Terminological Recognition in French for Specific Purposes

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Abstract

Recognition of terminology is an essential cognitive activity for learners of languages for specific purposes and presents particular difficulties compared to general lexical recognition. This study attempts to identify and prioritize the main lexical difficulties that learners encounter in specialized texts. The effects of lexical fuzziness in recognizing specialized vocabulary are also analyzed. Two experiments were performed with 17 graduate students enrolled in a Spanish university's foreign language business master's program, specifically in the course titled French for Specific Purposes. These experiments were administered using two different methodologies – microsequences of learning and controlled definitions – that facilitate terminological recognition and conceptual precision; however, controlled definitions were not addressed in the present study. The results of this study provide an initial approximation of a typology of the difficulties involved in terminological recognition and of strategies used by learners to execute this lexical discrimination activity.

1 Introduction

The last two decades have been particularly productive in the study of lexical acquisition of second languages (L2) and second language teaching, as Laufer (2009:341-342) has reported. The publication of the well-known article by Meara (1980), in which he highlighted the existing lack of interest in the teaching of vocabulary in L2, attracted renewed attention to these issues. The acquisition and knowledge of specialized vocabulary has been a relatively marginal issue in second language acquisition research, and even less attention has been paid

to the teaching of technical vocabulary (Chung & Nation, 2003: 103). Nevertheless, research into technical vocabulary teaching has gradually increased over recent years, particularly in the area of languages for specific purposes (Nation & Kyongo, 1995; Chun & Plass, 1996; Laufer & Hill, 2000; Nation, 2001; Coxhead & Nation, 2001; Horst, 2005; Chung & Nation, 2004; Mehrpour & Rahimi, 2010; Lessard-Clouston, 2010, Kwary, 2011). Whereas in the 1960s and 1970s, vocabulary was considered irrelevant to linguistic knowledge, currently, lexical aspects are regarded as part of the curricular content to be provided by the teacher (Nation, 2001: 203-204). Thematically specialized texts contain a large number of terms, an element that should therefore not be ignored in the teaching of a language.

The instruction of specialized lexical content in languages for specific purposes (LSP) has mainly focused on three elements (Piñeiro & Matesanz, 2012): (i) the identification and teaching of technical lexical units in a text, (ii) the determination of percentages of terms in a specialized text, and (iii) the number of terms that students should know. The most productive area of study is undoubtedly the first because there are myriad papers in various languages dealing with specialized vocabulary in widely varying fields of study. Although their focus is the teaching of a language, the majority of these studies are conducted from a primarily lexicological perspective, centered on the description and analysis of vocabulary. The language student's perspective has not been sufficiently considered when analyzing lexical acquisition processes. Except in the case of methodological developments aimed at the classroom, the student's view of the lexical component has been absent. The classification formulated by Nation (2001:11-21) of vocabulary that can be found in a text (high-frequency words, academic words, technical units, and low-frequency words) corresponds to a lexicological view of discourse. However, this four-fold classification, which is quite useful for language teachers, is hardly relevant to the student who, obviously, does not perceive vocabulary in this manner.

Students of languages for specific purposes are more aware than other learners of the importance of knowing vocabulary in the specialized subjects addressed in L2 and of the need to identify the units that make up the target dominion's terminological repertory. Nevertheless, the lexical recognition process is not always evident (Jiang, 2000, 2002, 2004), and learners frequently encounter some difficulty in identifying the specific terminology in a field (Piñeiro & Matesanz, 2012).

1.1 The problem of terminological recognition in specialized discourse
One aspect of lexical acquisition not dealt with from a semantic perspective is terminological recognition, understood here as a specific aspect of lexical recognition in specialized discourse. The term *terminological recognition*, as opposed to *terminology recognition*, is used here as synonymous with *lexical recognition* to avoid confusion with the denomination of automatic terminological recognition systems.

Studies in the area of terminological recognition are somewhat limited because the emphasis has been on formal identification of lexical units and not on comparing those units with other words to establish basic classifications of the vocabulary of a language.

The first problem that learners encounter in L2 is establishing an initial form-meaning link, one of the priorities of lexical activities (Saigh & Schmitt, 2012: 24). Lexical recognition, both in the native language and in a second language (or in both in convergence), is a broad research field, including the identification of lexical units in both oral and written discourse (Lemhöfer et al., 2008). The approaches to lexical recognition in second languages are quite diverse and include the study of the influence on word recognition of words with different orthographical systems (alphabetic L2 for learners from non-alphabetic L1 as in Koda, 1996; Wang & Koda, 2003; Hayes-Harb, 2006; Wang, Koda & Perfetti, 2007; Akamatsu, 1999; Muljani & Koda, 1998; Toyoda & Scrimgeour, 2009); recognition of cognates (Moss, 1992; Meara, 1993; Cunningham & Graham, 2000; Sunderman & Schwartz, 2008; Dressler, et al., 2011; Peeters, Dijkstra & Grainger, 2013); or the influence of affectivity on lexical recognition in L2 (Segalowit et al. 2008), a less frequently addressed question.

Lexical recognition undoubtedly has a specific function in the acquisition of specialized language by facilitating the identification of technical vocabulary and differentiating technical vocabulary from general vocabulary. The fact that one of the characteristics of specialized discourse is the use of technical vocabulary indicates that this element is particularly significant in the teaching of specialty languages. As noted by Vidal and Cabré (2007: 188), knowledge of technical vocabulary expedites the acquisition of concepts in the target subject matter and the transfer of concepts to specialized production. Thus, lexical discrimination between general and technical vocabulary is the first step in an optimal acquisition process.

1.2 Research questions

A review of the current research related to lexical recognition in L2 discourse led the authors of the present study to pose various questions relating to the problems that learners encounter in the process of identifying lexical units. These research questions sought to discover and analyze the terminological recognition challenges that learners encounter in specialized texts.

The questions were as follows:
1. What are the difficulties that learners encounter in correctly discriminating between general and specialized vocabulary?
2. Is it possible to establish a typology of difficulties in terminological recognition?
3. How does fuzziness in specialized vocabulary affect recognition?
4. To what extent does the level of competence in the French language influence terminological recognition?

2 Material and Methods
2.1 Participants

To provide answers to the questions posed, two experiments were performed with a group of 17 students in the French IV course of the Official Master's Program in Foreign Language and Culture for International Business (120 European Credit Transfer and Accumulation System [ECTS] credits, 4 semesters) at the Rey Juan Carlos University in Madrid. The participants, all near the end of their university studies, were between the ages of 22 and 30, with an average age of 24.8. The distribution of participants by sex was completely unbalanced: 16 of the 17 students were women. The group had similar academic backgrounds before their enrollment in the current Master's program. None of the students had specialized in business or in other related fields, such as economics or business management.

