

Assessing the use of aids for a computer-mediated task: taking notes while listening

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This research aims at understanding the cognitive processes at work, and strategies used by students of English as a foreign language (EFL) when confronted with a complex task in a multimedia system. More precisely, we propose to study how second language learners use the aids provided by the multimedia setting to take notes while processing a video document. A sample of 16 university students (6 undergraduates, 9 graduates and a native speaker) were asked to write down key words and key arguments understood from a 2-minute BBC report on an electronic notebook inserted in Virtual Cabinet, a learning environment hitherto unknown to them. They had 12 minutes to take notes online and produce a summary of the report, and they could manipulate the input and use an online dictionary at will. Observation of the different strategies used by the subjects was made possible by screen data capture software that logged all the learners' actions during the whole experiment. This exploratory study will focus on describing this complex task – cognitively demanding because it combines different operations and requires using aids appropriately and in a timely manner to carry out the task successfully. It provides information on the way the students use the multimedia environment to perform the task (taking notes online) and the use they make of aids such as an online dictionary and the rewind and pause buttons. This study concludes that video control functionality is a useful aid because it provides learners with an individualised means to process the input at their own pace. On the contrary, providing a dictionary during the comprehension phase has proved to lead to inefficient strategies and seems therefore to be disqualified as an aid for the comprehension phase of the task in a timed context.

Keywords: Complex task, listening comprehension, second language learning, multimedia aids, note-taking, cognitive load.

1. Introduction

The use of computer-assisted language learning (**CALL**) systems offers students a great potential in order to develop their language skills. These systems not only provide rich and authentic documents but they usually include aids designed to assist second language (**L2**) learning. Yet, if these aids seem to afford a potential for learning, this potential needs to be carefully assessed against the limitations of learners' capacity for managing conflicting demands on their cognitive resources (Schnotz, 1999; Sweller, 2005; Wickens, 1984).

In the field of listening, Grgurović and Hegelheimer (2007) have pointed out that help options to aid listening comprehension have not yet been thoroughly investigated, and that the relationship between the use of help and comprehension scores is still a domain that requires further research. The present pilot study thus attempts to assess the use of two types of aids – pause and rewind buttons and an online dictionary for a listening task in a **CALL** system. Peters (2007) has provided information on how the learners make use of an electronic dictionary and on how different tasks can be used to manipulate **L2** learners' look-up behaviour and word retention, yet it was focussed on a reading task. Hulstijn (2000) has provided insight on how beginning and advanced **L2** learners use, learn to use, and can be instructed to use bilingual electronic dictionaries in a flexible way. It was again linked to a reading task, therefore not completely applicable to our study related to oral comprehension. Furthermore, in our study, the choice of the dictionary is open – either monolingual, bilingual or synonym – and may shed further light on the choice made by the students involved.

In order to understand the cognitive processes at work deployed by **L2** learners when confronted with a complex task (listening and writing notes), sixteen subjects ranging from beginners to a native speaker were asked to write down key words and produce a synthesis of the main arguments understood from a 2-minute **BBC** report on an electronic notebook inserted in a **CALL** system. During the task, the subjects could manipulate the input and use an online dictionary at will. These operations were observed thanks to screen data capture software in order to analyse strategies used for listening and note-taking. The aim of this research is to improve the understanding of learner activity when confronted with **CALL** systems and contribute to the growing body of research on the role and design of aids in such systems (Liou, 1997; Tricot, 2007).

2. Theoretical framework

The use of an aid can only be assessed in relation to a given task. The first step of any study thus consists of defining as precisely as possible the contours of the task and determining the cognitive processes it requires before assessing the use of the aids that are provided in the computer-mediated task.

Taking notes during a listening task involves a complex relationship between different cognitive processes and strategies which may differ according to individual learners. Note-taking combines different skills as it necessitates storing information, managing comprehension operations (accessing the content and selecting the information) and writing operations (Piolat, 2003). In order to give an overview of the task, the following diagram

adapted from Kellogg (1996) distinguishes four different operations that are more cyclical than chronological, which facilitate determining the potential strategies used by subjects when taking notes during a listening task.

