

## The Impact of Interlingual Equivalence on Vocabulary Development. A Case Study on the Acquisition of Specialised (Technical) Lexis

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**Abstract:** This paper explores the correlation between the use of several types of equivalence (e.g., linguistic, paradigmatic, semantic) for ELT purposes and the acquisition of terms and concepts pertaining to the fields of science and technology. It builds on previous research concerning the questionable use of interlingual equivalence (namely foreign language – mother tongue) when seeking vocabulary enhancement on the part of ELLs (English language learners). In order to gain significant insight, mixed research methods have been employed, most notably overt observation carried out among two groups of undergraduates (Architecture and Civil Engineering) paired with assessment strategies.

**Keywords:** interlingual equivalence, online teaching, overt observation, specialised lexis, textual analysis, vocabulary-learning strategy

### 1. Introduction

As lexical acquisition and continuous enrichment of vocabulary provide multiple advantages for ELLs by targeting all the four major skills (both receptive and productive), it is crucial to investigate all the potentially effective ways yielding such results, including the long-term ‘controversial’ translation-based activities. In this respect, Nation (2001: 568) emphasizes that “the use of first language translations provides a very useful means of testing vocabulary [...] in recall and recognition items”. Considering that polysemous words and homonyms tend to “pose a series of problems in the teaching-learning process” (Vâlcea 2019: 8388)

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regardless of their nature and complexity, particular emphasis should be laid upon the ever-challenging technical genres which might simultaneously contribute to the SL and TL vocabulary development.

This paper seeks to identify the potential ways in which translation-based activities influence the acquisition of technical vocabulary and the parameters/variables that exert the greatest impact on the process considering the pandemic challenges (eventually resulting in the shift to online teaching). Although a small-scale study, the emerging results pinpoint part of the pros and cons of designing and adopting a translation-oriented approach for ELT purposes (primarily conditioned by the students' CEFR level - B1 → C1). Particular attention has also been paid to the use of intralingual translation (SL/ foreign language - English) as a ground-preparing technique for the proper grasp of the original meaning and eventual choice of the most suitable equivalents in the mother tongue (Romanian/ TL).

## **2. Technical lexis and interlingual equivalence**

Throughout the years, several vocabulary-learning strategies have achieved widespread popularity and qualified approval from renowned linguists and methodologists, including Nation (2001) and Thornbury (2002). Such works highlight the importance of identifying the ideal blend of monolingual and bilingual techniques and resources in order to enhance student performance (e.g., dictionaries, games, “guessing from the context”, occasional translation-based tasks, etc.). It is to be noted, however, that theorists tend to advise against the overuse of translation as a vocabulary-learning strategy as it “may mean the learners fail to develop an independent L2 lexicon, with the effect that they always access L2 words by means of their L1 equivalents, rather than directly” (Thornbury 2002: 77). Considering that this study has been conducted upon monitoring the class activity of undergraduates that are engineers and architects in the making, particular attention has been paid to the selection of specialized terms and concepts, all belonging to the technical spectrum. The expression “technical lexis” is used throughout this paper with regard to the specialized vocabulary pertaining to technical topics such as material types (Architecture and Engineering), material properties (Architecture and Engineering), design stages (Architecture), design project (Architecture).

Prior to incorporating the translation-oriented activities, general criteria laid down by scholars Baker (1992), Lungu-Badea (2004) and Newmark (1988) have been considered. By pairing the intralingual equivalence with the interlingual counterpart (translation proper), several subtypes have been explored:

- 1) Employing (where appropriate) *linguistic or formal equivalence* (SL-oriented): “used for the literal restitution of the content and form of the ST, with the objective and hope [...] that the target readers will receive the same message [...] as the source readers. This type of equivalence corresponding to literal translation (Berman, 1985a, 1985b) should ensure respecting the identity of the source culture and language, being oriented towards the ST” (Lungu-Badea 2004: 4, my translation);
- 2) Employing (where appropriate) *paradigmatic equivalence*: “consisting mainly of transposition, it is based on the correspondence between the grammatical levels of the texts [...], ST and TT. The establishment or manifestation of this correspondence enables the replacement of some grammatical elements from the ST with others in the TT without the meaning of the utterance conveyed in the TT being changed in any way” (Lungu-Badea 2004: 4, my translation);
- 3) Employing (where appropriate) *semantic equivalence*: “located at the level of the words and not at the level of the paragraph or of the text considered as a whole; it is considered a lexical correspondence and, according to this, the same semantic field corresponds to a word from the ST and its semantic or lexical equivalent in the TT” (Lungu-Badea 2004: 5-6, my translation);
- 4) Employing (where appropriate) a *descriptive equivalent*: “description and function are essential elements in explanation [...]. In translation discussion, function used to be neglected; now it tends to be overplayed” (Newmark 1988: 84);
- 5) Resorting, either in a macro or micro-level context, to the ‘*equivalence above the word level*’ (collocations): “the tendency of certain words to co-occur regularly in a given language” (Baker 1992: 47).

