Terminological Competence in Translation

Silvia Montero Martínez
Pamela Faber
University of Granada

Abstract

A Terminology course for Translation students must deal with the role of terminology in the translation process from both a theoretical and practical perspective. The objective of such a course is not to train translators as terminologists or documentation professionals, but rather as language mediators whose job is to facilitate interlinguistic communication. Translation students should thus learn how to carry out descriptive terminological work oriented towards producing a suitable target text. This means developing specific strategies as well as learning how to use available resources with a view to producing optimal translations. In this context, a truly effective Terminology course program must be adapted to fit new professional profiles. Such a program would target terminology management against the backdrop of specialized language translation. The specific characteristics of the translation process are what determine the type of terminological competence required.

Keywords: Terminology training, terminology management, translation, curriculum design

1. Introduction

The study of Terminology[1] in translator training should target the use of terms in real life contexts, and situate these specialized knowledge units within the context of dynamic communication processes. When the meaning and usage of terminological units are analyzed as they appear in texts, oral discourse, and communication situations, it becomes evident that general language and specialized languages are not so very different. For example, polysemy and synonymy occur quite frequently in specialized communication, and generate translation problems. In contrast, standardization and neologisms, which are crucial issues in many traditional Terminology programs, recede into the background.

An important factor to be taken into account is that translators generally do not have the same level of expert knowledge as text originators and receivers. Consequently, they must learn how to rapidly situate terms within their respective conceptual systems. At the same time, this process should allow translators to increase their knowledge in the specialized domain so that it reaches the threshold that enables them to satisfactorily translate the original text (Faber 2004).

In this respect, the analysis and subsequent structuring of terminology is motivated by the text in which it appears, and is carried out as part of the translation process. In other words, translators frequently find themselves working as *ad hoc* terminologists and terminographers (Wright and Wright 1997), who must reconstruct bits and pieces of conceptual systems instead of structuring entire specialized knowledge domains.

As a result, Translation students should acquire knowledge and strategies that will help them carry out this type of terminology work. However, undergraduate Terminology courses in Translation have received very little attention up to the present. Despite the conferences and seminars that have focused on this issue (Gallardo and Sánchez 1992, Gallardo 2003), there is a scarcity of bibliography on the best way to teach Terminology. Furthermore, there is no consensus of opinion on the contents of such a course because its objectives and methods have never been clearly defined. (Cabré 2000: 42). It is also necessary to examine how to teach Terminology for different professional profiles. In the absence of clear ideas regarding Terminology as an academic subject, what generally happens is that professors use teaching models that they have observed, used, and/or experienced during their academic career. Cabré and Estopá (1997) criticize the cloning of traditional teaching methods and strategies in the Terminology classroom.

This article describes a new perspective on teaching Terminology within the context of Translation Studies Degree programs offered in the Spanish university system (Montero and Faber 2008). Course objectives, theoretical contents, practical applications, teaching methodology, and evaluation criteria are all determined by the professional profile that students will ultimately acquire. Course elements are thus oriented towards enabling students to develop terminology management strategies for translation as well as helping them to learn how to use available terminological resources with a view to producing high-quality translations.

2. Terminology teaching

Little has been written about how to design and teach a Terminology course for different user profiles. Notable exceptions are Parc (1997), Resche (1997), Soffritti et al. (1997) and more specifically, in the case of Translation Studies, Picht and Acuña Partal (1997), Monterde Rey (2002), Faber and Jiménez Raya (2003), and Fedor de Diego (2003). It is true that Terminology has only recently come into its own as a scientific discipline. Cabré et al (2003) underlines the fact that theoretical principles and methods in Terminology are still taking shape. For example, in Spain, Terminology was not taken seriously as an academic subject until 1991 when it began to be taught in universities as part of a degree in Translation and Interpreting.

Although international conferences and symposiums on Terminology date from the 1930s (Chueca 1998), they were principally geared to scientists and engineers who were interested in the conceptual structure and standardization of linguistic designations for concepts within their own specialized knowledge domains.

Terminology first appeared in an academic setting at the beginning of the 1970s when Eugen Wüster, an engineer with a clear interest in Information Science, gave a course titled *Introduction to the General Terminology Theory and Terminological Lexicography* at the University of Vienna. Wüster established a foundation for working methods and principles for Terminology, with the aim of standardizing scientific language (Cabré 1999). His ideas left an indelible mark on terminological research, teaching, and practice.