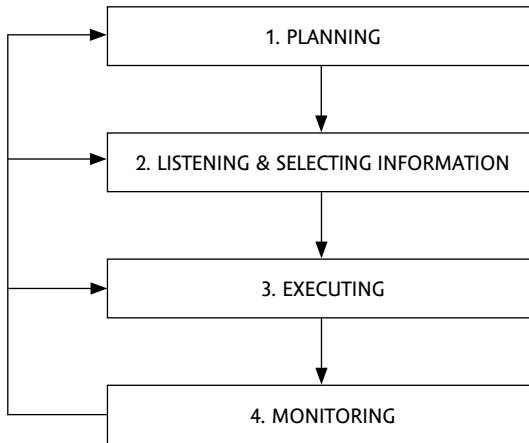


Figure 1. Taking notes during a listening task

1. **Planning:** any given task in an educational context requires interpretation by the learners: before starting the task, they need to form a mental representation of the aim (i.e., taking notes, being able to write a summary or listening to fill in gaps), the nature and expected content of the document (a movie, a news bulletin ...), the means available to carry out the task (dictionary, concordancer ...) and the constraints (time limit, obligation to use the keyboard). Planning involves finding, choosing, and determining a way of using resources appropriate to the accomplishment of a particular task (Wenden, 1987).
2. **Listening and selecting information:** in most cases listening takes place in real time, for instance when attending a lecture. This process is different in multimedia systems as learners are often offered the possibility of handling the input themselves and manipulating the flow of information with pause and rewind buttons, which allows them to break free of the temporal linearity of oral speech and to use adapted listening strategies (Guichon & McLornan, 2008). Two main strategies are then possible: either discovering the document in its entirety to have an overview or discovering it bit by bit thanks to pauses. Because of the limitations of working memory – what it can store and the amount of processing it can undertake (Field, 2003) – learners may want to break up the listening task and stop whenever they need. The study of pauses (when and for what purposes learners stop the input) can thus provide invaluable information concerning the strategies used to carry out the task.
3. **Executing:** the actual writing of notes comprises several operations for the subject: holding the selected information in the writing buffer before converting it into motor instructions to the appropriate muscles and writing down notes (Velay, Longcamp & Zerbato-Poudou, 2004). The multimedia system makes the learners' task more complex

as they have to use a keyboard instead of a pencil, which requires them to synchronise several resource-demanding operations (Piolat, 2004). Two parameters can thus help determine the competence of the learners: the amount of notes taken in a given time and the relevance of these notes for the main task.

4. **Monitoring:** monitoring can encompass several types of operations: checking the input by listening again to all or parts of the document, checking the spelling of a word in a dictionary, proofreading notes and identifying spelling mistakes or potential information gaps, reorganising notes so that they are more comprehensible, and transforming notes into a finished text. Rost (2002, p. 142) has underlined how important the follow-up reconstruction and review activities based on their notes are for learners' development of listening ability. Accuracy is, at the stage of monitoring, the important parameter. It can be measured by comparing the notes with the text-base. In the table below, we have summarised the four operations and the indicators that can be used to study the processes involved while taking notes during a listening task.

Table 1: Processes and indicators

Operations	Processes	Indicators
Planning	<ul style="list-style-type: none"> - getting ready for the task ahead - revising one's strategy when it appears to be ineffective (self-management) 	<ul style="list-style-type: none"> - testing different function buttons (volume, start/stop) - amount of time before starting the main task
Listening and selecting information	managing the input (directing one's attention to relevant information for the task)	<ul style="list-style-type: none"> - study of the pauses - use of on-line aids
Executing	writing down relevant information	<ul style="list-style-type: none"> - amount of notes taken in a given time - relevance of these notes
Monitoring	checking, verifying and correcting one's performance during the task	<ul style="list-style-type: none"> - number and types of corrections

The observation of learners using the system while testing the buttons can help to understand the planning phase, but this could be complemented by think-aloud procedures to elicit other planning operations that are inaccessible without the subjects' explanation either during task completion or retrospectively. However, all the indicators listed in the rightmost column can be used to infer learner strategies since they correspond to identifiable behaviours that are consciously used by subjects to carry out a given task (see O'Malley and Chamot, 1990 for a review of learning strategies).

Several aids can be included in a multimedia system to assist listening and note-taking (i.e., pause and rewind buttons, subtitles or keywords in L1 or L2, online dictionaries, pre-filled questionnaires to guide note-taking.)

