition, personal support adds a qualitative dimension to the correction of a text. Virtual correction software has given rise to mixed reactions among the interviewed students: between the enthusiasm of an experienced user and mistrust of a radical sceptic, there are a wide variety of reactions. Three elements emerge from the feedback on the Antidote software: limited accessibility to the tool, rough knowledge of its functions, and desired training.

Perceptions of teachers

Even if there are different departmental rules for the correction of French, the objective of the teachers interviewed is common: bringing students to independently use traditional or virtual tools to develop effective strategies for self-correction.

Even though Antidote is not always reliable, it is still recommended by teachers who were interviewed. It is part of a range of tools and strategies that enhance language production in all its forms, whether in the assessed work or in e-mail.

Perceptions of CPAF personnel

The Centre for Development and Aid in French (CPAF) is visited mainly by students whose mastery of the language is intermediate or low. We found that Allophone students are more motivated than French speaking students, and that students in the natural sciences sought help the most. Virtual correction tools are used on a daily basis by the employees of the CPAF, but most of them prefer paper tools, which are more adapted to the terms and conditions of the literature courses and standardized French test. In addition, in the help relationship, the actual work from paper tools leaves more concrete traces than the virtual work. Tutoring with Antidote proves especially effective for students who are strong in grammar and who desire to improve. Beyond the debate between virtual and traditional tools, a constant remains: the motivation of students is the main mechanism of their improvement, but it is not always present.

Perceptions of professionals

The issue of emerging students is complex and recent. In our College, there was an increase in the number of students affected by learning disabilities. Physical and virtual resources are made available to them based on their individual diagnosis. Antidote is the most recommended virtual tool because it is available at the College. While beneficial, Antidote still does not always help these students improve the mastery of French.

Analysis of the French writing

The text written at Time 1 shows those students of the sub-sample have difficulty mastering the language. The number of errors committed in this context is superior to all other times in the study, and this is particularly true for the categories of grammar and spelling. In the other categories, the number of errors is similar to the other times. This constant suggests that students find it difficult to identify and correct their errors of punctuation, vocabulary, syntax, and grammar.

The texts of Times 2 and 3 are similar in that they were written at home. Most students used the virtual tool even though it was not a requirement. Encouraged by teachers, usage increased by 10% for the students in the sample. In the sub-sample, the number of tools increased by 12%. The data shows that the texts written in the absence of constraints of time and place contain more errors of grammar. Students tend to neglect more organizational logic when they write at home.

At Time 4, students have obviously taken this exercise seriously, as they have managed to reduce, on average, the number of errors by 12 per text. The texts presented at Time 4b (after Antidote) include the lowest frequency of any experimental time. Even if the students had one hour to correct their writing, most of them did it without rewriting their text. The self-correction observed in our sub-sample was limited to proofreading for 92% of the students. It is clear that students treat their first draft almost as a final version. The self-correction is simply used to locate surface errors, not to seriously rework the structure and sentences of a text. From this perspective, it is not surprising that the total number of errors of syntax and grammar remains virtually identical to version 4a (before Antidote) and version 4b. The correction of these errors requires rewriting, which is obviously not a reflex among students.

The degree of reliability of the warnings of Antidote was far from equal. Red alerts are most relevant in a proportion of 77%. The partial analyses ranked second with a 51% reliability rate. Rather than ignore red alerts' students should consider them closely, especially as there are not very many in a text. Orange alerts arrive last with its large number that is inversely proportional to their relevance of 7%. Students express a certain disinterest in this regard. Vigilance and judgment of the student are required for all warnings, even red alerts that appear to detect the most obvious errors, as the software can give entirely erroneous diagnoses. If the results of the self-correction with Antidote seem particularly satisfactory for grammar and spelling (where errors declined two-thirds after revision), it is not the case in the other four categories (punctuation, vocabulary, syntax, and grammar), which remain virtually intact. Even if students had the impression of correcting with Antidote, it is only an illusion because the virtual tool does not detect 67% of their errors. For 40% of the students in the subsample, the

exercise of self-correction resulted in the addition of one or several errors in their text. This is a considerable number. The better students show overconfidence by rewriting portions of their text without review, while weaker students integrate poor suggestions with the Antidote software because the students are incapable of judging the relevance of its suggestions.

PEDAGOGICAL SUGGESTIONS

Our study hypothesizes postulated that the use of software correction influences the quality of the language of written work of students. We have seen so far that improving the quality of language in a virtual context is possible and measurable. However, it is by no means automatic. To promote students' self-correction skills using these tools, we must establish a conducive learning environment in line with that of young people consulted. This environment can best be described as a digital generation from a multi-ethnic world. The students also have different technological skills and linguistic backgrounds. To this end, the educational approaches offered should take into account the need to develop and deliver basic training combined with customized training.

The triangulation of all data in this research project, namely the students' profile, the responses to questionnaires, and the track log for using tools, the choice of software, the interviews are taken into account in the following suggestions.

