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User needs to the test: evaluating a terminological knowledge base on the environment by trainee translators[1]

Clara Inés López Rodríguez, Miriam Buendía Castro and Alejandro García Aragón, University of Granada

ABSTRACT

Trainee translators and their use of lexicographical and terminographical resources when translating specialised texts can shed light on the close relation between Terminology, Lexicography, Translation and Knowledge Acquisition. Although the definition of users' profiles and their needs has been an habitual concern in Lexicography and Terminology research, there are not many studies dealing with methodological aspects in the design of empirical studies to evaluate lexicographic and terminographical resources.

In this context, we designed a questionnaire to evaluate and validate for translation a terminological knowledge base on the environment, called EcoLexicon. The questionnaire was completed on-line by 3rd year students of the Faculty of Translation and Interpreting of the University of Granada (Spain). With this research, we aim at shedding some light on methodological aspects in the design of empirical studies to evaluate general and specialised resources for translating, as well as using the results obtained in the questionnaire to make some improvements to EcoLexicon for translators.

KEYWORDS

Function Theory of Lexicography, user profile, trainee translators, evaluation of terminological resources, EcoLexicon, survey design, on-line questionnaire.

1. Introduction

One of the main challenges in Terminology is the definition of user profiles and their needs in particular situations, as well as the evaluation of how terminological resources such as glossaries, thesauri, terminological data bases and software for terminology management satisfy these needs. Even so, the evaluation of new terminology products and software for terminology management should not obscure the fact that terminology work is primarily intellectual work on content and language, and that the use of software is a secondary issue.

In this paper, we review previous work on user profiles (Sager 1990; Bergenholtz and Tarp 2003, 2004, 2010; Tarp 2008a; L'Homme and Leroyer 2009) with the aim of describing the needs and profiles of the users of EcoLexicon, a terminological knowledge base on the environment. To that end, we describe the design of a questionnaire that follows the premises of Psychology on questionnaire design, which was distributed to 3rd year students in the Translation and Interpreting Degree Programme at the University of Granada (Spain). Finally, we present the results of this questionnaire. The conclusions drawn from the study will help us validate EcoLexicon (http://ecolexicon.ugr.es/) for a specific user profile: students of specialised translation.

2. The Function Theory of Lexicography: in search of user needs

The conception of dictionaries is shifting to a more modern approach which takes into account specific user needs, such as production in a native or second language, or translation (L'Homme 2009: 238).

Accordingly, the Function Theory of Lexicography (Bergenholtz and Tarp 2002, 2003, 2004; Tarp 2008a) claims that any lexicographic resource should be designed to meet specific information needs, and is therefore defined according to the function(s) it is due to fulfil. A *lexicographic function* can be defined as the satisfaction of the specific types of lexicographically relevant needs that may arise in a specific type of potential user in a specific type of extra-lexicographical situation (Tarp 2008a: 81). This tendency towards user needs can also be extended to terminographic products. In this sense, Nielsen describes very aptly the functionality of specialised translation dictionaries for learners:

> Dictionaries are utility products that are designed to help specific types of users in specific types of situations to solve specific types of problems. This means that the type of dictionary that is relevant in this context is one whose function is to help learners solve specific types of problems encountered when translating subject-field specific texts into a foreign language (2010: 69).

Therefore, in order to be able to talk about the user needs of any lexicographical or terminographical resource[2], it is necessary to specify the type of user situations, on the one hand, and the type of users, on the other hand.

2.1. Type of user situations

User situations constitute the most important elements of lexicographic functions. Even though lexicographic functions were first introduced for general-language repositories, they are extensible to terminographic or specialised resources as well, since user situations are similar for either cases. As Bergenholtz and Tarp point out:

> No user has specific needs unless they are related to a specific type of situation. Consequently, it is not enough to define which types of users have which needs, but also the types of social situations in which these needs may arise should be defined. However, not all such situations are relevant for lexicography; only situations in which needs may arise that can be satisfied by consulting dictionaries (2010: 30).

The situations where lexicographic and terminographic resources provide assistance to users can be divided into *cognitive* and *communicative* situations, although recently a third type, called *operational* situation, has also been suggested[3] (cf. Tarp 2008b).

2.1.1. Cognitive situations

Cognitive functions are motivated by the need to acquire new knowledge or check existing knowledge about a specific topic or a specific LSP. In cognitive user situations, lexicographically and terminographically relevant needs are thus needs of encyclopaedic knowledge related to language, specialised language, culture or any specific subject field (L'Homme and Leroyer 2009: 269).

More specifically, and based on Tarp (2007), cognitive-oriented user situations can be said to include:

- the acquisition of information about a special subject field in the native language and/or in a foreign language;
- the acquisition of information about the native LSP and/or the foreign LSP;
- the comparison between the special subject field in the native and foreign culture; and between the native and foreign LSP.