In the present article, we will only focus on pause and rewind buttons and on the use of an online dictionary because they are both central to the task proposed in the system

used for this experiment and require further investigation to assess their potential as multimedia aids facilitating the task of L2 learners.

Pause and rewind buttons enable learners to control the listening process, as observed by Tricot (2007). By interrupting the flow of information, they first allow them to sequence the listening task into more manageable units and provide moments that can be devoted solely to taking notes while holding relevant information in working memory. Rewinding is associated with complementary listening operations, either because the learner has not understood some information or because he wants to make sure his inferences are correct.

It has been suggested by cognitive psychologists that giving learners control over the pace of the information may facilitate the processing of the input, as observed by Mayer and Moreno (2003). The self-pacing principle indicates that giving learners control over the pace of the instruction may facilitate elaboration and deep processing of information. Mayer and Moreno (2003) report higher transfer test performance if information is presented in learner-controlled segments rather than as one continuous unit, an example of the self-pacing principle they called the segmentation effect. Van Merriënboer and Kester (2005) also cite an experiment made by Mayer and Chandler (2001) that showed that learners who were allowed to exercise control over the pace of a narrated animation performed better on transfer tasks compared with learners who received the same narrated information at normal speed without learner control.

Liou (1997) has analysed the type of aids that were used by learners in the context of a self-paced interactive video unit. Among the students observed, 85% use the pause function and the backward button, 80% use the English script, the glossary or the repetition of previous sentence and 70% use the repetition function while 55% refer to the Chinese script. Grgurović and Hegelheimer (2007) have continued this analysis focussing on subtitle and transcript more specifically. They have identified four patterns of learner interaction with the help options and insist on the need to promote these help options as students do not make enough use of them.

More specifically, online dictionaries can be used for two main operations, either during the listening phase when they can help students infer the meaning of an unknown word, or during the monitoring phase, when the spelling or the meaning of a word has to be checked. A study was also conducted by Hulstijn (1993; 2000) in order to analyse the factors of relevance and inferability in the choice of items searched in the dictionary. Hulstijn (2000) shows that participants almost always looked up the meaning of the words that could be classified as [+ *Relevant*, - *Inferable*] and least often the words corresponding to the type [- *Relevant*, + *Inferable*].

In our current research, these criteria have been taken into account to analyse the words looked up in the dictionary. Were these relevant (i.e., was the dictionary the only way to find the meaning of the word) or inferable (phonologically transparent or inferable from the image that accompanies the oral flow)?

In this study, we will focus on the following question: What kind of strategies do the L2 learners develop in order to succeed in a limited amount of time in taking notes and summarising a short video extract in a multimedia system? In order to answer this question, we will analyse the following strategies more specifically. First, how do the sample subjects use the video control in order to organise their task? Then, how do they use the dictionary (i.e., the amount of time spent using the dictionary, the number of attempts for each word searched, the comparison between the total number of attempts and the successful attempts and the relevance of the use of the dictionary).

3. Research methodology

3.1 Participants

The 16 participants in this study were 15 learners of English as a Foreign Language (13 females and 3 males; 6 undergraduates, 9 graduates) from a French university, aged 18 to 32 and a male English native speaker. This sample of learners is comprised of a variety of levels ranging from beginner to advanced. Their level was first evaluated thanks to a self-assessment grid provided by the *Common European Framework of Reference for Languages* (CEFR) and confirmed by the Dialang Test.¹ The breakdown of levels, presented in the table below, reflects, even in this small sampling, the population of most non-language specialist students in France.

Table 2: Language proficiency levels of the participants

Level	Beginner	Lower intermediate	Upper intermediate	Advanced	Native
Number of students	3	4	5	3	1

A native English-speaker (subject 16) was included in the sample in order to give us an indication of what an expert is able to do in the conditions established above. Indeed, following Rost’s (2002, p.174) recommendations on the improvement of construct validity, we chose to include a native speaker’s performance as a benchmark.