Regarding the participants' linguistic knowledge, the group was completely multilingual. In addition to their native language, all students knew at least four foreign languages with varying degrees of competence. However, English was the L2 of all participating students; students averaged 14.3 years of formal instruction. French was the L3 for ten students and the L4, L5 or L6 for six participants. Only one student's native language was French, a fact that is specifically observed in Experiment 2 . Students for whom French was L4, L5 or L6 were defined as a homogenous group labeled "Ln" because instruction in this language varied between two and four years, which was less than the 5.8 average years in the case of L3 French. Moreover, no relevant differences were observed between L4, L5, L6 and L7 for the purposes of this study in which no other skills were evaluated except those targeted by the analysis. Ln refers to a linear order of language acquisition subsequent to the reference position as long as there was homogeneity in one or more aspects of the resulting group. Hence, we did not adhere to the recent proposal of Hammarberg (2010), who questioned the linear order of acquisition and proposed using the designations of primary language, secondary language, and tertiary language, which, in the case of this study, would correspond to French. In the present study, tertiary language would designate five languages (French, German, Italian, Korean and Japanese). However, this classification would imply a uniformity in the knowledge of French that is non-existent in this case. The designation of tertiary language in our case would prevent differentiating French L3 from Ln, which is, *a priori*, relevant to Experiment 1.

2.2 Design

This study was based on two experiments, both of which were focused on the recognition and acquisition of specialized vocabulary and performed by the students of French as a Foreign Language. Although the experiments were complementary and implemented during the same time frame, the methodologies were different. Experiment 1 was designed as an individual activity, whereas Experiment 2 involved collaboration for which the students were divided into small groups.

2.3 Experiment 1

The first experiment was conducted using **microsequences of the consolidation of learning** (Matesanz, de Miguel & López Alonso, 2011), initially designed to improve retention and consolidation of knowledge generated in the classroom, although not specifically lexical knowledge. Learning microsequences are brief pedagogical sequences focused on the review and identification of the most relevant curricular content in an academic session to facilitate retention and generate learning progress (Matesanz, de Miguel & López Alonso, 2011: 455). Supported by three basic core ideas – recapitulation, reflection and synthesis – this methodology occurs in a brief time frame, which in addition to the didactic utility of microsequences, promotes discrimination between what is pertinent and what is secondary. This characteristic renders microsequence methodology compatible with activities focused on other targets, such as vocabulary acquisition.

2.3.1 Procedure

For the present study, the design of the microsequences was adapted to obtain data on the recognition and retention of specialized terminology used in business French. The study was based on 7 business texts in French, the terminological specificity of which preferentially

corresponded to Categories 2 and 3 of the technical vocabulary classification created by Nation (2001: 198-201).

The basic protocol for learning microsequences was followed in that they were always conducted toward the end of a class session, i.e., in the last 10 minutes of class. The use of microsequences for lexical purposes requires a precise didactic organization of the class, which can be summarized in the following points: (i) a specialized text regarding one of the unit topics of the syllabus is presented in class and read as a group; (ii) after the reading, the teacher offers to solve any comprehension problems, dealing with all difficulties in the same manner without distinguishing between general and specialized vocabulary; (iii) a specific concept of the text is addressed that generally leads to the introduction of new words; (iv) at the end of class, each student individually rereads the text and their personal notes; (v) once the reading is reviewed, the student is asked to select three terms that he or she considers to be specifically related to the current syllabus module (Lawson & Hogben 1998); (vi) the student proposes a brief definition in French for each one of the terms selected without resorting to synonymia; (vii) once the activity is finished, students, without consulting the text again, are requested to send the file of work performed in class to the virtual campus. Optimally the file should be sent directly from the classroom to the instructor. This is not always possible when a digital classroom is not available as was the case in the experiment described here. Therefore, the deadline for handing in the files on the platform was only a few hours, and students received explicit instructions not to consult dictionaries or reread the text. Although this is a component of the study that we were unable to fully control, we do believe that the error index in the assignments, in both lexical selection and conceptual precision, reveals that there was little *a posteriori* correction. This experiment was regularly ongoing for four months.

2.3.2 Analysis of the data

The data analyzed in this study are only those related to lexical recognition, not to terminological accuracy or grammatical correctness. Therefore, data extracted from the definitions were not used because one of the instructions given to the students was to focus on the precision and succinctness of the content. At no time were the students expected to create real terminological definitions because to do so, they would have needed specific skills that were not included in the course objectives. The microsequences were presented at all times as a terminological, not a terminographic, activity.

The first data analyzed were the degree of success or error in lexical recognition. The criteria used when considering a lexical unit as successful or erroneous, in both this experiment and Experiment 2, were based on the terms selected by the students having at least one specific meaning in business French. All terms selected were checked in various dictionaries and terminological glossaries and, in the most questionable cases, with terminological databases. Some of the online lexicographical repertoires and terminological data bases used were *Le grand dictionnaire terminologique* (GDT), *Multilingual Thesaurus of the European Union, InterActive Terminology for Europe* (IATE), *IMF Terminology,* and *A Multilingual Directory*.

In Experiment 1, students identified 270 lexical units as specialized vocabulary, although only 187 (69.3% of the total) were considered valid according to the established criteria.

Example	Student = (S)	Success	Errors
(i)	S17		amadouer
(ii)	S1		bâtiment
(iii)	S16	commerce	
(iv)	S6	distribution	
(v)	S11	entreprise	
(vi)	S3		horlogerie
(vii)	S14	marché du travail	
(viii)	S9	marketing	
(ix)	S16	négociation	
(x)	S14	recrutement	

Table 1. Some examples of success and errors in Experiment 1.

Eighty-three units that did not fit the criteria were discarded. It should be noted that some units are repeated because all of the students worked simultaneously from the same text.
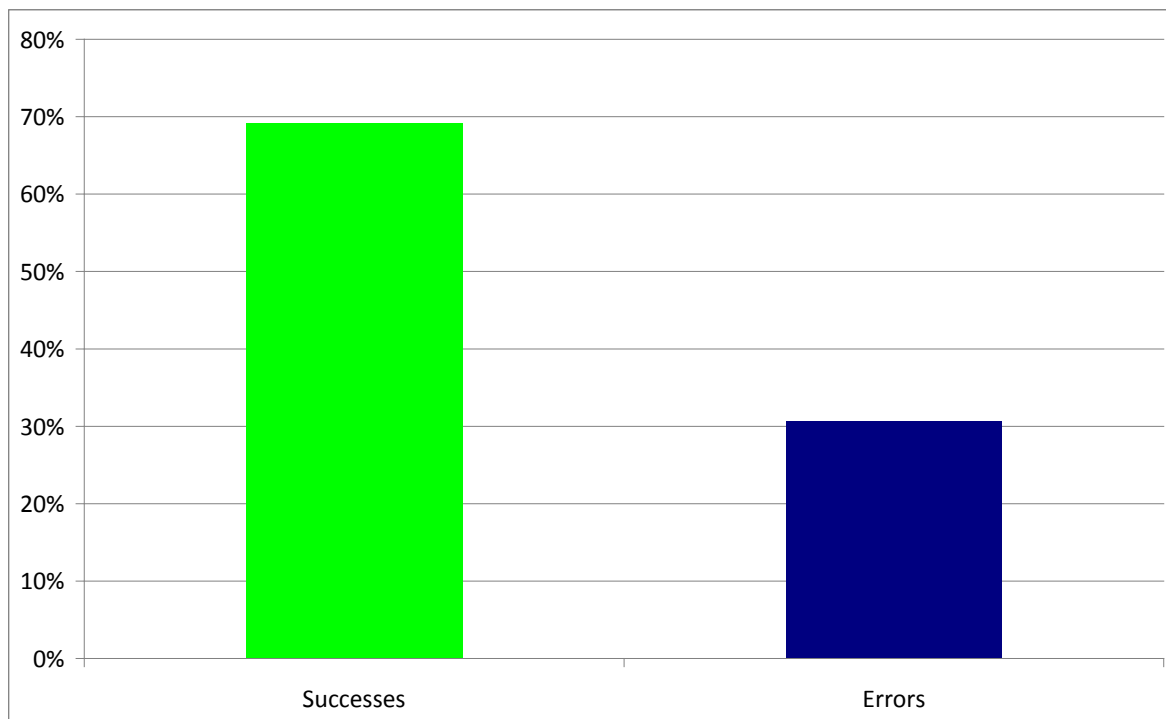