2.1.2. Communicative situations

Communicative functions and communicative situations are determined by the need to get dictionary assistance when the user is engaged in some textual activity, such as reading or revising a text, translating a source text into a target text language or writing a text in the mother tongue or in a foreign language (L'Homme and Leroyer 2009: 270). These situations, without order of priority, refer to (Bergenholtz and Tarp 2010: 31):

- the production of text in the mother tongue;
- the reception of text in the mother tongue;
- the production of text in a foreign language;
- the reception of text in a foreign language;
- the translation of text from the mother tongue into a foreign language;
- the translation of text from a foreign language into the mother tongue;
- the translation of text from one foreign language into another.

2.1.3. The translator at the crossroads of cognitive and communicative situations

Determining the possible user needs during the translation process is a complex question with a difficult answer because translation is composed of several phases and requires both cognitive and communicative user skills:

> […] boundaries between both cognitive and communicative uses are rarely clear. In order for dictionaries to be suited to particular types of users, their micro and macrostructural design should be oriented towards the cognitive-functional uses that particular user groups make of dictionaries. Evidently, making a dictionary for translators involves describing the meaning of words, their use in context, and their possible correspondences in other languages. It also entails making their position explicit (at least at some level) in the configuration of the mental lexicon. This involves considering cognitive and functional criteria in a continuum since the concepts of situation (as a set of knowledge acquisition needs) and linguistic context are intertwined (Tercedor Sánchez *et al*. forthcoming).

When translators use any kind of resource, they are normally engaged in a situation where both cognitive and communicative challenges and abilities are in place. Therefore, we believe that only methodological reasons justify the separation of these perspectives, which are entwined in the translation process. This opinion is also shared by many researchers in the field of Translation:

> This is certainly the case of the translator, who must simultaneously deal with both situations, since there is no communication without cognition. In order to successful achieve communicative goals, translators need to be provided with knowledge about the conceptual structure underlying the subject field they are working with (León Araúz *et al*. 2008: 999).

2.2. Type of users

Sager (1990: 197-199) distinguishes seven types of users according to the kind of information they retrieve from term banks: a) subject specialists; b) professional communication mediators such as technical writers, translators and interpreters; c) specialist lexicographers and terminologists; d) information and documentation specialists; e) language planners; f) professional language users such as publishers, language teachers, applied linguists; and g) general users of the language.

Cabré (1999: 45-49) also includes linguistic engineering and artificial intelligence professionals, who use terminology for machine translation, computer-assisted translation applications and expert systems.

Moreover, when designing a relevant profile of potential dictionary users, a number of criteria should be taken into account (Bergenholtz and Tarp 2010: 31):

1. The mother tongue of the users
2. The user's mastering of their mother tongue
3. The user's mastering of a specific foreign language
4. The user's mastering of a specific LSP in their mother tongue
5. The user's mastering of a specific LSP in a foreign language
6. The experience they have in translation
7. Their general culture knowledge
8. Their culture knowledge in a specific foreign language area

9. Their knowledge about a specific subject or science.

By combining the user typology resulting from these questions with the user situations described above (section 2.1.), it is possible to determine the corresponding information needs which are to be satisfied by a particular lexicographic or terminographic product, as well as its possible functions. It is also possible to draw up a user typology for a specific lexicographic/terminographic resource.

2.3. The user needs in EcoLexicon

EcoLexicon is a Terminological Knowledge Base (TKB) on the environment enhanced by both linguistic and knowledge representation techniques. It was created to facilitate the acquisition and translation of environmental terms between different languages (English, Spanish, German, and more recently Greek, Russian and French), and to represent knowledge on the environment using multimodal resources such as definitions, concordances, contexts, images, animations, etc. The user's acquisition of information about the environment in different languages is also facilitated by the fact that in this knowledge base, each concept appears in a frame that highlights its relation to other concepts, and makes its designations in different languages explicit (Faber *et al*. 2006, 2007; Tercedor Sánchez and López Rodríguez 2008; López Rodríguez *et al*. 2010). The frame around each concept forms a dynamic cloud (see Figure 1).