3.2 Procedure

The learners were first introduced to the learning environment at the beginning of the experiment, as the aim was to observe the strategies deployed when confronted with a new multimedia environment. *Virtual Cabinet*, the multimedia system that was used for this experiment, is aimed at developing listening and writing skills through several tasks during which learners are asked to process audio and video information coming from different documents; the objective is to write a synthesis to advise a British minister on a current issue (Guichon, 2006). This system is currently used in several French self-access language centres and research is needed to assess its potential and limits for language learning to aid in further redesign and pedagogical tutoring. The task chosen for the present experiment required that learners listened to a **BBC** report and took notes in an electronic notebook. They could use an online dictionary which is included on the page and which provides word search from English to English, from English to French, from French to English and also synonyms.

Once they had been introduced to the learning environment, the subjects were asked to write down key words and key arguments understood from a 2-minute **BBC** report in an electronic notebook included in *Virtual Cabinet*. It corresponds to a script of 243 words, dealing with the question “Should the government do more to eliminate gender bias in male-dominated sectors?” Learners had 12 minutes to take notes online and to produce a summary of the report; they could manipulate the input and use an online dictionary at will. This limited amount of time was set to purposefully exert time pressure on the subjects,

consequently highlighting their strategies and enabling a comparative study, in which all the students were placed in the same conditions of time and place.

3.3. Data collection

The screen recordings are the core data collection instrument, as the computer allows us to have direct access to the process from which we can deduce learner strategies. This access was made possible thanks to screen data capture software (*Camstudio*) that enabled logging the actions of the learners during the whole experiment, all the while leaving the students on their own during the task with no obstructive or disturbing equipment. The students were informed that their work was recorded for the purpose of a research on multimedia use and explicitly allowed the researchers to work on their recorded session for the experiment. The conditions were similar to those learners encounter in autonomous learning when facing a new multimedia system in a self-access centre.

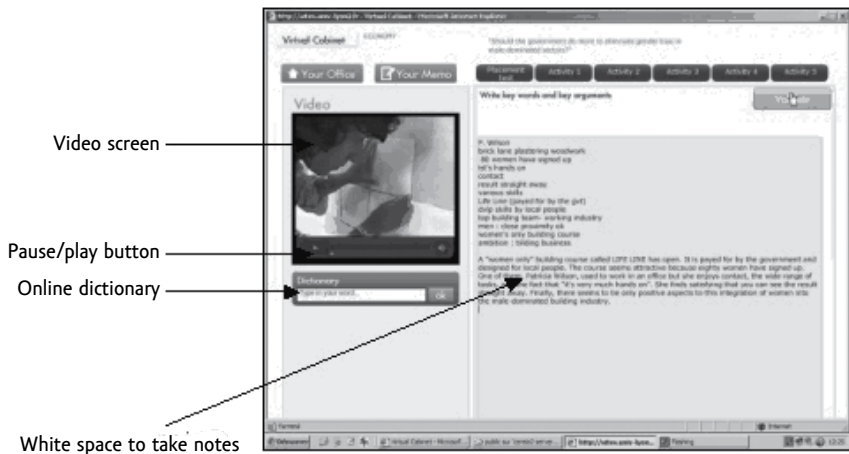


Figure 2. Screen shot of the multimedia setting

3.4. Scoring and data analysis

To have a more precise idea of their performance in relation with the specific task, in addition to their level of language proficiency, the students were classified, taking into account 3 relevant criteria for the task to be completed (see 2.1.), in addition to their linguistic level (see 3.1 above):

- ✂ the number of key words identified: altogether there were a maximum of 19 key words written down. Each correct answer was given 1 point.
- ✂ the number of arguments written down: there were 8 arguments, with 2 points each.
- ✂ the time management for the actual realisation of the task:
 - ♣ 2 points if the task was successfully completed (text produced and time for a full revision)
 - ♣ 1 point if the task was partially successful (text produced, but no time for revision)

☛ no points if the task was unsuccessfully completed (neither time to write a text nor time for revision).²

The association of these three criteria allowed us to assess the performance of each participant and to draw a continuum from student 1, with the weakest global performance to student 16, the expert. Finally, the screen recordings of all participants were transcribed for an objective representation of the activities, with particular focus on the use of video control and online dictionary.

4. Results

4.1. General performance

The actual performance generally follows the language proficiency of the subjects, even if one student has performed very well, compared to his expected language level (a student from the upper intermediate group who has reached the performance of the native speaker) or another on the contrary has had a poor performance (one student from the advanced group).