Cabré (2000) underlines the fact that in Spain until the 1990s all Terminology training was carried out by national and regional agencies, each with their own ideas regarding Terminology and terminological work. For example, TermEsp, a subsection of the *Centro Superior de Investigaciones Científicas*,[2] adhered to the Wüsterian guidelines of international organizations such as INFOTERM. In contrast, regional agencies, such as TERMCAT (Catalonia), UZEI (Basque Country), and SNL (Galicia) preferred the model for terminological work followed in Quebec, which is more oriented towards terminological standardization in minority languages.

In Spain this type of terminological work was initially used as a model for the course design of the subject *Terminology* in Translation Studies. *Terminology* is one of the core materials of this degree, and is offered in the last two years after students have had time to reflect on the language mediation process. This reflection naturally leads to the realization that in order to effectively translate specialized texts, a translator must be aware of how to identify and resolve terminology problems.

In 1991, the *Coloquio Iberoamericano sobre la Enseñanza de la Terminología*[3] drew up a proposal for a Terminology course design (Gallardo and Sanchez 1992: 294-300), a variant of which is now used in most Spanish universities. Nevertheless, its usefulness for translator training is somewhat questionable. For example, this proposal reflects an excessive influence of Wüster's General Terminology Theory, which was logically not conceived with translators in mind. Furthermore, there is an imbalance between theory and practice with a significant overload of theory. Over a decade later this same criticism was reflected in the *II Coloquio Internacional sobre Enseñanza de la Terminología* (Gallardo 2003). Alcina (2003), Cabré et al. (2003), Cámara (2003) and Gómez (2003) underline the need to revise and update this Terminology course design, which seems to prioritize other professional profiles.

Both Terminology and Translation Studies have evolved over the years. Accordingly, the objectives and contents in our proposal are exclusively oriented towards translators, who do not have time to carry out systematic terminology management, but must perform this activity *ad hoc*. Within the context of translator training, Terminology should be taught as an indispensable instrument in any process of specialized language communication. In this sense, the *descriptor* or brief guidelines regarding the subject's contents always seems to fall short because it does not capture the true scope and complexity of the relation between terminology and the translation process.

3. Terminological competence in translation

In any analysis of the relation between Terminology and Translation, it is necessary to bear in mind that both are conditioned by semantic, pragmatic, contextual, and cultural factors that operate at the level of the source language and target language (House 2000: 150).

According to Cabré (2000: 73, 74), Translation and Interpreting Studies[4] and Terminology are relatively recent academic disciplines despite the fact that they have existed for centuries as applied language activities. Furthermore, both are interdisciplinary, and also happen to be convergence points for linguistic, cognitive, and communication sciences. However, they are different because terminology, as the inventory of terms within a specialized domain, is not in itself a type of speech act, but rather an instrument used in specialized communication. Translation primarily focuses on the communication process, whereas terminology receives a secondary focus. Terminology is interesting for the translator in the measure that it is part of the message conveyed by a specialized text. As a result, the relationship between Terminology and Translation is asymmetric since terminology has no intrinsic need to recur to translation. In contrast, translation must use terminology as a means to achieve the interlinguistic transfer of specialized knowledge units (Velasquez 2002: 447).

It goes without saying that the adequacy of the terminology in a text as well as its suitability for the level of specialization determines to a great extent the quality of a translation. This signifies that the translator must successfully deal with terminological problems during the analysis of the source text and the production of the target text. Obstacles to the transmission of specialized knowledge stem from the translator's unfamiliarity with the terminological units, their meaning in discourse, and their possible correspondences in the target language (Rodríguez Camacho 2002: 319, 320; Cabré et al. 2002: 168, 9). The lack of reliable terminological resources obliges translators to acquire information management skills and be able to manage terminology *ad hoc* in order to resolve translation problems. Translators thus need to develop strategies to carry out the following processes:

- the identification and acquisition of specialized concepts activated in discourse;
- the evaluation, consultation, and elaboration of information resources;
- the recognition of interlinguistic correspondences based on concepts in the specialized knowledge field;
- the management of the information and knowledge acquired and its re-use in future translations.

This set of abilities is part of the terminological subcompetence (Faber 2004), a module of general translation competence. In this regard, Neubert (2000: 9) states that it is not necessary for translators to be experts in the specialized field. What is essential is that they be capable of rapidly acquiring expert knowledge, an ability which includes the processes listed above. The ability to recognize concept systems activated by terms in context does not transform translators into experts within the field, but provides them

with the knowledge necessary to facilitate understanding and succeed in the process of information transfer and communication (Rodríguez Camacho 2002: 311).

