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Entry navigation devices in monolingual dictionaries for learners of English

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Introduction

Consulting a dictionary is a more complicated process than it may seem at first glance. Finding the information necessary in an entry may be successful or not, depending on the user's dictionary reference skills (Scholfield 1982; Nesi 1999: 54), but there are also other factors that influence dictionary use, such as the level of language proficiency of language learners, their motivation as well as time constraints. One of the most important factors, however, one whose effectiveness depends not on the users but rather dictionary compilers, is the user-friendliness of dictionaries (Lew 2013a: 79). In other words, if learners are to obtain pertinent information from entries, dictionaries need to be adjusted to their needs; otherwise, using a dictionary can become a serious burden. One recent attempt by lexicographers to assist users in dictionary navigation has been the introduction of sense navigation devices in entries, such as signposts and menus, which summarize in a few words what a particular sense in an entry is about. The main role of these meaning access facilitators is twofold: (1) to allow users to find the meaning they are searching for in an entry as quickly as possible; and (2) to improve the selection of senses by users, so that they manage to bring back the right meaning from dictionaries. The most obvious difference between signposts and menus regards their positioning within an entry. The former are sense cues which are located at the beginning of senses, while the latter are found at the top of an entry, and thus more distant from their respective senses. Evidence from studies comparing both systems (Lew 2010; Nesi and Tan 2011) points to the superiority of signposts. However, it still remains unclear whether combining both signposts and menus in single entries would be even more beneficial to dictionary users and, thus, this thesis attempts to analyze more closely the difference between signposts alone and a combination of signposts and

menus, which is the primary aim of the present study (see section 3.1., which lists all the aims of the study). The paragraphs below briefly summarize what specific issues are covered in each chapter and how the present thesis is structured. The thesis begins with the Introduction, followed by five chapters and a brief Conclusion. The first two chapters set the background for the study, which is the topic of the next three chapters.

Chapter 1 of this thesis focuses on guiding devices in monolingual dictionaries for learners of English. Section 1.1. deals with the problems that dictionary users encounter during sense selection, while the following sections (sections 1.2. and 1.4.) are concerned with signposting and menu systems in English learners' dictionaries and one general dictionary (the exception being the Encarta World English Dictionary): signposts in the Longman Dictionary of Contemporary English (LDOCE), guide words in the Cambridge International Dictionary of English (CIDE; spelled as "guidewords" in the following editions of this dictionary, the Cambridge Advanced Learner's Dictionary, or CALD), short cuts in the Oxford Advanced Learner's Dictionary of Current English (OALD), quick definitions in the Encarta World English Dictionary (EWED) and menus in the Macmillan English Dictionary for Advanced Learners (MED). Section 1.3. refers to the problematic aspects of signposting systems, such as their heterogeneity, vagueness, or redundancy.

Chapter 2 elaborates on the empirical studies of signposting and menu systems. Section 2.1. covers a comparison of LDOCE3 signposts and CIDE guide words (Tono 1997), the four different guiding systems in LDOCE3, OALD5, COBUILD2 and CIDE (Bogaards 1998), and an investigation of the efficacy of LDOCE4 signposts (Lew and Pajkowska 2007). Section 2.2. is concerned with the effectiveness of menus (Tono 1992; Lew and Tokarek 2010), while section 2.3. describes three studies (Lew 2010; Nesi and Tan 2011; Tono 2011) where signposting and menu systems are compared. Chapter 2 ends with a short discussion of the topics covered in the studies (section 2.4.) and introduces the reader to the research questions of the present study.

Chapter 3 contains general information about the present study: the aims of the study (section 3.1.), research questions (section 3.2.) and methodology (section 3.3.). Section 3.3. describes the design of the research, the subjects who participated in the study, the procedure of the study, the test items used and how the data were analyzed.

Chapter 4 presents the results of the study for the first eight research questions and discusses these findings. Section 4.1. summarizes the results for entry consultation

time, while section 4.2. describes the results for sense selection accuracy. Chapter 4 ends with a discussion (4.3.) of both the present and previous findings.

Chapter 5 attempts to answer research questions nine and ten. In general, it is concerned with the process of sense selection and the phrasing of sense cues. Section 5.1. deals with the analysis of sense selection, section 5.2. focuses on the linguistic form of sense cues, section 5.3. discusses the findings of this chapter, while section 5.4. presents the limitations of the study.

The Conclusion, which summarizes the study findings, completes the whole thesis.

Chapter 1: Guiding devices in monolingual dictionaries for learners of English

Introduction

Chapter 1 begins with an analysis of the problems that dictionary users encounter in entry navigation. The sections that follow are a description of signposts and menus used in four of the Big Five (Dziemianko 2012: 37–40) English monolingual learners' dictionaries (Longman Dictionary of Contemporary English, Cambridge International Dictionary of English or Cambridge Advanced Learner's Dictionary, Oxford Advanced Learner's Dictionary of Current English, Macmillan English Dictionary for Advanced Learners; no signposts or menus are used in the Collins Cobuild English Dictionary), and the Encarta World English Dictionary. A separate section is devoted to each one of these dictionaries. An additional section discussing potential problems with signposts has been included in the chapter. Chapter 1 ends with some general concluding remarks.

1.1. Problems with sense selection

When faced with difficulty understanding a word in a foreign language, one of the options that language learners have is consulting a dictionary. Finding the right meaning, however, is not always as simple as it may seem. Dictionary users encounter various problems during the process of dictionary look-up and they do not always manage to bring back the correct meaning even if the lexicographic data are there to be found (Nesi and Hail 2002: 282).

To begin with, dictionary users have a habit of reading the early parts of entries and are not as likely to examine further sections of longer entries (Tono 1984; Müllich 1990; Nuccorini 1994: 590; Wingate 2002: 113; Lew 2004: 32–33; Lew et al. 2013: 242). Tono (1984) observed that only when his subjects were completely certain that the first sense was not the one they needed did they decide to examine the remaining parts of the entry. However, more experiments are needed to see whether this tendency is common with more advanced learners, who might spend more time browsing through the latter parts of an entry, as they should be aware that the most frequent and known senses of words appear at the beginning of entries in many modern dictionaries. Second, understanding the definition of a headword becomes a burden when the words used to explain it are too sophisticated or simply incomprehensible (Neubach and Cohen 1988: 7–10). One way to counter this problem is for a dictionary to use a restricted defining vocabulary, but only some dictionaries utilize this option (and it is not without its problems, cf. Adamska-Sałaciak 2012), and when they do, they may not do so consistently. Such comprehension problems may make it hard to select the appropriate sense. Third, the metalanguage used in a monolingual dictionary may hinder effective sense selection. This includes unfamiliar symbols (Atkins 1996: 522–524), abbreviations, codes, etc., which can impede sense selection.

In general terms, language proficiency probably determines to a large degree how well a user can select senses in dictionaries. The degree of a learner's linguistic competence, however, need not correspond to one's dictionary reference skills, which is another factor influencing dictionary look-up. Hence, teaching users how to use a dictionary should be made a priority in schools and universities if meaning search is to be successful most of the time (Atkins and Varantola 1997: 36; Chi 1998: 565–566). In addition, lexicographers ought to try to eradicate problems with sense selection and dictionary use in general by designing user-friendly dictionaries adjusted to the users' needs (Tono 1988: 103, 1991: 229, 1998: 98–99; Lew and Galas 2008: 1273). One such effort aimed at achieving this goal has been the introduction of signposts and menus into dictionaries, which will be described in the following sections.

1.2. Signposts in English monolingual dictionaries

This section deals with signposts in print English monolingual dictionaries. Depending on the dictionary publisher, a range of terms have been used with reference to this device. The Longman Dictionary of Contemporary English uses *signposts*, the Cambridge International Dictionary of English (later published under the name Cambridge Advanced Learner's Dictionary) has *guide words*, the Oxford Advanced Learner's Dictionary of Current English assists users with *short cuts*, while the Encarta World English Dictionary enables faster meaning access through *quick definitions*. The noun entry *space* used with signposts and a menu in the test sheet of the main study is illustrated in Fig. 1 (signposts are defined in section 1.2.1., while menus in section 1.4.1.). Information about the specific types of signposts and menus used in particular dictionary editions is brought together in Table 1.

SPACE noun

1 area for particular purpose	6 empty land
2 between things	7 freedom
3 outside the earth	8 in writing
4 where things exist	9 in a report/book
5 time	

1 AREA FOR PARTICULAR PURPOSE [uncountable and countable] an area, especially one used for a particular purpose: *a supermarket with 700 free parking spaces storage/cupboard/shelf space We really do need more storage space. the factory's floor space* (=the size of the available floor area)

2 BETWEEN THINGS [countable] an empty place between two things, or between two parts of something [=gap] *space between the space between the house and the garage. Lucy cleared a space on her desk. There was an empty space where the flowers had been.*

3 OUTSIDE THE EARTH [uncountable] the area beyond the Earth where the stars and planets are **in/into space** *Who was the first American in space? creatures from outer space* (=far away in space) **space travel/research/programme/exploration** *the history of space travel*

4 WHERE THINGS EXIST [uncountable] all of the area in which everything exists, and in which everything has a position or direction: *the exact point in space where two lines meet. how people of other cultures think about time and space*

5 TIME a) in/within the space of something within a particular period of time: *Mandy had four children in*

the space of four years. b) a short space of time a short period of time: *They achieved a lot in a short space of time.*

6 EMPTY LAND [uncountable and countable] land, or an area of land that has not been built on: *a pleasant town centre with plenty of open space. the wide open spaces of the prairies. the loss of green space in cities*

7 FREEDOM [uncountable] the freedom to do what you want or do things on your own, especially in a relationship with someone else: *We give each other space in our marriage. She needed time and space to sort out her life.*

8 IN WRITING [countable] **a)** an empty area between written or printed words, lines etc: *Leave a space after each number. b)* the width of a typed letter of the alphabet: *The word 'the' takes up three spaces. c)* a place provided for you to write your name or other information on a document, piece of paper etc: *Please write any comments in the space provided.*

9 IN A REPORT/BOOK [uncountable] the amount of space in a newspaper, magazine, or book that is used for a particular subject: *The story got very little space in the national newspapers.*

Fig. 1. Noun entry *space* in the signpost-and-menu condition in the main study.

Table 1. Signposts and menus in particular dictionary editions.

Dictionary/edition ¹	Year of publication	Type of guiding device
LDOCE3	1995	Signposts/menus
LDOCE4	2003	Signposts
LDOCE5	2009	Signposts
CIDE	1995	Guide words ²
CALD1	2003	Guidewords
CALD2	2005	Guidewords
CALD3	2008	Guidewords
CALD4	2013	Guidewords
OALD4	1989	Short cuts ³
OALD5	1995	Short cuts
OALD6	2000	Short cuts
OALD7	2005	Short cuts
OALD8	2010	Short cuts
EWED	1999	Quick definitions
MED1	2002	Menus
MED2	2007	Menus

1.2.1. Longman Dictionary of Contemporary English

This section focuses on “signposts” in the Longman Dictionary of Contemporary English. Signposts were first implemented into the microstructure design of entries in LDOCE in 1995 (DeCesaris 2012: 533; Yamada 2013: 199). They have been defined in various ways:

- signposts are “words or short phrases that distinguish the meanings of longer entries, act as a visual index to help the user access the meaning they want as quickly as possible” (LDOCE3, xi)
- a signpost can be understood as a “word or short phrase that summarizes the sense (...) and comes after the sense number and before the definition” (Nichols 2006: 162)

¹ The specific dictionary editions have been listed in the table in the same order in which they have been described in sections 1.2.1., 1.2.2., 1.2.3., 1.2.4., 1.4.1.

² The term “guide word” was spelled as one word in CIDE, whereas in CALD it was spelled as “guide-word”.

³ Short cuts appear in OALD4 and OALD5 only for selected highly polysemous verb entries.

- “the *sign posts* and *menus* in LDOCE (...) try to lead the users as fast as possible to the part of the entry which may serve them best” (Bogaards 1998: 556)
- signposts form a “system of sense indicators given at the beginning of each sense” (Lew and Tokarek 2010: 194)
- “the idea is to provide the user with rough-and-ready clues to the range of meaning or use covered within a specific sense section of the entry, and so direct them to the most relevant sense” (Lew 2013b: 295)
- “LDOCE3 (...) adapted a strategy (...) for each separate sense, there is a short descriptor (...) designed to give the user a general idea of the way the word is divided up; these can be scanned fairly quickly, and ideally the user is drawn to the appropriate sense” (Rundell 1998: 327)

When discussing the organization of information in OALD5, CIDE, COBUILD2 and LDOCE3 entries, Scholfield succinctly characterizes LDOCE3 signposts:

This practice, found also in some bilingual dictionaries, appears to be an excellent way of helping the user reach the right sense or entry with economy of effort – i.e. without having to read complete definitions of each sense of a given wordform (...) It correctly assumes that the user’s endpoint of look-up is not (usually) a whole entry or group of homonymous entries, but a single sense, as is surely true of look-up as an adjunct to reading, translating, etc. (Scholfield 1999: 25)

In fact, the key role of signposts is to guide the user as quickly as possible to the relevant meaning of a given word (Ichikawa et al. 2005: 28). Signposts appear in highly polysemous dictionary entries at the beginning of each sense. In LDOCE3, signposted senses start on a new line. The signposts appear in boldface and capital letters before the definition, and are located in-between two “black triangles” (Bogaards 1996: 288) pointed in the direction of the signpost. It is not the signposts that are numbered but the senses: the sense numbers appearing in boldface precede the signposts. LDOCE3 signposts have been written in the dictionary’s defining vocabulary (LDOCE3, xvi), in an effort to make them comprehensive and thus maximally facilitate access to word meanings. Further, the LDOCE3 *Guide to the Dictionary* informs the user that signposts “may be a synonym, a short definition, or the typical subject or object of a verb” (LDOCE3, xvii). Urata et al. (1999: 78–79) go further with their observations by classifying LDOCE3 signposts into: “synonyms; short definitions; hypernyms; typical sub-

jects; typical objects; context, purpose”. Both typologies clearly show that heterogeneous linguistic forms of signposts have been adopted in LDOCE3.

Signposting is not the sole device in LDOCE3 that enables faster access to word meaning. Entry navigation is also facilitated through menus which appear “[i]n some of the longer entries” (LDOCE3, xvii). Béjoint (2010: 175–176) explains the process of combining signposts and menus by saying that LDOCE3 menus appear “with ‘super signposts’, the main headings (...) Each of these headed a group of meanings, and in each group the meanings were headed by their signposts”. However, it must be made clear that not all the senses belonging to specific groups of meanings have signposts, in such cases users have to read the whole sense to fully understand what it means. At any rate, the point being made is that LDOCE3 has clearly adopted an uncommon strategy to assist dictionary users through a combination of signposts and menus. The signposts that appear in entries with menus are analogous in linguistic form and design to the signposts applied in entries without menus.

Menus were no longer present in LDOCE4 (Béjoint 2010: 176) entries, with only signposts having been retained. They are largely like those in LDOCE3: signposts appear at the beginning of senses, they start on a new line, they appear in boldface and capital letters. One typographical innovation, however, is related to the fact that LDOCE4 introduced blue color, and signposts are highlighted in blue (LDOCE4, xi); the aim of this technical change was to simplify even more the process of scanning through a dictionary entry. As a result, the triangles delimiting signposts in LDOCE3 were removed as the highlighting was presumably considered to distinguish them sufficiently. Taking into account the linguistic form of these signposts, DeCesaris (2012) concluded after a close examination of fifteen random noun entries and ten adjective entries that mainly superordinates are used as LDOCE4 signposts in noun entries, whereas contextual information is used as LDOCE4 signposts in adjective entries (DeCesaris 2012: 536–538). Atkins and Rundell characterize LDOCE4 signposts in the following way: “[the signpost] is often realized by a synonym or paraphrase of the headword (...) a superordinate of the headword (...) or an indication of the domain or subject matter” (Atkins and Rundell 2008: 216). They also observe that these signposts are “more telegraphic than menu items”. Some crucial differences, however, between LDOCE3 and LDOCE4 signposts include changes in wording or even location of particular signposts within entries, and in various cases adding signposts to newly formed

senses. One such modification can be found in the verb entry *sweep*. The signpost *CROWD* under sense 3 in LDOCE3 was changed to *GROUP MOVES* in LDOCE4 (sense 4), apparently in response to a change to this specific definition: not only people but also animals can “sweep somewhere”. As already mentioned in the previous paragraph, menus were no longer included in the fourth edition of LDOCE.

The signposting system in LDOCE5 has not introduced any major changes. It may be speculated then that the choices made in the previous edition regarding the design of signposts were seen as optimal and, hopefully, dictionary users were content with the innovative and enhanced version of the sense-guiding system. Nonetheless, one conspicuously different typographical feature of LDOCE5 signposts is that the letters are printed in white small capital letters (LDOCE4 signposts were printed in black); however, they still remain highlighted in blue. A sample LDOCE5 verb entry (fragment) for *have* is shown in Fig. 2 below.

have² **ST W1** /hæv/ v [T]

1 QUALITY/FEATURE (also **have got** especially BrE) [not in progressive] used to say what someone or something looks like, what qualities or features they possess etc: *She has dark hair and brown eyes.* | *Sullivan's music does have a certain charm.* | *You need to have a lot of patience to be a teacher.* | *Wild rice has a very nutty flavour.* | *He didn't even have the courtesy to answer my letter.* | **have it in you** (=have the skill or special quality needed to do something) *You should have seen the way Dad was dancing – I didn't know he had it in him!*

REGISTER
In everyday British English, people usually say **have got something** rather than **have something**, but in writing they usually prefer to use just **have**: **He's got a degree from Bristol University.** (spoken, everyday) | **He has all the relevant qualifications.** (written)

2 INCLUDE/CONTAIN (also **have got** especially BrE) [not in progressive] to include or contain something or a particu-

Fig. 2. Sample verb entry *have* (fragment) with signposts in LDOCE5.

1.2.2. Cambridge International Dictionary of English and Cambridge Advanced Learner's Dictionary

Guide words featured in the 1995 edition of the Cambridge International Dictionary of English (DeCesaris 2012: 533; Yamada 2013: 199). The following information about this particular incarnation of signposts can be found in the dictionary:

Our first concern in writing CIDE has been clarity and simplicity, that is the clearest presentation we could devise with the minimum of the fuss and clutter that are the usual feature of dictionaries (...) a specific innovation of CIDE is that each entry is for one core meaning to which the reader is immediately directed by the **GUIDE WORD**. (CIDE, viii)

Words that have more than one meaning have guide words (CIDE, ix). In most cases, the more frequent meanings of these words appear before the less frequent meanings. The CIDE entry organization, which has implications for the signposting system, is based on the splitting of an entry into several entries (headed by the same word) centered around various core meanings. The guide words take the form of framed small capitals. They appear between the headwords and their definitions. To demonstrate the appearance of such signposts, two separate verb entries under the headword *burn* have the following guide words: **BE ON FIRE** and **DAMAGE**.

A revised edition of CIDE was published as the Cambridge Advanced Learner's Dictionary in 2003 (CALD1). Although additional guidewords (with the term now spelled as one word, unlike in the original CIDE) were added to some entries (for example, **PRODUCE LIGHT** to the verb entry *burn*), the form of presentation of CIDE guide words did not change. As a matter of fact, even the technique of dividing polysemous entries into entries with identical headwords, with each separate entry being assigned to a given guide word and its meaning, was unaltered. The same can be said of CALD2 guidewords. Major changes with respect to the signposting system were not introduced until the publishing of the dictionary's third edition in 2008.

CALD3 guidewords may cover more than one meaning and entries are now said to be ordered by the "frequency of the first meaning in each guideword group" (CALD3, XI). CALD3 guidewords are printed in boldface, small capital letters and appear in blue, with a blue circle and a white arrow in its background shown to the right of each guideword. It appears that only the most polysemous entries have guidewords which start on a new line, whereas other entries have run-on guidewords.

CALD4 guidewords resemble their counterparts from the previous edition, however, their color has been changed to red, guidewords are followed by a red-framed triangle against a white background and all entries that feature guidewords, regardless of their level of polysemy, have run-on guidewords (guidewords do not necessarily start on a new line). Both CALD3 and CALD4 signposting systems have generally abandoned the one-entry-per-sense policy. The meanings of a single lemma have been placed in one entry per part-of-speech (so-called *lempos*), which is a more mainstream strategy.

On balance, CALD guidewords are clearly evolving into a more transparent and user-friendly guiding system. When looking for a word's meaning, dictionary users can find the information they need in a single entry, while the addition of color to guidewords has made them more discernible, which in turn should support the process of entry navigation. A sample CALD4 noun entry for *absorption* is presented below in Fig. 3.

absorption /əb'zɔ:p.fən/ (US) /-'zɔ:rp-/ noun [U]
TAKING IN ▷ **1** the process of taking something into another substance: *Some poisonous gases can enter the body by absorption through the skin.* **INTEREST** ▷ **2** complete interest in something: *Her absorption in her work is so great that she thinks about nothing else.*
 → See also **self-ab'sorption** (**self-ab'sorbed**) **PAYING COSTS** ▷ **3** the situation in which a company pays the cost of something easily: *We can justify the company's absorption of higher manufacturing costs.* **TAKING CONTROL** ▷ **4** the situation in which one company takes control of another so that they become one company: *Reports confirmed the absorption of Kode's operations into DCM's offices.*

Fig. 3. Sample noun entry *absorption* with guidewords in CALD4.

1.2.3. Oxford Advanced Learner's Dictionary of Current English

Short cuts appeared for the first time in the Oxford Advanced Learner's Dictionary of Current English in the dictionary's fourth edition, which came out in 1989 (Meer and Sansome 2001: 288), however, they were used only for a handful of highly polysemous verb entries (*do, make, see, etc.*). The short cuts appeared in capital letters and were introduced with LDOCE3-like triangles pointing in the direction of the short cut. Each short cut had only one triangle, unlike LDOCE3 signposts, which had a pair of triangles

surrounding the signpost. The short cuts in OALD4 formed core meanings and other senses of the entry centered around those meanings, so that a short cut would usually serve a cluster of senses. Each short cut would begin a new paragraph, the paragraphs were separated from one another with white space. Six years after the appearance of OALD4 short cuts, OALD5 implemented the same strategy by inserting its own version of short cuts, once again only for a handful of highly polysemous entries, or “large verb entries” (*Symbols used in the dictionary*, OALD5), as stated in the front matter. This time, however, the short cuts were printed in boldface and were not capitalized. Moreover, the triangular arrows of OALD4 were replaced by centered bullets and the paragraphs headed by different short cuts were separated from each other with less spacing.

The appearance of OALD6 brought about a more systematic use of short cuts. According to the *Key to dictionary entries* in OALD6 (viii), short cuts “show the general meaning or context of each meaning” and “meanings that are closely related to each other share the same short cut” (OALD6, viii). From the typographical point of view, OALD6 short cuts do not resemble their counterparts from other dictionaries. OALD6 short cuts are printed in black capital letters and appear in half-rectangular (corner) frames, most likely to increase their visibility. The short cuts start on a new line each and are followed by sense numbers.

Further typographical developments were introduced to the signposting systems in OALD7 and OALD8. The color of short cuts was changed to blue as a result of introducing two-tone printing, they were now printed in boldface and small capital letters, and were introduced with blue triangular arrows. As far as the content of signposts is concerned, OALD6 and OALD7 short cuts were not entirely the same. Selected entries in the newer edition were equipped with additional short cuts and the wording of short cuts was changed when considered necessary by the OALD lexicographers. There were no significant modifications between the seventh and eighth edition short cuts. A sample OALD8 verb entry (fragment) for *measure* is presented in Fig. 4 below.

measure 0-^w /'meɪʒə(r)/ verb, noun
 ■ verb
 ▶ **SIZE/QUANTITY** 1 0-^w to find the size, quantity, etc. of sth in standard units: ~ sth (in sth) *A ship's speed is measured in knots.* ◊ *a device that measures the level of radiation in the atmosphere* ◊ *measuring equipment/instruments* ◊ ~ sb/sth for sth *He's gone to be measured for a new suit.* ◊ ~ how much, how long, etc... *A dipstick is used to measure how much oil is left in an engine.* 2 0-^w linking verb (not used in the progressive tenses) + noun to be a particular size, length, amount, etc: *The main bedroom measures 12ft by 15ft.* ◊ *The pond measures about 2 metres across.*
 ▶ **JUDGE** 3 0-^w ~ sth | ~ how, what, etc... to judge the importance, value or effect of sth **SYN** assess: *It is difficult to measure the success of the campaign at this stage.*

Fig. 4. Sample verb entry *measure* (fragment) with short cuts in OALD8.

To sum up the current and preceding two sections, dictionary publishers in general tend to experiment with their signposting systems on every level. The introduction of two-tone printing to dictionaries is one noticeable direction of lexicographers' efforts aimed at increasing the user-friendliness of dictionaries. Colored signposts are more visible to dictionary users, which is of immense importance, as signposts are presumably elements of an entry on which correct sense selection depends.

1.2.4. Encarta World English Dictionary

The Encarta World English Dictionary (1999), a dictionary for native speakers of English, adopted a signposting system, here called "quick definitions" (EWED, xvi). More details about these meaning access structures were provided in the dictionary's *Introduction to the First Edition*:

Our research has indicated that today's dictionary users want to find the information they are seeking quickly. In response to that need we have developed the 'quick definition' feature that is unique to this Dictionary. Quick definitions appear in small capital letters at all entries with more than one sense. They give a brief gloss of the headword for the user who does not want, or need, the full picture. They provide a thumbnail sketch rather than an analysis of the meaning. The quick definitions are also important in helping readers to navigate through the many senses of a long entry. (EWED, xii)

Just as in many other signposting systems, EWED's quick definitions were printed in boldface. They appeared at the beginning of a sense, after the sense number, however, one distinguishing characteristic is that they did not necessarily begin on a

new line. Senses in an entry were set as run on. It is possible that such an entry structure was adopted by the dictionary publisher to save more space. With regard to the linguistic form of quick definitions, they tend to be more like short definitions, thus somewhat wordier than in the competing systems.

1.3. Problematic aspects of signposting systems

The aim of introducing signposts in English monolingual learners' dictionaries was to facilitate meaning access during dictionary consultation. Dictionary users frequently struggle with long polysemous entries (Bogaards 1998: 555) and presumably either spend too much time on identifying the correct sense of a word or ignore large amounts of information in the entry. The introduction of signposts in print dictionaries has undoubtedly made dictionary look-up a much faster process, however, these guiding devices are not without imperfections. A few problems have been noted by previous authors (Akasu et al. 1996; Bogaards 1996; Herbst 1996; Rundell 1998; Scholfield 1999; Urata et al. 1999; Yamada 2010).

To begin with, one problem concerns the heterogeneity of signposts (Yamada 2010: 155) with regard to their linguistic form. Signposts have been classified (see section 1.2.1.) by different researchers into: synonyms, short definitions, paraphrases or superordinates of headwords, typical subjects, typical objects, context, etc. On the one hand, this shows that the linguistic form assigned to signposts lacks standard lexicographic consistency even within single dictionaries, which is normally unprecedented in many aspects of the process of compiling dictionaries. Such inconsistencies may well result in a decrease of correctly selected senses on account of providing dictionary users with information which is not uniformly presented. On the other hand, the issue becomes more complicated when considering Gouws's words:

According to the needs of the target users and the nature of the lemma signs, a general bilingual dictionary should employ a system with a differentiated treatment for different types of lemma signs. The lexicographer's attempts to treat each lemma sign according to its own nature may not be deterred by lexicographic conventions based on an assumption that consistency necessarily enhances an optimal retrieval of information. (Gouws 2000: 110)

In spite of directing the comment at bilingual dictionaries, Gouws's opinion may also have application in the context of monolingual dictionaries. Given the diverse nature of words and ways of defining them, lexicographers' stringent adherence to constant lexicographic principles concerning the relation of signposts to the headword (had such rules existed) could possibly contribute to more erroneously selected senses in frequent cases. Instead, perhaps a more flexible approach to formulating signposts should be adapted. Having said that, it remains uncertain whether the incongruity of signposts to a limited number of linguistic forms in dictionaries is a disadvantage. Intuition suggests that the linguistic form of signposts should depend on the valence and argument structure of the headword.

The second concern is the vagueness of signposts (Herbst 1996: 350; Rundell 1998: 327). Common and well-known words (for example, words classified as superordinates of headwords) are often used as signposts. This means that some signposts may not guide users to correct, more specific meanings due to being too general for a particular context. In order to demonstrate this phenomenon, one needs to take a closer look at the verb entry *raise* and its guide word **EXIST** from CIDE (page 1170). It seems rather counterintuitive that if a dictionary user wants to learn that "to raise funds" means "obtaining money", one needs to find this information in the entry *raise* under the guide word **EXIST**. The problem here is that there is little semantic connection between these words in this context, so such a guide word is likely to mislead the user. In such a case, it would be interesting to know how exactly CIDE guide words were selected. Akasu et al. (1996: 38) notice that there is no mention in the dictionary of what the selection criteria of CIDE guide words was.

Another contentious issue is redundancy (Yamada 2010: 156). According to Urata et al. (1999: 78), signposts can be repetitions of entry definitions. One such example can be found in the verb entry *stir* in LDOCE3 (page 1418). The sense under the signpost *MOVE SLIGHTLY* has two definitions: a) to move slightly or change your position because you are uncomfortable or just before you wake up b) to move slightly. A brief analysis of this case suggests that despite being useful navigation devices in general, signposts in specific cases may be superfluous, simply because all they do is repeat parts of those definitions using the same words. Such repetitions use up dictionary space which could have been put to better use otherwise.

Signposts do not always consist of words found in the dictionary's restricted defining vocabulary, where such restrictions are in use (Bogaards 1996: 288; Meer and Sansome 2001: 288–289). This may indeed be problematic as the role of signposts is to briefly explain or even summarize word meanings in as general terms as possible. Signposts that are not part of a dictionary's restricted defining vocabulary may cause comprehension problems and mislead, rather than guide, language learners. Research would have to be conducted to actually see what proportion of, say, LDOCE signposts or CIDE guide words go beyond their respective defining lexicons, whether these are just isolated cases or perhaps a more systematic problem.

Fifth, signposts alone are normally not enough to decipher the meaning of the word in question. A dictionary user needs to come in with some prior hypothesis about the word's meaning given the context in which the unknown word appears (Scholfield 1999: 25). The whole process of dictionary use may be more complex than it might seem at first glance. When one comes across a new word in a particular context and decides to look up the word in a dictionary with signposted entries, in order to use those signposts to one's advantage, an intuitive guess at the newly encountered word's meaning must have been made prior to dictionary consultation. In other words, signposts cannot be the only clues in discovering the meaning of a word, previously obtained contextual information is equally significant.

Dictionaries are not perfect (Abecassis 2008: 7), and so also their meaning access structures designed to facilitate meaning search and expedite dictionary look-up have their shortcomings. Notwithstanding all the problematic issues related to signposts, it must be admitted that many dictionary users need guiding devices in paper dictionaries. In spite of being critical of signposts, even Herbst (1996: 350–351) claims that dictionaries which do not have signposts are at a disadvantage. Signposts improve sense selection accuracy and reduce entry consultation time as will be shown in Chapter 2.

1.4. Menus in English monolingual dictionaries

This section elaborates on entry menus in English monolingual dictionaries. We have already seen how menus are used alongside signposts in LDOCE3 (section 1.2.1.), so LDOCE3 menus will not be covered again here. Instead, we shall focus on the one

monolingual learners' dictionary which uses menus as the main type of guiding device: the Macmillan English Dictionary for Advanced Learners in its first and second editions.

1.4.1. Macmillan English Dictionary for Advanced Learners

The Macmillan English Dictionary for Advanced Learners (both MED1 and MED2) uses the so-called entry menu, which is a summary of a polysemous entry listing its senses and preceding the main entry. Welker (2010: 213) calls this device a “list of senses”, Tono (2001: 167) goes a step further referring to “a list of senses without examples and detailed information”, making it explicit that the more exhaustive information is provided below the list. Perhaps an even more accurate way of explaining what menus are is by saying that they form a list of “numbered signposts” (Nesi and Tan 2011: 79) located “above the entry proper” (Lew 2010: 1121), designed to simplify and speed up the process of sense selection. Accordingly, the purpose of menus is to enable dictionary users to find the appropriate section of an entry, and facilitate this process as much as possible given that some entries are long and have many senses. Menus in MED appear only in headwords which are lexical words (not function words) and in those that consist of five meanings at least (Béjoint 2010: 187). They take the form of a list of senses (or signposts) of a given word that have been placed in a table, and are always positioned at the top of an entry. These senses are numbered, the numbers appearing in boldface. The menus of some entries also contain brief information following the last sense in the menu (+ PHRASES; + PHRASAL VERBS), indicating that the last sense of the entry outside the menu is followed by information about the phrases or phrasal verbs lemmatized with the headword. It appears that the insertion of information in menus regarding phrasal verbs (+ PHRASAL VERBS) has only been applied in MED2 menus, but not in MED1. Menus are printed in black against a red shading, warning dictionary users that a particular entry must be read carefully due to having five or more meanings. Yamada (2013: 200) gives the following rationale for choosing menus as the dictionary's guiding devices: “[w]ith the information all at the top of the entry, it is easier to see the full picture; Since the layout of the menus usually allows lexicographers a little more space than is available for signposts, the clues for users are a little more like-

ly to be helpful”. A sample menu of the noun entry *top* (fragment) in MED2 is illustrated below in Fig. 5.

top¹ /top/ noun ★★★

1 highest place/part	6 toy that spins
2 highest/best position	7 fruit/vegetable leaves
3 container lid/cover	8 beginning
4 piece of clothing	+ PHRASES
5 furthest part	

1 [C] [usually singular] the highest place, point, part, or surface of something: *We could see mountain tops in the distance.* ♦ **at the top of sth** *I left my purse at the top of the stairs.* ♦ **the very top** *Our cat had climbed to the very top of the tree.* ♦ **reach the top** *We reached the top of the hill and looked down.* ♦ **on top (of sth)** *He sprinkled sugar on top of the cake.* **1a.** a flat surface, especially the flat upper surface of a piece of furniture: *You need to wipe down the table tops.* → **WORKTOP**

Fig. 5. Sample noun entry *top* (fragment) with menu in MED2.

As far as the linguistic form of the individual sense cues in MED menus is concerned, according to DeCesaris (2012: 533–534) they can be grouped into either: (1) synonyms of the headword; (2) context containing specific information about the headword; (3) superordinates of the headword; or (4) subject field labels. DeCesaris’s (2012) analysis of fifteen noun entries and ten adjective entries that were randomly selected showed that the vast majority of MED2 sense cues take the form of a synonym. However, DeCesaris does make the following comment in relation to the analyzed MED2 noun entries:

MEDAL2⁴, which is the only one of these dictionaries to place the signposts in a menu introducing the entry, often uses a phrase that we have classified as a synonym in a context in which other dictionaries use an expression that we have classified as a superordinate. For example, the sense of *call* referring to a short visit, typically at someone’s home, has been classified as a synonym in MEDAL because the signpost given is *short visit* (because a *call* is a *short visit*); this same sense carries the signpost *visit* in CALD3, which is classified as a superordinate (because a *call* is a kind of *visit*). (DeCesaris 2012: 536)

Also, Atkins and Rundell make an insightful observation regarding the linguistic form of signposts in MED menus:

⁴ MEDAL2 stands here for the second edition of the Macmillan English Dictionary for Advanced Learners (MED2).