The continuum presented in figure 3 results from assessment of the subjects' actual performance in the specific conditions of the experiment and reorganizes the results, ordering them according to their performances from 1 to 16. As can be seen, the range of total scores for all three criteria is presented following the level of performance, from 9 to 34 (maximum score possible 37 points), the average score being 18.5.

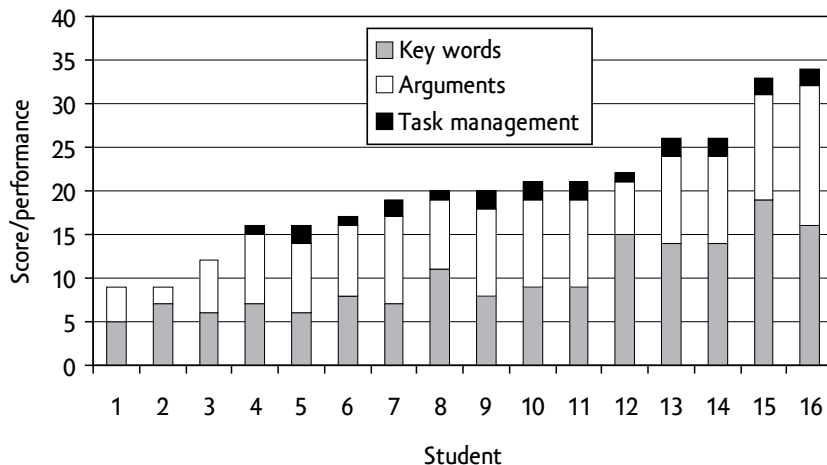


Figure 3. Performance of the sample learners

It is worth emphasising that the performance of the native speaker (subject 16) is not very different from the performance of student 15. The expertise of the native is limited by the actual conditions in realising the task (lack of familiarity with the system, time pressure). We can also notice that the first three students encountered difficulties and were not able to manage the task efficiently. Since they did not manage to conclude the task successfully

and got only a small number of key words or key arguments, they got no score for task management. This continuum thus serves as a benchmark to assess the use of different aids in carrying out the task.

4.2. Use of the video control

The data enables us to identify three different strategies concerning the use of the video controls, gathered in table 3 below. Table 3 presents the number of subjects for each of the three strategies and the use by individual subjects (numerically identified by their level of language proficiency from 1 to 16).

Three different strategies have been observed:

- ✧ global viewing: subjects watch the report once or twice but never pause;
- ✧ split viewing: subjects split the viewing of the report several times;
- ✧ global and split viewing : subjects first watch the report globally and then the second viewing is split using different pauses and rewinding operations.

Table 3: Different types of listening profiles

Type of strategy	global viewing	split viewing	global and split viewing
Number of subjects	2 (including native speaker)	4	10
Subjects	14, 16	2, 12, 13, 15	1, 3, 4, 5, 6, 7, 8, 9, 10, 11

Only two subjects, one of the most advanced students and the native, chose **global viewing**, which is not surprising given that only highly proficient learners are able to process such a document without any pause. **Split viewing** was chosen by four students, three of whom are among the best performers. Finally the category that gathers the most subjects – 10 out of 16 – is the **global and split viewing** strategy, representing the lowest to intermediate language proficiency levels.

4.3 Organisation of the written production: keywords and synthesis

The analysis of the use of video control throughout the task indicates that the students took advantage of the multimedia setting to separate listening from writing, and to alternate the listening and the writing phases in order to avoid a double task. We shall now focus on two major elements of the written phase: note-taking and summary writing. Two parameters will be taken into account: the kind of elements written down (key words, key arguments or full sentences) and the transfer process from key words to full sentences.

If we pay attention to the keywords, it can be observed in figure 4 below that there is an obvious link between the number of key words and the level of performance.

A clear distinction is also apparent between the less-advanced students (from 1 to 8) who made little use of the keywords in producing the final text. Only the more advanced students (from 12 to 15 and native speaker 16) used the keywords written down in the first phase of the task to write the synthesis. The way the key words were reinvested during the writing of the final summary is quite revealing.