Proper customization and application of these strategies to technical-vocabulary teaching have been possible thanks to the two possible scenarios and subsequent solutions provided by linguist and translation scholar Peter Newmark (1988). He distinguishes between two major situations that are likely to occur when dealing with technical lexis in two different languages (SL and TL):

- 1) Rendering a technical term in the TL by means of a technical counterpart – “normally, you should translate technical and descriptive terms by their counterparts” (Newmark 1988: 153);
- 2) Rendering a technical term in the TL by means of a descriptive counterpart (applicable to lexical gaps) – “where a SL technical term has no known TL equivalent, a descriptive term should be used” (Newmark 1988: 154).

These considerations have been accounted for when integrating interlingual equivalence in the four stages of the lexical acquisition process (described as “strands” by Nation 2001: 650-651): “meaning focused input”, “language focused learning”, “meaning focused output” and “fluency development”.

### 3. Research methodology

In order to collect the data, several instruments have been employed, most notably the overt observation paired with formative and summative assessment strategies (vocabulary quizzes and functional writing). The sampled population consisted of two groups of undergraduates majoring in Architecture (approximately 60 students) and Civil Engineering (approximately 70 students) and enrolled in the second and first year of study, respectively. Their (online) activity has been monitored for the entire span of the first term of academic year 2020 – 2021 (September 2020 – February 2021), meeting each group on a regular basis (once a week) for 14 consecutive weeks.

As this was my first time giving classes to undergraduates enrolled in the faculties of Architecture and Engineering, students have been asked about their lexical interests in the field (potential topics they would be particularly interested in). Their academic syllabus featuring the field-essential subjects has also been consulted prior to integrating certain teaching methods. As a result, several additional topics have been established in the aftermath of the first meeting, including those of material types and properties (Civil Engineering), drawing types and views, design project and subsequent stages (Architecture). Classes were given via the Zoom app, with each session lasting between 60 and 90 minutes (newly customised span for the transition to online teaching). The nature and occurrence frequency of the interlingual equivalence varied according to a range of parameters/ variables established beforehand (see Table 1 below):

- 1) *Year of study* (college level): 2<sup>nd</sup> year (Faculty of Architecture and City Planning: Architecture – Target Group 1), 1<sup>st</sup> year (Faculty of Constructions: Civil Engineering – Target Group 2);
- 2) *CEFR level*: as identified for receptive (reading, listening) and productive (speaking, writing) skills;
- 3) *Previously acquired knowledge*: field-related lexical units studied in the foreign language (English) during the first academic year (Faculty of Architecture and City Planning: Architecture – Target Group 1), technical vocabulary pertaining to physics, chemistry, mathematics studied in the mother tongue (Romanian) during high school (Faculty of Constructions: Civil Engineering – Target Group 2). Particularly activated during the lead-in/ elicitation stage in order to make students “reflect on the ways (the new word) is similar to the words they already know. This reflection need not be restricted to the second language, but should also involve comparison with the first language” (Nation 2001: 648);
- 4) *Lesson stage*: considering the nature of the class given (seminar), three major lesson stages have been prioritised: Lead-in/ Elicitation, Controlled Practice and Freer Practice;

- 5) *Type of activity*: great emphasis laid upon the textual analysis of excerpts featuring multiple specialised (technical) terms;
- 6) *Working format*: individual tasks and teamwork.

<b>Parameters/ variables considered</b>		
<b>Year of study</b>		
<i>Target Group 1</i>	2	Bachelor's degree/ undergraduate level
<i>Target Group 2</i>	1	Bachelor's degree/ undergraduate level
<b>CEFR level</b>		
<i>Target Group 1</i>	B2-C1 (upper-intermediate/ advanced)	Receptive skills → mostly C1 Productive skills → B2-C1
<i>Target Group 2</i>	B1-C1 (intermediate/ advanced)	Receptive skills → mostly B2 Productive skills → B1-B2
<b>Activating/ tapping into prior knowledge – technical vocabulary targeted</b>		
<i>Target Group 1</i>	Specific SL and TL technical terms acquired during the first academic year (2019 - 2020)	Degree of specificity → superior
<i>Target Group 2</i>	Technical terms belonging to physics, chemistry, mathematics	Degree of specificity → inferior
<b>Lesson stage</b>		
<i>Target Group 1</i>	Lead-in/ Elicitation; Controlled Practice; Freer Practice	
<i>Target Group 2</i>		
<b>Type of activity</b>		
<i>Target Group 1</i>	Dominant: brainstorming, textual analysis	
<i>Target Group 2</i>	Dominant: textual analysis, panel discussion	
<b>Working format</b>		
<i>Target Group 1</i>	Individual (brainstorming), teamwork (textual analysis, panel discussion)	
<i>Target Group 2</i>	Individual (brainstorming), teamwork (textual analysis, panel discussion)	