The ‘definitions’⁵ are kept as brief as is consistent with intelligibility. In many cases, they take the form of a telegraphic version of the main definition, but they can also work on the basis of contextual or collocational ‘hints’: so for example, the MED menu for *service* includes one item that simply reads ‘in tennis etc’, while the sense of the verb *pitch* that describes the movement of planes or ships is indicated by a menu item saying ‘about ship/aircraft’. (Atkins and Rundell 2008: 204)

In addition to what has been said above, Atkins and Rundell (2008: 205) suggest that lexicographers should use simple words in signposts. The idea is to avoid confusion and misinterpretation of the information found in menus. Perhaps it would be a good idea to stay within the limits of the defining vocabulary of a given dictionary. Returning to the topic of the linguistic form of MED menus, only minor changes were introduced in MED2 menus compared to the first edition. Occasionally, cues were added to entries with new senses and some were reformulated.

Conclusion

The Big Five English monolingual learners’ dictionaries have made the needs of dictionary users their priority, recognizing that users should be able to scan long dictionary entries and bring back the right meaning with as much ease and little time as possible. One reasonable approach that could satisfy language learners is equipping dictionaries with either signposts or menus, the role of which is to present much information in just a few words and hopefully guide dictionary users to the meaning they are attempting to find. It seems so far that these guiding devices have not disappointed. Research findings (see Chapter 2) reveal that signposts and menus are beneficial to users, however, still more study is needed if these results are to be generalized to the larger population.

As demonstrated in the present chapter, monolingual dictionaries for learners of English have facilitated entry navigation through the use of signposts (LDOCE) (also called “guide words” (CIDE and CALD) and “short cuts” (OALD)), or an alternative system of menus (MED). Dictionary publishing houses have tried to make these access structures as helpful and effective as possible over the years mainly by improving their typographical features, for example, through the introduction of color. The addition of color to signposts presumably makes them more salient, although experiments need to

⁵ By ‘definitions’ the authors mean the sense cues in MED menus.

be conducted to confirm this expectation as typography-related studies in the field of lexicography are few and far between, let alone in dictionary use. Luna's contribution (2004) on the visual aspects of dictionaries continues to be a rare case. It will, indeed, be fascinating to see what other ideas connected to the improvement of the typographical features of signposts lexicographers will come up with in the near future.

It has been shown in Chapter 1 that the functioning of signposts may not be problem-free, especially if their linguistic form is considered. Signposts lack a uniform relationship to the headword, some of them appearing as synonyms or paraphrases of headwords, others being superordinates of entry words, etc. Other inconveniences include their vagueness and redundancy. Excessively general words are sometimes used for signposts and in various cases including them in entries to aid navigation is superfluous, as they simply repeat the information from the definition, using up space that instead could have been used for useful lexicographic information. In general, lexicographers would do well to concentrate their efforts on choosing the best signposts, otherwise confusion of users becomes a likely scenario.

LDOCE3 is the only English monolingual learners' dictionary among those analyzed in this chapter which offers guidance to users through a combination of signposts and menus in single entries. So far signposts and menus have been studied only separately, perhaps one of the reasons being that the combined system was only offered in one dictionary, for a very limited number of headwords, and it was subsequently abandoned in the following editions. One of the main goals of this thesis is to test the effectiveness of menu-and-signposts combined entries and compare it with signposts alone, and bare entries. It is hoped that the data gathered from this study will provide an answer as to whether equipping single entries in print dictionaries with both signposts and menus is beneficial to the user, and if so, in what types of entries.

To reiterate, Chapter 1 has introduced the reader to the types of signposting systems in various editions of MED, LDOCE, CIDE (and CALD), OALD and EWED. Also, problematic issues connected to signposts were discussed. Chapter 2 will focus on the empirical studies on guiding devices in dictionaries for learners of English.

Chapter 2: Review of empirical studies on guiding devices in English learners' dictionaries

Introduction

Chapter 2⁶ provides a detailed account of the empirical studies on sense navigation devices in dictionaries for learners of English. Section 2.1. focuses on the usefulness of signposts. LDOCE3 signposts and CIDE guide words are covered in Tono's study (1997); Bogaards (1998) compares meaning access structures of LDOCE3, OALD5, COBUILD2 and CIDE; and Lew and Pajkowska (2007) test LDOCE4 signposts. Section 2.2. deals with the effectiveness of menus. First, Tono's results (1992) are presented; and second, Lew and Tokarek's observations (2010) on entry menus in electronic bilingual dictionaries are described in detail. Section 2.3. compares signposting and menu systems in three studies: Lew (2010), Tono (2011) and Nesi and Tan (2011). Chapter 2 ends with a brief discussion of the topics covered and research questions that will be tried to be answered in Chapter 4 and Chapter 5.

To serve as a reference to the following sections, Table 2 briefly summarizes the empirical studies on signposting and menu systems in chronological order (by year of publication). The table provides information about: the authors of the studies, type of guiding devices tested in the studies, whether a monolingual or bilingual interface was employed in the study and the dictionary entries from which the lexicographic data were taken.

⁶ Significant parts of Chapter 2 have been published as *Entry-internal navigation in dictionaries: A review of the literature* (Ptasznik 2013).

Table 2. Empirical studies on signposting and menu systems.

Study	Type of guiding device(s) ⁷	Monolingual vs bilingual	Dictionary entries
Tono (1992)	Menus	Unspecified	Unspecified
Tono (1997)	Signposts	Monolingual	LDOCE3 and CIDE
Bogaards (1998)	Signposts	Monolingual	LDOCE3, OALD5, COBUILD2 and CIDE
Lew and Pajkowska (2007)	Signposts	Monolingual	LDOCE4
Lew and Tokarek (2010)	Menus	Bilingual	PWNO
Lew (2010)	Signposts and menus	Monolingual	OALD7
Tono (2011)	Signposts and menus	Monolingual and bilingual	LDOCE5 and MEDO
Nesi and Tan (2011)	Signposts and menus	Monolingual	MED2

2.1. A review of empirical studies on signposting systems

This section summarizes the empirical studies that deal with the effectiveness of signposts. The research findings of Tono (1997), Bogaards (1998) and Lew and Pajkowska (2007) are described.

2.1.1. Tono (1997)

The primary aim of Tono's research (1997) was to compare the efficacy of LDOCE3 signposts and CIDE guide words, and perhaps see what changes could be introduced in the design of these devices. The experiment consisted of two parts: (1) an example search test; and (2) a word association test. The first test was formed out of fifty example sentences selected from two dictionaries (half of the sentences were taken from LDOCE3, half from CIDE). The participants were instructed to carefully read the example sentences, try to make out the meaning and search for the same sentences as quickly as possible within respective LDOCE3 and CIDE entries. Five different conditions were implemented in the example search test:

⁷ The term "signpost" is used here as a general term, it may apply to different incarnations of signposts used in other dictionaries, for example, CIDE guide words, OALD short cuts, etc.

- Condition A: LDOCE3 and CIDE entries with no meaning access devices
- Condition B: CIDE entries with guide words, LDOCE3 entries without signposts
- Condition C: LDOCE3 entries with signposts, CIDE entries without guide words
- Condition D: LDOCE3 entries with signposts and CIDE entries with guide words, entries were short
- Condition E: LDOCE3 entries with signposts and CIDE entries with guide words, entries were long

The eleven graduate students (attending Tokyo Gakugei University) who took part in the test were timed on their performance.

In the word association test, the subjects were provided with keywords. Their task was to try to associate as many words as possible with the words given and draw up a list by writing down their ideas on a piece of paper. The aim of this test was to compare the participants' answers with the actual words that form LDOCE3 signposts and CIDE guide words and to see what kind of words in sense navigation devices it is more appropriate to use. Forty-six undergraduate students attending Tokyo Gakugei University contributed to the results of the word association test.

Tono (1997) reports a few findings. First, it appears that dictionary consultation is a faster process when users are assisted with LDOCE3 signposts rather than CIDE guide words. Second, no differences were observed with respect to the two dictionaries in condition A (see above). However, the same cannot be said of conditions B, C and D, where dictionary look-up performance was best for LDOCE3. These two results suggest that LDOCE3 signposts might be a more effective supporting device than CIDE guide words both in terms of sense selection accuracy and entry consultation time. Third, a closer analysis of condition E shows that the subjects needed more time to complete the tasks while working on longer entries when having LDOCE3 signposts at their disposal. Tono attempts to explain this phenomenon by contending that users may find it too challenging to benefit from LDOCE3 signposts in longer entries as LDOCE3 signposts can be easily confused with other types of information in entries, such as collocations. To rephrase the findings above, the data indicate that LDOCE3 signposts are more user-friendly sense navigation devices than CIDE guide words with respect to selecting the correct senses and the time needed for consultation, however, this may not necessarily be the case with longer entries, and more evidence is needed to fully support such a conclusion. In addition, the word association test confirmed the superiority of LDOCE3

signposts. Most of the words that the participants associated with the given keywords were more similar to those used in LDOCE3 signposts. Tono concludes that CIDE guide words are considered to be vague and abstract and hence the conviction that LDOCE3 signposts contain more semantically meaningful and accurate information.

2.1.2. Bogaards (1998)

Bogaards carried out an experiment (1998: 555–559) with a view to discovering how high-proficiency learners of English scan longer entries. Fifty-four Dutch pre-university students (aged between 16 and 17) with a seven-year English learning experience were recruited for the study. Each participant was asked to complete twenty tasks. All tasks had an identical design: one English sentence with an underlined target item, a sentence in Dutch (being the Dutch equivalent of the English sentence) with a blank line corresponding to the underlined target item of the English sentence, and a dictionary entry situated below the English and Dutch sentences more or less in the middle of the page. Less known target senses of the target items were selected for the study. The subjects were instructed to follow a few steps while going about the tasks. They had to remember to write down the time before starting to do each task, read the English and Dutch sentences carefully, consult the meaning of the underlined target word in the entry and underline the information needed for comprehending the target word's meaning, record the time again, give their answer by translating the target word into Dutch in the space provided (Dutch translations were marked as either “correct”, “nearly correct”, or “incorrect”) and finally proceed to the next task. Overall, there were four test versions. Five of the target items out of the twenty in each test had their dictionary entries copied from a specific dictionary, either LDOCE3, OALD5, COBUILD2 or CIDE. The assignment of particular dictionaries to target items was rotated across different versions. The values of *place* and *length* were controlled, with “[p]lace (...) defined as the number of lines between the beginning of a dictionary entry up to the line where the beginning of the relevant information could be found. Length (...) defined as the total number of lines in the entry” (Bogaards 1998: 559). At the end of the test, the subjects answered questions probing their familiarity with specific dictionaries, their individual dictionary preferences, etc.

One finding from this study was that “semantic guiding principles seem superior to access structures without clear guiding principles, and also better, but to a lesser degree, than access structures which are based on grammar” (Bogaards 1998: 561). In light of this information, this is why LDOCE3 and CIDE signposting systems were more beneficial to the subjects with regard to the time needed for consultation and retrieval of pertinent information from dictionary entries. OALD5, which has the most obscure guiding principles out of the dictionaries tested, gave the least satisfactory results; while COBUILD2, which assists users with grammar-based access structures, fell behind LDOCE3 and CIDE, but ahead of OALD5. Significantly, these findings were substantiated by what the participants had thought of the dictionaries. Roughly half of the subjects were of the opinion that CIDE had the most to offer, while only one student praised OALD5. Compellingly, OALD5 fared worse than its competition (taking into consideration only the entries used in the study), despite having the least text to browse through. Bogaards (1998: 561) also concluded from his research that “[d]ictionary users like to take shortcuts and make use of search strategies which take them as fast as possible to the information they need”, which implies that users are willing to ignore an excess of information in entries, especially when they do not need it and would like to hastily bring back the meaning they are searching for.

2.1.3. Lew and Pajkowska (2007)

This study (Lew and Pajkowska 2007) was aimed at testing the usefulness of LDOCE4 signposts. The following independent variables were selected: presence or absence of guiding device (signposts), entry length and proficiency level of dictionary users. The duration of the look-up, translation accuracy and sense selection accuracy were the dependent variables. Four hypotheses were tested. According to Hypothesis 1, the presence of signposts in dictionary entries leads to the shortening of the dictionary look-up process. Hypothesis 2 anticipated that both translation accuracy and sense selection accuracy increase when users are assisted with signposts. Hypothesis 3 stated that signposts are more beneficial to dictionary users in longer entries, while Hypothesis 4 predicted that low-proficiency students of English would gain more assistance from signposts than the high-proficiency students. Fifty-one male and female high school

students (twenty pre-intermediate, thirty-one intermediate) aged between 16 and 19 took part in the study. There were ten items in each test, or ten tasks to be completed. Each task had two sentences: one in English, followed by a Polish translation of the English sentence. The target item in the English sentence was always underlined. Each Polish sentence had a gap which corresponded to the underlined target item in the English sentence. Dictionary entries were positioned below the English sentences and their Polish equivalents. The subjects had to read both sentences, locate the target item and carefully read the dictionary entry in search of the meaning that would allow them to come up with a Polish translation of the target item. The participants were also told to underline the relevant information in the entry that was used for translation. All tasks were timed. As for the selection criteria of study materials, the target items were chosen from a high-frequency vocabulary list because finding the relevant information in an entry needed for translation was the most important part of the whole procedure for the researchers. As a result, the participants were expected to focus primarily on the content of dictionary entries and not the translations. Second, Lew and Pajkowska wanted the subjects to read the whole entries and so less common and unfamiliar target senses were used in the study. Furthermore, both short and long entries appeared in the tests. 50% of the items in a single test had short entries (4 senses at most), and the remaining 50% had long entries (10 senses at most). Approximately half of the subjects worked with signpost-equipped entries, while the others worked with a test version with bare entries.

The study found that the subjects managed to save some time during dictionary look-up in the signpost condition. It took the students on average 14.4% less time to complete the tasks when being assisted with signposts. Although the difference did not reach statistical significance, the effect size was considerable. In addition, it was observed that signposts did not provide more help to the low-proficiency students than the high-proficiency students. It appears that the degree of usefulness of signposts was no different for students who excel in English and students who represent a lower linguistic level. Notably, the performance of subjects working with signposts was just about the same when being exposed to either shorter or longer entries. However, Lew and Pajkowska did find it likely that low-proficiency students benefited more from using signposts in shorter entries, whereas high-proficiency students' performance was enhanced by these devices in longer entries. Pessimistically, the data suggest that it is dubious whether signposts improved both translation accuracy and sense selection accura-

cy. Unusually, the pre-intermediate group of students achieved better scores than the intermediate group with respect to sense selection accuracy. In spite of some discouraging results, Lew and Pajkowska stress the importance of the need to continue research on the merits of signposts.

2.2. A review of empirical studies on menu systems

The present section focuses on the utility of menus from the user perspective. It elaborates on the methods and conclusions drawn from the studies of Tono (1992) and Lew and Tokarek (2010).

2.2.1. Tono (1992)

Tono, who was one of the pioneers of dictionary use research, conducted an empirical study (1992) on menus. The aim of the experiment was to see whether this particular sense navigation device had any effect on the dictionary look-up process. The presence or absence of the guiding device (menus) and the level of dictionary reference skills of the users were selected as independent variables, while “the ease with which the users found the appropriate information in the dictionary” (Tono 1992: 241) was measured. Fifty-seven Keio University law students and 182 Setagaya Junior High School students took part in the experiment (Tono 1992: 241–244). The college students formed the higher-level English proficiency group, whereas the Japanese high school students were assigned to the lower-level English proficiency group. Every single participant was asked to complete a 15-minute test, which consisted of nine tasks. Each task was formed out of an English sentence containing an artificial word in italics, for example:

If you say something like that, I’m sure he will be *stup* about it.

All of the sentences were identical in each and every test. The students had to find the meaning of the italicized pseudo-words in the mini-dictionaries (some of which were equipped with menus, others were not) that had been distributed in the class by their

teachers, and select the target senses of the unknown words appearing in specific context. The subjects were not made aware of the artificial words employed in the study and the two experimental conditions with and without menus. Additionally, the participants were asked to translate the English sentences into their native language (Japanese), however, the students' translations were eventually not assessed in any way.

The main finding of Tono's study (1992: 244–246) was that the lower-level menu group outperformed the lower-level non-menu group and the difference between the two groups achieved statistical significance. By contrast, among the higher-level students no significant difference was found between the subjects working with and without menus. On balance, the data suggest that menus are useful devices that influence dictionary look-up positively; however, this only applies to lower-level students and menus are simply not helpful to higher-level students. Menus make it possible for lower-level students to improve their performance in dictionary use tasks, they make up for the students' poor skills allowing them to achieve results comparable to the higher-level students. Regarding these findings, Tono recommends including menus in the design of dictionaries for beginners. Other conclusions connected not so much to menus as dictionary use were also reached: students with a higher level of English proficiency have dictionary reference skills whose level exceeds the level of the weaker students, the junior high school participants found it more problematic to differentiate between transitive and intransitive verbs than the college students, and finally the subjects in the study had a habit of relying on meaning rather than grammatical information during dictionary consultation.

2.2.2. Lew and Tokarek (2010)

The study by Lew and Tokarek (2010: 193–197) was the first to investigate the effectiveness of entry menus as guiding devices in electronic bilingual dictionaries. An experimental electronic dictionary interface was designed with three experimental conditions: (1) no menu condition; (2) menu condition; (3) menu + highlighting condition. Polish headwords were listed in alphabetical order on the left side of the screen. Clicking on one of the headwords led to the display of the entry in one of the three mentioned conditions, which were randomly assigned. In Condition 1, the whole entry was pre-

sented without the assistance of menus. Condition 2 appeared with entry menus containing various senses of a given headword. By clicking on one of the senses, the complete entry was presented and the user was automatically taken to the specific sense that had been selected. Condition 3 was identical to Condition 2 with one exception: the senses selected by the users were highlighted. Ninety Polish-speaking students representing a pre-intermediate and intermediate level of English participated in the study. The subjects were asked to complete twenty translation tasks from Polish into English. Each task had one sentence in Polish and one in English. The English sentences contained gaps which corresponded to the target items in the Polish sentences. The students were told to consult the bilingual dictionary entries from the electronic interface that they had been provided with and translate the lexical items. Ten of the headwords in the study were nouns, nine were verbs and there was one adjective. They were all used in less known meanings in the Polish and English sentences. The entries had between four and twelve senses: the shorter entries having between four and six senses, while the longer entries between seven and twelve. All the subjects were timed on their dictionary look-up and translation activity.

Lew and Tokarek (2010: 198–201) found that menus equipped with highlighted senses significantly reduced consultation time as opposed to bare menus and entries without menus. Taking the English proficiency level into account, the intermediate students spent less time on dictionary look-up than the pre-intermediate students in the menu + highlighting and no menu conditions. No difference was detected between both groups of subjects with respect to access time in the menu condition, which implies that menus without highlighting might confuse the higher-level students but at the same time speed up access for lower-level students. Predictably, scanning through longer entries prolonged the consultation process across all three dictionary versions. Another conspicuous advantage of menus with highlighting is that they increased translation accuracy figures at both proficiency levels. Further, the higher-level subjects outperformed the lower-level subjects in translation tasks without menus, however, working with the help of menus alone narrowed the gap between the two groups. To summarize, there is every indication to suggest that menus with highlighting contribute substantially to higher translation accuracy and faster entry consultation time.

2.3. A review of empirical studies of the contrasts between signposting and menu systems

The current section reviews the studies comparing signposting and menu systems in dictionaries. Three studies are discussed: Lew (2010), Tono (2011) and Nesi and Tan (2011).

2.3.1. Lew (2010)

Lew (2010: 1121–1123) designed his study in the hope of determining which sense cue system functions more effectively in monolingual dictionaries: signposts or menus. Ninety subjects participated in the study. The Polish high school students aged between 16 and 19 were grouped into two different English proficiency levels: Low and High. The former comprised sixty-three participants classified as level A2 by the Common European Framework of Reference for Languages standards, whereas the latter consisted of twenty-seven B1-level students. Each test had six sheets with the following lexical items: *advance*, *blow*, *clash*, *draw*, *fine*, *lead*. On each sheet the subjects were provided with instructions, one sentence in English and one sentence in Polish, and a dictionary entry for the target item. The sentence in Polish was a partial translation of the English sentence. The Polish sentence had a gap which corresponded to the target lexical item in the English sentence. The students were asked to come up with a Polish translation of the item in question after scanning through the entry. Further, they were asked to underline the information in the entry required for completing the translation exercise, which made it possible for the experimenter to see exactly which sense they had selected. The lexical items were used in a particular context in their less known senses. The lexicographic data were taken from OALD7 entries, which are equipped with sense navigation devices called “short cuts”, a particular incarnation of signposts. Forty-four participants of Lew’s study completed their tasks with OALD7 entries that were left intact (signpost version), while the remaining forty-six participants worked with menus supplied above the entries, but without the short cuts (menu version). The sense cues used in the menus were collated from original OALD7 short cuts and their linguistic form was not modified. The subjects were put into pairs. One student would take the test, while the other

was asked to time his or her partner with a stopwatch. Once the test was completed, the students switched places in each pair.

No statistically significant difference was recorded between the short cut and menu versions with respect to sense access time (Lew 2010: 1123–1127). Somewhat unexpectedly, the high-proficiency students needed on average 11% more time for consultation than the low-proficiency students, although statistical significance was not reached. As far as sense selection accuracy is concerned, Lew noted a tendency for short cuts to outperform menus and inferred from the data that the high-proficiency group scored higher in sense selection tasks than the low-proficiency group. Statistical significance was achieved for translation accuracy rates in favor of the short cut system, which suggests that signposts serve a more facilitative function than menus in translation, and a significant difference was found with regard to language proficiency level implying that the higher-proficiency students were better at translation exercises than the lower-proficiency students. Lew attempts to explain the advantage that signposts hold over menus. In his opinion, it is highly beneficial to users that signposts are located next to their respective senses unlike the sense cues in menus. Such positioning of signposts allows students to consult both the senses and the signposts at almost the same time and go back to one or the other as many times as deemed necessary without much effort. This may be crucial for retrieval of relevant information from an entry. In addition, “even if the correct sense is identified in the Menu itself, the user may become lost when moving from the Menu item to the sense. This danger appears to be less likely with the cues being placed next to the full treatment at a given sense” (Lew 2010: 1126). Finally, Lew emphasizes that the form, formatting and typographical features of sense cues are equally essential as their positioning within entries and more attention must be given to these topics by dictionary-makers.

2.3.2. Tono (2011)

This study used eye-tracking technology to investigate the dictionary look-up processes. The data were collected from five female and three male subjects studying at the Tokyo University of Foreign Studies, whose English language abilities were assessed as B2 to C1 (HIGH group, four subjects) and A2 (LOW group, four subjects) by the Common

European Framework of Reference for Languages standards. Four independent variables were controlled by the experimenter: (1) monolingual vs bilingual interface; (2) entry-initial vs entry-final target sense positioning in entries; (3) type of guiding device (menus vs signposts); and (4) type of information (grammar patterns, definitions, etc.). The subjects' proficiency levels and task look-up success or failure were the moderator variables, while scan paths and cumulative fixations areas extracted from the eye mark recorder data served as the dependent variables. The tasks were presented on a PC screen. In a task, the subjects were provided with a sentence containing the target word highlighted in red. The participants were asked to find the meaning of the target word used in a specific context with the help of the dictionary entry located underneath the sentence and its target word. Entries were created for MAKE and FAST for the purpose of the study. The lexicographic data were taken from LDOCE5 (for MAKE) and MEDO (for FAST). The entries MAKE and FAST were redesigned as necessary in line with the measured variables in the study, which means that the information presented to the subjects was manipulated by the researcher.

One of Tono's findings was that retrieval of relevant information from dictionary consultation was not always successful. Nevertheless, scanning dictionary entries still led to the acquisition of extensive lexical and grammatical knowledge. Regarding entry navigation supporting devices, it was only higher-level students that consulted signposts when browsing through entries. A possible explanation for the lower-level students' lack of interest in these meaning access structures might be that less experienced students were simply unaware of what their purpose was. The fact that signposts tend to be misleading is an equally important finding. They may be worded inadequately and at times are too abstract, which confuses dictionary users and consequently leads to bringing back the wrong information. This observation implies that dictionary entry designers ought to turn their attention to the linguistic form of signposts and possibly deduce from their research what kind of improvements could be introduced. Furthermore, the study confirmed Tono's earlier finding (1992) that mainly the less proficient students benefited from menus during their search for the meaning of words. The eye-tracking data (2011) revealed that menus were frequently ignored by proficient students. In addition, the scan path and cumulative fixation point analysis showed that neither a monolingual nor bilingual dictionary interface affected task look-up success or failure but rather the level of complexity of lexical information in an entry. Nevertheless, tak-

ing into account the positioning of target senses within entries, the data indicated that there was a higher probability of retrieving relevant information located at the beginning of an entry when accessing a bilingual dictionary interface than a monolingual one. There was no such advantage of the bilingual interface over the monolingual interface when pertinent information was located either at the end, or in other parts of the entry. In general, the monolingual interface was less helpful to dictionary users. Finally, the vast majority of the subjects omitted the grammar codes in entries. This tendency suggests that the transparency of grammar coding systems is an urgent issue, but also that grammatical information may be perceived by dictionary users as unnecessary, or they simply lack the dictionary reference skills required for utilizing this type of information.

In another eye-tracking study, Lew et al. (2013) reported findings with some implication for sense guidance in general. The study was conducted with ten Polish students, five intermediate and five advanced, who were asked to provide Polish translations of target English items appearing in a sentence context, based on bilingual dictionary entries presented on screen (lexicographic content was adapted from two modern comprehensive Polish dictionaries, NKFD and PWNO). In effect, this was a sense selection task; the senses chosen being determined after a thorough analysis of the recorded gaze patterns was combined with the selected Polish equivalent, which was spoken by the participants and recorded. One conclusion relevant to sense navigation devices is that these access structures serve a crucial role in bilingual dictionary look-up as the subjects in the study focused their attention on sense-guiding elements for roughly 25% of consultation time. Also, Lew et al. (2013) demonstrated that students of both lower and higher English proficiency levels accessed sense navigation devices to almost the same degree, which is a finding different from Tono's (2011).

2.3.3. Nesi and Tan (2011)

The main objective of the study (Nesi and Tan 2011: 79–84) was to examine and contrast signposting and menu systems in terms of entry consultation time and sense selection accuracy. Nesi and Tan collected data from 124 Malaysian university students through online testing. Eighteen target items (nine nouns, five adjectives, four verbs) were used in the study and the lexicographic content was adapted from MED2. All

items had five senses, each of the senses from one to five being the target sense at least three times. The tests were formed out of eighteen English sentences containing the target lexical item, which was underlined. The subjects' task was to read the sentences, notice the target items within the context used, grasp their meaning by scanning the dictionary entries provided and select the appropriate sense of the word's meaning. In general, three versions of dictionary entries were designed: (1) with signposts; (2) with menus; and (3) without any sense-guiding elements. All participants were exposed to the same items and all three conditions. Three different test versions were used altogether, as the assignment of the three experimental conditions to items was rotated by three orders. The subjects' performance was also measured with respect to their level of English language competence, defined by their Malaysian University Entrance Test scores. The time spent on entry consultation was recorded for each item. One item was excluded from the data due to being used as an example during the instructional period.

The authors report that the subjects who had access to signposts in the study achieved higher scores in sense selection than those who worked with menus, or no sense-guiding devices at all (Nesi and Tan 2011: 81–91). Clearly, users benefit more from sense cues located next to respective definitions than those placed in entry-initial menus at the top of the entry. There was no statistically significant difference in terms of consultation time between senses equipped with signposts and menus. As for proficiency level, the higher-level students were more successful at sense selection tasks, and the lower-level students performed poorly especially in the absence of any supporting devices. One interesting finding concerned the location of target senses within dictionary entries. It was no surprise that a large number of subjects managed to correctly identify target senses occupying entry-initial positions. However, Nesi and Tan also found that the subjects performed even better with regard to entry consultation time and sense selection accuracy in entry-final senses. By contrast, they encountered much difficulty when deciphering the meaning of senses positioned in the middle. An attempt at interpreting this finding was made by crediting it to the so-called “bathtub effect” (Aitchison 1987: 119, as quoted in; Nesi and Tan 2011: 89), according to which, for example, it is easier to remember the early or final parts of a word than what is in the middle. By the same token, dictionary users might prefer scanning senses placed at the beginning or end of entries, which contain more transparent information, and in the process facilitate learning to a much higher degree than when analyzing senses situated in-between the

two most accessible positions. As a matter of fact, it may be argued that the students with higher mastery of English intentionally skipped the initial senses of well-known headwords as they were aware that normally the most common and frequently used senses appear early on in entries; hence, the data we get on entry-final senses. Further, Nesi and Tan reported that it is not so much the part of speech of entries as the sense position or relation of sense cues to the headword that result in either a positive or negative task look-up outcome. Also, they make the following comment concerning the linguistic form of sense-guiding devices:

The wording of the signposts doubtless affects speed and accuracy of consultation, but some meanings are clearly far easier than others for lexicographers to signpost and define, and for dictionary users to understand. More research is needed to discover the best ways to signpost meanings, especially those which are more abstract, and are not associated with specific contexts or collocation sets. (Nesi and Tan 2011: 90)

Last but not least, Nesi and Tan found that the length of entries did not influence sense selection accuracy. However, shorter entries did speed up dictionary consultation.

2.4. Discussion

Finding the meaning of a word in a dictionary may not always be a simple task. Dictionary users are often confronted with various problems while scanning entries and they do not manage to correctly identify senses on each occasion. For that reason, dictionary publishers have introduced sense navigation devices to assist in sense selection and reduce the time required for entry consultation. Not many empirical studies on the usefulness of sense-guiding elements in entry consultation have been conducted so far, however, in general the findings suggest a supportive function of signposts and menus. In spite of this conclusion, it is still debatable whether sense navigation devices are equally beneficial to both the more and less proficient students of English. From one perspective, menus considerably facilitate meaning access of lower-level students but not of higher-level students (Tono 1992). Tono confirms this view in his eye-tracking study (2011) and additionally infers from the data that mainly more advanced students use signposts but at the same time disregard menus, while the less advanced students do not access signposts as they may be unaware of what their purpose is. On the other

hand, Lew et al. (2013) observed that students who represent both a higher and lower level of English proficiency focused their attention on sense-guiding elements to practically the same extent. Surely, more research is needed. Nevertheless, given the experience and level of mastery of English of advanced students, it would seem strange that they completely ignore menus, as they must be aware that such devices might contain relevant information necessary for task completion. As for less advanced students, it seems likely that they at least have the ability to intuitively or partially understand what the function of signposts is. A lower proficiency in English need not mean that such students are not effective dictionary users.

As far as the positioning of sense cues within entries is concerned, existing studies suggest that signposts have an advantage over menus. Lew (2010) reported a tendency that students performed better with short cuts than with menus and statistical significance was reached between the two devices with respect to translation accuracy in favor of the short cut system. Similarly, the subjects from Nesi and Tan's study (2011) scored higher with signposts than with menus in sense selection tasks. However, there was no significant difference in both studies between signposts and menus with regard to access time. Nonetheless, it seems reasonable that menus are at a disadvantage. In this context, Lew's (2010) rationale is compelling: it is likely more convenient for dictionary users to have sense cues located next to their respective senses. In this way, it is easier to consult meanings with their signposts, or not confuse signposts with the wrong senses. The chances are that after identifying a specific sense cue in the menu above the entry, dictionary users could get lost when slowly shifting their attention to the text underneath the menu. Signposts limit such risks to the minimum. On the other hand, menus provide a single "mental map" of the entry, and might be expected to do better in drawing the users' attention to those senses embedded deep in the entry which otherwise run the risk of being ignored. The existing empirical evidence so far, however, does not seem to bear out this expectation.

The finding (Nesi and Tan 2011) that sense selection accuracy and entry consultation time may be higher with target senses located in entry-initial and entry-final positions is another topic which requires some attention. It sounds plausible that retrieving information from senses placed in the middle of entries is more difficult than when the meaning one is searching for is situated at the beginning or maybe also at the end of an entry, the reasons being that: (1) dictionary users tend to primarily analyze initial senses

of entries and skip the senses that follow (Tono 1984); and (2) the bathtub effect may increase the salience and visibility of entry-initial and entry-final senses. Furthermore, it could be true that advanced language learners scan entries in a different manner than less skilled students. Higher-proficiency learners might have found out through experience that well-known senses of words tend to appear at the beginning of entries, and so for them meaning search begins with the entry-final senses, and perhaps even at times initial senses are ignored. This hypothesis would still need to be tested, though.

Despite being helpful navigation devices, signposts can sometimes be too abstract, or general. This drawback may mislead users during dictionary look-up and as a result entry consultation may fail in such cases. Focusing on the linguistic form of signposts (Nesi and Tan 2011; Tono 2011) should be made a priority by lexicographers when designing dictionary entries. If users are to bring back the right meaning from dictionaries, more attention should be given to the wording of signposts. Lew (2010) adds to this discussion by contending that the formatting and typography of sense cues is an equally important issue.

Finally, researchers in dictionary use have started to use gaze tracking techniques (Simonsen 2009, 2011; Kaneta 2011; Tono 2011; Lew et al. 2013). This approach (for more information on eye-tracking, or eye movement research, see: Rayner (1998, 2009); Ewing (2005); Penzo (2005); Duchowski (2007); Pernice and Nielsen (2009); Tobii (2010)) allows them to record the test persons' eye movements and analyze what the subjects looked at with high precision. By and large, eye-tracking must be considered extremely useful because researchers can infer, at least partially, which visual information humans focus on and perhaps even how the brain functions (Leigh and Zee 1999: 3; Pernice and Nielsen 2009: 5). But eye-tracking is not without its drawbacks. It is still expensive and creates a highly artificial setting (Ross 2009). Only time will show to what extent researchers will resort to eye-tracking in dictionary use.

Considering everything said with regard to entry navigation research in dictionary use, still a few questions remain unanswered. Does combining signposts with menus in single entries increase sense selection accuracy and reduce entry consultation time in comparison with entries equipped with one guiding device (either signposts or menus)? How does entry length and part of speech affect sense selection accuracy and entry consultation time under specific experimental conditions (with signposts and menus, with

bare signposts, without any guiding devices)? By what factors is the process of selecting senses influenced? These are some of the questions that will be raised in the study.

Conclusion

The primary aim of Chapter 2 has been to acquaint the reader with the main empirical studies that have been conducted on the effectiveness of signposts and menus in dictionaries. Common sense suggests that signposts and menus make the process of scanning entries less complicated for dictionary users and decrease the amount of time needed for consultation. These assumptions, however, need to be tested experimentally. Chapter 3 provides a general overview of the aims of the study and research questions posed, whereas Chapter 4 and Chapter 5 attempt to find answers to those research questions.