Consequently, terminological subcompetence does not refer to the acquisition of a list of terms, but rather to the ability of the translator to acquire the knowledge represented by these terms. According to Izquierdo Aymerich (2003), terminological acquisition is a cognitive and linguistic ability that permits the translator to model reality in consonance with cognitive schemas or world views that serve as a reference for each translation. For example, translators should be able to identify the most relevant conceptual relations and their lexical formalizations in the discourse. They should also be able to extract recurrent semantic and syntactic patterns or templates in both languages (Faber and Mairal, forthcoming).

4. Proposal for the acquisiton of terminological competence

Our proposal for a Terminology course for translators is summarized in the following descriptor: *Acquisition, documentation, and management of specialized language for translators*. The contents, exercises, and activities of the course contribute to the acquisition of terminological competence in translation.

4.1 Objectives and contents

The contents of our program (see Annex I) are organized under the following four headings:

> 1. INTRODUCTION TO TERMINOLOGY
> 2. THEORY AND PRACTICE OF TERMINOLOGY
> 3. TERMINOLOGY APPLIED TO TRANSLATION
> 4. TERMINOGRAPHIC DOCUMENTATION IN THE TRANSLATION PROCESS

The first three include a total of seven subdivisions (equivalent to 40 hours), and are divided into 25 teaching units. The fourth and final part of the course on terminographic documentation (40 hours) is exclusively devoted to the practical activities implicit in the elaboration of a translation-oriented terminology project. The contents in these four sections are in consonance with the teaching objectives.[5]

Firstly, it is necessary for students to understand the basic premises of terminological work, which may vary according to user needs and profiles. Students are initially provided with an overview of Lexicology and Terminology (UNITS 1, 3-6), and also learn basic concepts pertaining to Lexicography and Terminography (UNITS 7, 8). The distinction between word and term is the basis for a parallel distinction between Lexicology and Terminology, a difference that in many ways is more artificial than real. An overly rigid view of Terminology has often created unnecessary barriers between the two disciplines. Both general and specialized language are tools used to control and regulate communication, not only by means of linguistic rules, but also through social conventions, which dictate linguistic behavior in different types of communicative situation (UNIT 9).

The characteristics that differentiate general discourse and specialized discourse go far beyond the dichotomy between word and term. Important variables are topic, user, and context, which make specialized discourse a communication tool that requires its own type of analysis. However, specialized languages also possess many features of general language (UNIT 14). This means that there is a constant exchange of units between the two. Specialized language and general language are thus regarded as pragmatic subsets of language (in its widest sense), which encompasses general languages as well as all specialized languages. From this perspective, we propose that word and term (UNIT 9) should be treated as different points in a continuum. When we approach the concept of LINGUISTIC UNIT as a graded category, the boundaries between category members such as *word* and *term* are fuzzy. The structuring of a specialized domain in dynamic or prototypical categories (UNIT 12) signifies that terms can be located at either a subordinate or superordinate level, while words tend to belong to the basic level of categorization. Both words and terms reflect conceptual structure, and are subject to linguistic as well as non-linguistic rules that govern any act of communication.

Secondly, students should be aware of the various approaches to Terminology that exist in the world. We thus make a clear distinction between Wüster's General Terminology Theory (UNIT 3) and other proposals that appeared afterwards, such as Communicative Terminology Theory (Cabré 1999) (UNIT 4), Sociocognitive Theory of Terminology (Temmerman 2000) (UNIT 5), and Frame-Based Terminology (Faber et al. 2006, 2007; Faber and Mairal, forthcoming) (UNIT 6). The reductionism of General Terminology Theory is clearly at odds with the complexity of specialized knowledge communication in the real world. If Terminology is regarded as an idealized model, based only on prescriptive principles, there is no room for either diversity or variation. Lexical units become static entities that are merely names, unable to account for the knowledge structures and the sociocognitive dimension of communication. Instead, Terminology should be regarded as a discipline that is based on textual variation, and whose objectives are the following:

(i)   to formally, semantically and functionally describe units that can acquire terminological value;

(ii)   to account for how this value is activated;

(iii)   to explain the relations of these units with other types of sign.

In Translation Studies, terms should be studied as they really occur in texts, and not from the perspective of an idealized conceptual structure determined by organizations that must standardize terminology in specialized domains.