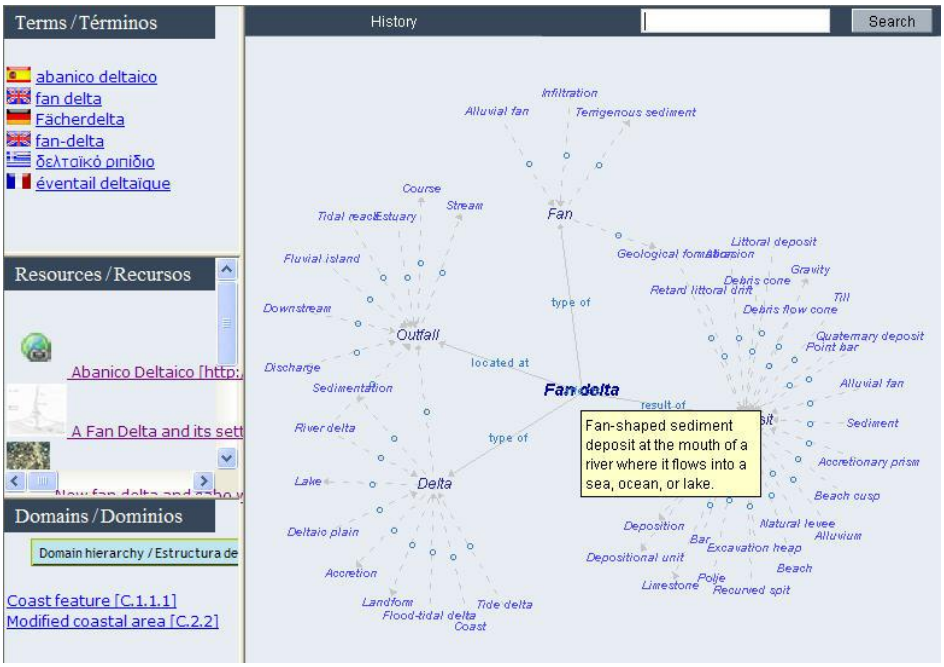

Figure 1. The representation of the concept FAN DELTA in EcoLexicon

As a result, it can be said that EcoLexicon is designed to meet the needs of different user types, such as a student of sciences wishing to acquire specialised knowledge about a specific concept, or a translator looking for translation correspondences in a language, to name only some examples.

It is assumed that, up to a certain level, its potential users are familiar with scientific language usage both in English and Spanish, for example, and possess a minimum of scientific knowledge. Thus, following Sager (1990), Pearson (1998: 35-39) and Bergenholtz and Tarp (2010: 34-35) we distinguish between *laypeople*, *semi-experts* and *experts*.

Since its creation and on-line hosting, EcoLexicon has been accessed by many users throughout the world. However, in order to gain a clear picture of these users, firstly, we will focus on both English and Spanish native speakers, and laypeople, semi-experts and experts, in a number of situations where terminology needs may occur. These situations are mainly cognitive situations requiring the acquisition of environmental information or of Spanish and English language usage in texts about the environment. We will also address the following communicative situations:

- the reception of Spanish environmental texts;
- the production of Spanish environmental texts;
- the reception of English environmental texts;
- the production of English environmental texts;
- the translation of Spanish environmental texts into English;
- the translation of English environmental texts into Spanish.

To this end, we describe the design of a questionnaire to provide feedback on the needs of different types of users of EcoLexicon, and as a first step we chose a particular user profile as our target population: translation trainees following a course on Scientific and Technical Translation. This profile is sufficiently interesting because students of specialised translation initially fall into the layperson group, and by reading and translating specialised texts, they progressively turn into semi-experts, and they may have to deal with experts to accomplish a translation assignment.

3. Designing a questionnaire to validate EcoLexicon

Questionnaire design is crucial when it comes to extracting reliable data and feedback from any type of user group. If questionnaires, tests, scales or other measuring instruments do not follow adequate psychometric criteria, any conclusion extracted from them may be wrong, biased or misleading. Thus, evaluation instruments such as the present questionnaire should be built according to rigorous and as objective as possible quality standards (Smith 2005, Downing 2006). In order not to retrieve groundless or faulty information from users, and thus avoiding future decisions on unreliable data, we followed Muñiz and Fonseca Pedrero's (2008, 2009) basic steps for the elaboration of a measuring instrument.

Moreover, considering that in the future we will apply our questionnaire to an increasingly larger number of respondents and user types, our premises for questionnaire design were inspired by the field of Psychology,

which is known to provide a reliable and realistic insight on questionnaire design, questionnaire respondent types and questionnaire results analysis on a large scale.

3.1. Aim of the questionnaire

The objective of our questionnaire was to gather information about specific users of EcoLexicon, and their perception of its usefulness and usability. In particular, we targeted a specific group of users: trainee translators of the Faculty of Translation and Interpreting of the University of Granada, Spain. Our purpose was to elicit their opinion about:

- the contribution of our knowledge base to the acquisition of environmental knowledge;
- the usefulness of EcoLexicon in the translation of specialised texts on the environment;
- the user interface of EcoLexicon;
- how EcoLexicon can be improved in the future.

3.2. Preparing the questionnaire: the previous pilot studies

Prior to our actual survey, we carried out two pilot studies, one in 2008 (Prieto Velasco and López Rodríguez 2009: 206-207) and one in November 2010. In the first case, we distributed a brief questionnaire among actual users of EcoLexicon in our University. They received links to several terminological resources on the environment, including EcoLexicon, and were asked to evaluate how useful EcoLexicon was in relation to the other databases when reading (in the case of engineers) or translating (in the case of translation students) two environmental texts in Spanish and English addressed to semi-experts. This experience helped us to refine the questions and to pay more attention to the preliminary introduction to the survey. Later on, in November 2010, the survey was updated with new questions and a new format (from paper to an on-line questionnaire). On that occasion, it was tested with a group of students of the Masters in Translation of Erasmushogeschool Brussel, taking advantage of the fact that one of the authors of this paper (Miriam Buendía Castro) was there on a research leave.