Learners of English (as we are dealing here primarily with English monolingual learners' dictionaries) consult dictionaries when having problems understanding various words, for example, when reading books or doing homework for English classes. These dictionary users wish to find the meaning of the word they are looking for quickly and without any confusion. This is why dictionary publishers have tried to make dictionaries as user-friendly as possible by equipping them with devices which they hope allow users to scan longer entries with greater facility. Since the introduction of signposts in CIDE and LDOCE3 in 1995, lexicographers have wondered how effective signposts actually are. Common sense suggests that there must be benefits, nevertheless, such claims need empirical evidence. And this is what the first and second research questions attempt to examine. Do signposts increase sense selection accuracy (research question 1) and reduce entry consultation time (research question 2) during dictionary look-up? In general, it has been shown so far by Bogaards (1998), Lew (2010) and Nesi and Tan (2011) that signposting systems are beneficial to dictionary users and that having to consult entries without access to these devices might be both time-consuming and ineffective. In fact, signposts have been designed to assist language learners by speeding up entry consultation and contributing to successful meaning search.

Second, it is a rare practice to combine signposts and menus within single entries in print dictionaries. So far the mainstream approach by dictionary publishers and edi-

tors has been to equip entries with either signposts or menus. A departure from this trend, however, has been the use of both signposts and menus in LDOCE3 for key words, a practice which was discontinued with the next edition. It is intriguing why lexicographers have not chosen to combine signposts and menus more frequently. For that reason, the study will attempt to find the answer to that question by measuring the effectiveness of single-entry combined signposts and menus with respect to sense selection accuracy (research question 3) and entry consultation time (research question 4), and comparing this condition with signposts alone and bare entries. Notably, this will be the first empirical study focusing on a combination of signposts and menus in single entries.

Third, it seems evident that dictionary users struggle with finding the right sense in longer entries. The more senses a given word has, the harder it becomes to choose the appropriate one and the more effort is put into the activity. The study also attempts to explore this aspect of dictionary use. The questions to be asked are: does entry length have any effect on sense selection accuracy and entry consultation time? Put differently, is it easier to select senses in shorter entries? Does entry navigation take more time when dealing with longer entries? What effect does the length of entries have on sense selection accuracy (research question 5) and entry consultation time (research question 6) when different guiding devices are used? The current evidence indicates that with access to guiding devices entry length does not influence sense selection accuracy (Lew and Pajkowska 2007; Nesi and Tan 2011), but plays a major role with respect to entry consultation time (Lew and Tokarek 2010; Nesi and Tan 2011).

Not much attention in the literature has been given to how word class influences sense selection accuracy and entry consultation time. Nesi and Tan noticed in their study (2011) that the subjects encountered most difficulty when consulting adjective and verb entries, however, Nesi and Tan were quick to point out that the study was not designed to measure the effect of part of speech on the subjects' performance. In the vast majority of cases, researchers have focused on determining which guiding device (signposts or menus) is more helpful to dictionary users and whether entry length is a meaningful factor when scanning entries. However, not much has been said about the word class of headwords in this context. Is it easier to navigate noun or verb entries? Does it take more time to process headwords which are nouns or verbs? Or to be even more precise: how does part of speech affect sense selection accuracy (research question 7) and entry consultation time (research question 8) in the following experimental con-

ditions: entries with signposts and menus, entries with signposts, entries without signposts or menus? These types of questions remain to be asked, and not only in regard to nouns and verbs, but also adjectives (although this study will not deal with adjectives).

Fifth, selecting the senses that one needs for understanding a given word encountered in a text is in itself a fascinating phenomenon. Why do we make the choices that we do? For what reasons do we neglect the analysis of certain parts of entries? Which type of lexicographic information do we consider most useful? Do dictionary users actually use guiding devices? What factors affect the process of selecting senses in dictionary consultation and how do these factors influence this process? What conclusions can be drawn from the process of sense selection (research question 9)? These are just a handful of questions that may be asked with regard to sense selection. Given however that other research tools are employed in this study, more down-to-earth ways of gaining such information are used. The senses selected by the participants of the study will be closely analyzed for each test item. Most attention will be paid to the two most frequently selected senses in an entry, or senses with a similar accuracy of sense selection, with the intention of understanding precisely what it was that made the subjects select those senses, what confused them, etc. After the analyses of selected items (more interesting cases), general conclusions connected to common patterns of sense selection will be drawn.

Finally, I will also report on other findings from the study (research question 10).

Chapter 3 will introduce the details of the study designed to address the research questions outlined above.

Chapter 3: The study

Introduction

Chapter 3 is concerned with the aims of the study, research questions and method of research applied: research design, subjects, materials, procedure, test items and data analysis.

3.1. Aims of the study

One study aim is to examine the role of signposts in print dictionary entry-internal navigation. Signposts have become an innovation in a handful of paper dictionaries and are considered to be useful devices that facilitate the process of meaning search in an entry. Some work has already been done on GUIDING DEVICES⁸ and for the most part the findings indicate that it is indeed beneficial for dictionary entries to be equipped with signposts. In all likelihood, signposts reduce ENTRY CONSULTATION TIME and presumably enhance SENSE SELECTION ACCURACY.

Second, an attempt will be made to measure the effectiveness of combining signposts and menus within the same entry. Such a combination of both GUIDING DEVICES has not yet been adopted by lexicographers (beyond a handful of entries in LDOCE3) but there is a likelihood that such a combination might contribute positively to SENSE SELECTION ACCURACY or ENTRY CONSULTATION TIME. A combination of sign-

⁸ The variables used in the study (ENTRY CONSULTATION TIME, SENSE SELECTION ACCURACY, ENTRY LENGTH, PART OF SPEECH and GUIDING DEVICE) are distinguished in the text with small capital letters in Chapter 3, Chapter 4 and Table 14 in Chapter 5.

posts and menus in an entry will be compared against entries with signposts alone, and bare entries with no sense navigation devices.

The third aim is to investigate how ENTRY LENGTH may influence dictionary consultation in general, and under specific experimental conditions: (1) signposts with menus; (2) signposts; (3) entries without signposts or menus. Intuition suggests that the longer the entry, the more time is required for dictionary look-up and the harder it becomes to correctly select target senses.

Fourth, the study endeavors to determine if the PART OF SPEECH of a target item has any effect on SENSE SELECTION ACCURACY and ENTRY CONSULTATION TIME.

The fifth aim is to observe and analyze some general dictionary patterns of user behavior in relation to target sense selection. Researchers are still searching for the answer as to what factors compel language learners to bring back the wrong meaning from dictionaries. Two of the factors at play may be time constraints and lack of motivation, but this has been more of a guess than a research finding. On that account, an effort is made to see what particular aspects of dictionary entries may hamper the process of sense selection.

Finally, I will also discuss other related issues and report on a few remaining and less significant findings of the study.

3.2. Research questions

An attempt will be made to answer the following research questions:

- (1) Do signposts increase SENSE SELECTION ACCURACY during dictionary look-up?
- (2) Do signposts reduce ENTRY CONSULTATION TIME during dictionary look-up?
- (3) Does a combination of signposts and menus increase SENSE SELECTION ACCURACY, and how does it fare against signposts alone or entries without GUIDING DEVICES?
- (4) Does a combination of signposts and menus reduce ENTRY CONSULTATION TIME, and how does it fare against signposts alone or entries without GUIDING DEVICES?
- (5) Does ENTRY LENGTH affect SENSE SELECTION ACCURACY, and how does ENTRY LENGTH affect SENSE SELECTION ACCURACY in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?

- (6) Does ENTRY LENGTH affect ENTRY CONSULTATION TIME, and how does ENTRY LENGTH affect ENTRY CONSULTATION TIME in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?
- (7) Does PART OF SPEECH affect SENSE SELECTION ACCURACY, and how does PART OF SPEECH affect SENSE SELECTION ACCURACY in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?
- (8) Does PART OF SPEECH affect ENTRY CONSULTATION TIME, and how does PART OF SPEECH affect ENTRY CONSULTATION TIME in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?
- (9) What conclusions can be drawn from the process of sense selection?
- (10) What other inferences can be made?

3.3. Method

This section focuses on the research method adopted for the purposes of the study. It has been divided into the following sections: research design, subjects, materials, procedure, test items and data analysis.

3.3.1. Research design

By and large, a factorial design (Hatch and Farhady 1982: 28–30) was selected for the experiment. Three independent variables were chosen to achieve the aims of the study: GUIDING DEVICE, ENTRY LENGTH and PART OF SPEECH. As regards GUIDING DEVICE, the dictionary entries appeared in three conditions: (1) signposts combined with menus; (2) signposts alone; and (3) control without any GUIDING DEVICES. In terms of length, the entries consisted of either five, seven or nine senses, the three values being equally distributed. Finally, with respect to PART OF SPEECH, nouns constituted 50% of the entries while verbs the other half. A repeated measures design (Mackey and Gass 2005: 150–

151) was used in the study. Every single subject was exposed to the same target items which were nested in ENTRY LENGTH and PART OF SPEECH, as each given entry comprised of the same number of senses and constituted the same word class regardless of GUIDING DEVICE. However, the choice of GUIDING DEVICE for specific items varied depending on the test version. ENTRY CONSULTATION TIME and SENSE SELECTION ACCURACY were the two dependent variables measured in the study. Both these measures were recorded separately for every subject and test item.

The whole experiment consisted of two pilot testing phases and the main study (see Table 3 below).

Table 3. Pilot tests and main study.

Type of test	Part	No. of groups	No. of subjects	Subject level	No. of lexical items
Pilot test 1	1	1	10	intermediate	36
Pilot test 2	2	1	10	intermediate	12
Main study	3	8	108	intermediate	36

The pilot tests were conducted for several reasons:

- to determine whether the study is feasible (Teijlingen and Hundley 2001: 2)
- to select those items for the main study that would be neither too difficult nor too easy for the subjects
- to discard the more problematic items (with a too low or too high SENSE SELECTION ACCURACY) and replace them with more suitable items
- if necessary, to introduce changes (Blaxter et al. 2006: 137) to the design or even content of the study
- to ensure that the procedure works well
- to see whether the subjects have enough time for the tasks
- to gather some general feedback from the subjects about the study
- to practice data collection methods and data analysis

On the whole, forty-eight different lexical items were used in both pilot studies and the main study: *slip, gauge, crash, sweep, cap, plug, snap, tie, pitch, clear, mark, cast, seat, screw, push, patch, draw, line, bar, tack, raise, range, space, claim, bond, scrap, lift, force, root, fix, charge, section, pit, burn, strike, crack, shoot, float, pile, pop, jam, load, roll, lock, scale, lash, unit, carry*. The items were selected from a frequency list produced at the University of Leeds by researchers from the Centre for Translation

Studies (<http://corpus.leeds.ac.uk/frqc/reuters.num>). The only exception were items *gauge*, *plug*, *screw*, *tack*, *jam*, and *lash*, which were selected from the online version of the Longman Dictionary of Contemporary English (LDOCEO).

Item selection played a crucial role in the design of the study. Several important criteria were taken into consideration. First of all, only entries containing at least five signposted entries in LDOCEO could be selected, the reason for this being that the shortest headwords in the study consisted of five senses. *Gauge* was an exception to the rule and had one signpost added (*JUDGMENT*) to its internal entry structure, and two signposts were formed for the entry *root* (*SETTLE* and *DEVELOP*) in the senses lacking such access structures. Second, items needed to have at least one less common sense. This particular meaning of the item in question would later be used in a less familiar context for intermediate students so as not to make the task too simple. Moreover, entries with at least two very similar senses were selected, the aim of which was to once again challenge the participants of the study and avoid very obvious choices. Finally, items with target senses positioned in the middle of entries were preferred to the entry-initial or entry-final ones, as research (see Chapter 2 for more information) suggests that students tend to opt for senses located at the beginning or end of an entry often ignoring the remaining information.

In light of the first piloting phase and main study consisting of thirty-six items, a balanced distribution of items nested within ENTRY LENGTH and PART OF SPEECH was planned from the outset through a division of the items into the following sets:

- Set 1: six nouns with five senses
- Set 2: six verbs with five senses
- Set 3: six nouns with seven senses
- Set 4: six verbs with seven senses
- Set 5: six nouns with nine senses
- Set 6: six verbs with nine senses

Due to a different number of lexical items (12) appearing in the second piloting phase, an analogous design was adopted, only differing in the total number of items within particular categories but retaining the proportions:

- Set 1: two nouns with five senses
- Set 2: two verbs with five senses
- Set 3: two nouns with seven senses

- Set 4: two verbs with seven senses
- Set 5: two nouns with nine senses
- Set 6: two verbs with nine senses

Each single task item had a cue sentence in English (which provided the subjects with some context), underlined target word in the cue sentence and dictionary entry of the target word underneath the cue sentence. The lexicographic data used in the dictionary entries came from the free online version of LDOCE⁹ (<http://www.ldoceonline.com>). When necessary, the lexicographic content was manipulated. For instance, additional signposts for dictionary entries were formed (*gauge, root*) and example sentences from entries were replaced with sentences from different dictionaries (*burn, cast, clear*). The cue sentences, on the other hand, were chiefly found in LDOCEO, MEDO, MWALED, OALDO, ODEO (online English monolingual dictionaries), and occasionally LDOCE2 and OW (paper dictionaries). Sporadically, the author of this thesis constructed cue sentences of his own.

3.3.2. Subjects

In total, 128 students of English from five different Polish high schools in Olsztyn, Iława and Nowe Miasto Lubawskie participated in all three parts of the experiment. The subjects were females and males aged between 16 and 19. Their native language was Polish, while English was the language they had been learning since elementary school. According to the students' teachers, the participants had been enrolled in intermediate-level English classes in their respective schools, thus it would also be possible to classify them under level B1 by the Common European Framework of Reference for Languages standards. The pilot testing phases were carried out on two groups from Iława formed out of ten subjects each. Data from 108 participants from eight different groups (Olsztyn, Iława, Nowe Miasto Lubawskie) were collected for the main study.

⁹ This dictionary will be referred to throughout as LDOCEO.

3.3.3. Procedure

The following thirty-six lexical items were selected for the first pilot testing phase: *slip, gauge, crash, sweep, cap, plug, snap, tie, pitch, clear, mark, cast, seat, screw, push, patch, draw, line, bar, tack, raise, range, space, claim, bond, scrap, lift, force, root, fix, roll, lock, scale, lash, unit, carry*. Every single subject received a copy of the same test, which was formed out of the thirty-six items mentioned above, each item appearing on one sheet. In each test, the items were distributed evenly across all three conditions, which meant that 1/3 of the entries had signposts, twelve entries were equipped with combinations of signposts and menus, and the remaining entries were devoid of any GUIDING DEVICES. Rotation of experimental conditions to items was assigned. However, it was not possible in the end to have every single item evenly represented under every condition across the three versions considering the number of participants in this study.

Before taking the test, the subjects were instructed by the experimenter (this author) about how to proceed step by step. The briefing sessions lasted twelve minutes. The participants were told to:

1. read the cue sentence in English;
2. take note of the target word in the cue sentence and its surrounding context;
3. search for information in the dictionary entry below for the meaning of the task item in the given context;
4. write down in the space provided on the test sheet the number of the target sense in the entry that contains the meaning of the item in question, and record the time needed for task completion;
5. proceed to the next task item.

The subjects were asked to measure their own time by using the stopwatch function of their cellular phones. The participants were allowed 90 minutes for the whole sessions during the first pilot testing phase and main study. Twelve minutes of that time was reserved for the instructional periods. The second pilot test lasted 45 minutes and once again at the beginning the students were informed for twelve minutes about the procedures. The subjects were not allowed to ask any questions once the test had begun.

The completion of the first pilot study resulted in some modifications. It was decided that nineteen items (*slip, crash, cap, plug, snap, pitch, seat, screw, push, patch,*

draw, bar, tack, raise, space, claim, scrap, lift, force) with a 30–70% SENSE SELECTION ACCURACY would remain unchanged for the main study, the cue sentences of eleven items (*root, range, fix, mark, clear, cast, bond, gauge, sweep, tie, line*) with a generally too low or too high SENSE SELECTION ACCURACY would be modified, and six items would be discarded (*roll, lock, scale, lash, unit, carry*). Several criteria were taken into account when deciding whether an item would remain intact, be modified in some way or be removed from the main study:

- SENSE SELECTION ACCURACY of task item;
- level of difficulty of task item;
- level of complexity of task item;
- a more or less balanced distribution of items nested within ENTRY LENGTH and PART OF SPEECH had to be preserved.

In brief, the preliminary findings from pilot test 1 suggested a superiority of signposts over a combination of signposts and menus, and entries without sense navigation devices. A decision was made to continue with the procedure.

The modification and removal of items in the first pilot testing phase led to a decrease in the total number of items in the study to thirty. The aim of the second pilot testing phase was to supply six more items. The following twelve lexical items were selected for the second pilot study: *charge, section, pit, burn, strike, crack, shoot, float, pile, pop, jam, load*. Ten subjects representing an intermediate level of English were recruited. Every participant was exposed to the same item. Unlike at the previous pilot testing phase, the subjects worked on items which only appeared in the signpost condition on account of having already obtained satisfactory data from pilot test 1, and the need to only test and find six more suitable items for further analysis. A wide dispersion of results was observed with respect to SENSE SELECTION ACCURACY for particular items: *charge* (70%); *pit* (40%); *strike* (60%); *burn* (70%); *crack* (80%); *section* (50%); *shoot* (60%); *float* (10%); *pile* (70%); *load* (30%); *pop* (80%); *jam* (80%). Items nested within the same categories of ENTRY LENGTH and PART OF SPEECH were paired and those with a SENSE SELECTION ACCURACY closer to 50% were selected for the main study (*pit, strike, section, shoot, pile, pop*), while the rest were discarded (*charge, burn, crack, float, load, jam*).

As a result of this selection procedure, the thirty-six lexical items used in the main study were: *slip, gauge, crash, sweep, cap, plug, snap, tie, pitch, clear, mark, cast,*

seat, screw, push, patch, draw, line, bar, tack, raise, range, space, claim, bond, scrap, lift, force, root, fix, pit, strike, section, shoot, pile, pop. These items were presented to 108 subjects with an intermediate command of English. The main study replicated the procedure for the first piloting phase in many regards:

- same number of items (36);
- all the subjects who took part in the main study (108) were exposed to the same items;
- in each test the items were distributed evenly across all three conditions (twelve items per condition);
- experimental conditions were rotated with respect to items; in this way, the number of responses for SENSE SELECTION ACCURACY and ENTRY CONSULTATION TIME for every single item appearing in each of the three conditions was the same throughout the whole study;
- same amount of time for task completion.

In contrast, the items and cue sentences used in the main study were not in all cases the same. As noted above, modifications to the task items were introduced and new items were added to the main study after the second pilot testing phase. Furthermore, in order to avoid any undesirable item order effects on the outcome of the study, three item orders were generated using an online random integer generator (<http://www.random.org/integer-sets/>). This means that altogether nine different test versions were used in the main study because the assignment of three experimental conditions to items was rotated by three orders. The assignment of items to conditions and rotation of these items by three orders is presented below in Table 4.

Table 4. Assignment of items to conditions and rotation of items by three orders.

order 3	order 2	order 1	Item ¹⁰	v1 ¹¹	v2	v3	POS	Senses	Target
24	13	1	slip	c	s	ms	verb	9	7
22	29	2	gauge	ms	c	s	noun	5	2
9	26	3	crash	ms	c	s	verb	7	3
11	36	4	sweep	s	ms	c	verb	9	3
32	31	5	cap	s	ms	c	verb	5	2
15	28	6	plug	c	s	ms	noun	7	5
35	16	7	strike	ms	c	s	verb	9	6
13	6	8	snap	s	ms	c	verb	7	3

¹⁰ The item *fix* is not included in the table as it was discarded from the main study due to low SENSE SELECTION ACCURACY.

¹¹ Test version, PART OF SPEECH, signpost condition, signposts + menus condition, control condition are abbreviated in the table to: v, POS, s, ms, c, respectively.

order 3	order 2	order 1	Item ¹⁰	v1 ¹¹	v2	v3	POS	Senses	Target
26	21	9	tie	ms	c	s	noun	7	6
10	25	10	pitch	s	ms	c	noun	7	4
25	15	11	clear	c	s	ms	verb	7	4
16	9	12	mark	c	s	ms	verb	7	5
29	18	13	cast	s	ms	c	verb	7	4
2	23	14	seat	s	ms	c	noun	5	2
6	14	15	shoot	ms	c	s	verb	7	2
17	33	16	screw	ms	c	s	verb	5	2
33	20	18	push	c	s	ms	verb	5	4
28	32	19	pop	c	s	ms	verb	5	1
36	22	20	patch	s	ms	c	noun	5	1
18	30	21	draw	c	s	ms	verb	9	2
5	24	22	line	s	ms	c	noun	9	5
27	34	23	bar	ms	c	s	noun	7	2
14	17	24	pit	s	ms	c	noun	9	6
20	19	25	pile	c	s	ms	noun	5	2
12	3	26	tack	c	s	ms	noun	7	1
1	8	27	raise	ms	c	s	verb	9	6
8	1	28	range	ms	c	s	noun	9	1
4	10	29	space	c	s	ms	noun	9	4
21	5	30	claim	s	ms	c	verb	5	3
30	11	31	bond	ms	c	s	noun	5	1
7	7	32	scrap	c	s	ms	noun	5	1
23	4	33	lift	s	ms	c	verb	9	5
19	12	34	force	c	s	ms	noun	9	8
34	2	35	section	s	ms	c	noun	7	4
3	27	36	root	ms	c	s	noun	9	8

The results from the first pilot study for the nineteen unchanged items were added to the data in the main study, which meant that altogether responses for target SENSE SELECTION ACCURACY and ENTRY CONSULTATION TIME from 118 intermediate English students would be counted in the final phase of the experiment. Notwithstanding being included in the last stage of the whole study, the item *fix* was removed from the main study's data analysis on the grounds of its unacceptably low SENSE SELECTION ACCURACY.

3.3.4. Test items

Moving on to the items used in the study, they were selected on the basis of some general criteria (see section 3.3.1.). A more specific description of item selection with respect to all forty-eight items is given below, as well as the chief processes of forming

and altering task entries throughout the whole experiment (pilot study 1, pilot study 2, main study):

- *slip*: the item (verb) had eleven signposted senses in LDOCEO and nine of these senses were selected for the study. The cue sentence (*The director never lets the tension slip.*) that was selected for the task item was taken from OALDO. The sense under the signpost *GET WORSE* was considered to be a less familiar one and was chosen as the target sense for pilot study 1. The sense under the signpost *CHANGE CONDITION* was close enough to the target sense to be potentially confusable. The first eight signposted senses and the tenth signposted sense from LDOCEO were used for the task item. The sense under the signpost *TIME* was selected as the ninth sense because of being a more confusable sense than any other remaining senses. The item remained unchanged for the main study.
- *crash*: the item (verb) had eight signposted senses in LDOCEO and seven of these senses were selected. The cue sentence (*The cymbals crashed and the trumpets blew.*) that was used for the task item was taken from MWALED. The sense under the signpost *LOUD NOISE*, obviously a less known sense, was chosen as the target sense for pilot study 1. The sense under the signpost *HIT SOMEBODY/SOMETHING HARD* was similar to the target sense. The first six signposted senses from LDOCEO were used for the task item. The sense under the signpost *PARTY* was chosen as the final sense in the entry because of being a more confusable sense than any other remaining senses. The target sense was located more or less in the middle of the entry (sense 3), which made the task more challenging. The item remained unchanged for the main study.
- *cap*: the item (verb) had five signposted senses in LDOCEO (all five were used). The cue sentence (*If the teams don't cap player salaries, the league won't survive.*) that was used for the task item was taken from MWALED. The sense under the signpost *LIMIT* was chosen as the target sense for pilot study 1. The target sense was listed as sense 2 in the entry. No irregularities connected to item design were observed after pilot test 1, and so the item was left unchanged for the main study.
- *plug*: the item (noun) had seven signposted senses in LDOCEO (all seven were used). The cue sentence (*Somewhere in the pipes there is a plug of ice blocking the flow.*) that was used for the task item was taken from ODEO. The sense under the signpost *TO FILL A HOLE* was chosen as the target sense for pilot study 1. The ex-

ample *a plug of tobacco* in the sense under the signpost *A PIECE OF SOMETHING* made the sense a potentially confusable one. The target sense was located in the middle of the entry (sense 5). The item remained unchanged for the main study as no problems were detected in the first pilot testing phase.

- *snap*: the item (verb) had seven signposted senses in LDOCEO (all seven were used). The cue sentence (*He snapped a reply.*) that was used in pilot test 1 was taken from OALDO. The sense under the signpost *SAY SOMETHING ANGRILY* was picked as the target sense, while the confusable sense in the task was the sense under the signpost *BECOME ANGRY/ANXIOUS ETC.* The target sense did not occupy an entry-initial or entry-final position within the entry and was located in the middle (sense 3). The item was left unchanged for the final phase of the experiment.
- *pitch*: the item (noun) had nine senses in LDOCEO (all were signposted) and seven signposted senses were selected from the original entry (the first five and last two senses from LDOCEO). The cue sentence (*What did you think of the candidate's campaign pitch?*) that was used for the task item was only partially constructed by the author of this paper as the idea was taken from OALDO. The sense under the signpost *PERSUADING* was selected as the target sense, which was a sense considered to be less known to the subjects. The sense under the signpost *STRONG FEELINGS/ACTIVITY* was the confusable sense in the task. The target sense was located in the middle of the entry (sense 4). No changes were introduced to the item after the completion of pilot test 1.
- *seat*: the item (noun) had five signposted senses in LDOCEO. All the signposted senses in the task item were used for pilot study 1 and the other senses were ignored. The cue sentence (*The majority of seats on the board will be held by business representatives.*) that was used for the task item was taken from OALDO. A less common sense of *seat* was made the target sense (sense under the signpost *OFFICIAL POSITION*), while the sense under the signpost *PLACE TO SIT* played the role of the confusable sense. The target sense (sense 2) followed the entry-initial sense. The item design was appropriate and no modifications were introduced with respect to the item after the first pilot testing phase.
- *screw*: the item (verb) had five signposted senses in LDOCEO. All the signposted senses were included in the pilot study 1 dictionary entry, while the other senses were left out. The cue sentence (*The light bulb screws right in.*) that was selected for

the task item was taken from MWALED. The sense under the signpost *CLOSE BY TURNING* was chosen to be the target sense, while the sense under the signpost *ATTACH* was the sense that was similar to the target sense. The target sense occupied the second position in the entry. No changes to the item were made for the main study.

- *push*: the item (verb) had ten signposted senses in LDOCEO. The first five senses of *push* from LDOCEO were used in pilot study 1. The cue sentence (*His parents are pushing him to study medicine.*) that was used for the task item was taken from LDOCE2. The sense under the signpost *ENCOURGAE* was the target sense, which is a less known meaning of *push*, and the sense under the signpost *PERSUADE* was the confusable sense. The target sense occupied the penultimate sense position in the entry. The item remained unchanged for the main study.
- *patch*: the item (noun) had six signposted senses in LDOCEO. The first five senses of *patch* from LDOCEO were used for the task item. The cue sentence (*There is a damp patch on the ceiling.*) that was used for the task item was taken from OW. The sense under the signpost *PART OF AN AREA* was the target sense and first sense of the entry. The item was not changed in any way for the main study.
- *draw*: the item (verb) had seventeen signposted senses in LDOCEO (nine were selected). The cue sentence (*Her screams drew passers-by to the scene.*) that was used for the task item was taken from OALDO. The sense under the signpost *ATTRACT* was the target sense and it was listed as sense 2 in the entry in pilot study 1, and it was potentially confusable with the sense under the signpost *GET A REACTION*. The item was not modified for the main study after the first pilot testing phase.
- *bar*: the item (noun) had nine signposted senses in LDOCEO (the first five, the seventh and ninth signposted senses were selected for pilot study 1). The cue sentence (*We sat at the restaurant's bar while we were waiting for a table.*) that was used for the task item was taken from MWALED. The sense under the signpost *PLACE TO BUY DRINK* was chosen to be the target sense, while the sense under the signpost *PLACE TO DRINK IN* was the confusable sense, which was located beside the target sense in the entry. The target sense was listed as the second sense in the entry. No problems connected to item design were detected after the completion of pilot test 1 and consequently no changes were introduced to the item for the main study.

- *tack*: the item (noun) had seven signposted senses in LDOCEO (all seven were used). The cue sentence (*The tacks held the remaining rags of carpet to the floor.*) that was used for the task item was taken from ODEO. The sense under the signpost *NAIL* was the target sense, while the sense under the signpost *PIN* was the confusable sense, which was located next to the target sense. The target sense occupied the first position in the entry. No item design problems were detected after pilot study 1 and therefore no modifications were introduced for the final phase of the experiment.
- *raise*: the item (verb) had sixteen signposted senses in LDOCEO (the first six, the eleventh, thirteenth and sixteenth signposted senses were selected). The cue sentence (*The laws were passed without raising much opposition.*) that was used for the task item was taken from MWALED. The sense under the signpost *CAUSE A REACTION* was selected as the target sense (less known meaning of the verb *raise*), while the sense under the signpost *COLLECT PEOPLE* was the confusable sense. Both the target sense and the confusable sense were located next to each other in the entry, the target sense occupying the sixth position in the entry. The item remained unchanged for the main study.
- *space*: the item (noun) had ten signposted senses in LDOCEO (the last nine in the LDOCEO entry were used). The cue sentence (*Scientists have a poor knowledge about the movement of sound waves through space.*) that was used for the task item was partially constructed by the author of this paper, but the idea was taken from MWALED. The sense under the signpost *WHERE THINGS EXIST* was chosen as the target sense, while the sense under the signpost *OUTSIDE THE EARTH* was the sense that was similar to the target sense. Both the target sense and the similar sense were located next to each other, the target sense occupying the fourth position in the entry. The item was left unchanged for the main study after pilot study 1.
- *claim*: the item (verb) had five signposted senses in LDOCEO (all five were used). The cue sentence (*No heirs came forward to claim the inheritance.*) that was used for the task item was taken from MWALED. The sense under the signpost *LEGAL RIGHT* was the confusable sense (*claim* used in a less known meaning). The target sense was located in the middle of the entry (third sense). The item remained unchanged for the main study after pilot study 1.

- *scrap*: the item (noun) had five signposted senses in LDOCEO (all five were used). The cue sentence (*All that is left of the blanket is a scrap or two.*) that was used for the task item was taken from MWALD. The sense under the signpost *PAPER CLOTH* was the target sense, while the sense under the signpost *OLD OBJECTS* was the confusable sense. Both the target sense and the confusable sense were located next to each other in the entry, the target sense occupying an entry-initial position. No changes were introduced with respect to item design after pilot study 1.
- *lift*: the item (verb) had eleven signposted senses in LDOCEO (the last nine were selected). The cue sentence (*The plot of the movie was lifted from real life.*) that was used for the task item was taken from MWALD. The sense under the signpost *USE SOMEBODY'S IDEAS/WORDS* was selected as the target sense (a less common meaning of *lift*), while the sense under the signpost *STEAL* was the confusable sense. Both these senses were located next to each other in the entry, the target sense occupying the fifth position in the entry. The item was left intact for the main study after the completion of pilot study 1.
- *force*: the item (noun) had ten signposted senses in LDOCEO. The first eight signposted senses were used and the sense under the signpost *POLICE*, which was a more similar sense to the target sense than the remaining signposted sense. The cue sentence (*We have convinced people by the force of our argument.*) that was used for the task item was taken from MEDO. The sense under the signpost *POWERFUL EFFECT* was the target sense (listed as sense 8 in the entry), while the sense under the signpost *STRONG INFLUENCE* was the confusable sense, which was located next to the target sense. After pilot study 1, it was decided that there would be no modifications connected to item design.
- *root*: the item (noun) had seven signposted senses and four senses without signposting in LDOCEO. All seven signposted senses were used in pilot study 1 and two additional signposts for two senses without signposts were created for the entry (signpost *SETTLE* for sense 5 in the entry and signpost *DEVELOP* for sense 7 in the entry). The cue sentence (*What are the historical roots of the region's problems?*) that was used for the task item was taken from MEDO. The sense under the signpost *ORIGIN/MAIN PART* was selected as the target sense of the entry, while the sense under the signpost *CAUSE OF A PROBLEM* was the confusable sense. Both the target sense and the confusable sense were located next to one another in the entry,

the target sense being listed as third in the entry. After pilot study 1, the target sense was found to be too similar to the confusable sense. A new cue sentence (taken from MWALED) was introduced to the main study (*“Butler” and “bottle” come from the same Latin root.*). The sense under the signpost *LANGUAGE* was the new target sense (a less known meaning of *root*), while the sense under the signpost *ORIGIN/MAIN PART* was the new confusable sense. The new target sense was sense 8 of the entry.

- *range*: the item (noun) had ten signposted senses in LDOCEO (the first nine were used in pilot study 1). The cue sentence (*The technical vocabulary is a little outside my range.*) that was used for the task item was taken from MWALED. The sense under the signpost *ABILITY* was selected as the target sense (a less known meaning of *range*), while the sense under the signpost *LIMITS* was the confusable sense. The target sense was listed as sense 8 in the entry. After pilot study 1, due to low SENSE SELECTION ACCURACY of *range*, the cue sentence was changed (*The new products are available in a range of colors.*) for the main study. The new cue sentence was only partially constructed by the author of this paper but the main idea was taken from MWALED. The sense under the signpost *VARIETY OF THINGS/PEOPLE* was the new target sense, which was the first sense of the entry, while the sense under the signpost *PRODUCTS* was the sense that was similar to the new target sense.
- *fix*: the item (verb) had eleven signposted senses in LDOCEO (five were selected). The cue sentence (*My lawyer fixed it so I wouldn't have to go to court.*) that was used for the task item was taken from MWALED. The sense under the signpost *ARRANGE* was the target sense (a less known meaning of *fix*), while the sense under the signpost *RESULT* was the confusable sense. The target sense was the third sense in the entry. In spite of having low SENSE SELECTION ACCURACY after the first pilot testing phase, the item was left for the main study with a changed cue sentence (*It is safer to write a letter of appeal rather than get a parking ticket fixed.*). The new cue sentence was constructed by the author of this paper but the idea was taken from MWALED. The new target sense was the sense under the signpost *RESULT*, while the sense under the signpost *LIMIT* was the confusable sense. The target sense was now the fourth sense in the entry.
- *mark*: the item (verb) had nine signposted senses in LDOCEO (the last seven were used). The cue sentence (*This tournament marks the official start of the season.*) that

was used for the task item was taken from MEDO. The sense under the signpost *SHOW A CHANGE* was selected as the target sense, which occupied the fourth position in the entry. The cue sentence was changed after pilot study 1 (due to low SENSE SELECTION ACCURACY figures) to a different sentence (*Public gatherings were generally marked by restraint and control.*) and this new cue sentence was taken from MEDO. The sense under the signpost *QUALITY/FEATURE* was the new target sense (fifth position in the entry).