**Table 1.** Parameters/ variables considered when planning the learning activities (including translations)

As far as teaching materials are concerned, the corpus of excerpts featured different degrees of technical specificity, tackling on the primary categories put forward by Newmark (1988: 153), namely “formal terms used by experts” (professional register) and “layman vocabulary including familiar alternative terms” (popular register). Towards mid-November (2020), the first testing component (formative) targeting productive skills (functional writing) was finalized, whereas vocabulary quizzes (constituting the summative assessment) were compiled and administered during the final two weeks of teaching activities (exam sessions 1 and 2 – December 2020 and January 2021).

#### 4. Data analysis and preliminary results

Having assumed the observer position during certain portions of the online class has provided a clearer overview of the type(s) of exercises that might work best for translation-based tasks. In the following, two different excerpts analysed during the online sessions will be used for exemplifying the pattern developed. The challenging lexical units are highlighted in bold.

1) Excerpt 1

Topic: *Material Types/ Concrete*

Target Group 2: *Civil Engineering*

Type of activity: *Textual Analysis*

Working format: *Teamwork*

Incomplete scheme (causing confusion): *intralingual translation/ defining the terms in the SL followed by decontextualised interlingual formal/ linguistic equivalence*

Suggested pattern: *intralingual translation/ defining the terms in the SL followed by contextualised interlingual equivalence/ explicitation/ addition*

“When wet concrete is cast (placed) in its final position, it is called in-situ concrete. Instead of being cast in-situ, reinforced concrete elements can also be precast – cast at a factory – then delivered to the construction site, ready for assembly. Sometimes, precast concrete is also prestressed. With **prestressing**, tension is applied to the reinforcing bars, by machine, usually before the concrete is poured. The bars are then held in tension while wet concrete is poured around them. After the concrete has fully set, the bars become ‘trapped’ in tension. This increases the concrete’s ability to resist **bending forces**” (Ibbotson 2009: 38);

This excerpt has been analysed during the controlled practice stage of the lesson (after introducing students to the basic lexis related to *concrete* one meeting prior), where students were asked to explain (1 – intralingual equivalence) and then render (2 – interlingual equivalence) the terms “prestressing” and “bending forces” in their mother tongue (Romanian) by resorting to the aids of their choice (e.g., online dictionaries, scientific articles, etc.). In this regard, Dejica (2020) points out that one of the major parameters of technical and scientific translation and genre-based distinction consists of presenting “the main CAT tools used by the technical” or “scientific translator (including reference works, specialised dictionaries and glossaries, etc.)” (2020: 64). By analysing the words/ phrases in bold, the major reason for resorting to translation strategies, namely polysemy and homonymy, has been explored.

Pungă and Pârlog (2017: 256) zoom in on a widely accepted fact, in saying that “the same words may have different meanings when used in isolation and when contextualized [...] Translation difficulties may arise and awkward, inappropriate or incorrect equivalents may be suggested as a consequence of one’s not being aware of such differences in meaning”. In their continuous attempts to contextualize the polysemous term “prestressing”, the students first looked up the word in the online monolingual dictionaries and provided the definitions for the verbal form: “applying tensile stress to (the steel cables, wires, etc. of a precast concrete part) before the load is applied” (Collins Dictionary), “introducing internal stresses into (something, such as a structural beam) to counteract the stresses that will result from applied load (as in incorporating cables under tension in concrete)” (Merriam Webster), etc. It is to be noted that, as a customary operation in mechanics, students had inferred part of the definition beforehand by analysing the prefix “pre” (before).

Nonetheless, the root “stress” in “prestressing” posed the greatest challenge since its meaning could not be accurately grasped without contextualizing it (the need for a larger text unit). In addition to its homonymous feature, actively used in different fields (psychology, physics/ mechanics), the multiple meanings generated by polysemy (usage within the almost same field) also constitute a major challenge for appropriate vocabulary acquisition. One technical (bilingual) dictionary lists the following Romanian equivalents: “sarcină”, “solicitare”, “încărcare”, “deformare”, “greutate”, “forță”, “tensiune”, “efort”, all actively used in mechanics. It might hence come as no surprise that many students got confused when resorting exclusively to the monolingual resources and to the Romanian equivalent(s) of “stress” in the absence of more specific details. For example, “stress” could at times be rendered by “sarcină” and so could “load”, comprised in the definition provided by *Collins Dictionary*.