Figure 1. Proportion of successes and errors in Experiment 1

The analysis of lexical selection of invalid units led to the formulation of an initial classification of the errors (general classification of errors) into three different groups: (i) non-specialist lexical units (general LU), (ii) syntagm-free syntax (SFS), and (iii) technical terms pertaining to other areas (TTotha). The most frequent error detected was erroneous identification of unknown vocabulary. The students tended to consider unknown units as specialized units. The second error observed, much less frequently, occurred in discourse segmentation when students considered syntagm-free syntax as isolated terms. The third problem was the incorrect analysis of the fields of study to which the terms pertained. This error is not so much a discrimination error as it is an error of conceptual precision because students recognized the words as technical terms but made identification errors because of a lack of knowledge of the exact meaning. In general, these last cases are rare, and the terms involved belong to thematically related subject matter.
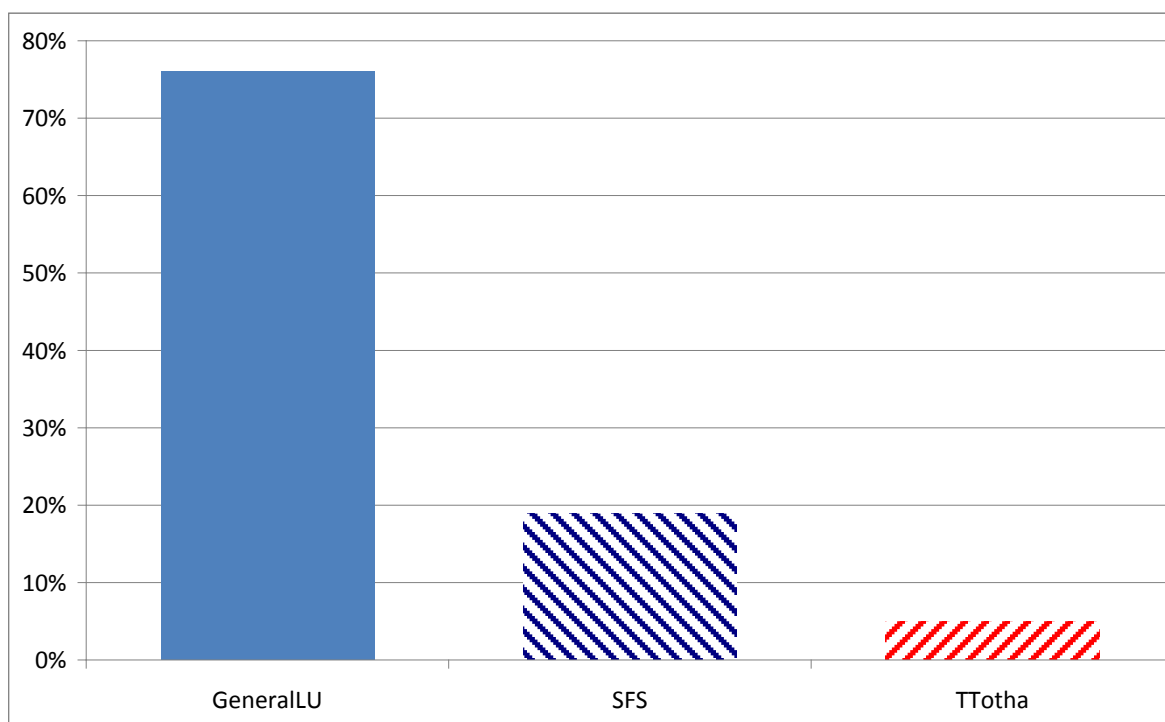

Figure 2. Proportion of non-valid lexical units according to the general classification of errors

The application of this initial classification can be observed in the following, which includes a selection of 25 examples:

Example	Student = (S)	Recognition Errors	Classification
(1)	S17	*amadouer*	General LU
(2)	S8	*augmentation*	General LU
(3)	S6	*bac*	General LU
(4)	S1	*bâtiment*	General LU
(5)	S5	*bienfait*	General LU

(7)	S5	*croissance*	General LU
(8)	S12	*denrés de 1ere nécessité*	SFS
(9)	S3	*être au chômage (sont au chômage in the text)*	SFS
(10)	S1	*formation*	General LU
(11)	S8	*gratification mensuelle*	SFS
(12)	S3	*horlogerie*	SFS
(13)	S13	*jeune chômeur*	SFS
(14)	S3	**rejoigne (rejoignez in the text)*	General LU
(15)	S17	*rejoindre*	SFS
(16)	S16	*réseau*	General LU
(17)	S17	*résilier*	Totha
(18)	S16	*secteur d'activité*	Totha
(19)	S14	*siège*	General LU
(20)	S17	*statistique*	TTotha
(21)	S11	*taux de chomage*	SFS
(22)	S8	*taxe de chômage*	SFS
(23)	S10	*télécommunication*	Totha
(24)	S9	*terrain*	General LU
(25)	S15	*offrir quelque chose d'office*	SFS

Table 2. Examples of errors in Experiment 1.

After a detailed analysis of the students' erroneous choices when asked to make a lexical differentiation, the above typology of errors was more precisely defined. In the new, more detailed classification, an internal distinction between groups (1) and (2) was established to expand the initial classification from three to five error types as follows: (i) non-specialist and unrelated lexical units (urLU), (ii) related lexical units (rLU), (iii) unrelated syntagm-free syntax (urSFS), (iv) related syntagm-free syntax (rSFS), and (v) technical terms pertaining to other areas (TTotha), group (3) in the former classification.
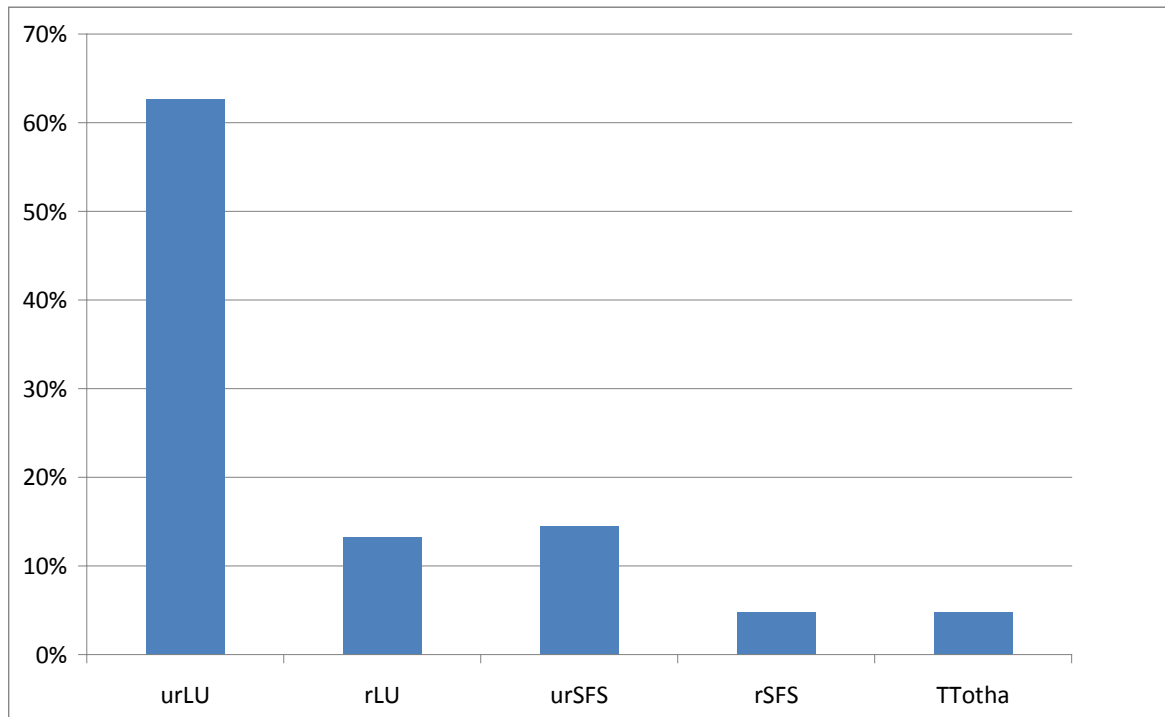
Figure 3. Proportion of non-valid lexical units in Experiment 1 according to the detailed error classification