- *clear*: the item (verb) had eleven signposted senses in LDOCEO (the first four, the sixth, seventh and eighth signposted senses in the LDOCEO entry were selected). The cue sentence (*The plane was cleared for landing.*) that was used for the task item was taken from MWALED (a less known meaning of *clear* was used). An example sentence (*The plane took off as soon as it was cleared.*) in one of the entry's senses (sense under the signpost *PERMISSION*) was removed from that sense (in order to make this task item more challenging as the example sentence was in many regards similar to the cue sentence) and replaced with a sentence from MWALED (*We cleared customs.*). The sense under the signpost *PERMISSION* was the target sense (fourth sense in the entry), while the sense under the signpost *GO OVER/PAST* was the confusable sense. The item was also used in the main study, however, with a different cue sentence (*His appointment had been cleared by the board.*) which was taken from OALDO, high SENSE SELECTION ACCURACY for *clear* in pilot study 1 being the reason for the modification. The target sense remained the same.
- *cast*: the item (verb) had nine signposted senses in LDOCEO (out of the first eight signposted senses all were used except for the third one). The cue sentence that was used for the task item (*Clarke's trying to cast me in the role of villain here.*) was taken from an example sentence of the entry *cast* in LDOCEO from the sense under the signpost *DESCRIBE*. An example sentence (*The press were quick to cast her in the role of "the other woman".*) from OALDO was inserted in the place of the removed example sentence without changing the context. The sense under the signpost *DESCRIBE* was the target sense (less known meaning of *cast*), while the sense under the signpost *ACTING* was the sense that was similar to the target sense. Both the target sense and the similar sense were located next to each other in the entry, the target sense being the fourth sense in the entry. After pilot study 1 (low SENSE

SELECTION ACCURACY of *cast*), the cue sentence was replaced with a sentence (*The press were quick to cast her in the role of “the other woman”.*) from OALDO, or in other words the present example sentence in the entry under the signpost *DESCRIBE* that had been previously inserted there. After this modification, the sentence that was initially the cue sentence for this entry (*Clarke’s trying to cast me in the role of villain here.*) in pilot study 1 was now used as an example sentence in the sense under the signpost *DESCRIBE*. The target sense and the similar sense were not changed, the sense under the signpost *DESCRIBE* being the target sense and the sense under the signpost *ACTING* the similar sense.

- *bond*: the item (noun) had five signposted senses in LDOCEO (all five were used). The cue sentence (*We entered into a solemn bond.*) that was used for the task item was taken from OALDO. The sense under the signpost *WRITTEN AGREEMENT* was selected as the target sense (less known meaning of *bond*), while the sense under the signpost *RELATIONSHIP* was the confusable sense. The target sense occupied the entry-final position. After pilot study 1 (low SENSE SELECTION ACCURACY for *bond*), a new cue sentence (from MWALED) was used (*The city issued bonds to pay for the new school.*). The sense under the signpost *MONEY* was the new target sense, while the sense under the signpost *WRITTEN AGREEMENT* was now the confusable sense. The new target sense occupied the entry-initial position in the entry.
- *gauge*: the item (noun) had five senses in LDOCEO and only four of these senses were signposted (the signpost *JUDGMENT* was created for the sense without a signpost). The cue sentence (*Tomorrow’s game against Arsenal will be a good gauge of their promotion chances.*) that was used for the task item was taken from OALDO. The sense under the signpost *JUDGMENT* was the target sense, which was located in the middle of the entry (third sense in the entry). The cue sentence was changed (*What gauge of wire do we need?*) for the main study (due to perfect SENSE SELECTION ACCURACY for the item *gauge*, the new cue sentence was taken from OALDO). The sense under the signpost *WIDTH/THICKNESS* was the new target sense and it was located in second position in the entry.
- *sweep*: the item (verb) had thirteen signposted senses in LDOCEO (the first seven, the tenth and eleventh signposted senses were selected). The cue sentence (*A wave of tiredness swept over here.*) that was used for the task item was taken from

OALDO. The sense under the signpost *FEELING* was selected as the target sense (less known meaning of *sweep*), while the sense under the signpost *WIND/WAVES ETC* was the confusable sense. The target sense was listed as the seventh sense in the entry. After pilot study 1 (high SENSE SELECTION ACCURACY for *sweep*), a new cue sentence (taken from OW) was used (*The huge waves swept her overboard.*). The sense under the signpost *PUSH SOMEBODY/SOMETHING WITH FORCE* was the new target sense (third sense in the entry). The confusable sense remained the same.

- *tie*: the item (noun) had seven signposted senses in LDOCEO (all seven were used). The cue sentence (*He was not ready to accept the ties of family life.*) that was used for the task item was taken from MWALD. The sense under the signpost *PREVENT YOU FROM DOING SOMETHING* was selected as the target sense (less common meaning of *tie*), while the sense under the signpost *CONNECTION/RELATIONSHIP* was the confusable sense. The target sense occupied the penultimate (sixth) sense position in the entry. A new cue sentence (*He was still a young man and he did not want any ties.*) was used (taken from OALDO) after pilot study 1 due to low SENSE SELECTION ACCURACY figures of the item *tie*. The target sense and the confusable sense remained the same.
- *line*: the item (noun) had twenty-two signposted senses in LDOCEO (nine were selected). The cue sentence (*More groups will now be set up on these lines.*) that was used for the task item was taken from an example sentence of *line* in LDOCEO from the sense under the signpost *WAY OF DOING SOMETHING*. This example sentence was at the same time removed from the entry in pilot study 1 and the main study from the sense under the signpost *WAY OF DOING SOMETHING* in order to avoid having in the entry an identical sentence to the cue sentence. The sense under the signpost *WAY OF DOING SOMETHING* was the target sense (less known meaning of *line*) and it was located in the middle of the entry (fifth sense in the entry). Low SENSE SELECTION ACCURACY of the task item after pilot study 1 resulted in changing the cue sentence (*He impatiently dismissed this line of thought.*) for the main study. The new cue sentence was taken from MEDO. The target sense remained the same.
- *roll*: the item (verb) had sixteen signposted senses in LDOCEO (seven were selected for pilot study 1). The cue sentence (*Roll the pastry on a floured surface.*) that

was used for the task item was taken from OALDO. The sense under the signpost *MAKE SOMETHING FLAT* was the target sense, while the sense under the signpost *ROUND OBJECT* was the confusable sense. The target sense was listed as the third sense in the entry. Given a very low SENSE SELECTION ACCURACY of *roll* and the fact that both the target sense and the confusable sense were very similar, which led to problems connected with sense selection, the item *roll* was discarded from the main study.

- *lock*: the item (noun) had six signposted senses in LDOCEO (the first five were used). The cue sentence (*I wasn't able to avoid hitting the cone on full lock.*) that was used for the task item was constructed by the author of this paper. The sense under the signpost *VEHICLE* was selected as the target sense (less known meaning of *lock*), while the sense under the signpost *IN A FIGHT* was the confusable sense. The target sense was the last sense in the entry. Due to the low SENSE SELECTION ACCURACY during pilot study 1, the item was removed from the main study.
- *scale*: the item (noun) had ten signposted senses in LDOCEO (the first five, the seventh and tenth signposted senses from the LDOCEO entry were selected for pilot study 1). The cue sentence (*Some changes to the company's pay scale have been introduced.*) was constructed by the author of this paper, but the idea was taken from an example (*changes to the company's pay scale*) in the entry *scale* in LDOCEO in the sense under the signpost *MEASURING SYSTEM*. Importantly, this example was cut out from the sense under the signpost *MEASURING SYSTEM*. The sense under the signpost *MEASURING SYSTEM* was the target sense, while the sense under the signpost *RANGE* was the confusable sense. The target sense was listed as the fourth sense in the entry. In light of the low SENSE SELECTION ACCURACY of the item *scale* in pilot study 1, the item *scale* was not used in the main study.
- *lash*: the item (verb) consisted of five signposted senses in LDOCEO and all five were used. The cue sentence (*Branches lashed at my face.*) that was used for the task item was taken from OALDO. The sense under the signpost *WIND/RAIN/SEA* was the target sense, while the sense under the signpost *HIT* was the confusable sense. Both the target sense and confusable sense were located next to each other in the entry, the target sense occupying the second position in the entry. The item *lash* achieved low SENSE SELECTION ACCURACY figures after pilot study 1, and so the item was discarded from the final phase of the experiment.

- *unit*: the item (noun) had ten signposted senses in LDOCEO (the first nine were used). The cue sentence (*The company manufactures waste disposal units.*) that was used for the task item was partially constructed by the author of this paper, but the idea for the cue sentence was taken from OALDO. The sense under the signpost *PART OF A MACHINE* was the target sense, while the sense under the signpost *PRODUCT* was the confusable sense. Both the target sense and confusable sense were located next to one another, the target sense being the sixth sense in the entry. A low SENSE SELECTION ACCURACY for this item led to the removal of *unit* from the main study.
- *carry*: the item (verb) had twenty-five signposted senses in LDOCEO (nine were selected). The cue sentence (*The bill carried the Senate by a vote of 75–25.*) that was used for the task item was taken from MWALED. The sense under the signpost *ELECTION* was selected as the target sense (less known meaning of *carry*), while the sense under the signpost *VOTE* was the sense that was similar to the target sense. Both senses (target sense and similar sense) were located next to each other in the entry. The target sense was listed as the eighth sense in the entry. After pilot study 1, the item was removed from the main study, the main reason being that both the target sense and similar sense were too confusing for the subjects.
- *charge*: the item (noun) had eleven signposted senses in LDOCEO (all these senses were chosen for pilot study 2 except for the first and third signposted senses). The cue sentence (*The senator rejects charges that he is too liberal.*) that was used for the task item was taken from MWALED. The sense under the signpost *BLAME* was selected as the target sense, while the sense under the signpost *CRIME* was the confusable sense. Both the target sense and the confusable sense were located next to one another in the entry, the target sense occupying the third position in the entry. After pilot study 2, due to high SENSE SELECTION ACCURACY the item *charge* was not used in the main study.
- *pit*: the item (noun) had ten signposted senses in LDOCEO (all these senses were selected for pilot study 2 except for the eighth sense). The cue sentence (*The conductor walked down into the pit and stood at the podium.*) that was used for the task item was taken from MWALED. The sense under the signpost *IN A THEATRE* was the target sense and it was listed as the sixth sense in the entry. Due to a SENSE

SELECTION ACCURACY closer to 50% than the item *charge*, the item *pit* was chosen for the main study.

- *strike*: the item (verb) had ten signposted senses in LDOCEO (all these senses were selected for pilot study 2 except for the third sense). The cue sentence (*The area was struck by an outbreak of cholera.*) that was used for the task item was taken from OALDO. The sense under the signpost *SOMETHING BAD HAPPENS* was selected as the target sense (sixth position in the entry), while the sense under the signpost *HIT* was the confusable sense (entry-initial position). Due to closer SENSE SELECTION ACCURACY to 50% of *strike* than the item *burn*, the item *strike* was used in the main study.
- *burn*: the item (verb) had thirteen signposted senses in LDOCEO (from the first twelve all were selected for pilot study 2 except for the first, second and fifth signposted senses). The cue sentence (*The cigarette smoke burned my throat and made my eyes water.*) that was used for the task item was taken from MWALED. An example sentence (*The whisky burned my throat as it went down.*) in the item *burn* in LDOCEO (sense under the signpost *FEEL HOT AND PAINFUL*) was removed from the entry in pilot study 2 as it was very similar to the cue sentence used. This example sentence was replaced with a sentence (*The hot peppers burned my mouth.*) which was taken from MWALED. The sense under the signpost *FEEL HOT AND PAINFUL* was selected as the target sense (less known meaning of *burn*) and it was listed as the seventh sense in the entry. The senses containing example sentences with various body parts (for example: face, cheeks, neck) that can “burn” or “be burned” were the confusable senses. The item *strike* had closer SENSE SELECTION ACCURACY to 50% than *burn* and therefore the item *burn* was not used in the main study.
- *crack*: the item (noun) had nine signposted senses in LDOCEO (the first seven were used). The cue sentence (*She peered out through the crack in the curtains.*) that was used for the task item was taken from MEDO. The sense under the signpost *GAP* was the target sense, and this sense was the first sense in the entry. The item *crack* had a close to 100% SENSE SELECTION ACCURACY in pilot study 2, while the item *section* had a 50% SENSE SELECTION ACCURACY, which meant that this item (*crack*) would not be used in the main study.

- *section*: the item (noun) had nine signposted senses in LDOCEO (the first seven were used). The cue sentence (*The brass section of the orchestra was further divided into two parts.*) was constructed by the author of this thesis, but the idea for the cue sentence was taken from OALDO. The sense under the signpost *GROUP OF PEOPLE* was selected as the target sense (fourth sense in the entry), while the sense under the signpost *PART OF A WHOLE* was the confusable sense. The item *section* was used in the main study.
- *shoot*: the item (verb) had ten signposted senses in LDOCEO (all these senses were selected for pilot study 2 except for the fourth, sixth and eighth signposted senses). The cue sentence (*He shot at the deer.*) that was used for the task item was taken from MWALED. The sense under the signpost *FIRE A GUN ETC* was the target sense (second sense in the entry), while the sense under the signpost *KILL/INJURE* was the confusable sense. The item *shoot* had a closer SENSE SELECTION ACCURACY to 50% than *float*, and so the item *shoot* was chosen for the main study.
- *float*: the item (verb) had eight signposted senses in LDOCEO (the last seven were used). The cue sentence (*They may have to float a loan to raise the money for renovations.*) that was used for the task item was taken from MWALED. The sense under the signpost *CHEQUE* was selected as the target sense (less known meaning of *float*). After pilot study 2, it turned out that the item had been wrongly designed (extremely low SENSE SELECTION ACCURACY) and *float* was excluded from the main study.
- *pile*: the item (noun) had five signposted senses in LDOCEO (all five were used). The cue sentence (*The building had been knocked down, and there was nothing left but piles of stones.*) that was used for the task item was taken from MEDO, but “old house” from the original sentence in the MEDO entry was replaced with “building” because the target sense contained an example sentence with the expression “old house”, and the lack of changes could have possibly made the subjects’ task too easy. The sense under the signpost *LARGE AMOUNT* was the target sense (second sense in the entry, located next to the confusable sense), while the sense under the signpost *ARRANGEMENT OF THINGS* was the confusable sense. Both *pile* and *load* had a SENSE SELECTION ACCURACY equally close to 50%, but the item *pile* was chosen for the main study instead of *load*.

- *load*: the item (noun) had six signposted senses in LDOCEO (the last five were selected for pilot study 2). The cue sentence (*Extra warmth from sunlight can put an additional load on the air-conditioning system.*) that was used for the task item was taken from OALDO. The sense under the signpost *WORK* was the target sense (first sense position in the entry), while the sense under the signpost *ELECTRICITY* was the confusable sense. It was decided after pilot study 2 that the item *load* would not be used in the main study (instead *pile* was selected for the final phase of the experiment).
- *pop*: the item (verb) had eight signposted senses in LDOCEO (the last five were used). The cue sentence (*Champagne corks were popping and the party was about to begin.*) that was used for the task item was constructed by the author of this thesis, but the idea for the cue sentence was taken from MEDO. The sense under the signpost *SHORT SOUND* was the target sense (first sense in the entry), while the sense under the signpost *BURST* was the confusable sense, which was located next to the target sense in the entry. Both *pop* and *jam* had identical SENSE SELECTION ACCURACY in pilot study 2, but the item *pop* was selected for the main study.
- *jam*: the item (verb) had five signposted senses in LDOCEO (all five were used). The cue sentence (*He fired one shot before his gun jammed.*) that was used for the task item was taken from MEDO. The sense under the signpost *MACHINE* was selected as the target sense (second sense in the entry), while the sense under the signpost *BLOCK* was the confusable sense (located next to the target sense). The item *jam* was not used in the main study.

3.3.5. Data analysis

The analysis of the data was based on General¹² Linear Model (GLM) ANOVA (Miller and Haden 2006; StatSoft 2006; Trochim 2006). Since two dependent variables were measured in the study, one ANOVA was run for ENTRY CONSULTATION TIME, and one for SENSE SELECTION ACCURACY, in conjunction with planned comparisons with a Bonferroni correction (Lachlan and Spence 2006; Napierala 2012). From the technical point

¹² An alternative way of analyzing the data using Linear Mixed-effects Modelling is available as Ptasznik and Lew (2014).

of view, the primary study materials used for data storage, organization and processing included selected Microsoft Office 2010 applications (Microsoft Word and Microsoft Excel) and a statistics software package (Statistica, version 10, StatSoft 2012). The data obtained from both pilot studies and the main study were stored in a Microsoft Excel spreadsheet file. The raw data were transferred into a Statistica data editor for the purpose of statistical data analyses. A GLM ANOVA was run with the syntax provided below (see Fig. 6 for ENTRY CONSULTATION TIME; see Fig. 7 for SENSE SELECTION ACCURACY).

```
GLM;
  DEPENDENT = Time;
  GROUPS = Subject(1 2 3 4 5 6 7 8 9 10 11 12 13 1
    4 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 3
    1 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 4
    8 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 6
    5 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 8
    2 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 9
    9 100 101 102 103 104 105 106 107 108 109 110 111 1
    12 113 114 115 116 117 118)
    POS(1 2)
    Length(5 7 9)
    Device(1 2 3);
  COVARIATE = none;
  DESIGN = Subject + POS + Length + Device + POS*
    Device + Length*Device;
  INTERCEPT = include;
  LACKOFFIT = no;
  PARAM = overp;
  SSTYPE = 3;
  ESTIMATE = none;
  SDELTA = 7;
  IDELTA = 12;
  RANDOM = Subject;
  SURFACE = none;
  MIXTURE = none;
  REPEATED = none;
  WDESIGN = none;
  SAMPLE = none;
  OUTPUT = none;
```

Fig. 6. Statistica GLM ANOVA syntax for ENTRY CONSULTATION TIME.

```
GLM;
  DEPENDENT = "Rightsense";
  GROUPS = Subject(1 2 3 4 5 6 7 8 9 10 11 12 13 1
    4 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 3
    1 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 4
    8 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 6
    5 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 8
    2 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 9
    9 100 101 102 103 104 105 106 107 108 109 110 111 1
    12 113 114 115 116 117 118)
```

```

                POS(1 2)
                Length(5 7 9)
                Device(1 2 3);
COVARIATE = none;
DESIGN = Subject + POS + Length + Device + POS*
        Device + Length*Device;
INTERCEPT = include;
LACKOFFIT = no;
PARAM = overp;
SSTYPE = 3;
ESTIMATE = none;
SDELTA = 7;
IDELTA = 12;
RANDOM = Subject;
SURFACE = none;
MIXTURE = none;
REPEATED = none;
WDESIGN = none;
SAMPLE = none;
OUTPUT = none;

```

Fig. 7. Statistica GLM ANOVA syntax for SENSE SELECTION ACCURACY.

According to the above syntax – GUIDING DEVICE, PART OF SPEECH, ENTRY LENGTH and two interactions with GUIDING DEVICE: (1) GUIDING DEVICE by PART OF SPEECH; and (2) GUIDING DEVICE by ENTRY LENGTH, were defined as the fixed effects parameters, while subject was specified as the random effect. The model was fitted using the over-parameterized model and type III sum-of-squares computation (SSType (3)). Exponent values SDELTA (7) and IDELTA (12) were specified and the intercept was included in the model.

Chapter 4: Results and discussion

4.1. Results: entry consultation time

Section 4.1. aims to present and analyze the ANOVA results for ENTRY CONSULTATION TIME, and the planned pairwise comparisons with Bonferroni adjustment.

4.1.1. ANOVA results for entry consultation time

Table 5 below presents the ANOVA univariate tests of significance, effect sizes and test power for ENTRY CONSULTATION TIME. The results of this analysis are interpreted in the following sections.

Table 5. ANOVA univariate tests of significance, effect sizes and test power (ENTRY CONSULTATION TIME).

Effect	SS	df	MS	Error df	Error MS	F	p	Partial η^2	Observed power (alpha=0.05)
Intercept	7608330	1	7608330	118	9482	802.00	0.000	0.872	1.000
Subject	1141367	117	9755	3841	675	14.45	0.000	0.305	1.000
POS ¹³	3762	1	3732	3841	675	5.53	0.018	0.001	0.652
Length	81408	2	40704	3841	675	60.30	0.000	0.030	1.000
Device	52496	2	26248	3841	675	38.88	0.000	0.019	1.000
POS*Device	1297	2	649	3841	675	0.96	0.382	0.000	0.217
Length*Device	6697	4	1674	3841	675	2.48	0.041	0.002	0.711
Error	2592876	3841	675						

¹³ The variables: PART OF SPEECH, ENTRY LENGTH, and GUIDING DEVICE are abbreviated in the tables as: POS, Length, Device, respectively.

4.1.2. Entry consultation time by guiding device

Fig. 8 below presents the mean ENTRY CONSULTATION TIME by GUIDING DEVICE.

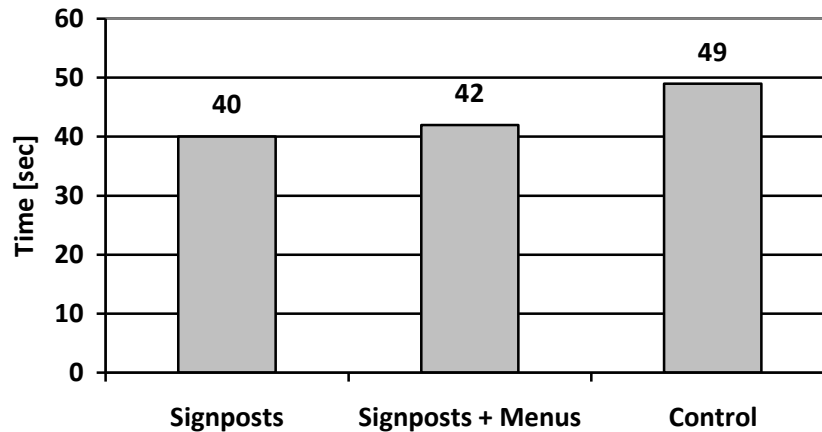


Fig. 8. Mean ENTRY CONSULTATION TIME by GUIDING DEVICE.

The data above (see Fig. 8) clearly show that GUIDING DEVICES shortened the time that the subjects required for entry consultation (mean ENTRY CONSULTATION TIME for signposts was 40 seconds, 42 seconds for signposts + menus, 49 seconds for control). The subjects assisted by signposts needed on average 9 seconds (18%) less for entry consultation than the subjects who worked without any GUIDING DEVICES. A combination of signposts and menus also led to better time results in comparison with bare entries, however, this advantage amounted to 7 seconds on average (14%), which is 2 seconds less than in the case of the signpost-only condition.

According to ANOVA data (see Table 5), there was a statistically significant effect of GUIDING DEVICE on ENTRY CONSULTATION TIME ($F_{(2,384)}=39, p=0.000$), although it must be pointed out that the effect size was rather small (partial $\eta^2=0.019$). The Bonferroni pairwise comparisons for ENTRY CONSULTATION TIME by GUIDING DEVICE are presented below (see Table 6).

Table 6. Bonferroni pairwise comparisons by GUIDING DEVICE for ENTRY CONSULTATION TIME.

Device	c	s	ms
c		0.000000	0.000000
s	0.000000		0.289385
ms	0.000000	0.289385	

The Bonferroni pairwise comparisons indicate that statistical significance was achieved between the control and signpost-only conditions, and between the control and signpost + menu conditions. However, no significant difference was noted between signposts and the combination of signposts and menus.

Given research question 2 (see section 3.2.), it may be said that having access to signposts in entries reduces ENTRY CONSULTATION TIME during dictionary look-up compared with bare entries. The data also demonstrate that combining signposts and menus in entries expedites ENTRY CONSULTATION TIME compared with entries without GUIDING DEVICES (research question 4). Nevertheless, it appears that adding signposts to menus in single entries does not result in better or worse time results than in the signpost-only condition. Supporting subjects with an extra device in entries lengthened the consultation process by 2 seconds on average; however, this difference was not found to be statistically significant.

4.1.3. Entry consultation time by entry length

Fig. 9 below presents the mean ENTRY CONSULTATION TIME by ENTRY LENGTH.

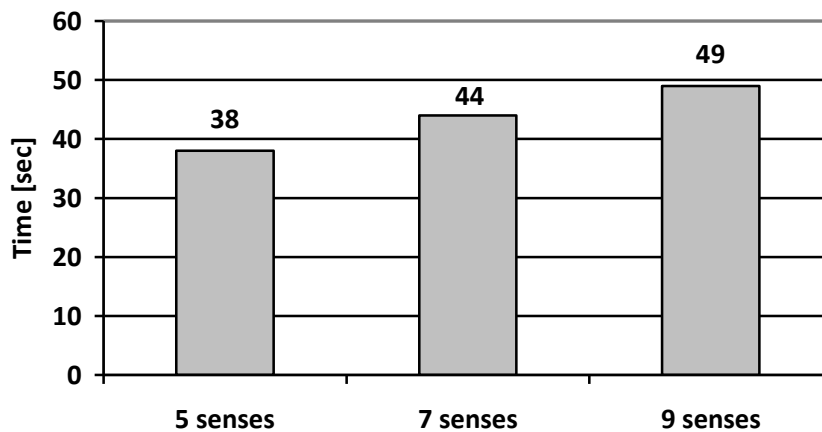


Fig. 9. Mean ENTRY CONSULTATION TIME by ENTRY LENGTH.

In general, the data in Fig. 9 suggest that the longer the entry, the more time is required for entry consultation. The mean ENTRY CONSULTATION TIME for entries with 5 senses was 38 seconds, 44 seconds for 7 senses, and 49 seconds for 9 senses. Thus, en-

tries with 5 senses took on average 11 seconds less (22%) than those of 9 senses, with 7-sense entries falling in-between the two.

The effect of ENTRY LENGTH on ENTRY CONSULTATION TIME reached statistical significance ($F_{(2,3841)}=60, p=0.000$), with a modest effect size (partial $\eta^2=0.030$). The Bonferroni pairwise comparisons for ENTRY CONSULTATION TIME by ENTRY LENGTH are brought together in Table 7 below.

Table 7. Bonferroni pairwise comparisons by ENTRY LENGTH for ENTRY CONSULTATION TIME.

Length	5	7	9
5		0.000000	0.000000
7	0.000000		0.000036
9	0.000000	0.000036	

Table 7 clearly shows that all pairwise comparisons are statistically significant. Thus, the length of entries has a significant effect on ENTRY CONSULTATION TIME (research question 6). On average, it took the subjects more time to analyze entries holding more senses. To sum up, it appears that the longer the dictionary entry, the more time dictionary users require for entry analysis.

4.1.4. Entry consultation time by part of speech

Fig. 10 below presents the mean ENTRY CONSULTATION TIME by PART OF SPEECH.

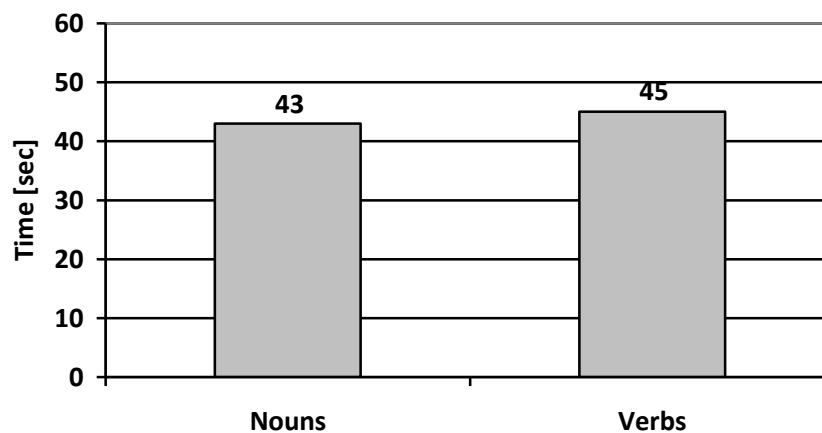


Fig. 10. Mean ENTRY CONSULTATION TIME by PART OF SPEECH.

Fig. 10 shows that on average it took the subjects 2 seconds more to consult verb entries compared to noun entries. Mean ENTRY CONSULTATION TIME by PART OF SPEECH for nouns was 43 seconds, compared to 45 seconds for verbs. This means that consultation time was shorter for nouns by 4% compared to verbs. This difference between nouns and verbs achieved statistical significance ($F_{(1,3841)}=6$, $p=0.018$), however, the effect size was very weak (partial $\eta^2=0.001$). Thus, the difference in consultation time between nouns and verbs is very slight and has no practical significance (research question 8).

4.1.5. Entry consultation time by entry length and guiding device

Fig. 11 below illustrates the mean ENTRY CONSULTATION TIME by ENTRY LENGTH and GUIDING DEVICE.

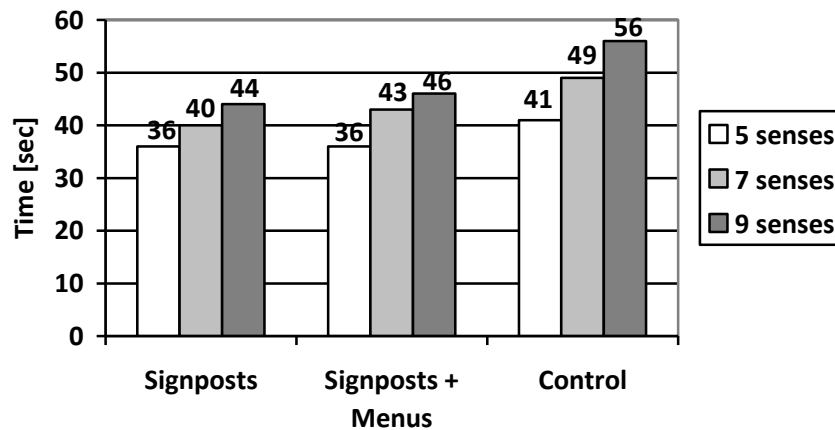


Fig. 11. Mean ENTRY CONSULTATION TIME by ENTRY LENGTH and GUIDING DEVICE.

The data clearly illustrate that the more senses an entry had in every single experimental condition, the more time was needed for entry consultation (mean ENTRY CONSULTATION TIME by ENTRY LENGTH and GUIDING DEVICE for signposts was 36 seconds for 5 senses, 40 seconds for 7 senses, 44 seconds for 9 senses; for signposts + menus 36 seconds for 5 senses, 43 seconds for 7 senses, 46 seconds for 9 senses; for control 41 seconds for 5 senses, 49 seconds for 7 senses, 56 seconds for 9 senses). In the signpost condition, on average consultation times in entries of 5 senses were shorter by

10% compared with entries of 7 senses, in entries of 7 senses shorter by 9% compared with entries of 9 senses and in entries of 5 senses shorter by 18% compared with entries of 9 senses. As for the average consultation times in the signposts + menus condition, entries of 5 senses were shorter by 16% compared with entries of 7 senses, entries of 7 senses were shorter by 7% compared with entries of 9 senses and entries of 5 senses were shorter by 22% compared with entries of 9 senses. In the control condition, the average consultation times in entries of 5 senses were shorter by 16% compared with entries of 7 senses, in entries of 7 senses shorter by 13% compared with entries of 9 senses and in entries of 5 senses shorter by 27% compared with entries of 9 senses. Taking into account ENTRY CONSULTATION TIME differences between entries of various length within conditions, it can be observed that signposts reduced these differences more than either signposts + menus or the control condition, one exception being the difference between entries consisting of 7 and 9 senses, which was on average 3 seconds for signposts + menus and 4 seconds for signposts. Furthermore, entry consultation in entries with 5 senses lasted on average 36 seconds in both the signpost and signposts + menus conditions, and 41 seconds in the control condition, which means that the presence of sense navigation devices in entries of 5 senses reduced ENTRY CONSULTATION TIME by 5 seconds (12%) compared with bare entries. In the case of entries with 7 senses, the subjects assisted by signposts spent on average 3 seconds less (7%) compared with the signposts + menus condition, 6 seconds less (12%) when assisted by signposts + menus compared with the control condition, and 9 seconds less (18%) when assisted by signposts compared with the control condition. As for entries with 9 senses, the subjects saved on average 2 seconds (4%) when having signposts compared with signposts + menus, 10 seconds (18%) when having signposts + menus compared with bare entries, and 12 seconds (21%) when having signposts compared with the control condition.

The interaction effect between ENTRY LENGTH and GUIDING DEVICE on ENTRY CONSULTATION TIME reached statistical significance ($F_{(4,3841)}=2, p=0.041$), however, the effect size was very small (partial $\eta^2=0.002$). A breakdown of the Bonferroni pairwise comparisons figures is provided below (see Table 8, Table 9, Table 10).

Table 8. Bonferroni pairwise comparisons by ENTRY LENGTH and GUIDING DEVICE (signposts) for ENTRY CONSULTATION TIME.

Length	Device	5s	7s	9s
5	s		0.844064	0.000556
7	s	0.844064		1.000000
9	s	0.000556	1.000000	

Table 9. Bonferroni pairwise comparisons by ENTRY LENGTH and GUIDING DEVICE (signposts + menus) for ENTRY CONSULTATION TIME.

Length	Device	5ms	7ms	9ms
5	ms		0.001001	0.000000
7	ms	0.001001		1.000000
9	ms	0.000000	1.000000	

Table 10. Bonferroni pairwise comparisons by ENTRY LENGTH and GUIDING DEVICE (control) for ENTRY CONSULTATION TIME.

Length	Device	5c	7c	9c
5	c		0.000068	0.000000
7	c	0.000068		0.005499
9	c	0.000000	0.005499	

In light of the Bonferroni pairwise comparisons for signposts, a statistically significant difference was only reached between entries of 5 and 9 senses. As for signposts + menus, significant differences were found between entries of 5 and 7 senses, and entries of 5 and 9 senses. Finally, in the control condition highly significant effects were observed in all three group comparisons, that is between entries of 5 and 7 senses, 7 and 9 senses, and 5 and 9 senses.

In view of research question 6 (see 3.2.), the results suggest that ENTRY LENGTH affects consultation time most when no devices are present. Once devices are added, the differences in consultation time with respect to ENTRY LENGTH are reduced, particularly for signposts (see Table 8, where only entries of 5 and 9 senses are significantly different). This is because signposts have helped by reducing consultation time especially in longer entries.

4.1.6. Entry consultation time by part of speech and guiding device

Fig. 12 below shows the mean ENTRY CONSULTATION TIME by PART OF SPEECH and GUIDING DEVICE.

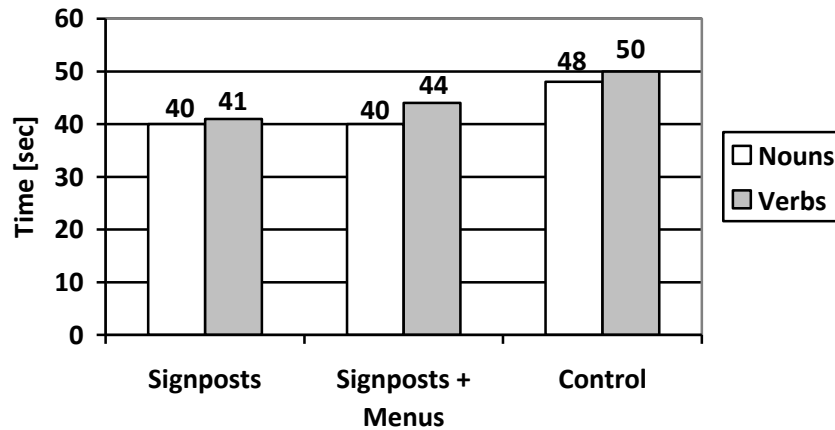


Fig. 12. Mean ENTRY CONSULTATION TIME by PART OF SPEECH and GUIDING DEVICE.