Even though Zumbo (2007) states that a measuring instrument is valid for a specific population profile only, and not for several, from the pilot studies, we have elaborated a questionnaire aimed not only at trainee translators (the subjects of the present study) but also at different users of EcoLexicon (translators, subject field specialists, the general public). However, by including some open questions and leaving space to comment, we were able to get a clear picture of the particular needs and interests of trainee translators in relation to the three aspects that interest us most: EcoLexicon in the acquisition of knowledge, EcoLexicon and Translation, and the interface of EcoLexicon.

In any case, we are aware that addressing a larger number of users and user types in the future will probably require some changes in the formulation of items. Therefore, as we said before, Psychology-based standards are a sound starting point for future respondents in both common and diverse situations. This way, the aim is that the eventual modifications of EcoLexicon will be based on feedback which is realistic and as unbiased as possible.

3.3. Circumstances of application of the survey and measured variables

The survey took place in January and March 2011 in two classroom settings of 3rd year students following a course on Scientific and Technical Translation in the Faculty of Translation and Interpreting of the University of Granada. Our population was a group of 44 students in their 3rd year of the Degree of Translation and Interpreting of the University of Granada. As such, they were familiar with terminology, applied linguistics and translation. The questionnaire was hosted on the on-line platform LimeSurvey® and was answered in their usual classroom (a computer room).

In our questionnaire the variables to be measured were students' perception of: a) the usefulness of EcoLexicon in the acquisition of expert knowledge; b) the usefulness of EcoLexicon in translation; c) the usability of the interface. From their answers in the open questions of the survey, we expected to elicit ideas about how to improve Ecolexicon in the future. These variables were explained in a 20-minute presentation prior to the survey, which summarised the main features of EcoLexicon, the aim of the survey and its sections. We explained some notions such as usability, i.e. "the measure of how easily and effectively people can use something" (Byrne 2006: 97). We did not include the operational definitions in the survey because we did not want to discourage participants by forcing them to read too much text. In any case, the researchers were present during the test to solve any doubts and answer questions.

3.4. The questionnaire's specifications

Our questionnaire uses simple language and vocabulary, and a clear visual interface (each group of questions dealing with a variable appears on a separate screen so that the aim of each question is better understood). The questionnaire is published on-line in English and Spanish, thus increasing accessibility (López Rodríguez *et al*. 2009)[4].

The questionnaire was designed to include a 'reasonable' number of questions (17 items), had a clear and simple structure, and was divided into four sections. Since each section appears in a different screen, users can concentrate on this specific aspect: (1) Information about the User;

(2) EcoLexicon and the Acquisition of Knowledge; (3) EcoLexicon and Translation; and (4) The interface of EcoLexicon.

Section 1 elicits background data from our subjects such as mother tongue, knowledge of foreign languages, and previous education in Science or a science-related field. It contained only three questions, although we plan to add more questions in the future considering that "to understand usability we must first understand the users who are the ultimate judges of usability" (Byrne 2006: 97).

Section 2 includes two questions about the role of EcoLexicon in the acquisition of knowledge about the environment, as can be seen in Figure 2.

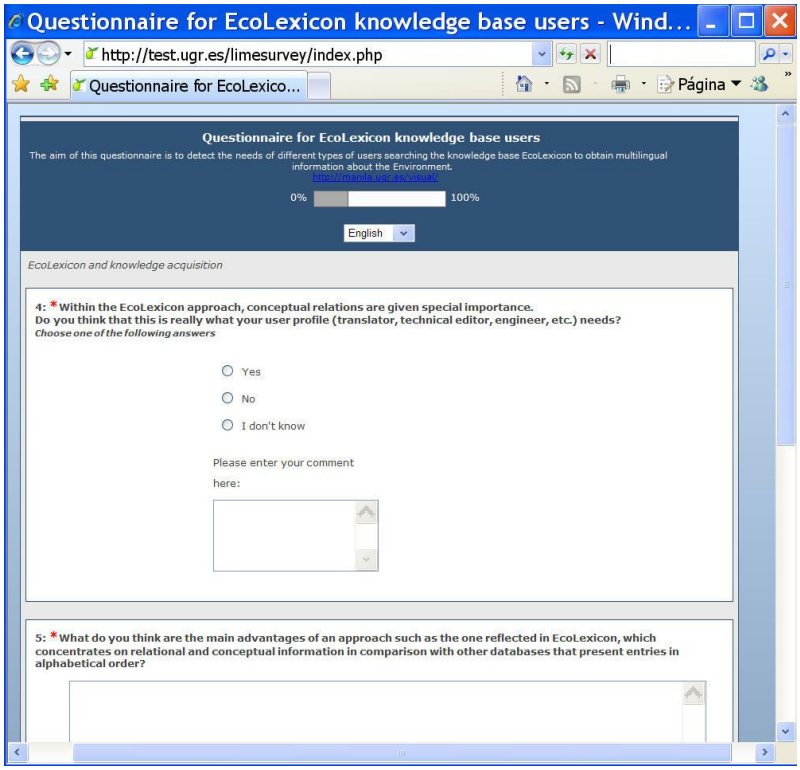

Figure 2. Section 2 of the questionnaire: EcoLexicon and the Acquisition of Knowledge *(English interface)*

Section 3 deals with EcoLexicon and translation in six questions. After receiving a text about hurricanes, the students had to translate the text into Spanish and to describe the way they had interacted with EcoLexicon during this translation task. They were also asked what information from EcoLexicon was more useful for a translator and whether they considered that EcoLexicon included information that was not useful for translators. The purpose of the three final questions was to reveal ways in which EcoLexicon could be improved for translation purposes, and the opinion of users about the contribution of EcoLexicon to translation quality.