Thirdly, students should be aware that the way terminological work is carried out depends on its ultimate purpose. Consequently, in order to better understand how to manage terminology in translation (UNIT 16, 17), a distinction will be made between descriptive and prescriptive terminography (UNIT 7); between systematic and *ad* hoc terminography (UNIT 8); and between monolingual, bilingual, and multilingual terminological management (UNIT 8). Although terminology management by translators needs to take

into account the prescriptive use of language, the process itself is descriptive and depends on the source text. It is not the job of the translator to standardize terminology, but rather to create seamless texts in which terms are used the same way as experts in the field would use them. Even though it would be desirable for translators to have the time to do more systematic terminographic work, they are generally obliged to reconstruct partial conceptual systems for each translation job. The number of languages involved in terminology work means that there are monolingual, bilingual, and multilingual strategies for terminology management.

Fourthly, students should be acquainted with the phases of term extraction, analysis, and lexical-conceptual representation that comprise the process of terminographic documentation (UNITS 18-25). In this sense, students' ability to apply theoretical and practical knowledge can be assessed by means of exercises and activities as well as the terminology project, in which they will demonstrate what they have learned in relation to different types of translation jobs. The terminology project consists of the following six tasks: (i) outline and description of the characteristics of the translation job (UNITS 16, 17); (ii) analysis of the difficulties of the source text and extraction of term candidates (UNITS 10, 12, 14); (iii) study and evaluation of the most useful sources of terminographic documentation (UNIT 18-21); (iv) compilation and consultation of an *ad hoc* corpus; (v) organization of lexical and conceptual knowledge (UNITS 22, 23); (vi) elaboration of ten definitions for specialized knowledge units within one of the conceptual categories (UNITS 15, 23). These six tasks reflect our vision of terminographic work as a dynamic process that goes from the beginning of the translation assignment to the production of the final version of the target text. It also includes the evaluation of the translation by the client or receivers. For this reason, the terminological decisions of translators should not be divorced from the social and professional context of the translation assignment. Their role as language mediators requires that they use the most suitable terminology for the knowledge level of the text receivers. Evidently, the communication problems that can arise from an overly rigid and standardized conception of terminology should be avoided at all costs.

From a theoretical viewpoint, this type of terminographic work is in consonance with: (i) the Communicative Theory of Terminology (Cabré 1999), which is based on discourse variation as a natural dimension of any speech act; (ii) the Sociocognitive Theory of Terminology (Temmerman 2000) in which concepts do not exist in themselves as isolated entities, but as interrelated elements in texts which make them come alive, and (iii) Frame-based Terminology (Faber et al. 2006, 2007; Faber and Mairal, forthcoming) in which both words and terms are part of the same linguistic reality although they may belong to different cognitive structures or frames.

Regarding the practical part of the course, our concept of the process of terminographic documentation includes:

- *Ad hoc* terminological exercises, which help students to deal with problems generated by terms in texts;

- Exercises pertaining to terminological description because translators must deal with lexical units in discourse, which often do not correspond to standardized terminological forms;
- Semasiological and onomasiological exercises in which students will organize specialized knowledge units either going from term to concept or from concept to term;
- Exercises on conceptual structures that go beyond traditional hierarchical relations in the partial reconstruction of conceptual systems.

As a way of successfully dealing with all of these factors in terminographic management, we propose the methodology used in Frame-Based Terminology (Faber et al. 2005, 2006, 2007; Montero 2008), which includes the use of modern terminographic tools and resources to organize specialized knowledge in dynamic frames.

4.2 Teaching methodology

Terminology, as an academic subject, is only useful to Translation students in the measure that they can perceive its usefulness within the context of their future professional activity. Accordingly, it is advisable to use a teaching model that transforms the students into the managers of their own learning process (Faber and Jiménez Raya 2003). This entails the progressive integration of new concepts with a view to fomenting learner autonomy so that students actively participate in this process. Such a teaching model should be flexible, open-ended, and based on both individual and group participation. In class, the teacher should encourage discussion and debate, and provide students with opportunities to learn from their mistakes as well as to reaffirm what they have done well. This model is evidently learner-centered, based on cognitive restructuring and autonomous learning (Fedor de Diego 2003).

Given the fact that our vision of the world is conditioned by previous experiences, knowledge and emotions (Amestoy de Sánchez 2001: 13), the model proposed is based on cognitive restructuring, which involves the conscious, deliberate reformulation of processing schemas. In order to produce any sort of conceptual change, it is necessary to:

(i)   identify and clarify the previous ideas of the students;

(ii)   question these ideas by using counterexamples;

(iii)   introduce new concepts;

(iv)   provide opportunities for students to use new ideas in various types of situation and confirm their explanatory and predictive power.

These steps involve the use of a series of techniques and activities that reveal to the students what they are unable to discover for themselves. Furthermore, teaching strategies should also avoid the presentation of information, and rely more on exercises that encourage the discovery and consolidation of new concepts. Finally, the teacher should foment the progressive learning of procedural knowledge and its application in different situations.