As far as noun entries are concerned, the signpost and signposts + menus conditions reduced entry consultation on average by 8 seconds (17%) compared to the control condition (mean ENTRY CONSULTATION TIME for nouns by GUIDING DEVICE was 40 seconds for both the signpost and signposts + menus conditions, 48 seconds for control). In the case of verb entries, the signpost condition reduced entry consultation on average by 3 seconds (7%) compared to the signposts + menus condition and by 9 seconds (18%) compared to the control condition, while a combination of signposts and menus was more effective by 6 seconds (12%) than the control condition (mean ENTRY CONSULTATION TIME for verbs by GUIDING DEVICE was 41 seconds for signposts, 44 seconds for signposts + menus, 50 seconds for control). In addition, noun entries in the signpost condition allowed to expedite entry consultation on average by 1 second (2%) compared to signposted verb entries, noun entries saved the subjects 4 seconds (9%) compared to verb entries in the signposts + menus condition, and noun entries proved to be superior to verb entries by 2 seconds (4%) in the case of bare entries. In general, ENTRY CONSULTATION TIMES were marginally shorter for noun entries.

The effect of the interaction between PART OF SPEECH and GUIDING DEVICE on ENTRY CONSULTATION TIME was very far from reaching statistical significance

($F_{(2,3841)}=1$, $p=0.382$), and the effect size was negligible (partial $\eta^2=0.000$). Bearing research question 8 in mind (see 3.2.), it seems highly plausible that PART OF SPEECH does not influence ENTRY CONSULTATION TIME with respect to entries equipped with either signposts, signposts + menus, or bare entries.

4.2. Results: sense selection accuracy

The aim of section 4.2. is to demonstrate and analyze the ANOVA results for SENSE SELECTION ACCURACY, and the planned pairwise comparisons with Bonferroni adjustment.

4.2.1. ANOVA results for sense selection accuracy

The ANOVA univariate tests of significance, effect sizes and test power for SENSE SELECTION ACCURACY are given in Table 11 below. The interpretation of these results can be found in the next sections.

Table 11. ANOVA univariate tests of significance, effect sizes and test power (SENSE SELECTION ACCURACY).

Effect	SS	df	MS	Error df	Error MS	F	p	Partial η^2	Observed power (alpha=0.05)
Intercept	806	1	806	119	0.861	936	0.000	0.887	1.000
Subject	103	117	0.881	3841	0.227	3.88	0.000	0.105	1.000
POS	1	1	0.815	3841	0.227	3.59	0.058	0.000	0.473
Length	6	2	2.859	3841	0.227	12.60	0.000	0.006	0.996
Device	1	2	0.644	3841	0.227	2.84	0.058	0.001	0.558
POS*Device	1	2	0.294	3841	0.227	1.30	0.273	0.000	0.282
Length*Device	1	4	0.357	3841	0.227	1.57	0.178	0.001	0.490
Error	871	3841	0.227						

4.2.2. Sense selection accuracy by guiding device

Fig. 13 below depicts the mean SENSE SELECTION ACCURACY by GUIDING DEVICE.

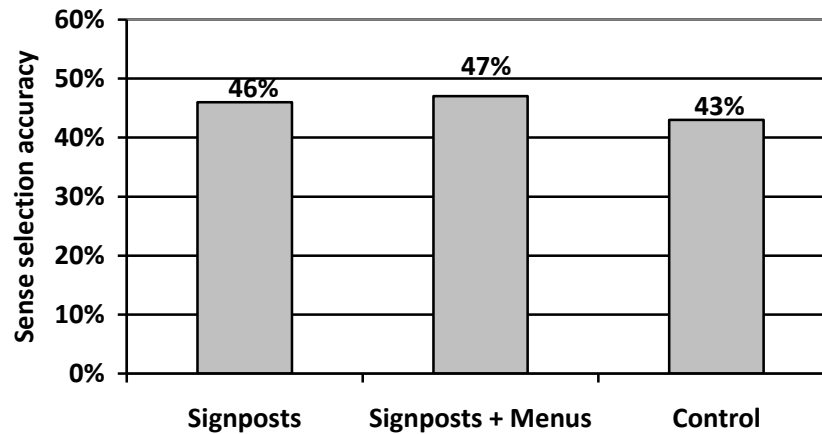


Fig. 13. Mean SENSE SELECTION ACCURACY by GUIDING DEVICE.

It can be seen from the figure above that on average the subjects performed best when having access to signposts + menus, achieving a SENSE SELECTION ACCURACY of 47%, which is better than in the signpost condition by 1% and in the control condition by 10%. Signposts, on the other hand, led on average to an increase of SENSE SELECTION ACCURACY by 8% compared to bare entries.

The effect of GUIDING DEVICE on SENSE SELECTION ACCURACY approached statistical significance ($F_{(2,3841)}=3, p=0.058$), while the effect size was very small (partial $\eta^2=0.001$), with little practical significance of the difference. These results indicate that signpost-equipped entries do not result in a significant improvement in SENSE SELECTION ACCURACY during dictionary look-up compared to entries that lack any sense navigation devices (research question 1). Also, a combination of signposts and menus does not significantly improve selection accuracy compared with either signposts only or bare entries (research question 3).

4.2.3. Sense selection accuracy by entry length

Fig. 14 below shows the mean SENSE SELECTION ACCURACY by ENTRY LENGTH.

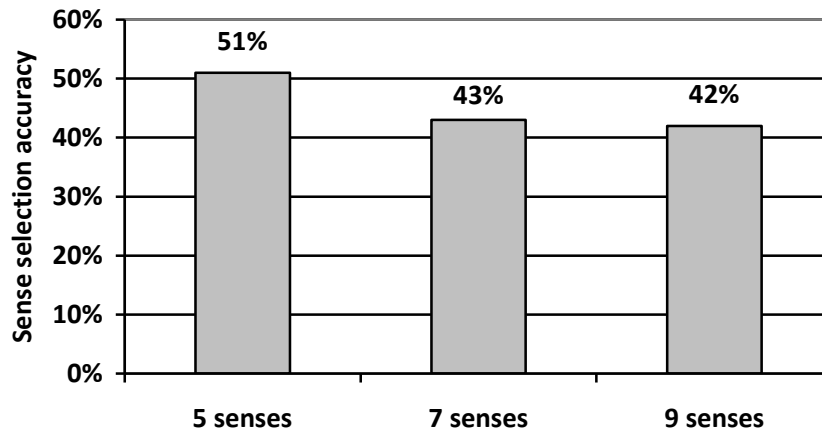


Fig. 14. Mean SENSE SELECTION ACCURACY by ENTRY LENGTH.

As seen from Fig. 14, SENSE SELECTION ACCURACY was highest for entries with 5 senses and lowest for entries with 9 senses (mean SENSE SELECTION ACCURACY by ENTRY LENGTH was 51% for entries with 5 senses, 43% for entries with 7 senses, 42% for entries with 9 senses). The shortest entries (5 senses) achieved higher scores than entries with 7 senses by 18%, entries of 5 senses had better SENSE SELECTION ACCURACY than the longest entries (9 senses) by 20%, and entries of 7 senses had higher SENSE SELECTION ACCURACY than entries of 9 senses by just 2%.

The effect of ENTRY LENGTH on SENSE SELECTION ACCURACY achieved statistical significance ($F_{(2,3841)}=13$, $p=0.000$), but the effect size was rather weak (partial $\eta^2=0.006$). The results of the Bonferroni pairwise comparisons are set out in Table 12.

Table 12. Bonferroni pairwise comparisons by ENTRY LENGTH for SENSE SELECTION ACCURACY.

Length	5	7	9
5		0.000103	0.000017
7	0.000103		1.000000
9	0.000017	1.000000	

The results are unambiguous: a statistically significant difference was found between entries of 5 and 7 senses, as well as entries of 5 and 9 senses. However, statistical significance was not achieved between the longer entries (7 and 9 senses), which noted very similar consultation accuracies.

Taken together, these results suggest that ENTRY LENGTH does affect SENSE SELECTION ACCURACY (research question 5). There seems to be a tendency for dictionary users to be more successful in choosing the right senses in entries of 5 senses (the shortest entries tested) compared to entries of either 7 or 9 senses, but there is no such difference between entries of 7 and 9 senses.

4.2.4. Sense selection accuracy by part of speech

The mean SENSE SELECTION ACCURACY by PART OF SPEECH is summarized in Fig. 15 below.

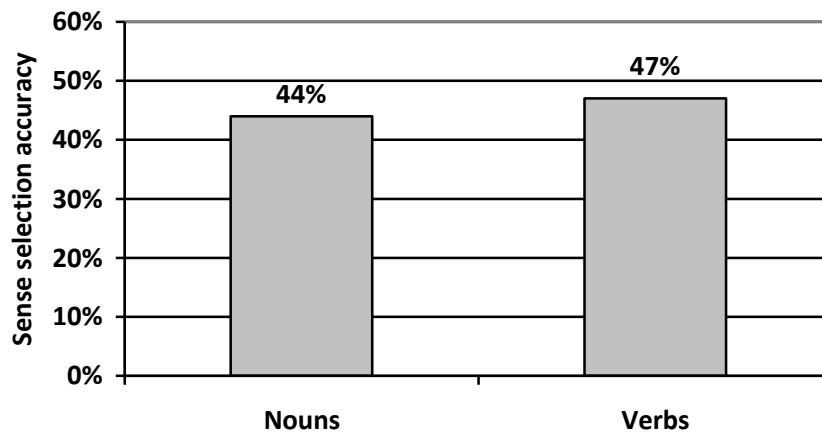


Fig. 15. Mean SENSE SELECTION ACCURACY by PART OF SPEECH.

From Fig. 15 above we can see that the subjects achieved slightly higher scores for SENSE SELECTION ACCURACY when working with verb entries (47%) than with noun entries (44%). The effect of PART OF SPEECH on SENSE SELECTION ACCURACY was close to reaching statistical significance at the 5% level and would be significant at the 10% level ($F_{(1,3841)}=4, p=0.058$). The effect size was very small (partial $\eta^2=0.000$).

The data demonstrate that word class does not appear to affect SENSE SELECTION ACCURACY in dictionary consultation (research question 7). More research would be needed, however, to verify this conclusion, due to the marginal significance level.

4.2.5. Sense selection accuracy by entry length and guiding device

The mean SENSE SELECTION ACCURACY by ENTRY LENGTH and GUIDING DEVICE is presented below in Fig. 16.

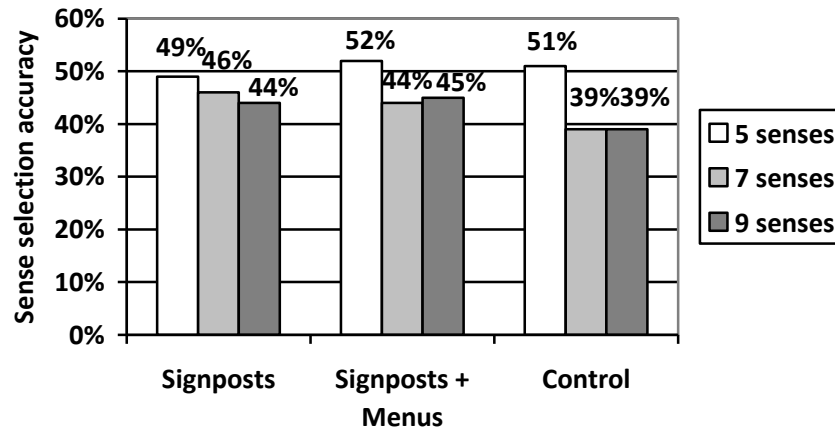


Fig. 16. Mean SENSE SELECTION ACCURACY by ENTRY LENGTH and GUIDING DEVICE.

In general, the data suggest that the fewer senses an entry has, the higher the chances of achieving better SENSE SELECTION ACCURACY results regardless of the condition. It appears that entries of 5 senses tend to fare better than other longer entries (7 and 9 senses) in any one of the three experimental conditions, contributing to higher SENSE SELECTION ACCURACY. There appears to be a slight tendency for GUIDING DEVICES to reduce the difference in SENSE SELECTION ACCURACY between the shorter (5 senses) and longer entries (7 and 9 senses) compared with bare entries, which suggests that the presence of supporting devices in entries might facilitate meaning access in longer entries.

However, the effect of interaction between ENTRY LENGTH and GUIDING DEVICE was not statistically significant ($F_{(4,3841)}=2, p=0.178$), and the effect size was very weak (partial $\eta^2=0.001$). Statistically non-significant differences notwithstanding, there does seem to be a slight tendency for dictionary users to have difficulty selecting target senses in longer entries when not receiving any support in the form of GUIDING DEVICES (research question 5). This, however, appears to be less of a problem when users have longer entries equipped with sense navigation devices at their disposal. Further, the data show that it is in general easier to select the target senses of shorter entries irrespective of whether these entries have GUIDING DEVICES or not. All of this means that sense nav-

igation devices might be helpful to dictionary users only in the case of longer entries, whereas the shorter entries may be less challenging as they have less information that needs to be processed by users.

4.2.6. Sense selection accuracy by part of speech and guiding device

Fig. 17 below presents the figures for mean SENSE SELECTION ACCURACY by PART OF SPEECH and GUIDING DEVICE.

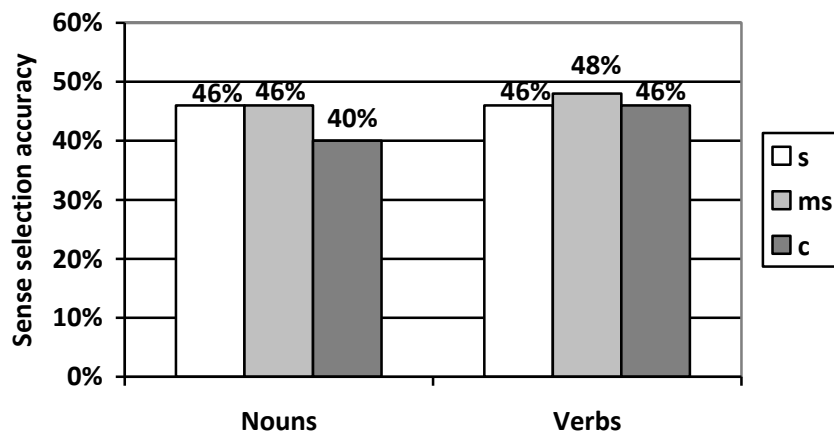


Fig. 17. Mean SENSE SELECTION ACCURACY by PART OF SPEECH and GUIDING DEVICE.

Fig. 17 above shows that noun entries with signposts or signposts + menus resulted in higher accuracy than entries with no devices by about 15% (mean SENSE SELECTION ACCURACY by PART OF SPEECH and GUIDING DEVICE for nouns was 46% for both signposts and signposts + menus, as against 40% for control entries). As for verbs, the results for both signposts and the control condition amounted to 46%, a result lower than that of a combination of signposts and menus by about 5%. Interestingly, noun entries in the control condition reached a SENSE SELECTION ACCURACY lower than in verb entries in the control condition by about 14%. Taking both conditions with sense navigation devices (signposts and signposts + menus) into consideration, the results reached the threshold of 46% on three occasions, the only difference being the mean SENSE SELECTION ACCURACY of signposts + menus for verb entries (48%).

The effect of interaction between PART OF SPEECH and GUIDING DEVICE on SENSE SELECTION ACCURACY was not statistically significant ($F_{(2,384)}=1$, $p=0.273$) and the effect size was very small (partial $\eta^2=0.000$). However, we might note a tendency for entries with navigation devices to result in better mean scores in nouns, but not in verbs (research question 7).

4.3. Discussion

With respect to research question 1, the results of the main study suggest that signposts do not increase SENSE SELECTION ACCURACY in dictionary consultation, as the relevant effect was not statistically significant. This finding, which confirms Lew and Pajkowska's (2007) results, raises some doubts as to the utility of sense navigation devices in entry navigation; however, the present study also shows (just like Lew and Pajkowska's study) that there is a tendency for dictionary users to perform better in the presence of signposts. The subjects from the main study achieved a mean SENSE SELECTION ACCURACY of 46% with signposts, a result better by 8% compared with the control condition (43%). This could mean that signposts did prove helpful to the subjects when they were searching for the meaning of the target items. Nevertheless, the positive role of signposts in sense selection can only be confirmed when more such research is conducted. Prior studies (Bogaards 1998; Lew 2010; Nesi and Tan 2011) have already shown that signposts are beneficial to dictionary users and there is every reason to believe that future research will support these findings.

Regarding research question 2, the results of the present study are unambiguous: signposts do reduce ENTRY CONSULTATION TIME during dictionary look-up. Mean ENTRY CONSULTATION TIME was significantly lower for entries equipped with signposts compared with bare entries (40 seconds for signposts, 49 seconds for control). This contrasts with the findings of Lew and Pajkowska (2007) and Nesi and Tan (2011), which found no statistically significant differences, although the former study noted a tendency for shorter times in signposted entries. Being able to save approximately 9 seconds during entry navigation sounds optimistic. Hence, it would be fairly reasonable for lexicographers to use signposts in dictionary entries more often, as doing so would be in the interest of the dictionary user. Bringing about such changes in dictionary entry design

could prove to be highly beneficial, keeping in mind the fact that users frequently underperform in sense selection due to time constraints and lack of motivation to carefully read through all the senses of an entry.

Combining signposts with menus in entries does not increase SENSE SELECTION ACCURACY compared with either signposted or bare entries (research question 3), as the effect of GUIDING DEVICE on SENSE SELECTION ACCURACY was not significant. However, there was a tendency for the subjects to score higher at sense selection tasks when having sense navigation devices in entries at their disposal (mean SENSE SELECTION ACCURACY for signposts + menus was 47%, 46% for signposts, 43% for control). The difference between signposts + menus and signposts alone is negligible, but the difference between a combination of signposts and menus and no devices is more apparent, though not statistically significant. Still, adding menus to signposts does not improve performance beyond signposts, so there is no logical reason to apply such a design in dictionary entries from the point of view of SENSE SELECTION ACCURACY.

As far as ENTRY CONSULTATION TIME is concerned, entries with signposts and menus reduce consultation time compared with entries without sense-navigation devices, but not compared with signposts alone (research question 4). There was no statistically significant difference in ENTRY CONSULTATION TIME between the signposts + menus and signposts-only conditions, but on the whole the subjects spent on average 2 seconds more on entries equipped with combined menus and signposts; this could mean that the extra seconds were wasted by dictionary users on consultation of identical sense cues located in menus. If this is so, it is probably counterproductive to combine signposts and menus in single entries. However, this does not mean that menus as such are useless. Quite apart from ENTRY CONSULTATION TIME and SENSE SELECTION ACCURACY, adding menus to signposts can be advantageous to dictionary users as a kind of overview of the whole entry, which may be helpful for meaning retention.

The data from the study also indicate that the length of entries does affect SENSE SELECTION ACCURACY (research question 5) and ENTRY CONSULTATION TIME (research question 6, see paragraph below). In the present study, it appears that GUIDING DEVICES are useful for sense selection but mainly in longer entries, which sounds logical, as signposts have been primarily designed to aid navigation in entries with many senses, and this is when the problem of sense selection arises. When faced with shorter entries, the subjects performed well, achieving comparable scores in all three conditions, which

only strengthens the conclusion that signposts are needed for long entries. At first glance, this finding is not in line with Lew and Pajkowska's (2007) results, according to which signposts help sense selection accuracy in both short and long entries. However, when taking the educational level of their subjects into account, Lew and Pajkowska arrived at the conclusion that higher-level (intermediate) students benefited from signposts in longer¹⁴ entries, while the lower-level (pre-intermediate) students did so in shorter entries. This finding is confirmed in the present study, as the subjects also represented an intermediate level of English and achieved higher sense selection scores thanks to signposts in longer entries.

As regards ENTRY CONSULTATION TIME (research question 6), the effect of ENTRY LENGTH on this variable was strongest when the subjects had no sense navigation devices. Only in this specific condition (control), statistically significant differences were found between entries of varying length; the interpretation being that even two extra senses in a bare entry prolong the process of dictionary consultation considerably. Another study finding is that signposts reduce ENTRY CONSULTATION TIME most in longer entries, a conclusion in conflict with Lew and Pajkowska's findings which did not detect any benefits of signposts in terms of entry consultation time in either shorter or longer entries in general, but at the same time in accordance with Bogaards's research (1998), in which LDOCE3 and CIDE entry guiding systems proved to be effective for advanced learners in scanning longer entries.

By and large, the data from the main study indicate that PART OF SPEECH has no effect on SENSE SELECTION ACCURACY in entries with signposts, signposts and menus, and entries without devices (research question 7). However, there was a tendency for the subjects to achieve higher SENSE SELECTION ACCURACY in noun entries with GUIDING DEVICES (mean SENSE SELECTION ACCURACY for signposts and signposts + menus in noun entries was 46%, as against 40% for control). This implies that sense navigation devices might be more helpful in noun entries than verb entries when choosing appropriate senses.

The data also revealed that the interaction between PART OF SPEECH and GUIDING DEVICE does not affect ENTRY CONSULTATION TIME (research question 8). Unexpectedly, the subjects needed on average more time to consult verb entries, as a statistically sig-

¹⁴ Shorter entries in Lew and Pajkowska's study had up to 4 senses, while longer entries had up to 10 senses.

nificant difference was found between noun and verb entries. Whether this is a generalizable finding remains somewhat uncertain. First, the effect size was very weak. Second, it is difficult to see how ENTRY CONSULTATION TIME can be affected by the word class of a headword, however, it might be possible that sense distinctions in nouns tend to be clearer as a principle. Third, there is no other clear empirical evidence that could support this finding. Interestingly, despite making it clear that their study does not focus on the effect of the part of speech of entries, Nesi and Tan (2011) did mention that their subjects encountered more problems with adjective and verb entries in sense selection. Therefore, taking into consideration the results of both studies on the effect of PART OF SPEECH on SENSE SELECTION ACCURACY and ENTRY CONSULTATION TIME (research questions 7 and 8), perhaps verb entries are more problematic than originally expected. This hypothesis, however, would still need to be tested.

The following chapter attempts to find answers to research questions 9 and 10.

Chapter 5: Sense selection and the phrasing of sense cues

5.1. Sense selection analysis

The purpose of this section is to answer research question 9 (see section 3.2.) by analyzing the process of sense selection in dictionary use. The analysis is based on the observation of how the subjects in the main study selected senses in specific test items. These observations are described underneath the table provided below. Table 13 illustrates in what proportion of cases a given sense of an item was selected by the subjects as their target sense. For example, in the item *bond* the first sense was selected by the subjects in general sixty-seven times (62%), the second sense three times (3%), the third and fourth senses not once (0%) and the fifth sense thirty-eight times (35%).

Table 13. Sense selection by test item in the main study. Target senses of the listed items appear in bold-face and specific items discussed in this section are highlighted.

Item	No. of senses	Target sense	Sense 1	Sense 2	Sense 3	Sense 4	Sense 5	Sense 6	Sense 7	Sense 8	Sense 9
snap	7	3	11%	13%	47%	11%	2%	4%	13%		
sweep	9	3	2%	14%	45%	1%	28%	2%	6%	0%	3%
raise	9	6	3%	19%	3%	14%	8%	34%	16%	3%	1%
mark	7	5	13%	17%	3%	16%	47%	1%	4%		
bar	7	2	42%	50%	3%	3%	2%	0%	0%		
bond	5	1	62%	3%	0%	0%	35%				
cap	5	2	9%	58%	15%	17%	1%				
cast	7	4	0%	4%	66%	26%	1%	1%	3%		
claim	5	3	29%	13%	32%	3%	24%				
clear	7	4	22%	18%	19%	28%	4%	4%	6%		
crash	7	3	6%	20%	58%	8%	3%	3%	1%		
draw	9	2	30%	37%	4%	3%	7%	15%	0%	2%	2%
force	9	8	3%	2%	13%	21%	5%	3%	28%	25%	0%
gauge	5	2	9%	45%	31%	9%	6%				
lift	9	5	3%	3%	1%	3%	71%	15%	2%	2%	0%
line	9	5	7%	2%	13%	18%	45%	8%	1%	2%	4%
patch	5	1	45%	32%	14%	4%	5%				

Item	No. of senses	Target sense	Sense 1	Sense 2	Sense 3	Sense 4	Sense 5	Sense 6	Sense 7	Sense 8	Sense 9
pile	5	2	22%	57%	4%	6%	10%				
pit	9	6	22%	19%	3%	3%	14%	29%	5%	2%	4%
pitch	7	4	8%	17%	8%	58%	1%	0%	8%		
plug	7	5	6%	14%	1%	5%	43%	2%	29%		
pop	5	1	44%	43%	6%	5%	3%				
push	5	4	4%	2%	1%	48%	45%				
range	9	1	60%	12%	21%	6%	0%	0%	0%	0%	0%
root	9	8	2%	3%	35%	13%	3%	1%	5%	37%	2%
scrap	5	1	46%	26%	16%	9%	3%				
screw	5	2	28%	57%	9%	2%	4%				
seat	5	2	32%	65%	0%	1%	2%				
section	7	4	17%	28%	0%	52%	1%	1%	2%		
shoot	7	2	10%	54%	23%	6%	4%	2%	2%		
slip	9	7	7%	10%	6%	7%	8%	3%	41%	12%	7%
space	9	4	3%	6%	60%	21%	1%	7%	0%	0%	2%
strike	9	6	2%	2%	5%	9%	11%	65%	5%	2%	0%
tack	7	1	31%	27%	3%	5%	1%	14%	19%		
tie	7	6	31%	43%	2%	1%	3%	21%	0%		

For the item *sweep*, the cue sentence was *The huge waves swept her overboard*. The sense under the signpost *PUSH SOMEBODY/SOMETHING WITH FORCE* was the target sense (target sense selection of 45%) and the sense under the signpost *WIND/WAVES ETC* (sense selection of 28%) was the second most often selected sense by the subjects. It seems that the subjects had a tendency to wrongly select the latter sense because of the word “waves” that appeared in the cue sentence. This word also appeared in the signpost of sense 5 and at the beginning of its definition. This suggests that dictionary users are often drawn to senses where a given word features that occurs in the original context. While overall a sensible strategy, in some cases it can be misleading and lead to incorrect sense selection. Also, the beginning of the definition of sense 5 as well as the signpost of this sense contain the word “wind(s)”. The words “waves” and “wind” can be classified under the superordinate “nature”. Hence, it is possible that the subjects made such an association and that the word “waves”, which appeared in the immediate context of the target item in the cue sentence, coerced them into selecting the sense containing the words “wind(s)” and “waves”. In addition, sense 5 contained other words that could be classified under “nature”, words such as “fire” at the beginning of the definition and “Thunderstorms” in the first example sentence of the sense.

For the item *bar*, the cue sentence was *We sat at the restaurant’s bar while we were waiting for a table*. The sense under the signpost *PLACE TO BUY DRINK* was the

target sense (target sense selection of 50%) and the sense under the signpost *PLACE TO DRINK IN* was the second most often selected sense by the subjects (sense selection of 42%). It must be admitted that both senses are very similar, however, one needs to be able to distinguish between the general meaning of “bar” (sense 1) and the one found in sense 2, which refers to a counter where one can buy a drink (this sense being the target sense). Apparently, not all of the subjects were able to notice this difference and consequently select the appropriate sense. This might suggest that dictionary users, in order to improve their success, would be well advised to read the senses of dictionary entries with greater care, and pay attention to all the seemingly irrelevant details. However, another explanation for why a large proportion of the subjects did not opt for the right sense could be that they only read the first sense of the entry which at first glance appeared to be the correct sense, but they did not even look at the remaining senses. This would confirm Tono’s observations (1984) that dictionary users mainly consult the first sense of an entry and do not bother to go any further if they think there is no good reason to do so.

For the item *cast*, the cue sentence was *The press were quick to cast her in the role of “the other woman”*. The sense under the signpost *DESCRIBE* was the target sense (selected 26% of the time), but the most selected sense (66%) was the one signposted with *ACTING*. A sentence with an identical construction to the one used in the cue sentence was located in the target sense (sense 4) as an example sentence (*Clarke’s trying to cast me in the role of villain here.*) and was intended to assist the subjects with the task, however, most subjects still chose the incorrect sense (sense 3) as their answer. One way of explaining this choice could be that the subjects associated the word “role” in the cue sentence with acting, and as a result decided to select the sense under the signpost *ACTING*.

For the item *draw*, the cue sentence was *Her screams drew passers-by to the scene*. The sense under the signpost *ATTRACT* was the target sense (selected 37% of the time) and the sense under the signpost *GET A REACTION* (sense selection of 30%) was the second most often selected sense in the entry following the target sense. So many subjects might have chosen sense 1 (the confusable sense immediately preceding the target sense) as their answer because they might have thought that “Her screams” (from the cue sentence) got the reaction of people (in this specific case “passers-by”) and that is why these people arrived at the scene. Almost a third of the subjects did not also use

the construction “draw somebody to something” (which appeared in boldface in the target sense) to their advantage, which is present in the cue sentence. The conclusion stemming from this observation is that dictionary users do not always find the relevant information in entries, despite it being there. To reiterate, language learners should read entries more carefully.

For the item *gauge*, the cue sentence *What gauge of wire do we need?* was used. The sense under the signpost *WIDTH/THICKNESS* was the target sense (target sense selection of 45%) and the sense under the signpost *JUDGMENT* was the second most often selected sense (sense selection of 31%). The explanation for this could be that the latter contained the construction “a gauge of something” in bold and at the beginning of the sense, which might have been crucial as a recent eye-tracking study (Lew et al. 2013) on bilingual dictionary entries found that bold type in entries attracts a lot of attention. In the present study, the subjects might have confused the construction “gauge of wire” in the cue sentence with the construction “a gauge of something” in sense 3 of the entry. This could mean that dictionary users sometimes prioritize the form of word expressions over their content.

For the item *patch*, the cue sentence was *There is a damp patch on the ceiling*. The sense under the signpost *PART OF AN AREA* was the target sense (target sense selection of 45%) and the sense under the signpost *OVER A HOLE* was the second most often selected sense (sense selection of 32%). The reason why so many subjects incorrectly selected sense 2 (the sense under the signpost *OVER A HOLE*) may have been that the subjects thought that the “patch” from the cue sentence is a kind of material on the ceiling that is covering a hole in the wall. However, the definition in sense 2 clearly states that such a material (“patch”) is sewn onto something, so it is hard to imagine anything being sewn on the ceiling, and that is why sense 1 must be the correct answer (target sense).

For the item *pile*, the cue sentence was *The building had been knocked down, and there was nothing left but piles of stones*. The sense under the signpost *LARGE AMOUNT* was the target sense (target sense selection of 57%) and the sense under the signpost *ARRANGEMENT OF THINGS* (in the sense of ‘stack’, sense selection of 22%) was the second most often selected. Almost a quarter of the subjects may have selected the incorrect sense as their answer because of finding in that sense the colligation “pile of”, which was also present in the cue sentence. However, the meaning of “pile” in the

cue sentence was “large amount”, especially that the building was knocked down and it is not possible to have stones arranged neatly afterwards.

For the item *push*, the cue sentence was *His parents are pushing him to study medicine*. The sense under the signpost *ENCOURAGE* was the target sense (selected 48% of the time) and the sense under the signpost *PERSUADE* (sense selection of 45%) was selected nearly as often. The subjects who incorrectly selected the sense under *PERSUADE* probably thought that “pushing him to study medicine” means that the person is being persuaded to study hard and get into medical school. However, a close analysis of the confusable sense (sense under *PERSUADE*) clearly shows that the item *push* is mainly used here in a political context. Although the last example sentence in this sense is an exception, it is still used with the construction “push something on somebody”, a construction not present in the cue sentence. Hence, the sense under the signpost *ENCOURAGE* must be the correct answer.

For the item *root*, the cue sentence was *“Butler” and “bottle” come from the same Latin root*. The sense under the signpost *LANGUAGE* (sense 8) was the target sense (target sense selection of 37%) and the sense under the signpost *ORIGIN/MAIN PART* (sense 3) was the second most often selected sense by the subjects (sense selection of 35%). There is a possibility that the subjects who selected the wrong senses associated the expression “come from” in the cue sentence with the word “origin”, which could be found in the signpost and at the beginning of the definition of the second most often selected sense. It seems that a lot of the subjects were not familiar with the meaning of “root” which refers to the context of word formation, and hence opted for the more common meaning in this specific example.

For the item *seat*, the cue sentence was *The majority of seats on the board will be held by business representatives*. The sense under the signpost *OFFICIAL POSITION* (sense 2) was the target sense (selected 65% of the time) and the sense under the signpost *PLACE TO SIT* (sense 1) was the second most often selected sense (sense selection of 32%). So many subjects may have incorrectly selected the incorrect sense because it was the first sense in the entry and it seemed to be the correct answer, so the subjects ignored the remaining senses. Moreover, sense 1 was a long one, and the subjects may have been dissuaded from looking elsewhere in the entry after consulting it.

In conclusion, one source of problem in sense selection is that dictionary users tend to associate words from the original context of the target item with words that are

present in signposts or definitions of this target item. For example, the subjects from the main study frequently selected the sense under the signpost *WIND/WAVES ETC* as their target sense for the item *sweep*. This probably happened because the entry *sweep* contained the word “waves” in its signpost and at the beginning of its definition and, importantly, the word “waves” could also be found in the cue sentence. The fact that signposts and definitions of senses contained the same words as the cue sentence made the subjects believe that the senses that had these signposts and definitions are the correct senses. So learners appear not to realize that lexicographers have no way of predicting what words will appear in the context of the target word, and it is not possible to predict this except for frequent collocations. They latch onto single wordforms rather than on more holistic meaning. Interestingly, in doing so, human users operate not unlike machine translation engines.

Second, dictionary users do not always concentrate their attention on the content of the sentences in which target items appear. Instead of also focusing on the meaning of these sentences, there is a tendency for learners to frequently misinterpret various constructions from the context of the target item, matching them with incorrect structures from the entry, which often results in wrong sense selection. This is what may have happened with the item *gauge*. The subjects noticed the construction “gauge of something” in the cue sentence and thoughtlessly matched it with the same construction appearing in the incorrect sense, as if not even trying to figure out what the cue sentence is about.

Third, it is likely that language learners do not consult all of the senses of an entry meticulously when searching for a word’s meaning. There is every likelihood that students skim through entries, meaning that they do not read the entries with enough care. This sloppiness may result from various factors: lack of motivation, unwillingness to waste too much time on a given task, impatience, senses being too long (item *seat*), etc. There is no doubt that these factors contribute to poor sense selection, or the inability to bring back the right meaning of a given word. In such situations, dictionary users might not even find the information needed for understanding a word when it is there to be found in the entry, as may have been the case with the item *draw*.

Fourth, there appears to be a tendency for dictionary users to focus their attention on the initial sense of an entry while neglecting the remaining senses (item *bar*). Such a habit may well derive from the conviction that all the necessary information can

be found in the first sense of an entry, which according to the users is presumably the most common sense in a given language, or the reason could simply be poor dictionary reference skills of the users. At any rate, the finding that language learners opt for initial senses in entries and avoid those senses located in the middle or at the end of entries was reported in Tono (1984) and Lew (2004). In addition, it must be added that accessing long senses in entries might discourage users from consulting whole entries.