Another illustrative example of mistranslation that would likely occur without the provision of relevant details is the erroneous semantic overlapping of “stress” and “tension” such as in the operations “prestressing” and “pretensioning” (both terms are sometimes rendered by “pretensionare” in Romanian – source: *Dicționar tehnic englez-român*). In order to avoid terminological confusion, the learning activity concluded with the unanimous suggested choice of “operație de precomprimare”, the additional solution provided by *Dicționar tehnic englez-român* (English – Romanian technical dictionary) in the form of explicitation/addition. As for the collocation “bending forces”, the variety of monolingual resources was surprisingly limited, with students directly pinpointing the semantic interlingual equivalence “forțe de încovoiere” provided by the same technical dictionary.

2) Excerpt 2 (Dialogue)

Topic: *Drawing Views*

Target Group 1: *Architecture*

Type of activity: *Textual Analysis/ Brainstorming*

Working format: *Individual Task*

Identified pattern: *classifying the challenging collocations into the corresponding terminological category by considering the superordinate concept (already provided in the paragraph) followed up by the contextualization of the phrases and suggestion of potential Romanian equivalents (interlingual equivalence)*

“According to this list, there are elevations of all four sides of the machine on drawing 28. So one of those should show the front of the machine. There should be a section through the pipe, showing the valve inside, on drawing 36. We need an exploded view of the mechanism showing the components spaced out. It’s hard to visualize this assembly, based on two-dimensional elevations and sections. It would be clearer if we had a three-dimensional view, as either an **oblique projection** or an **isometric projection**” (Ibbotson 2009: 8).

This paragraph has been used within the lead-in/ elicitation stage of the lesson, activating prior knowledge. The translation-based activity has been integrated in a brainstorming exercise and paired with “guessing from the context” strategies. Relying on the specific details accompanying the challenging collocations “oblique projection” and “isometric projection”, students have depicted the primary clue that would eventually help them identify the proper Romanian equivalents – both types of projection are subordinate terms of the superordinate concept “three-dimensional view”.

In their best endeavour to find an extensive and self-explanatory definition, an overwhelming majority of students came across the synonymous collocation for “isometric projection”, namely “isometric drawing”, as *Encyclopaedia Britannica* redirected the search to the definition of the latter: “method of graphic representation of three-dimensional objects, used by engineers, technical illustrators, and, occasionally, architects”. By resorting to available scientific articles, students pointed towards the linguistic or formal equivalence as the most adequate choice in this particular context, i.e., “proiecție izometrică” and “proiecție oblică”, respectively.

Upon planning the teaching activities and going through the assessment process, preliminary results highlight several aspects that could potentially update the original approach in order to make it more effective. First of all, intralingual translation and explicitation (used for foreign languages) might prepare the ground for the following tasks to be tackled (identifying the most suitable equivalents in



the mother tongue – Romanian). As a result, the ‘fear’ of focusing excessively on the use of mother tongue (TL) against that of the foreign language (SL) diminishes. Subsequently, a desirable translation-based scenario for ELT purposes would feature the ‘perfect’ blend of the two primary types of equivalence (interlingual and intralingual). The major pro of implementing mixed vocabulary-learning strategies (including interlingual equivalence) is reflected in the higher degree of accuracy in terms of distinguishing between the different meanings of the same technical term/phrase in the case of polysemous words (e.g., ‘prestressing’). On the other hand, the emergent limitations threatening the efficiency of this approach consist of the inability of thoroughly monitoring past-year activities in order to avoid redundancy (applicable to Target Group 1) and the tendency of following the same patterns over the entire course of the four months, with minor occasional changes.

## **5. Conclusions and future research directions**

As translation-based activities are not necessarily characteristic of non-philological faculties, identifying and planning the most efficient activities would most likely turn into a difficult, time-consuming task considering that several details should be known beforehand (e.g., the CEFR level, specialized subjects that have already been taught during the undergraduate programme, etc.). Most students (especially 1<sup>st</sup>-year students) tend to get ‘stage fright’ when asked to engage in individual lead-in/ elicitation activities, hence teamwork might prevail at least at the beginning of the semester. As time goes by, individual tasks might be progressively incorporated in order to observe the way students handle translation-based tasks on their own.

The interlingual equivalence oftentimes contextualizes and clarifies the multiple meanings that a technical term/ phrase might convey by seeking terminological accuracy. It may simultaneously enhance lexical acquisition in the foreign language (English/ second language/ SL) and mother tongue (Romanian/ first language/ TL) by establishing the most adequate correlations between the two working languages.

Future research directions may include testing similar translation-based patterns in different formats (contrasting the online limitations vs traditional classroom activities), investigating the impact of translation-based activities on academic writing involving documentation for the BA and MA papers (scientific articles and books written in English) and applying different techniques in order to avoid monotony and anticipation on the part of the ELLs.

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