Section 4 includes six questions about the interface of EcoLexicon: the usefulness of its visual resources (its dynamic network, images, structure of domains, etc.) and whether it provided easy and intuitive navigation.

In designing the questionnaire, we were able to use different question formats, thanks to the flexibility of LimeSurvey® (http://docs.limesurvey.org/Question+types). Thus, we included multiple choice options with comments, dropdown lists, lists with radio buttons, yes/no questions, and text questions (with short or long text). The inclusion of space for comments helped us gain detailed feedback from users.

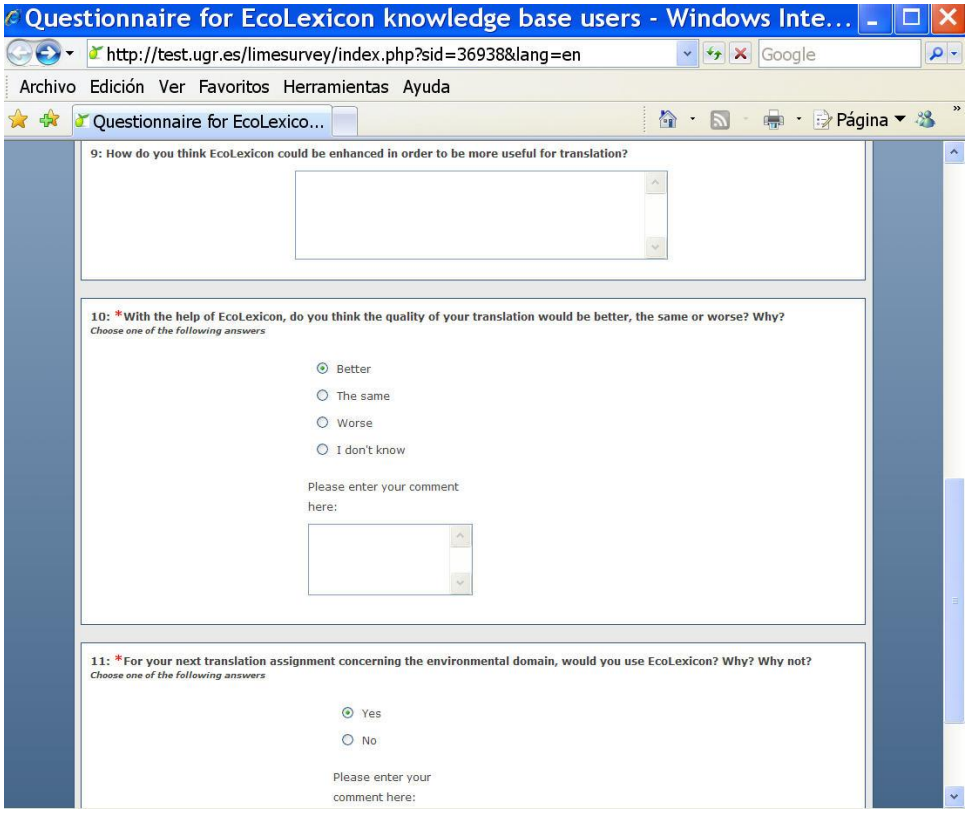

Figure 3. Different answer formats in our questionnaire

3.5. Record and analysis of data

The capabilities of LimeSurvey makes the creation of a database for analysis unnecessary. This open source tool analyses the data, provides percentages and graphs, and allows for filters and different exportation formats (xls, pdf, html, doc) as can be seen in Figure 4. Therefore, the researcher does not need to spend too much time processing the data.