5.2. Linguistic form of sense cues

This section deals with the wording of sense cues¹⁵ and it attempts to find answers to research question 10. The issues discussed involve the heterogeneity, vagueness, word class, and redundancy of signposts.

5.2.1. Heterogeneity of sense cues

There is no doubt that the issue of uniformity of the linguistic form of sense cues requires the attention of lexicographers. Signposts are formulated in single entries of the same dictionary in a variety of ways. As signaled in the first chapter (see sections 1.2.1. and 1.3.), sense cues can be worded as superordinates of headwords, their synonyms, definitions, paraphrases, contextual information, domain, purpose, the typical subject or object of a verb. Whether the trend of maintaining the heterogeneity of signposts should be reversed remains uncertain, as it is still unclear what way of organizing such information is most beneficial to the average dictionary user. Two cases are analyzed below more closely: items *tie* and *pitch*.

In the present study, in conditions with guiding devices, the item *tie* (noun) consisted of the following sense cues: (1) *MEN'S CLOTHES*; (2) *CONNECTION/RELATIONSHIP*; (3) *RESULT*; (4) *FOR CLOSING SOMETHING*; (5) *GAME*; (6) *PREVENT YOU FROM DOING SOMETHING*; and (7) *RAILWAY*. These signposts could be classified in the following way, respectively: (1) defini-

¹⁵ The primary focus of this thesis is not the linguistic form of sense cues; hence, the conclusions drawn in the following sections could possibly be regarded as suggestions for future research.

tion/superordinate; (2) synonym; (3) superordinate; (4) purpose; (5) domain; (6) contextual information; (7) domain. This specific item contained various types of sense cues, and the subjects from the study did not perform particularly well in this example. Sense selection accuracy was 6% for signposts, 33% for signposts + menus, 25% for the control condition. However, the results were much better for the item *pitch*, which similarly had different types of sense cues (it also had seven senses and was of the same part of speech as the item *tie*). The item *pitch* (noun) consisted of the following sense cues: (1) *SPORTS FIELD*; (2) *STRONG FEELINGS/ACTIVITY*; (3) *MUSIC*; (4) *PERSUADING*; (5) *BASEBALL*; (6) *SLOPE*; and (7) *STREET/MARKET*. These signposts could be classified as (respectively): (1) definition; (2) contextual information; (3) domain; (4) definition/synonym; (5) domain; (6) synonym; (7) synonym. For this example, sense selection accuracy was 63% for signposts, 59% for signposts + menus, 54% for the control condition. Perhaps doing research in this area in the future could lead to answers as to whether adhering to a heterogeneous linguistic form of signposts in single entries is beneficial or not. At the present moment, though, it seems that dictionary-makers should be allowed flexibility in the compilation of signposts, which seems safer on account of the difficulty of conveying detailed information through a limited repertoire of paraphrasing strategies.

5.2.2. Vagueness of sense cues

The fact that sense cues can be too broad or general for dictionary users is one inference made from Tono's research (2011). Senses of dictionary entries which have signposts that are not detailed enough may mislead language learners in entry navigation. Such a conclusion could perhaps be made on the basis of the item *tie* from the present study. Sense selection accuracy amounted to only 6% for signposts, 33% for signposts + menus and 25% for the control condition. It is possible that in this specific case the subjects did not access enough information from the sense cue *PREVENT YOU FROM DOING SOMETHING* (target sense), which might have contained some very general information about the target sense and turned out to be insufficient for correct sense selection (cue sentence: *He was still a young man and he did not want any ties.*). The vast majority of subjects clearly did not associate this sense cue with the increasing number of re-

sponsibilities that one might experience when gradually getting older. Perhaps a signpost formulated with words such as “responsibilities” or “burden” would have been more specific for this sense in the context provided. The same problem might have occurred with the item *space*. The signpost *WHERE THINGS EXIST* under the fourth sense (target sense) seems too broad and it did not sufficiently assist the subjects in grasping that in this sense *space* is used as a physics term, *space* must be understood here in an abstract way (cue sentence: *Scientists have a poor knowledge about the movement of sound waves through space.*). Most of the subjects (60% of the time) incorrectly selected the third sense under the signpost *OUTSIDE THE EARTH*, a sense in which *space* can be understood as “the area beyond the Earth”. Perhaps a signpost worded as *PHYSICS*, under the fourth sense, would have been more effective. The use of corpora for dictionary compilation means that senses are designed to serve clusters of typical uses as evidenced in the corpus. Nevertheless, predicting the exact context and situation which dictionary users find themselves in is unachievable in practice.

Signposts that are not specific enough may cause dictionary users problems. When a sense cue does not contain enough information about a sense, the sense is often ignored by the subjects, who decide to opt for other senses instead. As a result, users bring back the wrong meaning from dictionary consultation.

5.2.3. Word class of sense cues

Observations from the main study indicate that the word class of both the target item and its sense cues may possibly affect the process of sense selection. Take the case of the item *clear*. For this item, the cue sentence was *His appointment had been cleared by the board*. The subjects did not benefit much from either signposts or signposts + menus (sense selection accuracy of 31% for signposts, 28% for signposts + menus, 25% for control). The subjects had a tendency to select mainly the first four senses (sense selection of 22% for the first sense, 18% for the second, 19% for the third, 28% for the fourth). It is possible that the sense cue *PERMISSION* (the sense cue under the target sense), which is a noun, might have confused the subjects, as the target item *clear* had been used as a verb in the cue sentence. In cases like this, users possibly resort to a substitution strategy: in order to see whether a given sense is the correct sense in a given

context, users substitute sense cues of senses for the target item in its respective context. Most preferably, users would probably have these sense cues and target items in the same part of speech, because otherwise substituting words of a different class for one another becomes a serious burden. In these problematic situations, it is probable that users ignore such senses even when they are the right ones. Likewise, the subjects may have been confused when selecting the target sense of the item *tie*. For this item, the cue sentence was *He was still a young man and he did not want any ties*. The target sense was the sense under the signpost *PREVENT YOU FROM DOING SOMETHING*. The reason why many subjects selected the first and second senses of the entry instead of the fourth sense (target sense) may have been that the signpost *PREVENT YOU FROM DOING SOMETHING*, which can be classified as contextual information, is not a noun like the target item, so it is not possible to simply “insert” this whole expression in the place of “ties” in the cue sentence. It seems then that in this particular case a sense cue of the same part of speech as the target item *tie* could perhaps increase the accuracy of sense selection. A possible explanation for the substitution strategies that users employ in sense selection could perhaps be found in the principle of substitutability, which goes back to the Aristotelian classical definition. By this principle, the term being defined (so-called *definiendum*) and the defining part of the definition (so-called *definiens*) must be interchangeable. Even if substitutability rarely obtains in practice, since a definition is a phrase or clause, and so usually cannot naturally replace a lexical item, users may be subconsciously aware of the principle and assume that substitution occurs.

5.2.4. Redundancy of sense cues

The main aim of sense cues is to guide users to the right sense of an entry in order to find the definition one is searching for. This can happen when sense cues contain information that has been carefully selected for correct sense selection to take place. However, sense cues may sometimes simply repeat the information in definitions using the same wording, which could bring about certain consequences for the process of sense selection. The subjects of the present study might have been affected by this phenomenon. Examples include: the item *pitch* (the sense under the signpost *SLOPE* has the words “slopes” and “sloping” in its definition); the item *snap* (the sense under the sign-

post *SAY SOMETHING ANGRILY* has been defined as “to say something quickly in an angry way”); the item *strike* (the sense under the signpost *HIT WITH HAND/WEAPON ETC* has been defined as “to deliberately hit someone or something with your hand or a weapon). When a sense happens to be a target sense of a given item, it could possibly be beneficial to dictionary users if the sense cue of such a word was formulated with different words than the words and phrases used in the definition. Nonetheless, achieving this goal might be more difficult than it seems. Sense cues have to be brief and general, which means that wording signposts in a variety of ways could possibly be too challenging even for professionally trained lexicographers.

5.3. Discussion

The sense selection analysis in the study led to a few conclusions (research question 9). To begin with, dictionary users do not always bring back the right meaning from entries. The context in which the target item appears may contain the same words as the words that have been used in sense cues and definitions of senses. These identical words which appear in both the context of the target item and entries in general may lead to a misinterpretation of information in entries. For some reason, students frequently assume that if a word that appears in the context of the target word also appears, for example, in the signpost of a word, then the sense containing that signpost is the target sense. These recurring words clearly coerce dictionary users into choosing incorrect senses and hinder the process of sense selection, although it must be noted that occasionally applying this strategy in sense selection may bring about positive results.

Another observation is that dictionary users do not always pay attention to the meaning of the cue sentence containing the target senses. Instead, users focus on the form of constructions that appear in the context of the target word and definitions of senses. Encountering the same construction in both the context of the target item and the definition of a given sense may force dictionary users into selecting those senses regardless of whether they are the correct senses or not. It would be compelling to find out what factors may account for such dictionary use behavior. Perhaps users cannot decipher the meaning of the cue sentence in question as a few words which appear in this cue sentence or its context are unknown to the users. Hence, dictionary users decide not

to waste their time and resort to focusing on the form of constructions in the context of the target item and definitions of senses rather than the meaning of the cue sentence. Given everything said so far, it seems that dictionary users have adopted a natural strategy of pattern matching in sense selection by looking for: (1) similarities of form between constructions; and (2) recurring words (see paragraph above).

Also, various factors may contribute to a decrease in sense selection accuracy. For example, lack of time may result in dictionary users trying to find the meaning of a word as quickly as possible without consulting each and every sense in an entry, or even failing to read the senses but focusing on the signposts instead. In addition, if users are not motivated to learn what a given word means, sense selection becomes negatively affected as users may simply superficially scan entries rather than read them more closely. Finally, language learners tend to be impatient when it comes to accessing information from entries and decisions concerning which sense is the target one are made hastily.

Clearly, there is a tendency for users to consult initial senses of entries and avoid the remaining senses, a finding first reported by Tono (1984). Poor dictionary reference skills is a possible explanation for why users consult entries in this way. This is why students of English should be taught in their English classes how to use a dictionary. Without appropriate training, language learners will continue to make this mistake and retrieval of necessary information from dictionaries will become inhibited. It should be made clear to them that their chances of bringing back the right meaning from an entry will be much better when the whole entry is scrupulously consulted.

Given other inferences made on the basis of the study (research question 10), one might ask if lexicographers should indeed try to enforce an artificial uniformity of the form of signposts. Yamada (2010) expressed concerns that sense cues have a variety of linguistic form and that perhaps this lack of consistency may result in dictionary users having problems with entry navigation (see section 1.3.). However, it could be argued that the fact that signposts come in a number of types (definitions, paraphrases, synonyms, contextual information, etc.) is perhaps a positive trend in lexicography. It is not necessarily a sign of lack of coherence, as signposts need to be brief, and constraining the form of signposts to a specific type of construction or lexical relation to the headword (such as a synonym) would seem too restrictive and might lead to an inability to convey the meaning a given signpost is supposed to convey. Take the case of the item

pitch from the study. The fifth sense of this item had the signpost *BASEBALL*, which could be classified as a domain of *pitch* (noun entry). The sense cue *BASEBALL* informs the user that the sense given is connected to sports, or baseball to be even more precise. However, if the linguistic form of the signpost had to be changed, for instance, to a synonym, the best-chosen signpost in such a case could perhaps be *THROW*, which does not inform the user at all about whether this sense is used in the context of sports, let alone baseball. In other words, the sense cue *BASEBALL* is more informative, and changing the form of the signpost from domain into synonym would not make much sense. All of this means that if dictionary users are to correctly select senses in dictionaries with the assistance of sense navigation devices, lexicographers must be allowed reasonable flexibility with regard to wording sense cues, as explaining certain terms very frequently requires utilizing complex strategies on the part of dictionary-makers.

Another conclusion, one that had been reached by Tono (2011), is that signposts may sometimes be worded in too general terms, which of course is not surprising as signposts need to be brief and cover a range of uses. Nevertheless, signposts that are too broad are not specific and in such cases they mislead dictionary users or provide them with inaccurate information, which prevents dictionary users from selecting correct senses. Lexicographers would need to focus more attention on this specific aspect of signposting to perhaps notice how sense cues could be made more detailed, or to the point. For example, the subjects from the main study had problems selecting the sense under the signpost *WHERE THINGS EXIST* for the item *space*. The signpost used in this specific sense may have been too general, and a signpost worded as *PHYSICS* may have been more effective, as *space* was used in the cue sentence as a physics term. In modern lexicography, senses are compiled based on a cluster of citations in a corpus. Assuming that the corpus includes typical contexts of use, sense cues for specific senses in entries most beneficial to users can be chosen on that basis. However, it must be reiterated that it is impossible for lexicographers to exactly anticipate for what specific context the signpost of a sense is going to be needed in a given situation. Hence, it is also possible that entries with vague sense cues might be the best possible solution for entry navigation.

Furthermore, it is possible that dictionary users may become confused when sense cues are of a different part of speech than the target word, as is the case when they are, say, collocates of the headword. Dictionary users might have a tendency to substi-

tute sense cues of senses for the target item in its specific context in order to see whether a given sense fits into the context. Such procedures may allow users to select the correct senses during entry consultation by trial and error. However, when a given sense cue of the target sense is of a different word class than the target item, such a substitution may become impossible, and users are led away to other senses, and end up making the wrong choices. Research on the effect of part of speech on sense selection in entry consultation would have to be conducted if any definite conclusions are to be reached. Interestingly, substituting sense cues for target items is in a way consistent with the concept of substitutability of the Aristotelian, or classical definition. According to Aristotle, the term being defined (so-called *definiendum*) and the defining part of the definition (so-called *definiens*) should be interchangeable. Though substitutability is in practice questionable, the notion of replacing items with one another might be present in the minds of users, which means that users expect substitution to take place.

Lastly, some signposts repeat the information from definitions of senses using the same wording. Possibly, dictionary users could benefit more from sense cues that would be formulated with words different than the words and phrases used in specific senses in entries. However, research would first be needed to see if repeating the information from definitions in signposts with identical words and phrases is indeed suboptimal. At any rate, including the same wording twice in a single sense may be too difficult to avoid as signposts need to be brief and general, so there just might not be enough options for lexicographers to word signposts in the desired manner.

Table 14 below briefly summarizes the main study findings and conclusions for the ten research questions.

Table 14. Study findings and conclusions.

Research questions	Findings/conclusions
Research question 1: Do signposts increase SENSE SELECTION ACCURACY during dictionary look-up?	Signposts do not increase SENSE SELECTION ACCURACY during dictionary look-up.
Research question 2: Do signposts reduce ENTRY CONSULTATION TIME during dictionary look-up?	Signposts reduce ENTRY CONSULTATION TIME during dictionary look-up.
Research question 3: Does a combination of signposts and menus increase SENSE SELECTION ACCURACY, and how does it fare against signposts alone or entries without GUIDING DEVICES?	A combination of signposts and menus does not increase SENSE SELECTION ACCURACY. Signposts + menus do not lead to higher SENSE SELECTION ACCURACY compared with either signposts alone or entries without GUIDING DEVICES.
Research question 4: Does a combination of signposts and menus reduce ENTRY CONSULTATION TIME, and how does it fare against signposts alone or entries without GUIDING DEVICES?	Signposts + menus lead to faster ENTRY CONSULTATION TIME compared with entries without GUIDING DEVICES, but not compared with signposts alone.
Research question 5: Does ENTRY LENGTH affect	ENTRY LENGTH does affect SENSE SELECTION

Research questions	Findings/conclusions
SENSE SELECTION ACCURACY, and how does ENTRY LENGTH affect SENSE SELECTION ACCURACY in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?	ACCURACY. GUIDING DEVICES tend to increase SENSE SELECTION ACCURACY in longer entries. Dictionary users tend to achieve higher SENSE SELECTION ACCURACY in shorter entries than in longer entries regardless of whether these entries have sense navigation devices or not.
Research question 6: Does ENTRY LENGTH affect ENTRY CONSULTATION TIME, and how does ENTRY LENGTH affect ENTRY CONSULTATION TIME in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?	ENTRY LENGTH does affect ENTRY CONSULTATION TIME, with longer entries taking more time to consult. The effect of ENTRY LENGTH on ENTRY CONSULTATION TIME is most pronounced when dictionary users do not have access to sense navigation devices. Signposts reduce ENTRY CONSULTATION TIME particularly in longer entries.
Research question 7: Does PART OF SPEECH affect SENSE SELECTION ACCURACY, and how does PART OF SPEECH affect SENSE SELECTION ACCURACY in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?	PART OF SPEECH does not affect SENSE SELECTION ACCURACY in general, or in any of the three conditions. There is a tendency for SENSE SELECTION ACCURACY to be higher in noun entries with GUIDING DEVICES, but not in verb entries.
Research question 8: Does PART OF SPEECH affect ENTRY CONSULTATION TIME, and how does PART OF SPEECH affect ENTRY CONSULTATION TIME in the following experimental conditions: entries with signposts and menus, entries with signposts, entries without signposts or menus?	The data show that consulting verb entries takes more time than consulting noun entries. No interaction effect was noted between PART OF SPEECH and GUIDING DEVICE with respect to ENTRY CONSULTATION TIME.
Research question 9: What conclusions can be drawn from the process of sense selection?	Dictionary users tend to select those senses as their target senses which contain words encountered in the context of the target item. Dictionary users do not always pay attention to the general meaning of the sentences in which target items appear and, instead, focus on the form of constructions that appear in the context of target items and definitions of senses. Lack of motivation, time constraints and impatience may lead to lower SENSE SELECTION ACCURACY. Dictionary users tend to only consult initial senses of entries either deliberately or due to poor dictionary reference skills.
Research question 10: What other inferences can be made?	It is unclear whether forcing sense cues into uniform linguistic form is a good idea. At the present moment, it seems that lexicographers should be allowed flexibility in the wording of signposts. Signposts should be as detailed and specific as possible. However, predicting which signpost would be best for an unknown context is not easy. It might be more beneficial for dictionary users when sense cues are of the same word class as the target item whenever possible. Research is needed to see whether formulating sense cues and their definitions using the same wording is counterproductive.

5.4. Limitations of the study

The present study has a few limitations that need to be considered when discussing the study findings. In the study, the subjects were exposed to lexicographic data taken from English monolingual (primarily learners') dictionary entries. Given that these dictionaries contain information and definitions of various words in the English language, the intended recipients of such dictionaries are people whose command of English is very good if not fluent. It is no surprise, then, that it is most likely that native speakers of English are the users that consult monolingual dictionaries (albeit not usually learners' dictionaries) more frequently than any other group. Therefore, the question arises whether the lexicographic content employed in the study was entirely compatible with the students' language abilities. The subjects' linguistic knowledge was generally assessed by their teachers as intermediate, and despite our best efforts the degree of difficulty of the target tasks may not correspond to their proficiency level in English. And this is when yet another problem must be recognized. How certain can we be that the participants of this experiment were all intermediate-level users of English? Unfortunately, no preliminary proficiency level tests were conducted on the subjects, as school policy prohibited any such external testing. This means that, at least in theory, some subjects may have been more or less linguistically competent in English than others.

There may also be concerns that the length of the cue sentences, which varied somewhat across items, may not have provided the participants with sufficient context in all cases. One must bear in mind here that when deciding to consult a dictionary in natural circumstances, users are often provided with a considerable portion of the surrounding context in, for example, books, newspapers or magazines. Perhaps it would be desirable in future studies of this type to offer longer cue sentences, or maybe even more textual context that would guide subjects and lead them more accurately to finding the right answers.

Another potentially problematic issue is the so-called Hawthorne effect (Cohen et al. 2007: 160), whereby subjects do not necessarily perform naturally when aware that they are being observed or tested by the researcher. The fact that it is nearly impossible in the vast majority of cases to create a naturalistic setting for subjects while conducting research must never be underestimated.

Conclusion

The first aim of the present study was to investigate the role of signposts in print dictionary entry-internal navigation. As entry consultation can be a complicated process, a few pedagogical dictionaries of English have introduced signposts into their design in the hope that dictionary users will be able to find the meaning they are searching for with greater ease. Some studies (Bogaards 1998; Lew 2010; Nesi and Tan 2011) have already shown that signposts are beneficial to the average user and so the present study attempted to confirm these findings.

First, the evidence points to the fact that signposts do not increase sense selection accuracy as the effect of guiding device on sense selection accuracy did not achieve statistical significance. The implication is that dictionary users do not benefit from signposting when it comes to selecting the correct sense in entry consultation, which might suggest that users need to focus more on the lexicographic information in senses and not just the signposts. Nevertheless, there was a tendency for signposted entries to slightly outperform bare entries. More research would be needed to see whether sense selection accuracy is in fact affected by the presence of signposts in entries.

Second, signposts reduce entry consultation time. The time required for consultation was on average 40 seconds for signposts and 49 seconds for the control condition, and the effect of guiding device on entry consultation time reached statistical significance. These results indicate that dictionary users are able to save approximately 9 seconds during entry consultation when being assisted with signposts, which could be a significant benefit, as time constraints very often contribute to poor sense selection accuracy of users who are unwilling to read whole entries. By and large, it appears that signposts serve a positive function in dictionaries with respect to both sense selection

accuracy and entry consultation time. By being able to summarize senses in just a few words, signposts allow dictionary users to quickly decide which senses might contain the information they are looking for, and which senses are safely left alone. In this way, signposting not only saves students time, but also facilitates information access in the entry, which may lead to improved sense selection.

The second aim was to examine whether a combination of signposts and menus in single entries is a more effective strategy than signposts alone. So far the only English monolingual learners' dictionary to have equipped entries with both signposts and menus has been LDOCE3, which adopted such combinations of the two devices only for selected longer entries. As it is uncommon for dictionaries to assist users with signposts and menus simultaneously, there existed no empirical evidence of the effectiveness of such a design until now. The general conclusion drawn from the study is that adding menus to signposts in entries is no more beneficial to dictionary users than equipping entries with signposts only. In the study, the subjects achieved a mean sense selection accuracy of 47% in the signposts + menus condition and 46% in the signpost-only condition, a very small difference which was not statistically significant. Likewise, no difference was found between the two conditions with respect to entry consultation time. The subjects needed on average 40 seconds for entries with signposts and 42 seconds for a combination of signposts and menus. This could mean that the additional 2 seconds required for signposts + menus might have been used up for consulting the same sense cues in two places in the entry, menus at the top, and then again the sense cues situated next to the senses (signposts). This would suggest that combining two different types of sense navigation devices in single entries is counterproductive as signposts alone would suffice. However, this does not necessarily mean that menus are useless. Apart from its role in sense selection, an entry menu can possibly function as an overview of the whole entry, which may benefit users with respect to meaning retention. An additional finding is that signposts + menus resulted in higher scores in sense selection and faster consultation times compared with entries without sense navigation devices, which confirms the usefulness of supporting devices.

Concurrently, the effect of entry length on the process of dictionary use was closely analyzed. According to the observations, entry length affects both sense selection accuracy and entry consultation time. On the whole, guiding devices improved sense selection accuracy in longer entries, a finding consistent with the purpose of in-

cluding signposts in entries due to dictionary users not always being patient and motivated to scrupulously scan through whole entries. Further, sense selection accuracy figures were highest in entries consisting of fewer senses, notwithstanding these entries having sense navigation devices or not, which suggests that users do not need any assistance in shorter entries. In addition, the study reveals that entry length becomes a serious factor in entry consultation time when students have no access to sense navigation devices. In this particular condition, the more senses a given entry has, the longer its consultation. Even two additional senses in an entry considerably prolonged the time the subjects required for analyzing each task item, but this additional time was significantly reduced when signposts were present in the entry.

Also, the study tested how part of speech affects the subjects' ability to select senses and the time spent on entry consultation. Intuition suggested that the word class of an entry should not influence either sense selection accuracy or entry consultation time, even despite Nesi and Tan's trivial finding (2011) that both adjective and verb entries are more problematic. One observation is that part of speech has no effect on the accuracy of sense selection in general, or in any one of the tested experimental conditions, be it the signposts, signposts + menus, or control condition. Nevertheless, a tendency was revealed for sense selection accuracy to be higher in noun entries with guiding devices, but not in verb entries, the implication being that sense navigation devices might be more beneficial to dictionary users in noun entries. Other observations are that the interaction between part of speech and guiding device has no effect on entry consultation time, and it takes longer to consult verb entries than noun entries, as a small but statistically significant difference was found in the study between nouns and verbs (mean entry consultation time for verbs was 45 seconds, for nouns 43 seconds). In a way, this last observation confirms Nesi and Tan's tentative finding that consulting verb entries is trickier for dictionary users. However, this hypothesis would still need to be tested in future studies.

The fifth aim of the paper was to focus on the process of sense selection in entry navigation. Several conclusions have been inferred from the sense selection analysis. First, recurring words in senses and the context of the target item lead dictionary users into selecting incorrect senses. Second, instead of focusing on the meaning of the sentences in which target items appear, dictionary users tend to give priority to the form of constructions appearing in both the context of target items and definitions of senses.

Third, sense selection accuracy may be influenced negatively when dictionary users are impatient or not motivated enough, or when pressed for time. Fourth, the study confirmed Tono's finding (1984) that dictionary users tend to consult the initial senses of entries and tend to ignore the remaining senses. This could be either intentional, or due to the users' poor dictionary reference skills, which implies that language learners need dictionary training in schools.

Finally, as far as the linguistic form of sense cues is concerned, it seems that lexicographers need flexibility when it comes to wording signposts. Yamada (2010) critiques that the form that signposts take is not homogeneous, and that they come in various types: superordinates of headwords, their synonyms, definitions, paraphrases, contextual information, domain, purpose, the typical subject or object of a verb; the point being that such signposts mislead dictionary users in sense selection. Nonetheless, forcing all signposts into uniform linguistic form might not necessarily be a good idea even if this task was feasible. Changing the linguistic form of the present sense cues in dictionaries into other types might improve the indexical quality of cues in some cases more than in others, which is why dictionary-makers need flexibility in the compilation of signposts in order to decide, either individually or collectively, what cues to select.

The vagueness of signposts is yet another problem that dictionary-makers have to combat. Due to space constraints in paper dictionaries, sense cues need to be as brief and specific as possible. Admittedly, lexicographers have by and large successfully dealt with this problem. Nevertheless, some signposts could be more useful than others depending on the specific context that a dictionary user encounters. Modern dictionaries are based on corpus solid evidence, which includes a systematic examination of typical real-life contexts. Hence, perhaps dictionary-makers have already come up with the most adequate solutions as far as the specificity of signposts goes. In addition, the study findings suggest that it might be more advantageous for dictionary users when sense cues and target items are of the same part of speech. Learners tend to substitute sense cues of senses for target items in their respective contexts, trying to decide in this way whether a particular sense fits into the context of the target item. However, substitution of sense cues for target items is difficult to make when the target item and a sense cue of that target item are of a different word class. This hypothesis would still need to be tested for this observation to be confirmed. Taking into consideration the redundancy of signposts, metalexigraphers would need to carry out research in order to find out

whether signposts that repeat the wording from definitions of senses are less useful. Sense cues that are formulated with different words than the words used in definitions could be beneficial to the average user; nevertheless, as signposts must be general and specific, the range of possible wordings is limited.

Streszczenie

Celem rozprawy jest zbadanie przydatności elementów wspomagających nawigację wewnątrzhasłową w angielskich słownikach pedagogicznych. Obecnie w leksykografii pedagogicznej słowników angielskiego stosuje się dwa typy tychże elementów. Pierwszy z nich to tzw. wskaźnik¹⁶ semantyczny (w jęz. angielskim *signpost*), który występuje na samym początku konkretnego znaczenia danego hasła słownikowego w postaci np. krótkiej definicji tego znaczenia, zwięźle podsumowując treść całego znaczenia. Drugi typ to tzw. menu hasła (w jęz. angielskim *menu*), czyli blok nagłówków podhasła w postaci spisu treści, umieszczony bezpośrednio pod wyrazem hasłowym. Główną funkcją obydwu tych elementów jest ułatwienie użytkownikom słownika zaznaczenie poprawnego znaczenia danego wyrazu w określonym kontekście oraz ograniczenie czasu trwania tego procesu do minimum. Warto podkreślić, że źródłem uwzględnienia tych elementów nawigacyjnych hasła w angielskich słownikach pedagogicznych są przede wszystkim problemy użytkowników związane ze zrozumieniem znaczenia danego wyrazu na podstawie konsultacji słownikowej. Problemy te mogą wynikać ze zbyt dużej długości hasła, braku czasu, niewystarczającej motywacji, a także niewystarczających umiejętności użytkowników w zakresie posługiwania się słownikami.

Dotychczasowe badania przydatności elementów wspomagających nawigację w hasłach słownikowych wskazują na wyższą skuteczność wskaźników semantycznych (Lew 2010; Nesi and Tan 2011). Najważniejszym celem rozprawy jest sprawdzenie, czy połączenie wskaźników semantycznych oraz menu hasła w pojedynczym artykule

¹⁶ Żmigrodzki (2008: 119–122) stosuje w swojej terminologii określenie „indykator” semantyczny, bądź też znaczeniowy.

hasłowym w monolingwalnych papierowych słownikach pedagogicznych języka angielskiego może podnieść skuteczność wyboru poprawnych znaczeń wyrazów, a także przyspieszyć ten proces, w porównaniu do haseł wyposażonych tylko i wyłącznie w jeden typ elementów wspomagających nawigację, a mianowicie wskaźniki semantyczne (wyniki te zostały opisane w rozdziale czwartym). Cała rozprawa została podzielona na pięć rozdziałów (a także dwie sekcje rozpoczynające i kończące pracę, pierwszą wprowadzającą czytelnika w zagadnienia poruszane w rozprawie oraz drugą stanowiącą dyskusję i podsumowanie wyników badania).

Rozdział pierwszy traktuje o elementach wspomagających nawigację wewnątrzhasłową występujących w jednojęzycznych angielskich słownikach pedagogicznych. W rozdziale tym zostały też omówione problemy, z którymi borykają się użytkownicy dokonujący wyboru znaczeń, a także odniesiono się do problematycznych aspektów związanych ze stosowaniem systemu wskaźników semantycznych w artykułach hasłowych.

Rozdział drugi stanowi przegląd literaturowy badań empirycznych dotyczących elementów wspomagających nawigację wewnątrzhasłową. W dalszej części rozdziału uwzględniono krótką dyskusję nawiązującą do tematów poruszanych w rozdziale, oraz wprowadzenie do pytań badawczych badania właściwego rozprawy.

Rozdział trzeci jest szczegółowym opisem badania empirycznego. Zawiera on informacje dotyczące celów badania, pytań badawczych oraz zastosowanej metodologii, czyli sposobu zaprojektowania badania, osób badanych, zastosowanych procedur badawczych, wykorzystanych haseł słownikowych, a także metod statystycznej analizy danych.

Rozdział czwarty przedstawia wyniki w zakresie pierwszych ośmiu pytań badawczych. Podsumowane zostają wyniki dotyczące czasu konsultacji haseł oraz skuteczności wyboru znaczeń. Rozdział czwarty obejmuje także dyskusję tychże wyników.

Rozdział piąty stanowi próbę odpowiedzi na dziewiąte i dziesiąte pytania badawcze, skupiając się przede wszystkim na analizie procesu wyboru znaczeń i lingwistycznym formułowaniu treści wskaźników semantycznych. Rozdział kończy się krótkim opisem słabości zastosowanej metodologii.

Podsumowując najważniejsze wyniki badania właściwego, analiza statystyczna wykazała, że wskaźniki semantyczne nie zwiększają skuteczności wyboru znaczeń.

Hasła ze wskaźnikami semantycznymi natomiast osiągnęły nieznacznie lepszy wynik na poziomie tendencji statystycznej niż hasła pozbawione jakichkolwiek elementów wspomagających nawigację. Oznacza to, że jest potrzeba przeprowadzenia kolejnych badań. Jeśli chodzi o czas konsultacji haseł, wskaźniki semantyczne bez wątpienia zmniejszają czas potrzebny na analizę danego hasła. Ponadto, okazuje się, że połączenie wskaźników semantycznych z menu hasła w pojedynczym artykule hasłowym nie przynosi użytkownikom większych korzyści w porównaniu do haseł wyposażonych tylko i wyłącznie we wskaźniki semantyczne. Stosowanie menu hasła może jednak być przydatne z punktu widzenia osób uczących się języka obcego, gdyż element ten może funkcjonować jako ogólny przegląd całego hasła, co mogłoby umożliwić użytkownikom zapamiętywanie znaczeń danego wyrazu, bądź też uporządkowanie tej informacji. Co więcej, elementy wspomagające nawigację poprawiły skuteczność wyboru znaczeń w dłuższych hasłach, przy czym skuteczność była najwyższa w hasłach składających się z mniejszej liczby znaczeń, bez względu na to czy hasła te miały elementy nawigacyjne czy nie (co sugeruje, że użytkownicy nie potrzebują wsparcia w nawigacji w krótszych hasłach). Ponadto, długość hasła jest niezmiernie ważnym czynnikiem jeśli chodzi o czas konsultacji haseł, gdy użytkownicy nie mają dostępu do elementów nawigacyjnych (im więcej znaczeń ma hasło, tym dłużej trwa konsultacja). Wreszcie, badanie wykazało, że kategoria składniowa wyrazu hasłowego nie ma statystycznie istotnego wpływu na skuteczność wyboru znaczeń. Jednakże, elementy wspomagające nawigację mogą być bardziej korzystne dla użytkowników z punktu widzenia skuteczności wyboru znaczeń w hasłach będących rzeczownikami, choć jest to jedynie obserwacja na poziomie tendencji statystycznej. Co ciekawe, osoby badane dłużej studiowały hasła czasownikowe aniżeli rzeczownikowe (różnica statystycznie istotna). Może to sugerować, iż czasowniki sprawiają użytkownikom większe kłopoty niż rzeczowniki podczas konsultacji słownikowej.

Drugorzędnym celem pracy było skupienie się na procesie selekcji znaczeń oraz językowej formie treści wskaźników semantycznych. Po pierwsze, wyrazy powtarzające się zarówno w znaczeniach jak i w kontekście wyrazów hasłowych mogą prowadzić do wyboru niepoprawnych znaczeń. Po drugie, zamiast skupiać się na znaczeniu zdań, w których występują wyrazy hasłowe, użytkownicy słowników traktują formę konstrukcji występujących w kontekście i definicjach znaczeń priorytetowo. Po trzecie, niecierpliwość oraz brak motywacji i presja czasowa może negatywnie wpłynąć

na skuteczność wyboru znaczeń. Po czwarte, osoby korzystające ze słowników mają tendencję do skupiania się na początkowych znaczeniach hasła i ignorowania pozostałych znaczeń w haśle.