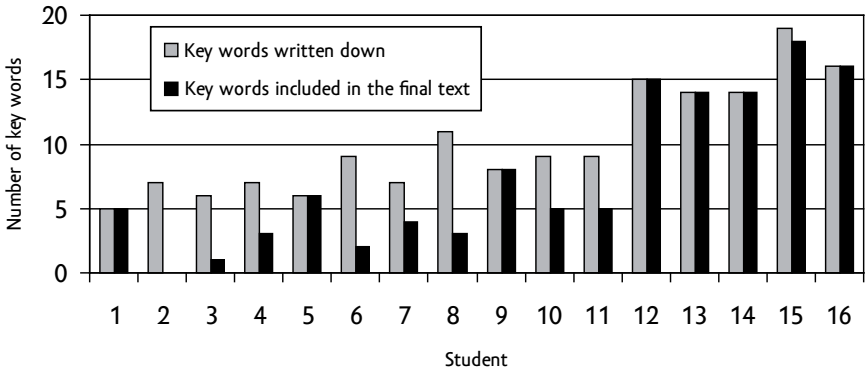


Figure 4. Number of key words reinvested during the writing phase

4.4. The use of the dictionary

The analysis of the screen data offers insight into the way an online dictionary is used by different types of students for a given task. As indicated in Figure 5, six students did not use the dictionary at all, five of whom are among the most advanced in English proficiency. Those who did use a dictionary lost a vast amount of time, and were not always successful in finding the words they were looking for (passing from definition to translation, or to synonyms, sometimes at random).

Looking up words in the dictionary occupied nearly one fourth of the time of the less advanced learners – up to 3 minutes out of the allotted 12. Student 15 was an exception, spending a significant amount of time (1 mn 10 s) using the dictionary, and nevertheless managing to conclude the task.

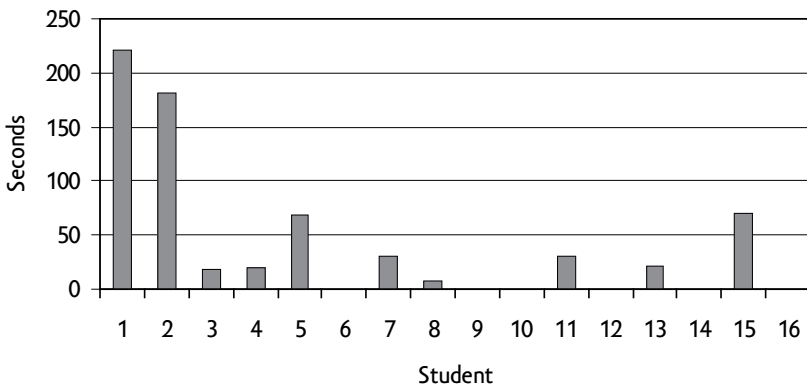


Figure 5. Amount of time spent using the dictionary per student

54 Finally Figure 6 shows the comparison of the total number of attempts of dictionary use and successful attempts. On average, only one third of the attempts were successful. It

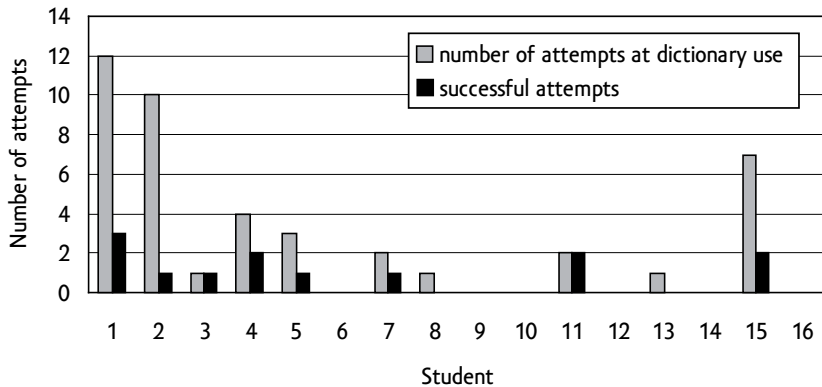


Figure 6. Number of attempts at dictionary use

thus reveals that “return on investment” of dictionary use was generally low, indicating inefficient use of this online aid.

Focusing on the three words from the text-base that were often looked up (tiling, bricklaying, plastering) might give us some insight into the use and the misuse of the dictionary. The results are presented in Table 4 below.