This distinction is of interest in determining the origin of some errors in terminological discrimination. Several of the examples from group (i), the largest group, indicate that one of the most frequent errors is identifying unknown vocabulary as specialized without there being any semantic relation to the specialty field, as in examples (1) and (12). Moreover, it should be noted that *amadouer* and *horlogerie* are not frequently used in French and were predictably unknown to the students who selected them. Examples such as these suggest that learners may assume that they are ignorant of the words because the words belong to field-specific terminology, in this case, business French. Perhaps the most obvious cases of the examples chosen (14) and (9) of S3. The form *rejoignez in example (14) was identified as a specialized term by S3, who failed to associate the word with the infinitive form *rejoindre* as did S17 (example 15). One may assume that this error is not a matter of lack of knowledge of the infinitive but rather the student attempting to reproduce the literal form found in the text (http://www.travailler-en-suisse.ch/taux-de-chomage-en-suisse-38-en-decembre-2010.html). However, the same student proposed the syntagm *être au chomage* with the verb in infinitive form as if it were a verbal phrase although it appears in the conjugated form *sont au chômage* twice in the text. The student in example (9) went through the morphological process of association of a word form with a word expression, in the terminology of Lyons (1977). In this case, the learner associated a conjugated verb with its infinitive because he/she recognized that it was a verb form. However, the same learner failed to make this recognition in example (14).

Group (ii) (rLU) presents an error type related to lexical lack of knowledge, but, as opposed to the former example, these words do appear frequently in the business field although they are not specific to this context. This fact facilitates the configuration of isotopies (Rastier, 1987), which aid in the comprehension of text. Examples (2) and (16) are words that form components of isotopic networks in the text in which they appear and that the learner relies on to understand the meaning of the text.

Groups (iii) and (iv) reflect one of the problems learners have with discourse segmentation: the identification of syntagm-free syntax as terminological compounds. Group (iii) (urSFS) includes syntagms unrelated to the thematic field, although the segmentations are not random, as observed in examples (8) and (25), i.e., they always constitute correct syntagms in free syntax. Group (iv) (rSFS) is larger than Group (iii) and is composed of collocations. As in example (21), the rSFS group consists of collocations as opposed to syntagms, which are terminological compounds, such as examples (27), (29), and (30).

Example Number	Student=(S)	**Recognition** Successes
(27)	S1	*chef de produit*
(28)	S1	*versement*
(29)	S3	*argent liquide*
(30)	S4	*marché du travail*
(31)	S4	*transaction*
(32)	S5	*virement*
(33)	S9	*emprunt*
(34)	S13	*prélèvement*
(35)	S14	*recrutement*

Table 3. Examples of successes in Experiment 1.

Terms belonging to other thematic fields (v), a small group, generally pertain to related fields, such as example (20) from economics. The morphosyntactic typology of this group is varied so that there are one-word and multi-word (compound) terms and syntagms in free syntax (collocations). However, because the group comprises only a few units, we considered that this diversity was not sufficiently relevant to subdivide the group. Because the grammatical form is less important than the semantic content, creating sub-groups here was not considered appropriate. Data were also obtained on successes and errors correlated with the level of students' French competence and acquisition of French L3/Ln. As expected, learners of French L3 had had more prolonged contact with the language and thus made fewer errors in the terminological recognition process than Ln learners. The group of L3 French learners showed a success percentage of 71% as opposed to 65% in the case of Ln French learners. This difference between the two groups is relatively small, only 6%.
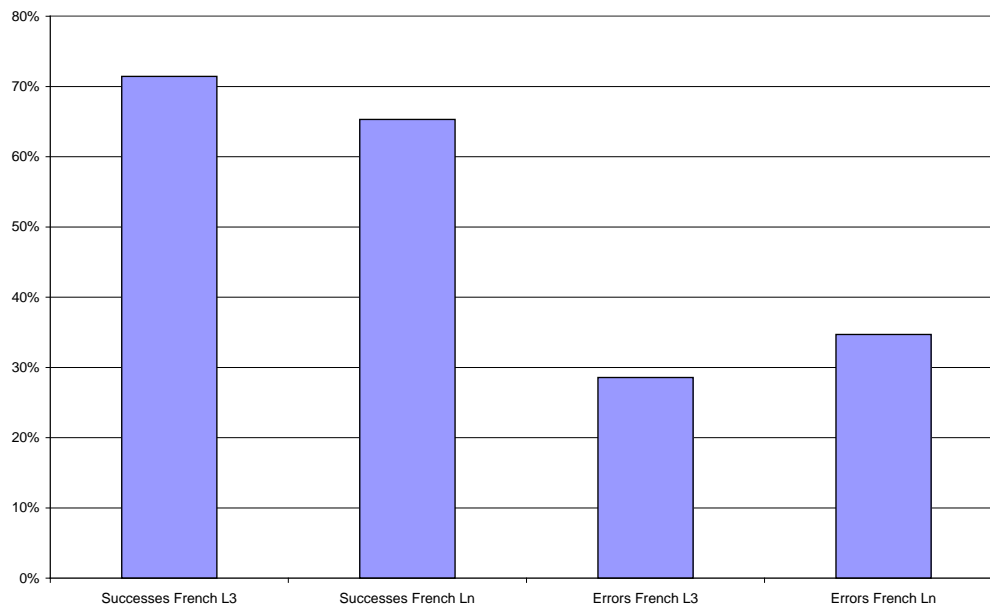
Figure 4. Successes and errors in terminological recognition by L3/Ln French learners

Analysis of the microsequences allowed us to determine whether the student clearly differentiated between specialized and general vocabulary after having become familiar with the text in class. We were also able to determine the level of lexical comprehension achieved, particularly terminological precision. Additionally, although not a direct objective of this experiment, the microsequences facilitated an evaluation of the correctness of students' written expression in controlled sequences based on the term definitions.