In an effective Terminology course, the constructivist paradigm (Cracolice 2001, Macbeth 2000), which combines aspects of discovery learning (Bruner 1996) and meaningful reception (Ausubel 2000), helps transform conceptual knowledge into mental images, whereas procedural knowledge becomes the capacity to autonomously carry out terminographic documentation applied to translation. Thus, it is extremely important that students understand the value, usefulness, and purpose of all exercises, and thus progressively take charge of their own learning process (Faber and Jiménez Raya 2003).
Learner autonomy is very useful in Translation Studies since students should be encouraged to work on their own, and thus become accustomed to finding solutions for problems that arise in the translation process. Within this type of context, the teacher becomes a facilitator of resources and learning (Jiménez Raya 1994).

The teaching methodology proposed evidently depends on activities and exercises that allow students not only to use and contrast the validity of the knowledge acquired, but also to deal with new situations where knowledge needs to be adapted. It should encourage students to design problem-solving strategies, and when necessary, improve their knowledge of the documentation process. The teaching materials recommended are the usual bibliographical sources (manuals, monographs, and journal articles), specialized language texts, multimedia texts, terminographic resources in both paper and electronic format (e.g. dictionaries, glossaries, databases), and software applications such as *WordSmith Tools*®, *MultiTerm*® and *OntoTerm*® for lexical and terminological analysis.

4.3 Evaluation

The evaluation process has generally focused on the student. However, students are only one component of a teaching process, whose goal is to achieve permanent changes in their cognitive make-up. These changes are progressively carried out in stages, each of which has its own set of objectives. Consequently, the evaluation process is progressive as well with the following three types of evaluation (Fenwick and Parsons 2000):

(i)   an initial evaluation with a diagnostic-predictive function in the form of tests, questionnaires, and discussion;

(ii)   a formative evaluation during the learning process with a view to orienting students and helping them to rectify or reaffirm terminology management strategies. This evaluation can be in the form of questions, dialogue, or tests;

(iii) a final evaluation in which the results obtained are assessed and the student is given a final mark.

The positive or negative assessments obtained with each of these methods should be applied to all of the factors that are a part of the teaching process. Students should be aware at all times of their progress and the effectiveness of their strategies. The teacher should be able to judge the validity of his objectives, program, and methodology.

All of the conceptual, procedural, and attitudinal knowledge taught in the subject of *Terminology* should be evaluated by means of class work, expositions or presentations. Table 1 shows some of the learning objectives and tools proposed for an initial, formative and final evaluation:

Table 1. Examples of the initial, formative, and final evaluation of the subject of *Terminology*

Knowledge type	Objective	Evaluation tool
Conceptual and attitudinal knowledge	To make students aware of the distinction between word and term	▪ Elicitation of students' opinions (initial evaluation) ▪ Discussion of required reading and oral presentation by teacher (initial/formative evaluation)
Conceptual and attitudinal knowledge	To increase students' knowledge of General Terminology Theory and new tendencies in Terminology theory	▪ Discussion of required reading and oral presentation by teacher (initial/formative evaluation)
Conceptual and attitudinal knowledge	To increase students' awareness of different types of terminology management	▪ Discussion of required reading and oral presentation by teacher (initial/formative evaluation)
Procedural and attitudinal knowledge	To help students develop strategies for using and consulting different types of terminographic resources	▪ Group work on different aspects of terminographic resources ▪ Terminographic searches ▪ Oral presentation of results in class (formative evaluation)
Procedural and attitudinal knowledge	To help students develop terminology work methods and management strategies regarding the following activities: ▪ description of the translation job and the specialized knowledge domain; ▪ term extraction; ▪ consultation of terminographic resources; ▪ identification of conceptual categories and linguistic designations; ▪ elaboration of definitions; ▪ presentation of terminographic work using OntoTerm®	▪ Supervised work and final project deliverable (formative and final evaluation)

For example, the evaluation of conceptual categories, such as those related to the dichotomy between word and term, can be evaluated both diagnostically and formatively through discussion and debate. The final evaluation should measure the students' capacity to successfully resolve terminological problems that arise in translation work. In this sense the terminographic documentation project that the students will present is of crucial importance.

4.4 Class organization

For the learning process to be successful, it is necessary for the teacher to coherently organize the contents and objectives, teaching activities, exercises, materials, and evaluation methods. Each teaching unit proposed in the program can be planned according to the template in (1), which exemplifies Unit 18 regarding terminographic resources.