Biorąc pod uwagę formę językową treści wskaźników semantycznych, najrozsądniejszym wyjściem wydaje się być przyznanie leksykografom swobody co do formułowania tychże elementów. Ujednolicanie formy językowej wszystkich wskaźników semantycznych w słownikach nie powinno być forsowane ze względu na trudności w przekazywaniu w kilku słowach szczegółowych informacji poprzez ograniczony repertuar technik i strategii parafrazujących. Ogólnikowość elementów wspomagających nawigację w hasłach to kolejne wyzwanie dla metaleksykografów. Wskaźniki semantyczne muszą być zwięzłe, ponieważ przestrzeń w słownikach, która służy prezentowaniu informacji leksykograficznej, musi być rozsądnie zagospodarowywana. Niestety, brak szczegółowości w elementach nawigacyjnych może utrudniać użytkownikom możliwość rozszyfrowania znaczenia danego wyrazu. Kolejnym wnioskiem jest stwierdzenie, że zgodność elementów wspomagających nawigację wewnątrzhasłową i wyrazów hasłowych w zakresie kategorii składniowej może pomagać użytkownikom we wskazywaniu poprawnych znaczeń. Osoby korzystające ze słowników wykazują tendencję do zastępowania wyrazów hasłowych w danym kontekście konkretnymi elementami nawigacyjnymi, w celu zdecydowania, czy poszczególne znaczenia pasują do kontekstu danego hasła. Proces substytucji staje się w większości przypadków niemożliwy, gdy element nawigacyjny i wyraz hasłowy stanowią odmienną część mowy. Należałoby jednak przeprowadzić więcej badań, by potwierdzić słuszność tego przypuszczenia. Wreszcie, niektóre elementy nawigacyjne powtarzają przy użyciu tych samych słów informację uwzględnioną w danym znaczeniu hasła. Czy to zjawisko ma jednak negatywny wpływ na proces wyboru znaczeń hasła musiałoby zostać jeszcze dokładnie zbadane.

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<http://www.ldoceanline.com/>

MEDO = *Macmillan English Dictionary Online*. <http://www.macmillandictionary.com/>

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<http://www.learnersdictionary.com/>

OALDO = *Oxford Advanced Learner's Dictionary*.
<http://www.oxfordlearnersdictionaries.com/>

ODEO = *Oxford Dictionary of English*. <http://www.oxforddictionaries.com/>

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Appendix

1. The thirty-six items used in the main study are provided on pages 130–167. The item *range* is presented in the signpost, signposts + menus and control conditions. The remaining thirty-five items are presented in the signposts + menus condition.
2. The six items removed from the main study after pilot study 1 (*lock, lash, unit, carry, roll, scale*) are provided on pages 168–173. These items are presented in the signposts + menus condition.
3. The six items that were not used in the main study after pilot study 2 (*charge, burn, crack, float, jam, load*) are provided on pages 174–179. These items are presented in the signpost condition.

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The new products are available in a range of colors.

RANGE noun

1 variety of things/people	6 mountains/hills
2 limits	7 place for shooting
3 products	8 ability
4 distance	9 land
5 music	

1 VARIETY OF THINGS/PEOPLE [countable usually singular] a number of people or things that are all different, but are all of the same general type **range of a range of services. The drug is effective against a range of bacteria. wide/broad/whole/full range of something students from a wide range of backgrounds. advice on a whole range of subjects narrow/limited range of something A fairly narrow range of people are responsible for key decisions.**

2 LIMITS [countable] the limits within which amounts, quantities, ages etc vary **age/price/temperature etc range toys suitable for children in the pre-school age range. a temperature range of 72-85° in/within a ... range Your blood pressure's well within the normal range. in the range (of) something to something a salary in the range of \$25,000 to \$30,000. Even the cheapest property was out of our price range (=too expensive for us).**

3 PRODUCTS [countable] a set of similar products made by a particular company or available in a particular shop **range of a new range of kitchenware. A company from Darlington has just launched its latest range of fashion jewellery. The watches in this range are priced at £24.50. We have a very large product range. → mid-range, top-of-the-range**

4 DISTANCE a) [uncountable and countable] the distance over which a particular weapon can hit things **range of missiles with a range of 3000 km within range (of something) We waited until the enemy was within range. out of/beyond range (of something) I ducked down to get out of range of the gunshots. at close/short/**

point-blank range (=from very close) *Both men had been shot at point-blank range.* → **long-range, short-range b)** [uncountable and countable] the distance within which something can be seen or heard **within range (of something) a handsome man who drew admiring glances from any female within range. any spot within range of your radio signal out of/beyond range (of something) Joan hoped that the others were out of range of her mother's voice. One way to see birds at close range is to attract them into your own garden. c)** [countable] the distance which a vehicle such as an aircraft can travel before it needs more fuel etc **range of The plane has a range of 3,600 miles.**

5 MUSIC [countable usually singular] all the musical notes that a particular singer or musical instrument can make: *His vocal range is amazing.*

6 MOUNTAINS/HILLS [countable] a group of mountains or hills, usually in a line: *a land of high mountain ranges and deep valleys range of mountains/hills the longest range of hills in the Lake District*

7 PLACE FOR SHOOTING [countable] an area of land where you can practise shooting or where weapons can be tested: *a rifle range. the police shooting range*

8 ABILITY [uncountable and countable] the number of different things that someone, especially an actor or actress, does well: *an actor of extraordinary range and intensity*

9 LAND [uncountable and countable] *American English* a large area of land covered with grass, on which cattle are kept

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

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RANGE noun

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2 LIMITS [countable] the limits within which amounts, quantities, ages etc vary **age/price/ temperature etc range** toys suitable for children in the pre-school age range. a temperature range of 72-85° **in/within a ... range** Your blood pressure's well within the normal range. **in the range (of) something to something** a salary in the range of \$25,000 to \$30,000. Even the cheapest property was **out of our price range** (=too expensive for us).

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RANGE noun

1 [countable usually singular] a number of people or things that are all different, but are all of the same general type **range of** a range of services. *The drug is effective against a range of bacteria.* **wide/broad/whole/full range of something** students from a wide range of backgrounds. *advice on a whole range of subjects* **narrow/limited range of something** A fairly narrow range of people are responsible for key decisions.

2 [countable] the limits within which amounts, quantities, ages etc vary **age/price/ temperature etc range** toys suitable for children in the pre-school age range. *a temperature range of 72-85°* **in/within a ... range** Your blood pressure's well within the normal range. **in the range (of) something to something** a salary in the range of \$25,000 to \$30,000. *Even the cheapest property was out of our price range* (=too expensive for us).

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Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

He snapped a reply.

SNAP verb

1 break	5 animal
2 move into position	6 photograph
3 say something angrily	7 stop
4 become angry/anxious etc	

1 BREAK [intransitive and transitive] to break with a sudden sharp noise, or to make something break with a sudden sharp noise: *A twig snapped under my feet. The wind snapped branches and power lines. snap (something) off (something) I snapped the ends off the beans and dropped them into a bowl. snap (something) in two/in half (=break into two pieces) The teacher snapped the chalk in two and gave me a piece.*

2 MOVE INTO POSITION [intransitive, transitive always + adverb/preposition] to move into a particular position suddenly, making a short sharp noise, or to make something move like this **snap together/back etc** *The pieces just snap together like this. The policeman snapped the handcuffs around her wrist. snap (something) open/shut She snapped her briefcase shut.*

3 SAY SOMETHING ANGRILY [intransitive and transitive] to say something quickly in an angry way: *'What*

do you want?' Mike snapped. snap at He snapped at Walter for no reason.

4 BECOME ANGRY/ANXIOUS ETC [intransitive] to suddenly stop being able to control your anger, anxiety, or other feelings in a difficult situation: *The stress began to get to her, and one morning she just snapped. Something inside him snapped and he hit her.*

5 ANIMAL [intransitive] if an animal such as a dog snaps, it tries to bite you **snap at** *The dog started snapping at my heels.*

6 PHOTOGRAPH [intransitive and transitive] *informal* to take a photograph: *Dave snapped a picture of me and Sonia.*

7 STOP [transitive] *American English* to end a series of events – used especially in newspapers: *The Rockets snapped a seven-game losing streak by beating Portland.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The city issued bonds to pay for the new school.

BOND noun

1 money	4 chemistry
2 relationship	5 written agreement
3 with glue	

1 MONEY [countable] an official document promising that a government or company will pay back money that it has borrowed, often with interest: *My father put all his money into stock market bonds. furious trading on the bond market*

2 RELATIONSHIP [countable] something that unites two or more people or groups, such as love, or a shared interest or idea [\rightarrow **tie**] **bond between** *the emotional bond between mother and child* **bond with** *the United States' special bond with Britain* **bond of** *lifelong bonds of friendship*

3 WITH GLUE [countable] the way in which two surfaces become attached to each other using glue: *Use a glue gun to form a strong bond on wood or china.*

4 CHEMISTRY [countable] *technical* the chemical force that holds atoms together in a molecule: *In each methane molecule there are four CH bonds.*

5 WRITTEN AGREEMENT [countable] a written agreement to do something, that makes you legally responsible for doing it [\rightarrow **contract**]

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

No heirs came forward to claim the inheritance.

CLAIM verb

1 truth	4 death
2 money	5 attention
3 legal right	

1 TRUTH [transitive] to state that something is true, even though it has not been proved **claim (that)** *The product claims 'to make you thin without dieting'.* **claim to do/be something** *No responsible therapist will claim to cure your insomnia. I don't claim to be a feminist, but I'd like to see more women in top jobs.* **claim to have done something** *The girls claim to have seen the fairies.* **claim responsibility/credit (for something)** (=say officially that you are responsible for something that has happened) *The group claimed responsibility for the bombings. Opposition leaders will claim victory if the turnout is lower than 50%.* **claim somebody/something as something** *A letter appeared in The Times claiming Fleming as the discoverer of penicillin.*

2 MONEY [intransitive and transitive] to officially demand or receive money from an organization because you have a right to it **claim something back** *He should*

be able to claim the price of the ticket back. **claim on** *British English You can claim on the insurance if you have an accident while on holiday.* **claim benefit/allowance/damages etc** *If you're still not satisfied, you may be able to claim compensation.*

3 LEGAL RIGHT [transitive] to state that you have a right to take or have something that is legally yours: *The majority of those who claim asylum are genuine refugees. Lost property can be claimed between 10 a.m. and 4 p.m.*

4 DEATH [transitive] if a war, accident etc claims lives, people die because of it- used especially in news reports: *The earthquake has so far claimed over 3000 lives.*

5 ATTENTION [transitive] if something claims your attention, you notice and consider it carefully: *The military conflict continues to claim our undivided attention.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

His parents are pushing him to study medicine.

PUSH verb

1 move	4 encourage
2 button/switch	5 persuade
3 try to get past	

1 MOVE [intransitive and transitive] to make someone or something move by pressing them with your hands, arms etc [\neq pull]: *It didn't move, so she pushed harder. I promised to push him on the swings for as long as he wanted. shoppers pushing their grocery carts* **push somebody/something away/ back/ aside etc** *She pushed him away. Maria pushed her hair back from her forehead. push somebody/something towards/into etc something* *Philip pushed him towards the door. push something open/shut* *I slowly pushed the door open.*

2 BUTTON/SWITCH [intransitive and transitive] to press a button, switch etc in order to make a piece of equipment start or stop working [=press]: *I got in and pushed the button for the fourth floor. Push the green button to start the engine.*

3 TRY TO GET PAST [intransitive] to use your hands, arms etc to make people or things move, so that you can get past them: *Don't push. Everyone will get a turn. push (your way) past/through/into/etc* *A fat man*

pushed past me in his rush to leave. She pushed her way to the front.

4 ENCOURAGE [transitive] to encourage or force someone to do something or to work hard: *Encourage your kids to try new things, but try not to push them too hard. athletes who push their bodies to the limit push yourself* *He's been pushing himself too hard, working 12-hour days. push somebody into (doing) something* *My husband pushed me into leaving the job. push somebody to do something* *The teachers pushed the students to achieve.*

5 PERSUADE [intransitive and transitive] to try to persuade people to accept your ideas, opinions etc in order to achieve something: *The president is trying to push his agenda in Congress. push for* *He was pushing hard for welfare reform. push to do something* *Company representatives are pushing to open foreign markets to their products. push something on somebody* *We don't try to push our religion on anyone.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

He was still a young man and he did not want any ties.

TIE noun

1 men's clothes	5 game
2 connection/relationship	6 prevent you from doing something
3 result	7 railway
4 for closing something	

1 MEN'S CLOTHES [countable] a long narrow piece of cloth tied in a knot around the neck, worn by men: *I wear a shirt and tie at work.* → **black-tie, bow tie**

2 CONNECTION/RELATIONSHIP [usually plural] a strong relationship between people, groups, or countries **close/strong ties** *the importance of strong family ties* **tie between/with** *close ties between the two countries* **economic/diplomatic/personal etc ties** *Japan's strong economic ties with Taiwan* **the ties of marriage/friendship/love etc** → **old school tie**

3 RESULT [usually singular] the result of a game, competition, or election when two or more people or teams get the same number of points, votes etc [=draw *British English*] *The match ended in a tie.*

4 FOR CLOSING SOMETHING a piece of string, wire etc used to fasten or close something such as a bag

5 GAME *British English* one game, especially of football, that is part of a larger competition **tie against** *England's World Cup tie against Argentina* **first round/second round etc tie, home/away tie**

6 PREVENT YOU FROM DOING SOMETHING something that means you must stay in one place, job etc or prevents you from being free to do what you want: *If you enjoy travelling, young children can be a tie.*

7 RAILWAY *American English* a heavy piece of wood or metal supporting a railway track [=sleeper *British English*]

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The director never lets the tension slip.

SLIP verb

1 fall or slide	6 knife
2 go somewhere	7 get worse
3 put something somewhere	8 change condition
4 give something to somebody	9 time
5 move	

1 FALL OR SLIDE [intransitive] to slide a short distance accidentally, and fall or lose your balance slightly: *Wright slipped but managed to keep hold of the ball.* **slip on** *He slipped on the ice.*

2 GO SOMEWHERE [intransitive always + adverb/preposition] to go somewhere, without attracting other people's attention [=slide]: *Ben slipped quietly out of the room. One man managed to slip from the club as police arrived.*

3 PUT SOMETHING SOMEWHERE [transitive always + adverb/preposition] to put something somewhere quietly or smoothly [=slide]: *Ann slipped the book into her bag. A letter had been slipped under his door. Carrie slipped her arm through her brother's.*

4 GIVE SOMETHING TO SOMEBODY [transitive] to give someone something secretly or without attracting much attention **slip somebody something** *I slipped him a ten-dollar bill to keep quiet.* **slip something to somebody** *Carr slips the ball to King who scores easily.*

5 MOVE [intransitive] to move smoothly, especially off or from something: *As he bent over, the towel round his waist slipped.* **slip off/down/from etc** *He watched the*

sun slip down behind the mountains. The ring had slipped off Julia's finger. Cally slipped from his grasp and fled.

6 KNIFE [intransitive] if a knife or other tool slips, it moves so that it accidentally cuts the wrong thing: *The knife slipped and cut his finger.*

7 GET WORSE [intransitive] to become worse or lower than before: *Standards have slipped in many parts of the industry. His popularity slipped further after a series of scandals. You're slipping, Doyle! You need a holiday.*

8 CHANGE CONDITION [intransitive always + adverb/preposition] to gradually start being in a particular condition [=fall] **slip into** *He had begun to slip into debt. She slipped into unconsciousness and died the next day. The project has slipped behind schedule.*

9 TIME [intransitive, always + adverb/preposition] if time slips away, past etc it passes quickly **slip away/past/by** *The search for the missing child continued, but time was slipping away. The hours slipped past almost unnoticed.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The huge waves swept her overboard.

SWEEP verb

1 clean something	6 become popular
2 push something somewhere	7 feeling
3 push somebody/something with force	8 sports
4 group moves	9 form a curve
5 wind/waves etc	

1 CLEAN SOMETHING [transitive] to clean the dust, dirt etc from the floor or ground, using a brush with a long handle [=brush]: *Bert swept the path in front of the house.* **sweep something off/out/up etc** *Will you sweep the leaves off the patio?*

2 PUSH SOMETHING SOMEWHERE [transitive always + adverb/preposition] to move things from a surface with a brushing movement: *I swept the papers quickly into the drawer.*

3 PUSH SOMEBODY/SOMETHING WITH FORCE [transitive always + adverb/preposition] to force someone or something to move in a particular direction: *The windsurfer was swept out to sea. Jessie was swept along by the angry crowd.*

4 GROUP MOVES [intransitive always + adverb/preposition] if a group of people or animals sweep somewhere, they quickly move there together **sweep through/along etc** *The crowd swept through the gates of the stadium.*

5 WIND/WAVES ETC [intransitive, transitive always + adverb/preposition] if winds, waves, fire etc sweep a

place or sweep through, across etc a place, they move quickly and with a lot of force: *Thunderstorms swept the country.* **sweep across/through etc** *90 mile per hour winds swept across the plains.*

6 BECOME POPULAR [intransitive, transitive always + adverb/preposition] *written* if an idea, feeling or activity sweeps a group of people or a place, it quickly becomes very popular or common **sweep the country/nation/state etc** *a wave of nationalism sweeping the country* **sweep across/through etc** *the latest craze sweeping through the teenage population*

7 FEELING [intransitive always + adverb/preposition] if a feeling sweeps over you, you are suddenly affected by it **sweep over** *A feeling of isolation swept over me.*

8 SPORTS [transitive] *American English* to win all of the games in a series of games against a particular team: *Houston swept Orlando to become NBA champions.*

9 FORM A CURVE [intransitive always + adverb/preposition] to form a long curved shape **sweep down/along etc** *The hills swept down to the sea.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

All that is left of the blanket is a scrap or two.

SCRAP noun

1 paper/cloth	4 information
2 old objects	5 fight
3 food	

1 PAPER/CLOTH [countable] a small piece of paper, cloth etc **scrap of** *He wrote his address on a scrap of paper. a rug made out of old scraps of material*

2 OLD OBJECTS [uncountable] materials or objects that are no longer used for the purpose they were made for, but can be used again in another way: *The equipment was sold for scrap. Scrap metal* (=metal from old cars, machines etc) *fetched high prices after the war.*

3 FOOD scraps [plural] pieces of food that are left after

you have finished eating: *My mother fed the dog on scraps to save money. table/kitchen scraps* American English

4 INFORMATION [countable] a small amount of information, truth etc **scrap of** *He obtained every scrap of information available. There isn't a single scrap of evidence.*

5 FIGHT [countable] *informal* a short fight or argument: *He's always getting into scraps with other dogs.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The laws were passed without raising much opposition.

RAISE verb

1 move higher	6 cause a reaction
2 increase	7 collect people
3 collect money	8 speak to somebody
4 improve	9 build
5 start a subject	

1 MOVE HIGHER [transitive] to move or lift something to a higher position, place, or level: *Can you raise the torch so I can see? William raised his cat and smiled at her. Raise your hand if you know the right answer.*

2 INCREASE [transitive] to increase an amount, number, or level [≠lower]: *Many shops have raised their prices. The university is working to raise the number of students from state schools. a campaign to raise awareness of meningitis. Dr Hayward intends to raise the museum's profile (=make it more well-known).*

3 COLLECT MONEY [transitive] to collect money that you can use to do a particular job or help people: *The Trust hopes to raise \$1 million to buy land. They are raising funds to help needy youngsters. a concert to raise money for charity → fundraising*

4 IMPROVE [transitive] to improve the quality or standard of something: *Changing the law cannot raise standards. The team need to raise their game.*

5 START A SUBJECT [transitive] to begin to talk or write about a subject that you want to be considered or a question that you think should be answered [=bring up]: *He did not raise the subject again. I'd like to raise the issue of publicity. Betty raised the important question of who will be in charge.*

6 CAUSE A REACTION [transitive] to cause a particular emotion or reaction: *This attack raises fears of increased violence against foreigners. The way the research was carried out raises doubts about the results.*

7 COLLECT PEOPLE [transitive] to collect together a large group of people, especially soldiers: *The rebels quickly raised an army.*

8 SPEAK TO SOMEBODY [transitive] to speak to someone on a piece of radio equipment [=contact, get]: *They finally managed to raise him at Miller's sheep farm.*

9 BUILD [transitive] *formal* to build something such as a monument [=erect]

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

We sat at the restaurant's bar while we were waiting for a table.

BAR noun

1 place to drink in	5 music
2 place to buy drink	6 colour/light
3 block shape	7 heater
4 piece of metal/wood	

1 PLACE TO DRINK IN [countable] **a)** a place where alcoholic drinks are served [\rightarrow **pub**]: *The hotel has a licensed bar. a cocktail bar* **b)** *British English* one of the rooms inside a pub: *The public bar was crowded.*

2 PLACE TO BUY DRINK [countable] a counter where alcoholic drinks are served: *They stood at the bar.*

3 BLOCK SHAPE [countable] a small block of solid material that is longer than it is wide: *a chocolate bar. a candy bar bar of a bar of soap*

4 PIECE OF METAL/WOOD [countable] a length of metal or wood put across a door, window etc to keep it shut or

to prevent people going in or out: *houses with bars across the windows*

5 MUSIC [countable] a group of notes and rests, separated from other groups by vertical lines, into which a line of written music is divided: *a few bars of the song*

6 COLOUR/LIGHT [countable] a narrow band of colour or light

7 HEATER [countable] *British English* the part of an electric heater that provides heat and has a red light

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

If the teams don't cap player salaries, the league won't survive.

CAP verb

1 cover	4 sport
2 limit	5 tooth
3 good/bad	

1 COVER [transitive] **be capped with something** to have a particular substance on top: *a graceful tower capped with a golden dome. magnificent cliffs capped by lovely wild flowers*

2 LIMIT [often passive] to limit the amount of something, especially money, that can be used, allowed, or spent: *the only county to have its spending capped by the government*

3 GOOD/BAD to say, do, or be something that is better, worse, or more extreme than something that has just

happened or been said: *Well, we went three nights with no sleep at all. I bet you can't cap that!*

4 SPORT [usually passive] *British English* to choose someone for a national sports team: *He's been capped three times for England.*

5 TOOTH to cover a tooth with a special hard white substance: *He's had his teeth capped.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The majority of seats on the board will be held by business representatives.

SEAT noun

1 place to sit	4 clothes
2 official position	5 house
3 part of a chair	

1 PLACE TO SIT [countable] a place where you can sit, especially one in a vehicle or one from which you watch a performance, sports event etc **collocations** **back/rear/front seat** (=the back or front seat in a car) **driver's seat, passenger seat** (=the seat next to the driver's seat in a car) **window/aisle seat** (=a seat next to the window or aisle, for example on a plane) **empty/vacant seat, front-row seat** (=in a theatre, sports ground etc) **good seat** (=one from which you can see well) **ringside seat** (=a seat in the front row for a sports event, especially a boxing match) **have/take a seat, show somebody to their seat, book/reserve a seat, bums on seats** *British English informal* (=used for talking about the number of people who go to an event, especially if this is a lot of people) *I was in the back seat and Jo was driving. People were shifting in their seats, looking uncomfortable. He requested a window seat for the flight. There were no empty seats. It was a great concert, and I had a front-row seat. We're a long way from the stage, but they were the best seats I could get. Please take a seat. You can book seats online. He is an actor who will put bums on seats. a 10,000-seat stadium*

2 OFFICIAL POSITION [countable] a position as an elected member of a government, or as a member of a group that makes official decisions **seat in/on a seat in the National Assembly. Promotion would mean a seat on the board of directors. Parliamentary/Senate etc seat the Senate seat for Colorado win/lose etc a seat** (=in an election) *He predicts that his party will gain at least 12 seats. Mr Adams is expected to keep his seat. Labour held the seat with a 7% majority. safe seat* *British English* (=one that a party will not lose) **marginal seat** *British English* (=one that another party might easily win)

3 PART OF A CHAIR [countable usually singular] the flat part of a chair etc that you sit on: *Don't put your feet on the seat! a wooden toilet seat. a broken bicycle seat*

4 CLOTHES [singular] the part of your trousers that you sit on **seat of a rip in the seat of his jeans**

5 HOUSE [countable] a home of a rich important family in the countryside **family/country seat**

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

What gauge of wire do we need?

GAUGE noun

1 instrument	4 railway
2 width/thickness	5 gun
3 judgment	

1 INSTRUMENT [countable] an instrument for measuring the size or amount of something
fuel/temperature/pressure etc gauge *The petrol gauge is still on full.*

2 WIDTH/THICKNESS a measurement of the width or thickness of something such as wire or metal: *a 27 gauge needle, heavy gauge black polythene*

3 JUDGMENT a **gauge of something** something that helps you make a judgment about a person or situation:

Retail sales are a gauge of consumer spending. The tests will give parents a gauge of how their children are doing.

4 RAILWAY the distance between the lines of a railway or between the wheels of a train: *a standard gauge railway* **broad/narrow gauge** (=with more/less than the standard distance between the rails)

5 GUN the width of the barrel of a gun: *a 12-gauge shotgun*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The cymbals crashed and the trumpets blew.

CRASH verb

1 car/plane etc	5 financial
2 hit somebody/something hard	6 sport
3 loud noise	7 party
4 computer	

1 CAR/PLANE ETC [intransitive and transitive] to have an accident in a car, plane etc by violently hitting something else [\rightarrow **collide**]: *The jet crashed after take-off.*
crash into/onto etc *The plane crashed into a mountain.*
crash a car/bus/plane etc *He was drunk when he crashed the car.*

2 HIT SOMEBODY/SOMETHING HARD [intransitive, transitive always + adverb/preposition] to hit something or someone extremely hard while moving, in a way that causes a lot of damage or makes a lot of noise **crash into/through etc** *A brick crashed through the window. We watched the waves crashing against the rocks. The plates went crashing to the ground. A large branch came crashing down.*

3 LOUD NOISE [intransitive] to make a sudden loud noise: *Thunder crashed and boomed outside.*

4 COMPUTER [intransitive and transitive] if a computer crashes, or if you crash the computer, it suddenly stops working: *The system crashed and I lost three hours' worth of work.*

5 FINANCIAL [intransitive] if a stock market or shares crash, they suddenly lose a lot of value

6 SPORT [intransitive] *British English* to lose very badly in a sports event: *Liverpool crashed to their worst defeat of the season.*

7 PARTY [transitive] *informal* to go to a party that you have not been invited to: *We crashed Joe's party yesterday.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Scientists have a poor knowledge about the movement of sound waves through space.

SPACE noun

1 area for particular purpose	6 empty land
2 between things	7 freedom
3 outside the earth	8 in writing
4 where things exist	9 in a report/book
5 time	

1 AREA FOR PARTICULAR PURPOSE [uncountable and countable] an area, especially one used for a particular purpose: *a supermarket with 700 free **parking spaces** storage/cupboard/shelf **space** We really do need more storage **space**. the factory's **floor space** (=the size of the available floor area)*

2 BETWEEN THINGS [countable] an empty place between two things, or between two parts of something [=gap] **space between** *the space between the house and the garage. Lucy **cleared** a **space** on her desk. There was an **empty space** where the flowers had been.*

3 OUTSIDE THE EARTH [uncountable] the area beyond the Earth where the stars and planets are **in/into space** *Who was the first American in **space**? creatures from **outer space** (=far away in space) **space travel/research/programme/exploration** the history of **space travel***

4 WHERE THINGS EXIST [uncountable] all of the area in which everything exists, and in which everything has a position or direction: *the exact **point in space** where two lines meet. how people of other cultures think about **time and space***

5 TIME **a) in/within the space of something** within a particular period of time: *Mandy had four children in*

the space of four years. b) a short space of time a short period of time: *They achieved a lot in a short space of time.*

6 EMPTY LAND [uncountable and countable] land, or an area of land that has not been built on: *a pleasant town centre with plenty of **open space**. the **wide open spaces** of the prairies. the loss of **green space** in cities*

7 FREEDOM [uncountable] the freedom to do what you want or do things on your own, especially in a relationship with someone else: *We **give** each other **space** in our marriage. She **needed** time and **space** to sort out her life.*

8 IN WRITING [countable] **a)** an empty area between written or printed words, lines etc: *Leave a **space** after each number. b)* the width of a typed letter of the alphabet: *The word 'the' takes up three **spaces**. c)* a place provided for you to write your name or other information on a document, piece of paper etc: *Please write any comments in the **space** provided.*

9 IN A REPORT/BOOK [uncountable] the amount of space in a newspaper, magazine, or book that is used for a particular subject: *The story **got** very little **space** in the national newspapers.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The press were quick to cast her in the role of "the other woman".

CAST verb

1 light and shade	5 throw
2 look	6 fishing
3 acting	7 send away
4 describe	

1 LIGHT AND SHADE [transitive] *literary* to make light or a shadow appear somewhere **cast something over/on/across something** *The flames cast dancing shadows on the walls. the shade cast by low-hanging branches*

2 LOOK [transitive] *literary* to look quickly in a particular direction **cast a look/glance at somebody/something** *She cast an anguished look at Guy. cast somebody a glance/look* *The young tramp cast him a wary glance. She blushed, casting her eyes down.*

3 ACTING [transitive] to choose which people will act particular parts in a play, film etc **cast somebody alongside/opposite somebody** (=choose people for the two main roles) *Pheiffer was expected to be cast alongside Douglas in Basic Instinct. cast somebody as something* *Coppola cast him as Sodapop in The Out-*

siders. cast somebody in a role/a part/the lead *The producer finally cast Finsh in the male lead.*

4 DESCRIBE [transitive] to regard or describe someone as a particular type of person **cast somebody as something** *Clinton had cast himself as the candidate of new economic opportunity. Clarke's trying to cast me in the role of villain here.*

5 THROW [transitive always + adverb/preposition] *literary* to throw something somewhere [=toss]: *Sparks leapt as he cast more wood on the fire.*

6 FISHING [intransitive and transitive] to throw a fishing line or net into the water: *There's a trick to casting properly.*

7 SEND AWAY [transitive always + adverb/preposition] *literary* to force someone to go somewhere unpleasant **cast somebody into prison/Hell etc** *Memet should, in her opinion, be cast into prison.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Somewhere in the pipes there is a plug of ice blocking the flow.

PLUG noun

1 electricity	5 to fill a hole
2 bath	6 for holding screws
3 advertisement	7 a piece of something
4 in an engine	

1 ELECTRICITY [countable] **a**) a small object at the end of a wire that is used for connecting a piece of electrical equipment to the main supply of electricity: *The plug on my iron needs changing. an electric plug* **b**) *informal especially British English* a place on a wall where electrical equipment can be connected to the main electricity supply [=socket; =outlet *AmE*]

2 BATH [countable] a round flat piece of rubber used for stopping the water flowing out of a bath or sink: *the bath plug*

3 ADVERTISEMENT *informal* a way of advertising a book, film etc by mentioning it publicly, especially on television or radio **put/get in a plug (for something)** *During the show she managed to put in a plug for her new book.*

4 IN AN ENGINE [countable] *informal* the part of a petrol engine that makes a spark, which makes the petrol start burning [=spark plug]: *Change the plugs every 10,000 miles.*

5 TO FILL A HOLE [countable] an object or substance that is used to fill or block a hole, tube etc **plug of** *You can fill any holes with plugs of matching wood.* → **earplug**

6 FOR HOLDING SCREWS *British English* a small plastic tube put in a hole to hold a screw tightly

7 A PIECE OF SOMETHING a piece of something pressed tightly together: *a plug of tobacco*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

His appointment had been cleared by the board.

CLEAR verb

1 surface/place	5 liquid
2 remove people	6 cheque
3 crime/blame etc	7 go over/past
4 permission	

1 SURFACE/PLACE [transitive] to make somewhere emptier or tidier by removing things from it: *Snow-plows have been out clearing the roads. clear something of something* Large areas of land had been cleared of forest. **clear something from something** Workers began clearing wreckage from the tracks. *Dad cleared a space* (=moved things so there was room) in the garage for Jim's tools. *It's Kelly's turn to clear the table* (=remove the dirty plates, forks etc).

2 REMOVE PEOPLE [transitive] to make people, cars etc leave a place: *Within minutes, police had cleared the area. clear somebody/something from something* Crowds of demonstrators were cleared from the streets.

3 CRIME/BLAME ETC [transitive usually passive] to prove that someone is not guilty of something: *Rawlings was cleared after new evidence was produced. clear somebody of (doing) something* Maya was cleared of manslaughter. a long-running legal battle to clear his name

4 PERMISSION [transitive] **a)** to give or get official permission for something to be done: *He was cleared by doctors to resume skating in August. clear something with somebody* Defence policies must often be cleared with NATO allies first. **b)** to give official permission for a person, ship, or aircraft to enter or leave a country: *We cleared customs.*

5 LIQUID [intransitive] if a liquid clears, it becomes more transparent and you can see through it: *Wait for the water to clear before adding any fish.*

6 CHEQUE [intransitive and transitive] if a cheque clears, or if a bank clears it, the bank allows the money to be paid into the account of the person whose name is on the cheque

7 GO OVER/PAST [transitive] to go over a fence, wall etc without touching it, or to go past or through something and no longer be in it: *The plane barely cleared the fence at the end of the runway. Edwards cleared 18 feet in the pole vault. The plane cleared Chinese airspace.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

There is a damp patch on the ceiling.

PATCH noun

1 part of an area	4 computer
2 over a hole	5 eye
3 for growing something	

1 PART OF AN AREA [countable] a small area of something that is different from the area around it **patch of**
We finally found a patch of grass to sit down on. Belinda watched a patch of sunlight move slowly across the wall. Look out for icy patches on the road. a cat with a white patch on its chest. He combs his hair over his bald patch.

2 OVER A HOLE [countable] a small piece of material that is sewn on something to cover a hole in it: *a jacket with leather patches at the elbows*

3 FOR GROWING SOMETHING a small area of ground for growing fruit or vegetables: *a strawberry patch*

4 COMPUTER a small computer program that is added to software to solve problems

5 EYE a piece of material that you wear over your eye to protect it when it has been hurt: *He had a black patch over one eye.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Public gatherings were generally marked by restraint and control.

MARK verb

1 celebrate	5 quality/feature
2 show position	6 student's work
3 year/month/week	7 sport
4 show a change	

1 CELEBRATE [transitive] to celebrate an important event: *celebrations to mark Australia Day* **mark something with something** *Carter's 90th birthday will be marked with a large party at the Savoy Hotel. Mrs Lawson was presented with a gold watch to mark the occasion.*

2 SHOW POSITION [transitive] to show where something is: *A simple wooden cross marked her grave. He had marked the route on the map in red.* **mark something with something** *Troop positions were marked with colored pins. She placed a bookmark between the pages to mark her place.*

3 YEAR/MONTH/WEEK [transitive] if a particular year, month, or week marks an important event, the event happened on that date during a previous year: *This week marks the 250th anniversary of the birth of Joseph Priestley.*

4 SHOW A CHANGE [transitive] to be a sign of an important change or an important stage in the develop-

ment of something: *Her latest novel marks a turning point in her development as a writer. The move seemed to mark a major change in government policy. These elections mark the end of an era.*

5 QUALITY/FEATURE [transitive usually passive] if something is marked by a particular quality or feature, it is a typical or important part of that thing [=characterize]: *The villages of East Anglia are marked by beautiful churches with fine towers.*

6 STUDENT'S WORK [transitive] especially British English to read a piece of written work and put a number or letter on it to show how good it is [=grade American English] *I've got a pile of exam papers to mark.*

7 SPORT [transitive] especially British English to stay close to a player of the opposite team during a game [=guard American English]

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

He impatiently dismissed this line of thought.