2.4 Experiment 2

The second experiment was also designed to meet both cognitive and pedagogical objectives: (i) development of a lexical distinction between general and specialized vocabulary, (ii) development of operations involving conceptualization and lexical precision, (iii) practice in written expression and terminological definitions, and (iv) elaboration of a basic collaborative-cooperative glossary of specialized vocabulary.

2.4.1 Procedure

The participants in this experiment were the same as those in Experiment 1; however, this time, they worked in small groups rather than individually. Five small groups made up of three to five students each were randomly created. There was one native French speaker in one of the groups, which allowed us to determine to what extent a native speaker could positively influence lexicological recognition. Throughout the academic year, each group participated in three practice sessions, each integrated into the thematic content of the general course syllabus. The three sessions were conducted on the virtual campus using 15 texts from the field of business French that had an average degree of specificity but were different from those used in Experiment 1. The three exercises were identical in the number of phases and the time allowed for each one of the sub-phases into which they were divided. Each experience comprised three phases.

Phase 1. Phase 1 focused on discrimination between specialized and standard vocabulary. Each group received a different text on the topic of the particular exercise and, after reading

the text, was requested to present a list of lexical units (a minimum of five and a maximum of ten) adapted to one of the following criteria established for their selection: (i) units identified as specific business terms or (ii) general lexical units with at least one meaning specialized in the subject matter addressed. All of the units chosen were to be labeled as specialized language or general language according to the students' perception of the vocabulary. The teacher received the lists on the virtual campus and checked the degree of success of the selections. If the responses did not contain the minimum number of valid units, the students were asked to do a second reading and propose additional terms adapted to the established criteria.

Phase 2. In this phase, the groups were asked to define each one of the units in French according to their previous knowledge and based on what they had understood upon reading the text. They were not to use synonymia in the definitions, nor were they allowed to use outside supporting materials. In this phase, the students did not receive feedback on their work although the teacher corrected all of the definitions and evaluated both the degree of conceptual adaptation of the definitions and their grammatical correctness. Although the assignment involved definitions, lexicographical adequacy was not evaluated because the students had not received previous information on this type of linguistic experience, nor was this the objective of the activity. For example, units not corresponding to the usual lemmatizations in dictionaries, such as plural forms (*dettes* or *placements*), were not considered.

Phase 3. In this last phase, students worked autonomously on conceptual precision and written correctness, although these objectives were not made explicit. The instructions directed students to compare their definitions with those found in online dictionaries and glossaries; a controlled list of dictionaries and glossaries in French was made available. The restricted list of links was designed to avoid distorting the objective by allowing students to have access to unequal dictionaries that would be accessible online, leading to unreliable results. After consulting the dictionaries, students were asked to adjust their definitions if they deemed adjustment necessary. Again, they were not allowed to reproduce definitions from the resources consulted, which, in any case, were to be identified in their work. The third phase was conducted simultaneously in all three exercises, i.e., when phase 2 of the last exercise had concluded. The simultaneity of the third phase was because lexicographical consultation and revision always benefit by continuity. Once the definitions were compared, reviewed, and corrected, a glossary was created on the virtual campus that included all of the terms selected by the groups and their definitions; the glossary was then made accessible to all students enrolled in the course.

2.4.2 Analysis of the data
The terminological recognition activities conducted in this experiment produced new data on (i) the proportion of valid and erroneous terms in the students' lexical selection, (ii) the degree of success of each group, (iii) the students' perception of the specific language of the specialization, (iv) data on terminological precision, and (v) degree of grammatical correctness. The last two aspects are not addressed in the present study.

The first analysis presented seeks to determine if the group that included the native French speaker (Group 5) would achieve a greater number of successes in lexical selection. The result, shown in Figure 5, reveals that this factor did not influence the lexical recognition

process of the group. The percentage of successes for Group 5 was 75%; for Group 1, 74.1%; for Group 2, 72.7%; for Group 3, 87%; and for Group 4, 82.8%.

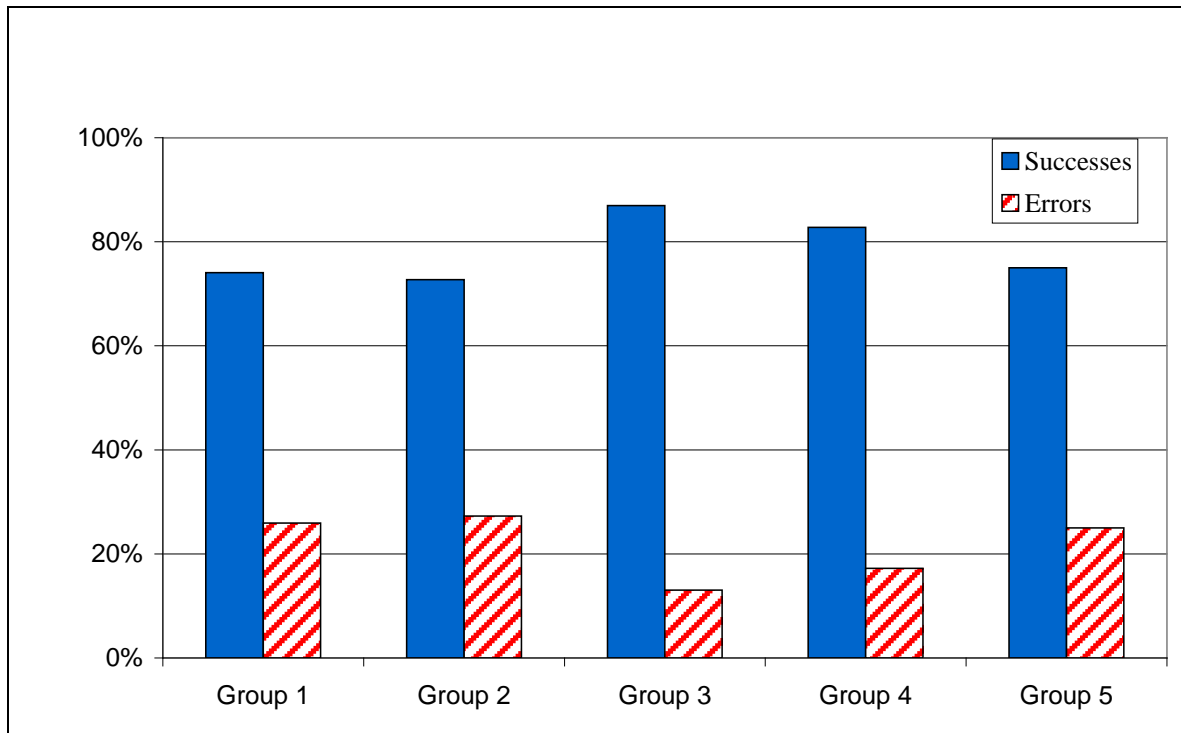The following figure shows the percentages of successes and errors for each group participating in the experiment.

Figure 5. Proportions of successes/errors in Experiment 2 for each group of learners.