(1)

TEMPLATE   **Objective:** To make the student aware of the terminographic resources and systems of terminology management for translation as well as the need to evaluate them.

Phase 1   *Introduction and explanation.* The teacher gives a concise overview of the standard types of terminographic resources for translators and asks them to examine the advantages and disadvantages of each type. This task is carried out in groups. Each group is assigned a specific type of resource, which they will analyze according to a series of variables.

Phase 2   *Group work.* Each group makes a list of terminology-related problems that translators must deal with, and proposes a list of solutions for each problem. The information in each resource is analyzed in reference to the range of solutions proposed.

Phase 3   *Exposition and discussion of results.* The students learn about the different types of terminographic resources through the presentations given, and thus become aware of the wide range of information offered in such resources.

Phase 4   *Evaluation of results.* The class then reflects on the usefulness of these resources in translation jobs.

This type of class structure encourages the active participation of the students in their own learning process in the context of a goal-directed activity. As a result, students are able to widen their horizons and integrate new knowledge into previous knowledge structures. It prepares them to carry out a terminology project and apply terminology management skills to specific translation jobs.

5. Conclusions

In order to be able to translate successfully, linguistic mediators should be able to apply theoretical concepts and use skills that are part of a dynamic translation macro-competence, whose nature can vary with the changing demands of the translation market.

In this sense one of the factors that contribute to a good translation is terminological subcompetence, which includes processes that range from terminographic search and documentation strategies to the partial reconstruction of specialized knowledge domains. The effective acquisition of terminological knowledge and skills by translation students requires:

(i)   a careful selection of teaching objectives as well as program contents in accordance with the professional profile targeted;

(ii)   teaching methods that make use of suitable techniques and activities;

(iii)   the use of didactic material that contribute to the achievement of the teaching objectives;

(iv)   the application of evaluation strategies in consonance with the teaching methodology.

Within this teaching context, students are encouraged to become autonomous, and to take charge of their own learning process. The ultimate objective is to enable them to successfully function in a professional context and to apply concepts and/or terminographic processes in their work. For this reason students should receive training based on Terminology theories that highlight the dynamicity of language as well as terminographic methods that facilitate *ad hoc* descriptive terminology management in the translation of specialized language texts.

Acknowledgments

Notes

1. We follow the conventional use of upper case for the theory of Terminology and lower case for terminology as the inventory of terms.
2. The National Research Institute in Spain.
3. Iberian Colloquium on Terminology Teaching.
4. Research on the terminological necessities of the interpreter is virtually inexistent. Most of the authors cited in this section write about translation; however, the majority of their observations are also applicable to interpreting though there are significant differences between the two contexts. Without a doubt, more research is needed in this area.
5. Montero and Faber (2008) offer guidelines regarding (i) the number of hours necessary to give the program; (ii) course objectives; (iii) teaching methodology, exercises and activities; (iv) evaluation method.

References

Alcina Caudet, A. 2003. "La programación de objetivos didácticos en Terminótica atendiendo a las nuevas herramientas y recursos". In Gallardo San Salvador, N. (ed.). *Terminología y traducción: un bosquejo de su evolución. Actas II Coloquio Internacional sobre Enseñanza de la Terminología*. 79-90. Granada: Atrio.

Amestoy de Sánchez, M. 2001. "La investigación sobre el desarrollo y la enseñanza de las habilidades de pensamiento". *Revista Electrónica de Investigación Educativa* 4(1). http://redie.ens.uabc.mx/vol4no1/contenido-amestoy.htm.

Ausubel, D. A. 2000. *The Acquisition and Retention of Knowledge.* Dordrecht: Kluwer.

Bruner, J. S. 1996. *The Culture of Education*. Cambridge, Mass: Harvard University Press.

Cabré, M. T. 1999. *La Terminología: Representación y comunicación. Elementos para una teoría de base comunicativa y otros artículos*. Barcelona: IULA.

Cabré, M. T. 2000. "La enseñanza de la Terminología en España: Problemas y propuestas". *Hermèneus* 2, 41-94.

Cabré, M. T. and R. Estopá. 1997. "Formar en Terminología: una nueva experiencia docente-Parte I." *TradTerm* 4(1), 175-202.

Cabré, M. T., R. Estopá, J. Freixa, M. Lorente, and C. Tebé. 2002. "Les necessitats terminològiques del traductor científic". In Chabás, J., R. Gaser and J. Rey (eds.). *Translating Science. Proceedings 2nd International Conference on Specialized Translation, 28 February - 2 March 2002. Barcelona: PPU.* 165-174. Barcelona: Universitat Pompeu Fabra.