Table 4: Analysis of the word search

Words	Number of times...		
	...the word was searched for	...the word was searched for and then written down	...the word was written down among all students
tiling	7	3	3
bricklaying	4	1	10
plastering	4	2	9

Although the word “tiling” was often looked up (7 times), it was rarely found (3 times). Interestingly enough, only those who looked it up in the dictionary wrote it down. The students did not manage to make use of the explicit visual explanation coming from the video and they did not know how to spell *tiling*. Some insisted on finding it, while others had a less fragmented viewing and left this unknown word aside and saved time for the rest of the activity. Two other keywords were also regularly searched for: four times each for “bricklaying” and “plastering”. Generally, the search was not successful for either of these two words, yet considering the whole sample, students often wrote them down. “Bricklaying”, for example, was written down by ten of the sixteen students. Both words were illustrated clearly in the video and both are fairly transparent phonologically for French speakers (*brick* is transparent for a French speaker; *plaster* resembles the French word *plâtre*).

Finally, it was apparent that students deduced the spelling of the words unknown to them from what they heard (e.g. *tily, *tyling, *tailing for *tiling*; *bricklink, *bricking, *briklay for *bricklaying*). Correct spelling seems to have been achieved at random.

4.5 Monitoring

The existence of the monitoring phase depends on good organisation under time pressure, and on the efficiency of note-taking (Rost, 2002). Four types of actions can be observed on the screen: spell check (spelling mistakes), word processing (space and punctuation), word check (dictionary), final global viewing or final split viewing.

As we saw above in figure 4, the students hardly made use of the key words to write the summary and only the more advanced ones managed to link both activities. Where present, final monitoring focused more on presentation (word processing, such as space or punctuation) than content (checking vocabulary) or repetition of the video report to look for missing information. Only a very few students used the dictionary in the production phase (to translate from French to English). No students used the monitoring phase for a final listening, which is most certainly due to time pressure.

5. Discussion

5.1 Pattern of listening

Our study has uncovered a variety of strategies to process the information contained in the report. The most efficient strategies – which led participants to carry out their task the most efficiently – consist either of global viewing or of split viewing, with pauses to process the information held in working memory and reviewing of precise moments to clarify certain areas of incomprehension. Besides, for students who struggle to process the input and to organise the viewing of the report efficiently, controlling the video can lead them over time to manage longer extracts and to become more precise when they stop the flow of information. Such functionalities as pause and rewind buttons can thus enable learners to approach this task in several manners in order to develop their own specific strategies in keeping with the “self-pacing principle” presented in the theoretical rationale.

Yet, the very common pattern of listening (global viewing + split viewing) may find its origins in the imitation of the traditional classroom listening experience that classically starts with a general comprehension listening followed by a more detailed and interrupted listening. We know that the students, when they are not sure of their strategies, tend to repeat what they have experienced throughout their learning experience in the classroom (Barbot, 1997).

Another aspect of performance to be taken into account is the degree of synchronicity of writing and listening. There seem to be three different profiles:

- ✧ Type 1: The students transcribe what is being played but do not need to stop the flow to take notes. This is typical of more advanced students. Listening and writing are synchronous. As a consequence, there may be a disconnection between the content of the video that is being played and the information that students are able to process, since the memory span is large enough to accommodate both listening to new information and handling former information.
- ✧ Type 2: The students stop the flow whenever they want to write something down: listening and writing are not synchronous. The memory span is not broad enough to enable the student to treat oral and written forms at the same time due to the risk of cognitive overload.
- ✧ Type 3: A third category of students not only needs to stop the oral flow, but also to

check it and listen again. This category, including the less advanced students, can only handle shorter extracts.

5.2 Use of the online dictionary

Two main results can be identified:

- ✦ One-third of the subjects did not use the dictionary at all and, when it was used, differences appeared in the level of subjects' performance. The dictionary was used during the monitoring phase by the more advanced students for the purpose of correcting their summary. On the contrary, the less efficient subjects used the dictionary during the comprehension phase and focused on isolated words to the detriment of the report as a whole.
- ✦ The dictionary was rarely used efficiently. The lack of efficiency was due to the fact that not knowing how to spell an unknown word, learners had a trial-and-error approach that was time-consuming. Moreover, students were at a loss when it came to choosing between the different possibilities of languages (i.e. French to English, English to English, English to French). As a result, students who used the dictionary more widely did not have time to listen to the whole report.