A total of 128 lexical units were selected by the groups from the texts proposed for Experiment 2, 101 of which were considered valid (78.9%) and 27 of which were erroneous (21.1%). The criteria used to consider a selection valid or erroneous are identical to those applied in Experiment 1, i.e., the units selected have at least one meaning specific to the field of business. As in the former experiment, all of the units chosen were compared to at least one terminological dictionary or glossary, and in the most questionable cases, the comparison was not only made with dictionaries but also with terminological databases.
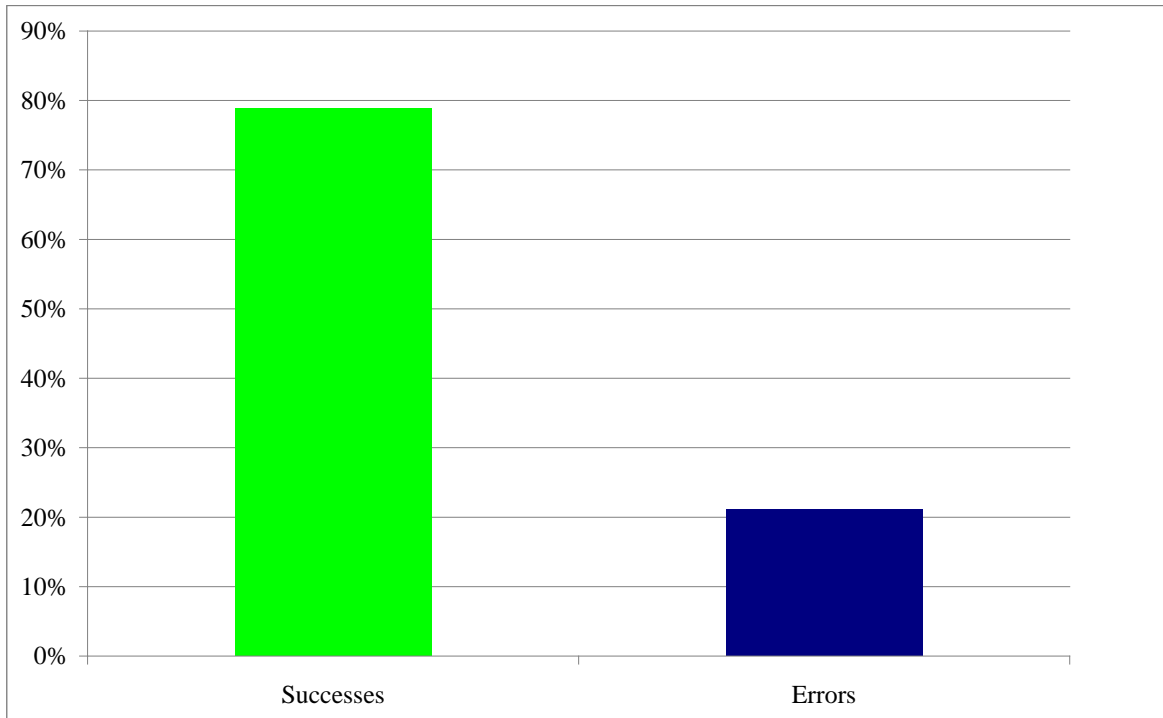
Figure 6. Proportions of successes and errors in Experiment 2.

Learners' recognition errors were analyzed according to the detailed classification of the five groups established in Experiment 1. The results indicate that the students did not make discrimination errors in the analysis of syntagms in free syntax unrelated to the thematic area (Category iii). There was also no presence of terms belonging to other thematic areas (Category v). In Experiment 1, these two categories had the lowest percentage of errors (5% in both cases) whereas in Experiment 2, the students simply did not commit these errors. We consider that this fact is linked to methodological differences between the experiments, as will be discussed in the following section.
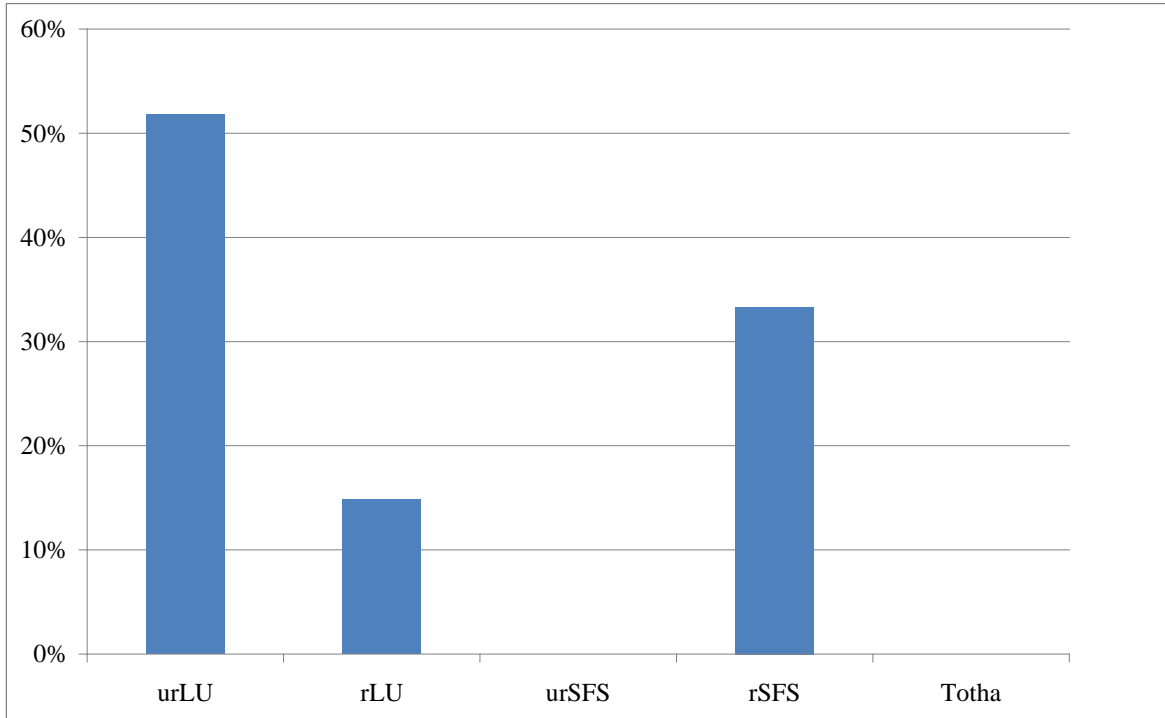
Figure 7. Proportion of non-valid lexical units in Experiment 2 according to the detailed classification of errors.