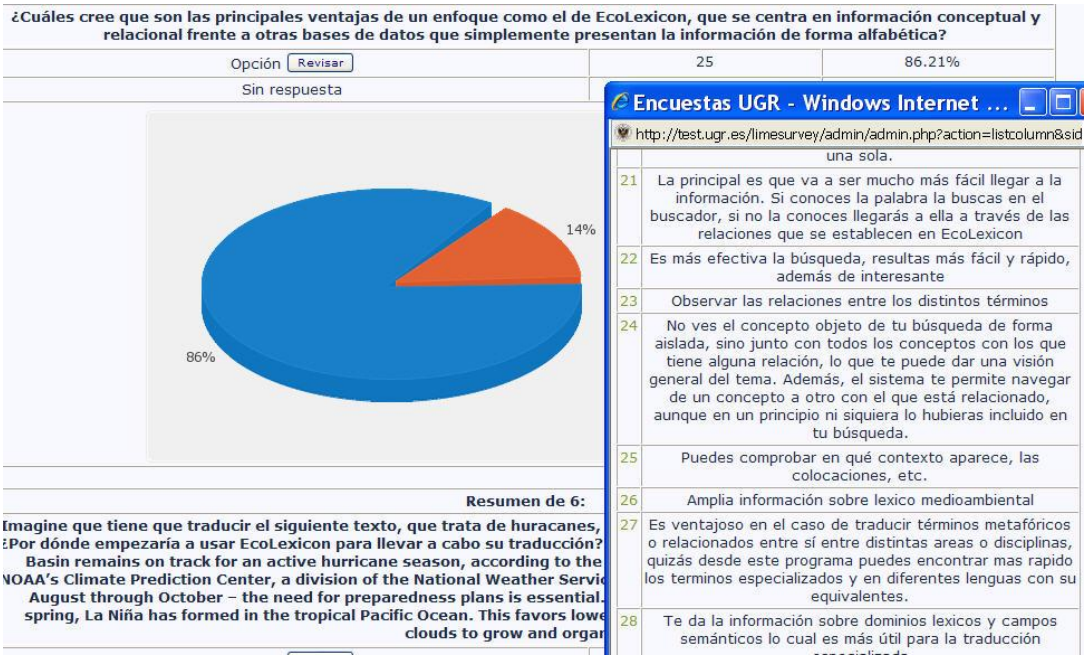

Figure 4. One of the results formats provided by LimeSurvey®

Nonetheless, LimeSurvey has some statistical limitations. It does not provide advanced statistics on the variability of the population and of results (standard deviation) nor does it provide a reference to the degree of statistical significance (p–value). For the purpose of our study, this was not a problem because our approach was both qualitative and quantitative.

3.6. Study population

The population consisted of two groups of 33 and 21 students, all of whom were enrolled in a course on Scientific and Technical Translation (English to Spanish). The first group followed the course in the first term, and the second group in the second. They had English as their first foreign language, and Spanish as their mother tongue (with the exception of four students who had Polish, Russian, Dutch, and Galician). Of these 54 students only 44 finished the test. The possibility of filtering unfinished tests avoided the inclusion of incomplete data that could skew the results. We read the answers of incomplete tests nevertheless.

	Encuesta	Fecha de creación	Dueño/a	Acceso	Privacidad en la respuesta	Estado	Respuestas completas	Respuestas parciales	Total de Respuestas
▶	Cuestionario para usuarios de la base de conocimiento EcoLexicon	2010-11-11	clarailr	Acceso libre	Anónimo	Activa	44	10	54

Figure 5. Data about finished and unfinished tests

Environmental conditions were not optimal in the second group because they performed the test during their last lecture of the day. However,

there was a good rapport with the teacher because students had known her for a whole semester (in the first group) and for nearly a month (in the second group). As a result, students felt free to ask questions.

3.7. Selection of other converging measuring instruments for the future

The use of different measuring instruments is helpful in gathering and interpreting evidence from other perspectives that may confirm the results obtained from participants in a specific context. These additional converging instruments should be selected according to pragmatic criteria, such as time, place and ethics, as well as their scientific quality and familiarity, their time-saving properties and coherence with our initial measuring instrument.

In a future survey, we will eliminate the anonymous nature of the questionnaire so that we can interview our subjects once interesting results have emerged, including the clarification of confusing answers. In this way, another complementary measuring technique can come into play. It is true that anonymity has guaranteed the free expression of positive or negative opinions about EcoLexicon. However, we have not been able to take advantage of the information we had about our students (interest in translation and terminology, cognitive abilities, etc.). Another drawback of anonymity is that a few students did not fill in the more difficult questions maybe because they knew that we would not guess who did not complete the whole questionnaire.

4. Results of the questionnaire: evaluation of Ecolexicon by novice translators

The quantitative and qualitative results of the 44 completed questionnaires were analysed in order to gain understanding of the perception of EcoLexicon by trainee translators. In this section we will present the more interesting findings.

4.1. Basic information about the respondents

The first section of the questionnaire shows that most of our subjects were pursuing university education in the Arts and Humanities, while 4.5% had studied Science and Technology at university level. More than 88% of the population defined their user profile as that of an undergraduate student in Translation / Applied Languages. Being in their 3rd year of their degree, they had previously studied subjects related to terminology, applied linguistics and translation. Interestingly, 18% chose the profile of Professional translator / technical editor maybe because some of our students had already worked as translators or because they felt that their skills and aspirations were similar to those of professional translators. One of the students had a B.Sc. in Industrial Engineering.

4.2. Ecolexicon and knowledge acquisition

From the analysis of the answers in section 2, "EcoLexicon and knowledge acquisition", it was ascertained that nearly 91% of the subjects agreed with the statement in question 4: "Within the EcoLexicon approach, conceptual relations are given special importance. Do you think that this is really what your user profile (translator, technical editor, engineer, etc.) needs?". Most comments on this question were about conceptual relations, which, according to students, help to better understand general and specific information within a subject field, as well as new concepts and how they are interrelated, new terms in a specific context or subject field, and the source text.