Cabré, M. T., R. Estopá, J. Freixa, M. Lorente, J. Marí, and C. Tebé. 2003. "La enseñanza de la Terminología en la traducción especializada: Nuevas propuestas para viejos problemas." In Gallardo San Salvador, N. (ed.). *Terminología y traducción: un bosquejo de su evolución. Actas II Coloquio Internacional sobre Enseñanza de la Terminología*. 177-130. Granada: Atrio.

Cámara, E. 2003. "El papel de la terminología en las asignaturas de traducción especializada científica y técnica". In Gallardo San Salvador, N. (ed.) *Terminología y traducción: un bosquejo de su evolución. Actas II Coloquio Internacional sobre Enseñanza de la Terminología*. 205-212. Granada: Atrio.

Chueca Moncayo, F. 1998. *Aproximaciones a la enseñanza de la Terminología en España: El caso específico de la formación de traductores en las Facultades de Traducción e Interpretación.* PhD Dissertation. Departamento de Lengua y Literatura Inglesa y Alemana. University of Valladolid, Spain.

Cracolice, M. S. 2001. "Constructivism: A framework used to understand human learning". *Mediated Learning* 2(1), 1-5.

Faber, P. 2004. "Terminological competence and enhanced knowledge acquisition". In Fleischmann, P.A., J. Schmitt and G. Wotjak (eds.). *Translationskompetenz.* 479-499. Tübingen: Stauffenburg.

Faber, P. and M. Jiménez Raya. 2003. "Autonomía de aprendizaje en la enseñanza de la Terminología". In Correia, M. (ed.). *Terminologia e Indústrias da Língua*, *Proceedings of the VII Simpósio Ibero-Americano de Terminologia. ILTEC: Lisboa.* 359-371. Barcelona: ILTEC.

Faber, P. and R. Mairal. (eds.). Forthcoming. *A Cognitive Linguistics View of Terminology and Specialized Language.* Berlin: Mouton de Gruyter.

Faber, P., C. Márquez and M. Vega. 2005. "Framing Terminology: A process-oriented approach". *Meta* 50(4), http://www.erudit.org/livre/meta/2005/index.htm.

Faber, P., P. León Araúz, J. A. Prieto Velasco and A. Reimerink. 2007. "Linking images and words: the description of specialized concepts." *International Journal of Lexicography* 20, 39-65.

Faber, P., S. Montero Martínez, R. Castro Prieto, J. Senso, J. A. Prieto, P. León Arauz, C. Márquez Linares and M. Vega Expósito. 2006. "Process-oriented terminology management in the domain of coastal engineering". *Terminology* 12(2), 189-213.

Fedor de Diego, A. 2003. "Sobre las propiedades metacognitivas y constructivistas de la terminología y sus consecuencias didácticas". In Muñoz Martín, R. (ed.). *I AIETI. Actas del I Congreso Internacional de la Asociación Ibérica de Estudios de Traducción e Interpretación*. Granada, 12-14 February 2003. 19-31. Granada, Spain.

Fenwick, T. and J. Parsons. 2000. *The Art of Evaluation: A Handbook for Educators and Trainers.* Toronto: Thompson.

Gallardo San Salvador, N. (ed.). 2003. *Terminología y traducción: un bosquejo de su evolución. Actas II Coloquio Internacional sobre Enseñanza de la Terminología*. Granada: Atrio.

Gallardo San Salvador, N. and D. Sánchez (eds.). 1992. *La enseñanza de la Terminología: Actas del Coloquio Iberoamericano sobre Enseñanza de la Terminología: Seminario sobre programa de los cursos de Terminología en la Licenciatura de Traducción e Interpretación en España.* Granada, Spain, June 1991. Granada: Escuela Universitaria de Traductores e Intérpretes.

Gómez Sánchez, A. F. 2003. "La enseñanza de la terminología enfocada a la interpretación". In Gallardo San Salvador, N. (ed.). *Terminología y traducción: un bosquejo de su evolución. Actas II Coloquio Internacional sobre Enseñanza de la Terminología*. 131-142. Granada: Atrio.

Izquierdo Aymerich, M. 2003. "Enseñanza y conocimiento especializado: conocimiento y conceptos". In Cabré, T. (ed.). *Terminología y conocimiento especializado.* 55-88. Barcelona: IULA, UPF.

Jiménez Raya, M. 1994. "Aprendizaje centrado en el alumno: Desarrollo de la autonomía del aprendiz de lenguas extranjeras". *Didáctica del español como lengua extranjera.* 38-52. Madrid: Fundación Actilibre.