3 Discussion

Comparison of the success/error proportions in terminological recognition for Experiments 1 and 2 indicates that the number of errors committed in this cognitive activity was higher in Experiment 1, in which the erroneous lexical selection was 30.7%, whereas the error percentage in Experiment 2 was only 21.1%.
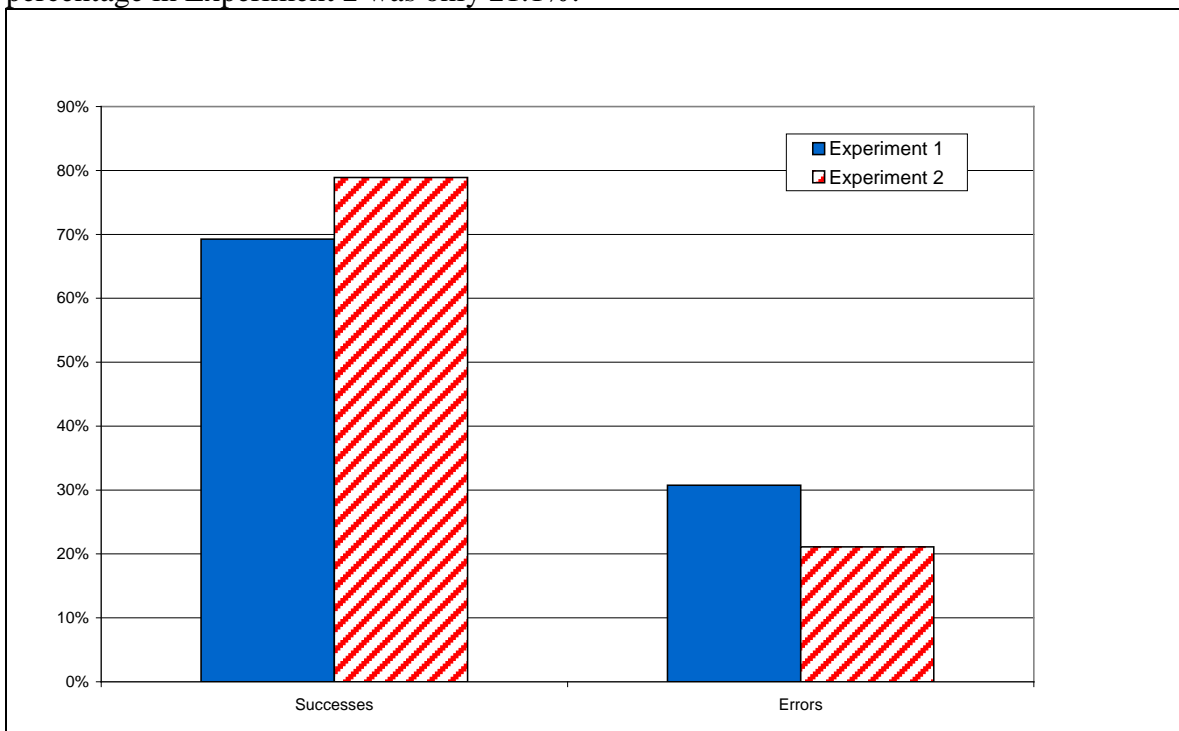
Figure 8. Comparison of success/error percentages in Experiments 1 and 2.

The variation in discrimination data can be attributed to the different manners in which lexical recognition was approached in Experiments 1 and 2 using different methodologies. Whereas the lexical microsequences of Experiment 1 were performed individually within a brief time frame at the end of an academic session, the terminological definition activity in Experiment 2 occurred in groups. Because there was no time limitation, it was possible for students to consult various sources of information during the activity. Additionally, asking students to make a value judgment on the specialized vocabulary (to label the units chosen as either specialized or general with at least one specialized meaning) reduced the margin of error.
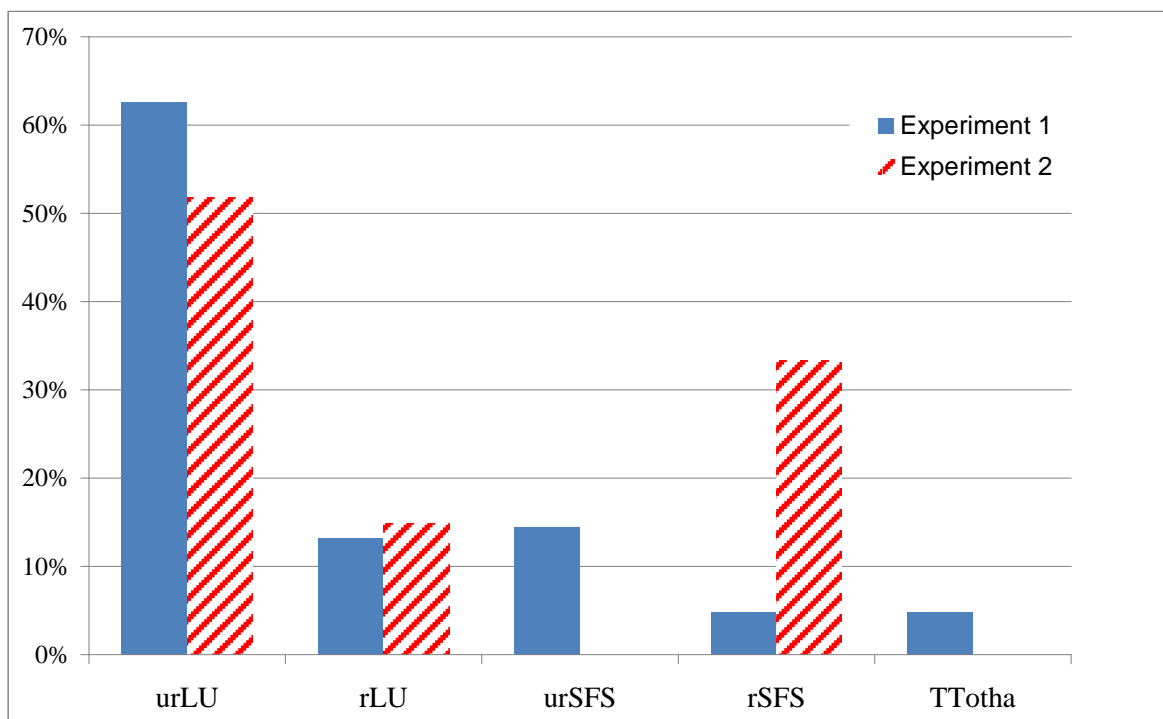

Figure 9. Comparison of error classification percentages in Experiments 1 and 2.

When comparing the data obtained by classifying the errors in both experiments, a tendency to minimize the most deviant cases can be observed in Experiment 2, in which the number of lexical units and syntagms in free syntax unrelated to the business world was lower. However, erroneous cases of lexical selection of units and syntagms related to business were more frequent in Experiment 2. The difference in data relative to terms belonging exclusively to other thematic areas (TTotha) was not considered relevant because, as stated above, their presence is limited in specialized texts. These should not be taken as cases of terminological polysemia, which, of course, were considered successes, but rather as clearly recognizable terms pertaining to other related fields.

Difficulty in identifying specific terms is a result of prior lack of awareness of the nature of specialized and general vocabulary before analyzing specialized texts in depth. Only those terms used nearly exclusively in specialized contexts were easily detected. In these cases, the difference between the general lexical unit and the term is generally quite evident, among

other reasons because the degree of internationality of extremely technical terms is high. In this category, the use of anglicisms in romance languages such as French is quite common, as observed in example (40).

Example Number	Group= (G)	Recognition Successes
(36)	G1	*défiscalisation*
(37)	G2	*inflation*
(38)	G1	*investissement*
(39)	G1	*main-d´oeuvre*
(40)	G1	*marketing*
(41)	G5	*salaire brut*

Table 4. Examples of successes in Experiment 2.

When presented with the texts in the classroom, the students were not explicitly informed which were the specific terminological units of the subject matter because the point was for them to arrive at a comprehension of the difference between specialized and general vocabulary by deduction. This process of lexical discrimination can have a positive result when students successfully identify terminological units in the subject matter, as in the examples in Tables 1 and 2. However, the process can be negative when the expected recognition effect does not occur.

The four explanations of the terminological discrimination errors in order of more to less frequency are as follows: (i) incorrect categorization when confusing unknown vocabulary with specialized vocabulary, (ii) difficulty in determining whether a lexical unit of general vocabulary also has a specialized meaning in specific knowledge areas, (iii) problems with discourse segmentation in which syntagms in free syntax are identified as terminological compounds, and (iv) correct recognition of terms but erroneous attribution to the field they pertain to. The low frequency of these errors may also be caused by their scarce textual presence.