The answers to the 5th item revealed our students' perception of the advantages of the approach of EcoLexicon. Accordingly, EcoLexicon provides:

- much more *systematised* information than alphabetical databases;
- a good frame for *comparing the conceptual span* of each concept;
- conceptual and linguistic *contexts* for the search concept, helping to find other *unexpected* concepts or terms by surfing from relation to relation;
- easy access to information on a *subject field* and to interrelated *attributes, events and concepts*, something which aids research before and during a translation;
- the chance to decide whether the *term* you wanted to use is suitable or not, based on the information given;
- "many tools in one" since it enriches concepts with images, definitions, terms, and related contexts.

Moreover, some respondents pointed out that EcoLexicon made conceptual relations explicit in a *clear*, *quick*, *dynamic*, and *accurate* way, and helped them to process *semantic*, *lexical* and *relational* knowledge. They also said that EcoLexicon enabled the acquisition of *specialised information* and specific terms in a subject field, especially the environment.

During the analysis of the answers and comments given for items 4 and 5 some of the statements lead us to believe that some of our students do not distinguish clearly the notions of 'term' and 'concept'.

4.3. Ecolexicon and Translation

From the analysis of the answers in section 3, "EcoLexicon and translation", the following conclusions were drawn.

When students carry out a specialised translation assignment (in our study, a brief text about hurricanes) using EcoLexicon, they normally proceed as follows:

(1) They look up the main concept of the text (in our example, HURRICANE), in order to get its conceptual relation tree, which contributes to a better understanding of the subdomain in question through the analysis of conceptual relations, as well as definitions, pictures and the information contained on the domains. Therefore, this step satisfies the need for encyclopaedic knowledge of translators (cognitive user situation).
(2) Once they gain a general overview of the subdomain, they will look up the specialised terms they do not know, their equivalents, contexts of use, and phraseology.

In relation to the open question "What information from EcoLexicon do you think is useful for a translator?", surprisingly the information students thought to be the most important for translators were conceptual relations (56.8%), followed by the equivalents or the different terms assigned to a concept in the different languages (52.2%). Phraseology, as well as contexts, was also conceived to be really useful (30%); visual information and definitions were highlighted as being the most handy tools for translators by 20%. Domain labels in the Domain field were only selected by 8%.

Nearly 90% of the subjects stated that all the information contained in EcoLexicon was useful because the more information, the better: different users will choose different information depending on their particular needs. Those who thought that some information should be taken out said that general concepts (such as WATER) had too many conceptual relations. This information overload was said to render the entry for WATER useless, as information cannot be visualised and, therefore, knowledge cannot be extracted.

Regarding improvements in the quality of their translations when using EcoLexicon, 84.09% concluded that with the help of EcoLexicon they thought their translations would gain in quality, as the knowledge base had been designed by specialists in Terminology and Environmental Studies, thus assuring authority, and therefore reliability[5]. Other comments support the idea that EcoLexicon is also helpful during the documentation process. One student even said that EcoLexicon contained "all, in one resource". About 5% stated that their translations would be the same as usual in terms of quality, and the rest, about 10%, affirmed that they did not know in advance. They stated that, in theory, EcoLexicon aimed at assisting users during the translation process, but they concluded that it may distract the user if he or she just needs correspondences in the different languages.

Concerning the use of EcoLexicon for their next specialised translation assignment on the environment, almost all the students (97.73%) showed their interest in using it together with other resources. Some of the reasons they pointed out were the fact that it is user-friendly and information is presented "very visually," it offers much more information than a basic bilingual dictionary, and it is specialised in the environmental domain, so it contains a large number of specialised terms.

4.4. The interface of EcoLexicon

The opinion of students about the usability and capabilities of the Ecolexicon interface were not limited to this section. In fact, in other sections, we found comments such as the following[6]:

> "EcoLexicon has a visually attractive format and interface, allowing for effective and direct searches."
> "It is an intuitive tool since it structures and simulates human knowledge."
> "It is an efficient and time-saving tool when it comes to finding equivalents in other languages."
> "It is user-friendly and information is presented very visually."

Almost 82% of our population considered that the visual resources of EcoLexicon are useful. However, the results of this question were affected by the fact that some students did not have on their computers the Java Applet required for the visualisation of the dynamic cloud of relations around each concept. Some students pointed out that some of the links to images needed updating. One of the students suggested that the selection of visual resources should target specific user profiles of the knowledge base (translators, engineers, etc.).

As to the Domain structure displayed in the interface of EcoLexicon, only 59% actually consulted it. Some respondents did not have the time, nor were they familiar with it. As a result, in future surveys, we will devote more time to explaining the applications of Domain structure.

In relation to the visual dynamic network of relations, when asked whether it would be interesting to include these conceptual relations separately (each relation in a different window), 68% answered affirmatively. They argued that the dynamic cloud of concepts was confusing whenever the concept had many relations with other concepts, because they were displayed simultaneously. This is usually the case with general concepts.