Macbeth, D. 2000. "On an actual apparatus for conceptual change". *Science Education* 84(2), 228-264.

Monterde Rey, A. M. 2002. "Creación de bancos de datos terminológicos con MultiTerm: Una experiencia docente". In Bravo Utrera, S.(ed.) *Estudios de Filología Moderna y Traducción en los inicios del nuevo milenio*. 169-201. Las Palmas de Gran Canaria: Departamento de Filología Moderna de la Universidad de Las Palmas de Gran Canaria.

Montero Martínez, S. 2008. "Tidying up tides: Modelling coastal processes in terminology management". *Translation and Cultural Diversity. Proceedings of the XVIII FIT World Congress.* Shanghai, 4-7 August 2008.

Montero Martínez, S. and P. Faber. 2008. *Terminología para traductores e intérpretes.* Granada: Editorial Tragacanto.

Neubert, A. 2000. "Competence in language, in languages, and in translation". In Schäffner, C. and B. Adab (eds.). *Developing Translation Competence*. 3-18. Amsterdam/Philadelphia: John Benjamins.

Parc, F. 1997. "Évolution d'une formation en milieu de travail". *Terminologies Nouvelles: Terminologie et formation* 17, 35-36.

Picht, H. and C. Acuña Partal. 1997. "Aspects of Terminology Training." In Wright, S. E. and G. Budin (eds.). *Handbook of Terminology Management. Basic Aspects of Terminology Management.* 305-321. Amsterdam/Philadelphia: John Benjamins.

Resche, C. 1997. "Terminologie et phraséologie comparées: un moyen et non une fin pour l'enseignement dans le secteur Lansad". *Terminologies Nouvelles: Terminologie et formation* 17, 37-42.

Rodríguez Camacho, E. 2002. "La Terminología en la formación de un traductor especializado". In Guerrero Ramos, G. and M. F. Pérez Lagos (eds.). *Panorama Actual de la Terminología.* 307-326. Granada: Comares.

Soffritti, M., F. Bertaccini and C. Cortesi. 1997. "L'icone dans la fiche terminologique: un nouveau point de départ?" *Terminologies Nouvelles: Terminologie et formation* 17, 43-48.

Temmerman, R. 2000. *Towards New Ways of Terminology Description: The Sociocognitive-Approach*. Amsterdam/Philadelphia: John Benjamins.

Wright, S. E. and G. Budin (eds.). 1997. *Handbook of Terminology Management. Basic Aspects of Terminology Management.* Amsterdam/Philadelphia: John Benjamins.

Wright, S. E. and L. D. Wright. 1997. "Terminology management for technical translation." In Wright, S. E. and G. Budin (eds.). *Handbook of Terminology Management. Basic Aspects of Terminology Management.* 147-159. Amsterdam/Philadelphia: John Benjamins.

Annex 1. Terminology Course Program

I. INTRODUCTION

Topic 1: What is Terminology?

Unit 1. Views on Terminology

Unit 2. Functions and users

II. THE THEORY AND PRACTICE OF TERMINOLOGY

Topic 2: Approaches to Terminology

Unit 3. General Terminology Theory

Unit 4. Communicative Theory of Terminology

Unit 5. Sociocognitive Theory of Terminology

Unit 6. Frame-Based Terminology Theory

Topic 3: Approaches to terminology work

Unit 7. Prescriptive and descriptive terminology management

Unit 8. Systematic and *ad hoc* terminology work. Monolingual and multilingual

strategies

III. TERMINOLOGY APPLIED TO TRANSLATION

Topic 4: Basic concepts

Unit 9. General and specialized discourse: words and terms

Unit 10. Specialized knowledge units

Unit 11. Term formation

Unit 12. Conceptual categories, concepts, and relations

Unit 13. Conceptual systems and multidimensionality

Unit 14. Terminological and conceptual variation in specialized discourse

Unit 15. Terminographic definition

Topic 5: Terminology and the translation process

Unit 16. Terminological needs of the translator

Unit 17. Terminology in translation

Topic 6: Sources of terminology acquisition and documentation

Unit 18. Standard terminographic documentation sources

Unit 19. Terminographic documentation in Internet

Unit 20. The compilation of an *ad hoc* corpus for terminographic documentation

Unit 21. The role of corpora in the translation documentation process

Topic 7: Analysis and representation of lexical and conceptual knowledge

Unit 22. Structuring lexical and conceptual knowledge

Unit 23. The elaboration of terminographic definitions

Unit 24. *MultiTerm*®: standard software application for terminological databases

Unit 25. *OntoTerm*®: software application for terminological knowledge bases