We may wonder why the students felt the need to check words which could be inferred phonologically and were illustrated in the video. The strategy chosen was thus inefficient as the students were unable to choose the most appropriate aid: they focused on the dictionary, when the analysis of the image in the video would have been more helpful. We must keep in mind that, as pointed out by Tricot (2007), image requires a cognitive treatment of its own and does not necessarily help in understanding the text, since it can illustrate exactly what is being said, simply evoke it, or have no link at all. Some images were not identified by the students as clearly explicit, maybe because they were understood as evocative rather than fully illustrative.

Without temporal pressure, the use of the dictionary might have been more productive and more successful, but in the case of a timed activity, it proved too time-consuming to be of real use. We may therefore consider that providing a dictionary for the comprehension phase in a context of limited time does not necessarily lead to the development of helpful strategies and is not a useful aid. Another essential problem comes from the association of the dictionary with a listening task, which does not provide clues concerning the spelling of the word. The search then becomes a succession of trials and errors that could be avoided if the spelling could be accepted, even if approximate. Two directions, however, can be envisaged to improve the use of the dictionary for such a task:

- ✦ make the dictionary available only for the monitoring phase so that learners make the most of the context and develop strategies to make inferences during the comprehension phase;
- ✦ limit the choice of dictionary search to a monolingual dictionary to prevent learners from wasting time, as some of them have searched for the same single word in different kinds of dictionaries, in a repetitive process.

6. Conclusion

To further the insights gained from this exploratory study and to validate it, research is needed with a greater number of participants who have more time to carry out the

task. It would also be useful to gain insight into the first phase of planning through a think aloud procedure and to have access to the mental process, through guided interviews, in order to compare the processes objectively observed and the processes consciously identified by the learners. Many factors are involved: proficiency level, time pressure, and unfamiliarity with the learning environment that may have influenced the use of the setting. Despite these limitations, such a study relying on screen data does, as we have seen, allow researchers to “get closer to the processes of language acquisition and use” (Hulstijn, 2000, p. 39).

In this study, we have proposed a methodology to assess the use of certain aids to assist learners in carrying out a learning task in a CALL system. This assessment begins with the precise description of a learning task and the sampling of CALL system users who are representative of the population of potential users. The screen data capture is a fruitful data collection procedure in such research since it allows for study of all the actions that are visible on the screen and, in this case, helps the researchers finely delineate the note-taking strategies used by the participants. Data analyses indicate whether and to what degree proposed aids efficiently assist users and allow for recommendations to redesign help strategies or to improve tutoring.

This study has thus helped us to determine that the video control functionality is indeed a useful aid because it provides learners with an individualised means to process the input at their own pace. On the contrary, providing a dictionary during the comprehension phase seems to lead to inefficient strategies and seems therefore to be disqualified as an aid for the comprehension phase of the task in a timed context.

Finally this study should sensitise CALL designers to the cognitive limitations of subjects and lead them to avoid the temptation of adding too many aids, which may divert the learners from the main task and be more of a hindrance than a real help.

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Notes

1. The Dialang test is a free test online offered by the European Council. The self-assessment grid is also provided online (http://www.sprachenzentrum.uzh.ch/angebot/kurse/sprachen/pdf/Raster_Selbstbeurteilung_Englisch.pdf).
2. An example of the scoring for student 10 is given in the appendix.

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Appendix

Example of scoring for student 10

In bold letters, the items found by the student among the whole possible list.

Key words	Arguments	Time management
woodwork	woman vs. man's job	0: fail
brick laying	male dominated sector	1: intermediate
manual work	aspects of construction	2: successful
building course	course for 80 women	
plastering	program launched by the government	
organisation	fun and contact	
Lifeline	London: boom town and Olympic games	
male-dominated	jobs for local people	
skills	men's opinion	
contact with people		
top building team		
government		
career		
Patricia Wilson		
80 women		
ambition		
women's only		
integrated		
tiling		
<i>Total: 9 key words</i>	<i>Total: 5 arguments</i>	<i>Total: 2 points</i>
<i>9 points</i>	<i>10 points</i>	<i>2 points</i>