Students made suggestions as to how the interface could be changed to make searches easier and more intuitive. Most of the students were overwhelmed by the display of all the relations, and thus they suggested that only the most basic relations should be visible. The application of colours and bigger font types was another solution for a better

discrimination of concepts and relations. One student suggested the possibility of searches by subject.

In any case, our novice translators appreciated the dynamism of Ecolexicon, its contribution to a better understanding of concepts and relations, and the fact that it is the user who activates the different resources. Consequently, all but one of our subjects said that time spent on consulting EcoLexicon was time well spent.

5. Conclusions

In this paper we have highlighted the value of surveys to improving and updating terminographic products such as EcoLexicon. We have reviewed the literature on users of lexicographic and terminological resources, their needs and the situations in which these needs arise. All these factors should be taken into account when designing and validating lexicographic and terminographic resources for specialised translation, a process in which both cognitive and communicative skills intervene.

Eliciting users' needs and their perceptions of terminographic resources requires the careful design of surveys backed by the principles of psychological validity. We have applied them to the elaboration of a questionnaire aimed at users of EcoLexicon, more specifically, trainee translators.

We are aware that a wider population is needed to reach conclusive results. In fact, we intend to continue surveying other users of EcoLexicon. In any case, the feedback from this questionnaire has helped us to understand how real users interact with EcoLexicon, yielding opinions from a perspective away from the 'lab of terminology research'.

With the remarks and recommendations of our students, as well as those of the subjects of two previous pilot studies, we will implement some of the changes proposed. For instance, the visibility and structure of domains, whose usability was only pointed out by 8%, will be enhanced, as well as the way correspondences in the different languages are displayed. As suggested by students, changes such as the colour of conceptual relations have already been introduced, as well as a solution to reduce conceptual and relational overinformation.

Therefore, the feedback from a survey has been useful in improving the EcoLexicon database and its interface, which are constantly being updated and enriched. In turn, this feedback will also contribute to future modifications of the questionnaire itself.

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Biographies

Clara Inés López Rodríguez is Tenured Professor at the University of Granada (Spain). She holds a PhD in Translation and Interpreting from the University of Granada. Her current research deals with scientific translation, terminology, and the application of corpus linguistics to terminology and translation. She has published her research in these areas in a number of high profile journals including *Terminology, Meta: Translators' Journal,* and *Journal of Specialised Translation.* She can be reached at: clarailr@ugr.es.

Miriam Buendía Castro holds a Master's degree in Translation and Interpreting and is currently working on her PhD dissertation at the University of Granada, Spain. Her main research interests cover corpus linguistics, terminology, semantic annotation and phraseology. She has published some papers in these areas. She can be reached at: mbuendia@ugr.es.

Alejandro García Aragón obtained a Bachelor's Degree in Translation and Interpreting at the University of Granada, and specialised in Modern Greek studies and Lexicography during his Master's Degree in 'Advanced Studies in Translation' at the same university, where he is currently a PhD student and research fellow. His major fields of research include: lexicography, terminology, specialised translation, knowledge representation, and Modern Greek studies. He can be reached at: aga@ugr.es.

Notes

[1] This research has been carried out within the framework of the project RECORD: Representación del Conocimiento en Redes Dinámicas [Knowledge Representation in Dynamic Networks, FFI2011-22397], funded by the Spanish Ministry for Science and Innovation.

[2] As Pérez Hernández states (2002: ch.3.3. Terminología y lexicografía), when it comes to distinguishing between 'terminology' and 'lexicography', most authors usually establish a correspondence between lexicology and lexicography, on the one hand, and terminology and terminography, on the other hand. In this line, 'lexicology' is the discipline that studies and describes the lexicon of a language and, 'lexicography' is presented as applied lexicology aiming at compiling general language dictionaries. In the same way, 'terminology' is said to be concerned with the theoretical and methodological description of specialised language, whereas 'terminography' is presented as applied terminology for the purpose of elaborating specialised dictionaries. This distinction between the theoretical and the practical aspect is very well established for 'lexicology-lexicography', but it is not the same for 'terminology-terminography'. In other words, very often the words 'terminology' and 'terminography' are indiscriminately used when referring to the practical application of Terminology (Montero *et al*. 2011: 21). In this paper, we always use the dichotomy 'lexicographical/terminographic resource', but refer to EcoLexicon as a 'terminological knowledge base', for a question of collocation: 'terminological' is the usual collocation for 'database'.

[3] Tarp (2008b: 126) mentions some reference works, such as handbooks, manuals, and how-to guides, which are designed to give directions and instructions on how to proceed in specific situations, thus having an operational function. In our study, we are not going to take operational functions into account.

[4] The printable version is available at: http://www.ugr.es/local/clarailr/surveyEN.zip and http://www.ugr.es/local/clarailr/surveyES.zip. The on-line survey directly feeds the on-line database hosted in LimeSurvey. Therefore, the interface of the actual survey can only be accessed by invitation.

[5] For more information concerning authority as a parameter that ensures the quality of a resource, see Buendía Castro and Ureña (2009).

[6] The students responded in Spanish. We present Miriam Buendía Castro's translation of their answers.