Choice of software

A wide range of learning aids is available. In the words of Durel (2006 b): 2) "*a choice must be made here in this generous offer, because just as we must get students to use good dictionaries, you must get them to use in a reasoned way good software.*" We argue that students should be helped to better understand and make a better use of the software and its various features. By doing this, we believe students will make a more informed choice, one that is relevant to their studies. As part of our experiment, our research has reported greater use of Word and Antidote. Both strengths and limitations were perceived by students, and identifying these will enable students to better target their choice of tools.

Comparison of Word and Antidote perceived by students

ANTIDOTE STRENGH	**WORD** STRENGH
Technical operation complex and nuanced	Simple operation
Improves the quality of language performance.	Efficiente for simple mistakes: unnecessary space, repetition, missing letters, space
Offers choices for the corrections.	Partial corrections
Offers correction explanation of errors from all angles.	Offers no explanation .
Allows the correction to be involved in analyzing the quality of its text, the function definition helps to understand the meaning of words.	Operates corrections automatically
Saves time.	Easy to learn
Useful for everyone and especially for allophones; includes a dictionary of occurrences.	Suitable for all because of the limited number of types of errors detected
Offers a variety of complementary tools integrated into the same software.	Offers indications for error of layout, punctuation, etc. Offers parallel tools.
LIMITS	LIMITS
Complex	Partial correction
Evaluates the quality of the language and not of the content and meaning.	No explication related to the meaning, the logic or the grammar
Is best suited for stronger students who know the basics of grammar.	Explanation not always understood or clear enough
Can add errors.	Corrections are sometime made in an automatic process.
Color alerts can create confusion and reduce comprehension.	Few visual clues and limited improvement of language skills
Elicits a response.	Limited reliability

We believe that proper use could help to rewrite the text, in addition to its active proofreading. The correction software does not replace manual correction because it still fails to decode the meaning of the text.

Correction software training

Using text correction software should be part of training that takes into account the linguistic knowledge and technology of the user. The diagnosis of needs is a prerequisite for developing training content and how trainers should proceed. The learning curve varies according to students: the training must take this into account, proceed with different types of approaches and consider the particularities of each discipline. Thus, in sociology, for example, students are asked to present the facts objectively and describe them accurately to ensure a structured analysis; in philosophy, the development of argument, coherence and logic is prioritized; in science, it is rather the observation and experimentation that allow the statement of laws and the discovery of mechanisms; in literature, the correct expression of thought, and the discovery of the authors of the study are to contribute to linguistic and cultural knowledge.

Training, rather than just awareness, should also be offered to both teachers and non-teaching staff in order to develop a culture that values the quality of language in the community. This should include targeting those who help emerging populations.

Autonomy and motivation

Beyond technical considerations surrounding the choice of virtual tools for correction and familiarity, we should consider the attraction they present to students in both the short and long terms. Sources of motivation components are supplied by academic, cognitive and pragmatic components.

Academic components: This could be, for example, a compulsory penalty for lack of structure and grammar mistakes, etc. Our research suggests that when a teacher formally uses a virtual tool correction to impose a penalty, students' writing skills significantly improve over time. We were able to record an increase in the use of tools, especially for Antidote, which is the most sophisticated software.

Cognitive components: Gaps in French make inoperative the work of correction and discourage students' correction software users. These, indeed, increase their faults more frequently than they decrease them.

Pragmatic components**:** The low proficiency in use (to detect particular grammar, style, rhetoric) and the lack of training decreases motivation.

To counter the lack of motivation, it is important to reduce barriers, and also enhance the development of support and monitoring to help students identify the benefits associated with correction software. This could be achieved by increasing the accessibility to the

different software, minimizing the time constraints of writing (to ensure a pragmatic approach to training by presenting students with examples of correction and control the real benefits associated with proofreading and rewriting a short or long work), and promoting the ownership of both academic and communicative benefits. Different factors could facilitate the adoption of a new product. It is important, according to Rogers (2003), to know and measure the superiority, complementarity and perceived benefits. Proven benefits are indeed a key source of influence of students' appropriation of a language correcting software.

Appropriation of correction software

Appropriation of correction software is key to ensuring long-term motivation, as well as developing and updating the improvement of the quality of the language (editing and self-correction). The training course has an impact on the control of software, but reaches its true purpose only if used in specific contexts of writing and demonstrate clear benefits in the eyes of students.

In addition, it is desirable that students have easy access to contacts not only to validate their learning curve, but also to guide them through more complex applications. Help centers are prime candidates for this role.

Autonomy and competence

Technical skills and language can developed independently more easily when all players in the schools unite to demonstrate to students the benefits to use the right software to correct the texts. It has been shown that these are conditions for developing a sense of accountability by the student. It is important to stress that this autonomy will be granted if the student is motivated and has received sufficient training to enable a comprehensive analysis of the text, as well as critical thinking and reflection. The role of a teacher as a motivator is key here, as she/he may give clear instructions to their students with respect to concrete measures to be taken to proceed with their self-correction.