Case (i), which was certainly the most deviant, could be interpreted as an example of a broadly categorized cognitive style. The learner supposes that lexical segments unknown to him/her are new to him/her. Clearly, however, in other teaching situations, this type of categorical extension would not occur, at least not in this manner. Students would surely not identify unknown lexical units as specialized terms if a terminological discrimination had not been previously requested. The categorizations could vary: known/unknown vocabulary instead of general/specialized vocabulary; however, it is not known whether the elements in these categories would coincide and to what extent the groups would vary. There no data concerning this issue was obtained in either of the two experiments, although the authors are currently studying this aspect of terminological recognition.

In cases such as (ii) and (iv), the terminological discrimination errors show problems of fuzziness. In (iv), the problem is related to the degree of specificity of the lexical unit. Although the recognition of fairly specific Category 1 terminology, according to the classification formulated by Nation (2001:198), is relatively easy for the student, ascription of the terminology to its specific field is another matter. Ascription errors have two causes: a)

superficial knowledge of the specialized fields to which the term pertains and (b) the extension of isotopies as in Rastier (1987). On the one hand, terminological discrimination errors are frequent when learners do not have sufficient knowledge of at least one of the fields addressed. Those who participated in the experiments were not specialists in business or economics, which may explain the high percentage of errors. Conversely, learners make recognition errors because they identify words belonging to isotopic configurations, which help construct meaning in the text as specialized lexical units. Learners tend to consider that elements within an isotopic configuration are actually specialized lexical units even when that is not the case. Evidently, discursive comprehension of a specialized text in an initial phase of comprehension, such as that analyzed here, does not require complete terminological discrimination, nor does it require a high degree of conceptual precision. These two aspects of lexical acquisition, particularly conceptual precision, constitute linguistic activities that require a certain degree of specialization. The comprehension of specialized texts is facilitated by isotopic configurations made by students. This observation is not new, of course, in relation to reading comprehension in L2 (López Alonso & Séré, 2001). However, judging from the data obtained in the experiments presented here, we believe that isotopic configuration plays a key role in the comprehension of specialized texts. Nevertheless, the configuration of isotopies has the disadvantage of complicating terminological discrimination because of lexical fuzziness occurring in this type of text of average difficulty.

The proportion of rUL, rSFS and TTothA, although less than that of unrelated elements, is clearly present in students' lexical selections, particularly in Experiment 2. In Experiment 1, the proportion of related lexical elements (rLU, rSFS y TTotha) reaches 7.1% of the total units selected, which corresponds to 23% of the total errors. In Experiment 2, this lexical group increases considerably. Although this lexical group represents only 10.1% of the total units selected, it includes 48% of total errors.
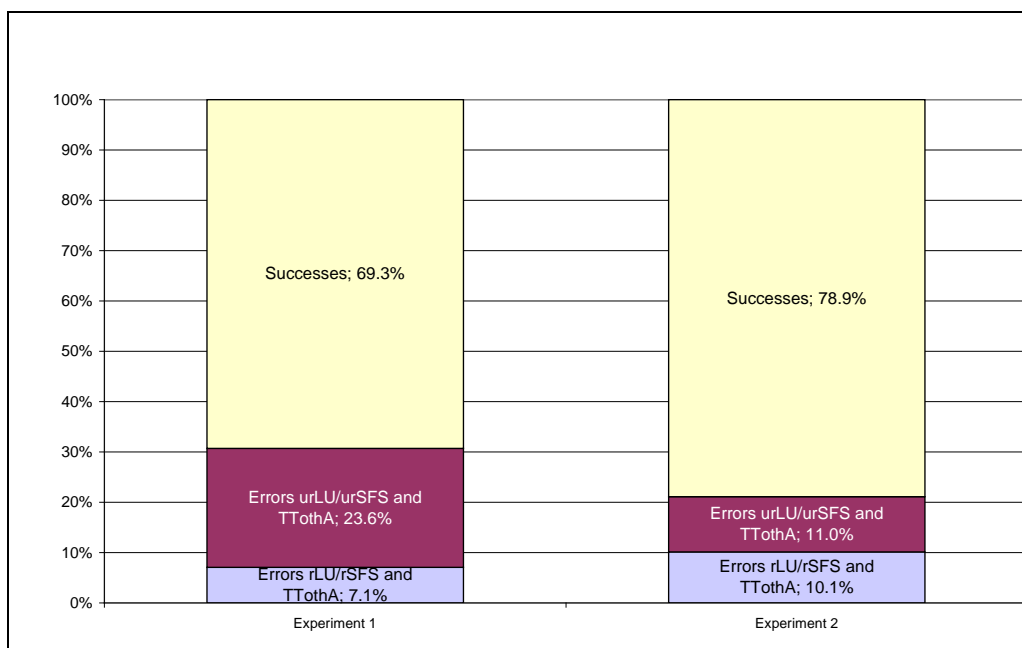

Figure 10. Percentage of errors in semantically related/unrelated lexical elements of the total lexical selections

Problems of terminological fuzziness increase as the proportion of errors in related lexical units increases, but simultaneously, the global number of errors in terminological recognition decreases. Terminological fuzziness is directly related to lexical precision, and therefore, these problems decrease as conceptual margins are delimited.

4 Conclusions

The analysis of the data collected in both experiments allows us to answer the research questions posed at the beginning of this paper. Three main problems in the cognitive process of terminological recognition were observed. First, erroneous identification of unknown vocabulary as specialized vocabulary occurs when learners tend to believe that the units they are not familiar with must be specialized lexical units. Second, although less frequent, learners encounter difficulties in performing discursive segmentation, erroneously interpreting syntagms in free syntax as terminological compounds. The third problem is not so much one of discrimination as of semantic categorization. Students formally recognize the terms but not their true meaning, thus leading students to erroneously select them as specialized terms of a given subject matter when they actually belong to other thematic areas. The first case is caused by an overgeneralization of the potential identification problem: the learner tends to think that most unknown vocabulary must be part of the specific vocabulary of the discipline. The other two cases present issues related to lexical fuzziness.

These problems can be observed in examples from which a brief typology could be extracted for the classification of learner terminological recognition errors: (i) non-specialized and unrelated lexical units, (ii) non-specialized lexical units that are thematically related, (iii) syntagms in free syntax that are unrelated thematically, (iv) syntagms in free syntax that are related to the thematic area, and (v) terms from another field.

The question of fuzziness in specialized vocabulary, discussed above, complicates terminological recognition. The analysis of the data obtained leads us to identify two reasons why learners make errors in this cognitive process. On the one hand, the authors believe that inadequate familiarity with the discipline to which the terms belong produces conceptual fuzziness; hence, problems related to lexical recognition arise. Moreover, fuzziness has another aspect that does not originate in the word itself, but rather at the textual level. We believe that overgeneralization of the isotopies leads to the interpretation of an isotopic configuration as specialized terms even when they are not.

Finally, the study does not reveal a great difference in terminological recognition between French L3 and French Ln learners. This fact opens the possibility of new research to determine whether the levels of successes and errors in lexical recognition are similar to those occurring in other aspects, such as terminological precision and grammatical correctness, and what the intervening elements are.

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