One of the most striking findings of this research project is that the use of self-correction software by students leads almost exclusively to a quick revision of the original text rather than a full rewrite. It is important, initially, to raise awareness among students of this particular behavior and to illustrate the negative consequences of types of errors such as syntax and grammar of the text. It is clear that a full rewrite is an intellectual act that is more demanding, both in terms of time and decoding, but we must encourage and promote this practice. It is worth recalling the importance of self-correction and to strongly encourage students to use correction tools. In addition, it is necessary to establish a clear distinction between proofreading and rewriting in the self-correction process.

Pedagogy and antidote

Antidote, a software tool for advanced correction, is not used to its full potential. To improve its use, we have already suggested providing training to students and stakeholders. In addition, it is possible to consider a number of other concrete actions. Nonetheless, we must first understand that the student who has a language deficiency and uses spell Antidote faces a window of correction that is often extremely busy. Modulators correction point to a large number of words and signs on which she/he will judge. To fight against discouragement at the heaviness of the task, we must bring the student to make strategic choices among the proposed corrections. So she/he will set priorities when correcting with Antidote, depending on the reliability of software code, first corrects the red alerts, and the partial analysis, and finally the orange alerts.

We must, therefore, lead the student to effectively use these tools while remembering that the goal is not the promotion of the tool or technology, but the improvement of their French language skills. Indeed, time must be granted by the institution, in the classroom and at home, to implement the various stages of software integration and exploitation of the language. The student must also develop the habit of taking the time to reread and rewrite the text. The purpose for reading should be both the understanding and the evaluation of the message.

Enhancement and promotion of the language

The purchase of the Antidote software for all workstations in the college is not an approach that ensures the self-improvement of the students' quality of the language. The return on this investment is directly related to the development of the tool and its promotion on a large scale. The enhancement of language skills should appear in the action plan of an institution's decision-making bodies. To help achieve this objective, the various players interacting with students should be sending this message. Each stakeholder has a role to play here. Members of the library and support center, in consultation with the teachers, could disseminate and promote virtual (and paper) tools and emphasize the importance of language proficiency in French-speaking institutions. However, this requires knowledge of these tools by the broader community. Initially, the advantages and benefits of these tools (time savings, reduced errors, etc.) may seem less obvious and immediate that the apparent disadvantages (additional steps in the work, choosing to make corrections, technology to process, etc.). This stage of discovery and taming could be facilitated by a campaign to promote the French language in the institution, which involves all members of the community to varying degrees.

Role of French help center CPAF

Staffs from French-language help centers are key partners for promotion, training and evaluation of text correction. They should target weaker students as well as poorly motivated ones to attend the center. Teachers from all disciplines, well informed of

activities taking place, will be best placed to promote the help center with this clientele. These are the efforts of all who, over time, will convince even the most recalcitrant students the importance of writing well in French. As for the stronger students, the center could help meet their needs by providing a range of development related to the more complex features of the software. Furthermore, it might be interesting to invite the center staff to consider using, in its philosophy and its accompanying development activities, some features of Antidote. Examples include aspects of logic and semantics incorporated into the marker. The integration teams of specialists in software correction of the language would provide a support for both technical and pedagogical needs.

CONCLUSION

At the end of this research project, with respect to the impact of virtual tools on the quality of the language, we can say that experiments conducted during the winter of 2010 by our research team provide interesting answers to legitimate questions raised on the contribution of new technologies to improve the quality of the French language among students in Quebec colleges. We found that, overall; most students care about the quality of language and deploy some efforts to revise their essays. Although they are familiar with the correction tools, their use remains superficial. . We observed a strong tendency among students to limit the exercise of self-correction to the simple proofreading stage, foregoing a genuine rewriting stage. Moreover, software correction tools, such as Antidote, can give students a false sense of accomplishment and security because these tools do not detect some of the mistakes of a text. To take full advantage of these tools, one must ideally provide students with continuous and integrated educational support that involves the whole community, and that aims to control both the language skills and use of the technology.

Technological tools that improve the quality of language are accessible and relevant to college students. It is therefore recommended that the use, training and promotion, in a global and comprehensive manner, be enhanced. Time should be taken in the classroom and at home to implement the appropriation and evaluation of these tools. Unsurprisingly, we should also teach students to take the time to reread and rewrite their texts.

The continuous and integrated evaluation of the quality of the written language by means of electronic tools would increase the motivation of students to improve the quality of their language. What needs to be developed is a spontaneous review mechanism for the meaning and the coherence of the writing in addition to the language code for any communication.

Further research could examine, for example, if the synchronicity of communications

(e.g., discussion forums, blogs, Facebook, Twitter, etc.) is likely to influence the quality of the language. Is immediate communication inferior in terms of language? How does one promote the writing quality of students' interactions in social networks? Is the partial usage of correction tools encrouaging the divergence between two forms of linguistic expressions, one for formal communication and one for informal communication?

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