LINE noun

1 between two areas	6 series of events
2 on your face	7 in a war
3 between two types of thing	8 product
4 opinion/attitude	9 job
5 way of doing something	

1 BETWEEN TWO AREAS [countable] an imaginary line on the surface of the earth, for example showing where one country or area of land stops and another begins **county/state line** *American English* *He was born in a small town just across the state line.* **line of latitude/longitude** *They were still travelling along the same line of longitude.* → **international date line**

2 ON YOUR FACE [countable] a line on the skin of someone's face [→ **wrinkle**]: *She frowned, and deep lines appeared between her eyebrows. There were fine lines around her eyes. No one can avoid lines and wrinkles as they get older.*

3 BETWEEN TWO TYPES OF THING [countable usually singular] the point at which one type of thing can be considered to be something else or at which it becomes a particular thing **line between** *There is a fine line between superstition and religion. The dividing line between luxuries and necessities is constantly changing. Sometimes he found it hard to draw the line between work and pleasure. Her remarks did not quite cross the line into rudeness. Large numbers of families are living on or near the poverty line* (=the point at which people are considered to be very poor).

4 OPINION/ATTITUDE [singular] an opinion or attitude, especially one that someone states publicly and that influences their actions **line on** *I can't agree with the government's line on immigration. Journalists are often too willing to accept the official line* (=the opinion that a government states officially). *He found it hard to accept the party line* (=the official opinion of a political party) *on every issue.* **take a tough/firm/hard line on something** *The school takes a very tough line on drugs.*

5 WAY OF DOING SOMETHING [countable] a particular way of doing something or of thinking about something **line of argument/reasoning/inquiry etc** *It seemed useless to pursue this line of questioning. Opposition parties soon realized they would have to try a different line of attack. The police are following several different lines of enquiry. We were both thinking along the same lines* (=in the same way). *In South Africa, the press developed along very different lines* (=in a very different way). *The company's rapid success means it's definitely on the right lines* (=doing something the right way).

6 SERIES OF EVENTS [countable usually singular] a series of events that follow each other **line of** *This is the latest in a long line of political scandals.*

7 IN A WAR [countable] the edge of an area that is controlled by an army, where soldiers stay and try to prevent their enemy from moving forward: *They finally broke through the German line. young soldiers who were sent to the front line to fight. One regiment was trapped behind enemy lines. Reinforcements were available just behind the lines.*

8 PRODUCT [countable] a type of goods for sale in a shop: *The company has just launched a new line of small, low-priced computers.*

9 JOB [countable usually singular] the type of work someone does **line of work/business** *What line of business is he in? in the building/retail etc line* *She's keen to do something in the fashion line.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

It is safer to write a letter of appeal rather than get a parking ticket fixed.

FIX verb

1 limit	4 result
2 punish	5 solve
3 arrange	

1 LIMIT [transitive] **a)** to decide on a limit for something, especially prices, costs etc, so that they do not change [=set] **fix something at something** *The interest rate has been fixed at 6.5%. Rent was fixed at \$1,750 per month.* **b)** if two or more companies fix the price for a particular product or service, they secretly agree on the price they will charge for it, in order to keep the price high and make more profit. This practice is illegal: *The government accused the two companies of fixing petrol prices.*

2 PUNISH [transitive] *informal* used to say that you will punish someone you are angry with: *If anybody did that to me, I'd fix him good.*

3 ARRANGE also **fix up** [intransitive and transitive] *spoken* to make arrangements for something: *'So when do I get to meet them?' 'Tomorrow, if I can fix it.'* **fix (it) for somebody to do something** *I've fixed for you to see him this afternoon at four.*

4 RESULT [transitive] to arrange an election, game etc dishonestly, so that you get the result you want: *Many suspected that the deal had been fixed in advance.*

5 SOLVE [transitive] to find a solution to a problem or bad situation: *The government seems confident that environmental problems can be fixed.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

What did you think of the candidate's campaign pitch?

PITCH noun

1 sports field	5 baseball
2 strong feelings/activity	6 slope
3 music	7 street/market
4 persuading	

1 SPORTS FIELD [countable] *British English* a marked out area of ground on which a sport is played [=field] **football/cricket/rugby etc pitch** *the world-famous Wembley football pitch He ran the length of the pitch and scored. on the pitch* (=playing a sport) *Jack was on the pitch for his school in the Senior Cup final.*

2 STRONG FEELINGS/ACTIVITY [singular, uncountable] a strong level of feeling about something or a high level of an activity or a quality: *The controversy reached such a pitch* (=become so strong) *that the paper devoted a whole page to it. a pitch of excitement/perfection etc* (=a high level of excitement etc) *He screamed at her in a pitch of fury. The goal roused the crowd to fever pitch* (=a very excited level).

3 MUSIC a) [singular, uncountable] how high or low a note or other sound is: *Ultrasonic waves are at a higher pitch than the human ear can hear. b) [uncountable] the ability of a musician to play or sing a note at exactly the correct level: *She's got perfect pitch.**

4 PERSUADING [countable] *informal* the things someone says to persuade people to buy something, do something, or accept an idea: *an aggressive salesman with a fast-talking sales pitch make a/somebody's pitch (for something)* (=try to persuade people to do something) *He made his strongest pitch yet for standardized testing in schools.*

5 BASEBALL [countable] a throw of the ball, or a way in which it can be thrown: *His first pitch was high and wide.*

6 SLOPE [singular, uncountable] the degree to which a roof slopes or the sloping part of a roof: *the steep pitch of the roof*

7 STREET/MARKET [countable] *British English* a place in a public area where someone who sells things to people goes to sell things or where an entertainer goes to sell things or perform: *We found the boy at his usual pitch at the bottom of the Acropolis.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

We have convinced people by the force of our argument.

FORCE noun

1 military	6 organized group
2 military action	7 strong influence
3 violence	8 powerful effect
4 physical power	9 police
5 natural power	

1 MILITARY a) [countable usually plural] a group of people who have been trained to do military work for a government or other organization **government/military/defence etc forces** *The riots were suppressed by government forces. He strengthened US forces in the Gulf. a plan to disarm the rebel forces* (=those fighting against the government) **b) the forces** *British English* the army, navy, and air force **in the forces** *Both her sons are in the forces.* **c) nuclear/conventional forces** nuclear weapons or ordinary weapons: *short-range nuclear forces*

2 MILITARY ACTION [uncountable] military action used as a way of achieving your aims: *Peace cannot be imposed by force. The UN will allow the use of force against aircraft violating the zone.*

3 VIOLENCE [uncountable] violent physical action used to get what you want: *The police used force to overpower the demonstrators.* **by force** *In the end he had to be thrown out of the house by force. They kicked the door down using sheer brute force.*

4 PHYSICAL POWER [uncountable] the amount of physical power with which something moves or hits another thing [**→ strength**] **force of** *The force of the explosion blew out all the windows.* **with great/considerable/increasing etc force** *He raised his hand and struck her with terrifying force.*

5 NATURAL POWER [uncountable and countable] a

natural power or event: *the force of gravity. powerful natural forces such as earthquakes, floods, and drought. the forces of nature*

6 ORGANIZED GROUP [countable usually singular] a group of people who have been trained and organized to do a particular job: *the company's sales force. the quality of the teaching force → police force*

7 STRONG INFLUENCE [countable] something or someone who is powerful and has a lot of influence on the way things happen **the driving force (behind something/somebody)** (=the person or thing that makes something happen) *Betty Coward was the driving force behind the project.* **a force for change/peace/democracy etc** (=someone or something that makes change, peace etc more likely to happen) *Healthy competition is a force for innovation. He's a quick and decisive player- a force to be reckoned with* (=a person, team, company etc that influences what happens). *The fall in prices was due to forces beyond their control.* **→ market forces**

8 POWERFUL EFFECT [uncountable] the powerful effect that something has on you: *Even after 30 years, the play has lost none of its force. the force of his personality*

9 POLICE the force a word meaning the police force, used especially by police officers

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The plot of the movie was lifted from real life.

LIFT verb

1 controls/laws	6 steal
2 by plane	7 voice
3 clouds/mist	8 increase
4 sad feelings	9 vegetables
5 use somebody's ideas/words	

1 CONTROLS/LAWS [transitive] to remove a rule or a law that says that something is not allowed **lift a restriction/an embargo/sanctions etc** *The government plans to lift its ban on cigar imports.*

2 BY PLANE [transitive always + adverb/preposition] to take people or things to or from a place by aircraft: *More troops are being lifted into the area as the fighting spreads.*

3 CLOUDS/MIST [intransitive] if cloud or mist lifts, it disappears

4 SAD FEELINGS [intransitive] if feelings of sadness lift, they disappear: *Jan's depression seemed to be lifting at last.*

5 USE SOMEBODY'S IDEAS/WORDS [transitive] to take

words, ideas etc from someone else's work and use them in your work, without stating where they came from and as if they were your own words etc **lift something from somebody/something** *The words were lifted from an article in a medical journal.*

6 STEAL [transitive] *informal* to steal something **lift something from somebody/something** *They had lifted dozens of CDs from the store.*

7 VOICE also **lift up** [transitive] *literary* if you lift your voice, you speak, shout, or sing more loudly [=raise]

8 INCREASE [transitive] to make prices, profit etc increase: *The U.S. may use tax cuts to lift the economy.*

9 VEGETABLES [transitive] to dig up vegetables that grow under the ground: *She was lifting potatoes.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

“Butler” and “bottle” come from the same Latin root.

ROOT noun

1 plant	6 tooth/hair etc
2 cause of a problem	7 develop
3 origin/main part	8 language
4 family connection	9 mathematics
5 settle	

1 PLANT [countable] the part of a plant or tree that grows under the ground and gets water from the soil: *tree roots. These plants produce a number of thin roots.*

2 CAUSE OF A PROBLEM the main cause of a problem **be/lie at the root of something** (=be the cause of something) *Allergies are at the root of a lot of health problems. The love of money is the root of all evil. A competent mechanic should be able to get to the root of the problem* (=find out the cause of a problem). *the root causes of crime*

3 ORIGIN/MAIN PART the origin or main part of something such as a custom, law, activity etc, from which other things have developed **root in** *a legal system with roots in English common law Jazz has its roots in the folk songs of the southern states of the US. be/lie at the root of something* *the liberal economic policies which lie at the root of American power*

4 FAMILY CONNECTION **somebody's roots** your relation to a place because you were born there, or your family used to live there: *immigrants keeping in touch with their cultural roots. Alex Haley's story about his search for his roots became a bestseller.*

5 SETTLE put down roots if you put down roots somewhere, you start to feel that a place is your home and to have relationships with the people there: *Because of her husband's job, they'd moved too often to put down roots anywhere.*

6 TOOTH/HAIR ETC the part of a tooth, hair etc that connects it to the rest of your body: *She'd pulled some of Kelly's hair out by the roots.*

7 DEVELOP take root a) if an idea, method, activity etc takes root, people begin to accept or believe it, or it begins to have an effect: *Economists believe that economic recovery will begin to take root next year. b)* if a plant takes root, it starts to grow where you have planted it

8 LANGUAGE technical the basic part of a word which shows its main meaning, to which other parts can be added. For example, the word 'coldness' is formed from the root 'cold' and the suffix 'ness' [**→ stem**]

9 MATHEMATICS technical a number that, when multiplied by itself a certain number of times, equals the number that you have: *2 is the fourth root of 16.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The tacks held the remaining rags of carpet to the floor.

TACK noun

1 nail	5 horses
2 pin	6 sewing
3 way of doing something	7 ugly objects
4 ship	

1 NAIL [countable] a small nail with a sharp point and a flat top

2 PIN [countable] *American English* a short pin with a large round flat top, for attaching notices to boards, walls etc [=thumbtack; =drawing pin BrE]

3 WAY OF DOING SOMETHING [uncountable and countable] the way you deal with a particular situation or a method that you use to achieve something: *If that doesn't work, we'll try a different tack. Rudy changed tack, his tone suddenly becoming friendly.*

4 SHIP a) [uncountable and countable] the direction that a sailing boat moves, depending on the direction of the

wind and the position of its sails **b)** [countable] the action of changing the direction of a sailing boat, or the distance it travels between these changes: *a long tack into the bay*

5 HORSES [uncountable] *technical* the equipment you need for riding a horse, such as a saddle etc

6 SEWING [countable] a long loose stitch used for fastening pieces of cloth together before sewing them

7 UGLY OBJECTS [uncountable] *British English* ugly cheap objects sold as decorations: *souvenir shops full of tack*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The light bulb screws right in.

SCREW verb

1 attach	4 sex
2 close by turning	5 cheat
3 paper/cloth	

1 ATTACH [transitive always + adverb/preposition] to attach one thing to another using a screw [→ **nail**] **screw something into/onto/to something** *The chairs were screwed to the floor. The wooden frame should be screwed onto the wall.*

2 CLOSE BY TURNING [intransitive, transitive always + adverb/preposition] to fasten or close something by turning it, or to be fastened in this way [≠unscrew] **screw (something) on/onto something** *The lens screws onto the front of the camera. She carefully screwed the cap back onto the toothpaste.*

3 PAPER/CLOTH [transitive always + adverb/preposition] also **screw up** to twist

paper or cloth into a small round shape: *She screwed the letter up and threw it in the bin.* **screw something (up) into something** *I screwed my handkerchief into a ball.*

4 SEX [intransitive and transitive] *taboo* an offensive word meaning to have sex with someone

5 CHEAT [transitive] *not polite* to cheat someone in order to get money from them **screw somebody for something** *They screwed us for \$60 in the end.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Her screams drew passers-by to the scene.

DRAW verb

1 get a reaction	6 pull somebody/something
2 attract	7 pull a vehicle
3 get something you need	8 fire
4 give information	9 choose
5 move	

1 GET A REACTION [transitive] to get a particular kind of reaction from someone **draw something from somebody** *His remarks drew an angry response from Democrats.* **draw praise/criticism** *The movie drew praise from critics.*

2 ATTRACT [transitive] to attract someone or make them want to do something **draw somebody to something** *What first drew you to teaching? Beth felt strangely drawn to this gentle stranger. The festival is likely to draw huge crowds.*

3 GET SOMETHING YOU NEED [transitive] to get something that you need or want from someone or something **draw something from something** *I drew a lot of comfort from her kind words. Plants draw nourishment from the soil.*

4 GIVE INFORMATION be drawn [usually in negatives] to give information in reply to questions about something: *She refused to be drawn on the subject.*

5 MOVE [intransitive always + adverb/preposition] to move in a particular direction: *She drew away, but he*

pulled her close again. The boat drew alongside us and a man appeared on the deck. I arrived just as the train was drawing into the station.

6 PULL SOMEBODY/SOMETHING [transitive always + adverb/preposition] to move someone or something in a particular direction by pulling them gently **draw somebody/something aside/up/across etc** *Bobby drew a chair up to the table. Hussain drew me aside to whisper in my ear.* **draw the curtains/a blind etc** (=close them by pulling them gently)

7 PULL A VEHICLE [transitive] if an animal draws a vehicle, it pulls it along: *a carriage drawn by six horses. an ox-drawn cart*

8 FIRE [intransitive] if a fire or chimney draws, it lets the air flow through to make the fire burn well

9 CHOOSE [intransitive and transitive] to choose by chance a card, ticket etc that will win a prize: *The winning ticket will be drawn at the Christmas Party.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The conductor walked down into the pit and stood at the podium.

PIT noun

1 hole	6 in a theatre
2 mine	7 in a garage
3 mark	8 body part
4 untidy place	9 business
5 car racing	

1 HOLE a) a hole in the ground, especially one made by digging: *The female **dig**s a **pit** in which to lay the eggs.*

*a five-foot deep pit → **sandpit** b)* a large hole in the ground from which stones or minerals are obtained by digging **gravel/sand/chalk pit**

2 MINE especially *British English* a coal mine: *Dad first **went down the pit** (=worked in a coal mine) when he was 15 years old. a national strike against **pit closures** (=when a coal mine is closed permanently)*

3 MARK a small hollow mark in the surface of something, especially on your skin as the result of a disease: *the deep pits left by smallpox*

4 UNTIDY PLACE [usually singular] *spoken* a house or room that is dirty, untidy, or in bad condition

5 CAR RACING the pits the place beside the track in a car race where cars can come in for petrol, new tyres etc → **pit stop**

6 IN A THEATRE an orchestra pit

7 IN A GARAGE a hole in the floor of a garage that lets you get under a car to repair it: *an **inspection pit***

8 BODY PART *informal* an armpit

9 BUSINESS *American English* the area of a stock exchange where people buy and sell shares [=floor *British English*]

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The area was struck by an outbreak of cholera.

STRIKE verb

1 hit	6 something bad happens
2 hit with hand/weapon etc	7 lightning
3 stop work	8 clock
4 attack	9 gain advantage
5 harm	

1 HIT [transitive] *written* to hit or fall against the surface of something: *She fell heavily, striking her head against the side of the boat. A snowball struck him on the back of the head. Several cars were struck by falling trees. The last rays of the setting sun struck the garden windows.*

2 HIT WITH HAND/WEAPON ETC [transitive] *formal* to deliberately hit someone or something with your hand or a weapon: *She struck him hard across the face. strike something with something* *The victim had been struck with some kind of wooden implement. Paul struck him a blow to the head. The assassin's bullet struck home* (=hit exactly where it should).

3 STOP WORK [intransitive] if a group of workers strike, they stop working as a protest against something relating to their work, for example how much they are paid, bad working conditions etc: *In many countries, the police are forbidden to strike. strike for* *They're striking for the right to have their trade union recognized in law.*

4 ATTACK [intransitive] to attack someone, especially suddenly: *The killer might strike again. Guerrillas struck a U.N. camp, killing 75. Opponents of the war say that civilian villages have been struck several times.*

5 HARM [transitive] to damage or harm someone or

something **strike at** *The law would strike at the most basic of civil rights. Such prejudices strike right at the heart of any notions of a civilized society. strike a blow at/against/to something* *The scandal seemed to have struck a mortal blow to the government's chances of re-election.*

6 SOMETHING BAD HAPPENS [intransitive and transitive] if something bad strikes, it suddenly happens or suddenly begins to affect someone: *The plague struck again for the third time that century. Everything seemed to be going fine when suddenly disaster struck. → stricken*

7 LIGHTNING [intransitive and transitive] if lightning strikes something, it hits and damages it: *The temple burned down after it was struck by lightning last year.*

8 CLOCK [intransitive and transitive] if a clock strikes one, two, six etc, its bell makes a sound once, twice, six times etc according to what time it is: *The church clock began to strike twelve. strike the hour* (=strike when it is exactly one o'clock, two o'clock etc)

9 GAIN ADVANTAGE [intransitive] to do something that gives you an advantage over your opponent in a fight, competition etc: *Brazil struck first with a goal in the third minute.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The brass section of the orchestra was further divided into two parts.

SECTION noun

1 place/object	5 law
2 part of a whole	6 side/top view
3 book/newspaper/report	7 medical/scientific
4 group of people	

1 PLACE/OBJECT [countable] one of the parts that something such as an object or place is divided into **section of a busy section of road. the reference section of the library. The plane's tail section was found in a cornfield. the smoking section** (=where you can smoke)

2 PART OF A WHOLE [countable] one of the separate parts of a structure, piece of furniture etc that you fit together to form the whole **in sections** *The boats were built in Scotland, and transported to Egypt in sections.*

3 BOOK/NEWSPAPER/REPORT [countable] a separate part of a book, newspaper, document, report etc: *This issue will be discussed further in section 2. sports/style/business/travel etc section* (=particular part of a newspaper)

4 GROUP OF PEOPLE [countable] a separate group within a larger group of people **section of a large section of**

the American public

5 LAW [countable] one of the parts of a law or a legal document: *Article I, Section 8 of the U.S. Constitution*

6 SIDE/TOP VIEW [uncountable and countable] *technical* a picture that shows what a building, part of the body etc would look like if it were cut from top to bottom or side to side **in section** *Here's the outside view, and here are the floors in section.*

7 MEDICAL/SCIENTIFIC *technical a)* [uncountable and countable] a medical operation that involves cutting → **caesarean section** at caesarean **b) [countable] a very thin flat piece that is cut from skin, a plant etc to be looked at under a microscope**

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

He shot at the deer.

SHOOT verb

1 kill/injure	5 photograph/film
2 fire a gun etc	6 plants
3 birds/animals	7 lock on a door
4 try to score	

1 KILL/INJURE [transitive] to deliberately kill or injure someone using a gun: *Police shot one suspect when he pulled a gun on them. Smith killed his wife, and then shot himself. A woman was **shot dead** in an attempted robbery. **shoot somebody in the leg/head etc** He had been shot in the back while trying to escape. The guards have orders to **shoot intruders on sight** (=shoot them as soon as they see them).*

2 FIRE A GUN ETC [intransitive and transitive] to make a bullet or arrow come from a weapon: *Don't shoot! I'm coming out with my hands up. **shoot at** Two guys walked in and started shooting at people. The soldiers had orders to **shoot to kill** (=shoot at someone with the intention of killing them). **shoot bullets/arrows** They shot arrows from behind the thick bushes. **shoot a gun/rifle etc** Tod's grandfather taught him to shoot a rifle.*

3 BIRDS/ANIMALS [intransitive and transitive] to shoot and kill animals or birds as a sport: *They spent the weekend in Scotland shooting grouse.*

4 TRY TO SCORE [intransitive and transitive] to kick or throw a ball in a sport such as football or basketball towards the place where you can get a point: *Giggs shot from the halfway line.*

5 PHOTOGRAPH/FILM [intransitive and transitive] to take photographs or make a film of something: *The movie was shot in New Zealand.*

6 PLANTS [intransitive] if a plant shoots, a new part of it starts to grow, especially a new stem and leaves

7 LOCK ON A DOOR [transitive] to move the bolt on a door so that it is in the locked or unlocked position

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The building had been knocked down, and there was nothing left but piles of stones.

PILE noun

1 arrangement of things	4 material
2 large amount	5 post
3 house	

1 ARRANGEMENT OF THINGS [countable] a group of several things of the same type that are put on top of each other [=stack] **pile of** *His mother came in carrying a pile of ironing in her arms. Flora shuffled through a pile of magazines. put something in/into a pile* *She tidied up the books and put them in neat piles. He balanced the plate on the top of a pile of books.*

2 LARGE AMOUNT [countable] a large amount of something arranged in a shape that looks like a small hill **pile of** *piles of melting snow. All that remained of the old house was a pile of rubble. Sophie stooped to throw*

another branch on the pile. He began to sweep the pieces of glass into a pile.

3 HOUSE [countable] a very large old house: *They've just bought an 18th-century pile in Surrey.*

4 MATERIAL [uncountable and countable] the soft surface of short threads on a carpet or some types of cloth **thick/deep pile** *Her feet sank into the thick pile of the rug. a deep pile carpet*

5 POST [countable] *technical* a heavy wooden, stone, or metal post, used to support something heavy

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Champagne corks were popping and the party was about to begin.

POP verb

1 short sound	4 hit
2 burst	5 popcorn
3 ears	

1 SHORT SOUND [intransitive and transitive] to make a short sound like a small explosion, or to make something do this: *The wood sizzled and popped in the fire.*

2 BURST [intransitive and transitive] to burst, or to make something burst, with a short explosive sound: *A balloon popped.*

3 EARS [intransitive] if your ears pop, you feel the pressure in them suddenly change, for example when

you go up or down quickly in a plane

4 HIT [transitive] *American English spoken* to hit someone: *If you say that again, I'll pop you one.*

5 POPCORN [intransitive and transitive] to cook popcorn until it swells and bursts open, or to be cooked in this way

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

I wasn't able to avoid hitting the cone on full lock.

LOCK noun

1 fastening	4 in a fight
2 hair	5 vehicle
3 on a river etc	

1 FASTENING [countable] a thing that keeps a door, drawer etc fastened and is usually opened with a key or by moving a small metal bar: *I'm sorry, there isn't a lock on the bathroom door. The key turned stiffly in the lock. a bike lock*

2 HAIR a) [countable] a small number of hairs on your head that grow and hang together **lock of** *He gently pushed a lock of hair from her eyes.* **b) locks** [plural] *literary* someone's hair: *long flowing locks*

3 ON A RIVER ETC [countable] a part of a canal or river that is closed off by gates so that the water level can be raised or lowered to move boats up or down a slope

4 IN A FIGHT [countable] a hold which wrestlers use to prevent their opponent from moving: *a head lock*

5 VEHICLE [uncountable and countable] *British English* the degree to which a vehicle's steering wheel can be turned in order to turn the vehicle

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Branches lashed at my face.

LASH verb

1 tie	4 tail
2 wind/rain/sea	5 criticize
3 hit	

1 TIE [transitive always + adverb/preposition] to tie something tightly to something else with a rope [=bind] **lash something to something** *The oars were lashed to the sides of the boat.*

2 WIND/RAIN/SEA [intransitive always + adverb/preposition, transitive] if the wind, sea etc lashes something, it hits it with violent force: *Giant waves lashed the sea wall. lash against/down/across* *The wind lashed violently against the door.*

3 HIT [transitive] to hit a person or animal very hard with a whip, stick etc: *Oliver lashed the horses to go faster.*

4 TAIL [intransitive and transitive] if an animal lashes its tail or its tail lashes, it moves it from side to side quickly and strongly, especially because it is angry

5 CRITICIZE [intransitive and transitive] to criticize someone angrily- used especially in newspapers: *Democrats lashed Republican plans, calling them extreme.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The company manufactures waste disposal units.

UNIT noun

1 group	6 part of a machine
2 measuring	7 furniture
3 part	8 apartment
4 part of a book	9 school/university
5 product	

1 GROUP [countable] a group of people working together as part of a larger group: *The man is in the hospital's intensive care unit.*

2 MEASURING [countable] an amount of something used as a standard of measurement **unit of** *The watt is a unit of electrical power.*

3 PART [countable] a thing, person, or group that is regarded as one single whole part of something larger: *a Russian army unit unit of The family is the basic social unit of modern society.*

4 PART OF A BOOK [countable] one of the numbered parts into which a textbook (=a book used in schools) is divided

5 PRODUCT [countable] *technical* a single complete

product made by a company: *The factory's output is now up to 150,000 units each month.*

6 PART OF A MACHINE [countable] a piece of equipment which is part of a larger machine **control/display/filter etc unit**

7 FURNITURE [countable] a piece of furniture, especially one that can be attached to others of the same type: *fitted kitchen units British English. storage units*

8 APARTMENT [countable] *American English* a single apartment in a larger building

9 SCHOOL/UNIVERSITY [countable] *American English* an amount of work that a student needs to do in order to complete a particular course

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The bill carried the Senate by a vote of 75-25.

CARRY verb

1 have a quality	6 persuade
2 news/programmes	7 vote
3 be responsible	8 election
4 take somebody/something	9 not enough effort
5 crime	

1 HAVE A QUALITY [transitive] to have something as a particular quality: *Degree qualifications carry international recognition. Few medical procedures carry no risk of any kind. Older managers carry more authority in a crisis. The plan is not likely to carry much weight with* (=have much influence over) *the authorities. If the child believes in what she is saying, she will carry conviction* (=make others believe what she says is true).

2 NEWS/PROGRAMMES [transitive] if a newspaper, a television or radio broadcast, or a website carries a piece of news, an advertisement etc, it prints it or broadcasts it: *The morning paper carried a story about demonstrations in New York and Washington D.C. The national TV network carries religious programmes.*

3 BE RESPONSIBLE [transitive] to be responsible for doing something: *Each team member is expected to carry a fair share of the workload. Which minister carries responsibility for the police? Parents carry the burden of ensuring that children go to school.*

4 TAKE SOMEBODY/SOMETHING [transitive] to take something or someone to a new place, point, or position **carry somebody/something to something** *The president wanted to carry the war to the northern states. Blair carried his party to victory in 1997. carry somebody/something into something* *Clinton carried his campaign into Republican areas.*

5 CRIME [transitive] if a crime carries a particular punishment, that is the usual punishment for the crime: *Drink-driving should carry an automatic prison sentence. Murder still carries the death penalty.*

6 PERSUADE [transitive] to persuade a group of people to support you: *He had to carry a large majority of his colleagues to get the leadership. Her appeal to common sense was what finally carried the day* (=persuaded people to support her).

7 VOTE be carried if a suggestion, proposal etc is carried, most of the people at an official meeting vote for it and it is accepted: *The amendment was carried by 292 votes to 246. The resolution was carried unanimously* (=everyone agreed). *Those in favour of the motion raise your arm. Those against? The motion is carried* (=proposal is accepted).

8 ELECTION [transitive] *American English* if someone carries a state or local area in a US election, they win in that state or area: *Cuban Americans play an important role in whether he carries Florida in the fall campaign.*

9 NOT ENOUGH EFFORT [transitive] if a group carries someone who is not doing enough work, they have to manage without the work that person should be doing: *The team can't afford to carry any weak players.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Roll the pastry on a floured surface.

ROLL verb

1 round object	5 drop of liquid
2 shape of tube/ball	6 waves/clouds
3 make something flat	7 game
4 clothes	

1 ROUND OBJECT [intransitive always + adverb/preposition, transitive] if something rolls, especially something round, or if you roll it, it moves along a surface by turning over and over **roll down/into/through etc** *The ball rolled into the street. One of the eggs rolled off the counter. roll something along/in/onto etc something* *Roll the chicken breasts in flour.*

2 SHAPE OF TUBE/BALL also **roll up** [transitive] to make something into the shape of a tube or ball **roll something into a ball/tube** *Roll the dough into small balls. Would you like the paper rolled or folded?*

3 MAKE SOMETHING FLAT [transitive] to make something flat by rolling something heavy over it [**→ rolling pin**]: *Pizza dough should be rolled thinly.*

4 CLOTHES [transitive] also **roll up** to fold the sleeves or legs of something that you are wearing upwards, so that they are shorter: *His sleeves were rolled above his elbows.*

5 DROP OF LIQUID [intransitive always + adverb/preposition] to move over a surface smoothly without stopping **roll down/onto etc** *Tears rolled down her cheeks.*

6 WAVES/CLOUDS [intransitive always + adverb/preposition] to move continuously in a particular direction **roll into/towards etc** *Mist rolled in from the sea. We watched the waves rolling onto the beach.*

7 GAME [intransitive and transitive] if you roll dice, you throw them as part of a game

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Some changes to the company's pay scale have been introduced.

SCALE noun

1 size/level	5 measuring marks
2 range	6 music
3 for weighing	7 water pipes
4 measuring system	

1 SIZE/LEVEL [singular, uncountable] the size or level of something, or the amount that something is happening **scale of** *We had underestimated the scale of the problem.* **on a large/small/grand etc scale** *There has been housing development on a massive scale since 1980. Most alternative technologies work best on a small scale. A structural survey revealed the full scale of the damage. I was shocked by the sheer scale (=very big scale) of the destruction.* **on a global/international/world scale** *Pollution could cause changes to weather patterns on a global scale. Large firms benefit from economies of scale (=ways of saving money because they are big).*

2 RANGE [countable usually singular] a whole range of different types of people or things, from the lowest level to the highest: *Some rural schools have 50 pupils, while at the other end of the scale are city schools with nearly 5,000 pupils.* **up/down the scale** *She gradually made her way up the social scale.* *animals which are lower down the evolutionary scale* (=the range of animals that have developed gradually over a long time)

3 FOR WEIGHING scales [plural] *British English scale American English* a machine for weighing people or objects: *a set of kitchen scales. some new bathroom scales* (=scales that you use to weigh yourself)

4 MEASURING SYSTEM [countable] a system of numbers that is used for measuring the amount, speed, quality etc of something **on a scale** *The earthquakes measured 7 on the Richter scale. Your performance will be judged on a scale of 1 to 10. We use a sliding scale* (=in which prices are not firmly fixed) *for charges.*

5 MEASURING MARKS [countable] a set of marks with regular spaces between them on a tool that is used for measuring, or on the side of a mathematical drawing: *a ruler with a metric scale*

6 MUSIC [countable] a series of musical notes that become higher or lower, with fixed distances between each note: *the scale of G major*

7 WATER PIPES [uncountable] a white substance that forms around the inside of hot water pipes or containers in which water is boiled

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The senator rejects charges that he is too liberal.

CHARGE noun

1 CONTROL [uncountable] the position of having control or responsibility for a group of people or an activity **in charge (of something)** *He asked to speak to the person in charge. the officer in charge of the investigation. Stern put Travis in charge of (=gave him control of) the research team. Owens came in and took charge of (=took control of) the situation. A commander in each county was to have charge of the local militia.*

2 CRIME [countable] an official statement made by the police saying that they believe someone may be guilty of a crime **collocations on a charge (of something), bring/press charges** (=state officially that someone is guilty of a crime) **face charges** (=be accused of a crime) **drop the charges** (=decide to stop making charges) **deny a charge, admit a charge, plead guilty to a charge, be released without charge, be cleared/acquitted of a charge** (=when someone is officially not guilty at the end of a trial) **be convicted of a charge** (=when someone is found guilty at the end of a trial) **charge against** *He was found guilty of all six charges against him. Phillips was arrested on drug charges. The following morning, he was arrested on a charge of burglary. Young appeared in court on a murder charge. charge of Higgins is facing a charge of armed robbery. As it was his first offence, the store agreed not to press charges. Police dropped the charges against him because of insufficient evidence. Nine people have pleaded guilty to various charges. Green was cleared of all charges against him.*

3 BLAME [countable] a written or spoken statement

blaming someone for doing something bad or illegal [=allegation] **charge that** *the charge that tobacco companies target young people with their ads* **charge of a charge of racial discrimination against the company** **deny/counter a charge** (=say that a charge is untrue) *Wallace denied charges that he had lied to investigators. lay/leave yourself open to a charge of something* (=be likely to be blamed for something) *The speech laid him open to charges of political bias.*

4 ATTACK [countable] an attack in which soldiers or animals move towards someone or something very quickly

5 EFFORT **lead the charge** to make a strong effort to do something: *It was small businesses that led the charge against health care changes.*

6 ELECTRICITY [uncountable] electricity that is put into a piece of electrical equipment such as a battery **on charge** (=taking in a charge of electricity) *Leave the battery on charge all night.*

7 EXPLOSIVE [countable] an explosive put into something such as a bomb or gun

8 STRENGTH OF FEELINGS [singular] the power of strong feelings: *Cases of child abuse have a strong emotional charge.*

9 AN ORDER TO DO SOMETHING [countable] formal an order to do something **charge to do something** *The old servant fulfilled his master's charge to care for the children.*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

The cigarette smoke burned my throat and made my eyes water.

BURN verb

1 INJURE/KILL SOMEBODY WITH FIRE [transitive] to hurt yourself or someone else with fire or something hot: *I **burned my hand** on the oven door. She was **badly burned** in a road accident. 16 passengers were **burned to death** (=died in a fire). A family of five were **burned alive** in their home last night (=died in a fire). Heretics were **burnt at the stake** (=burnt in a fire as a punishment).*

2 SUN [intransitive and transitive] if the sun burns your skin, or if your skin burns, it becomes red and painful from the heat of the sun: *I **burn quite easily**. Don't forget you can still **get burnt** when you're swimming or when it's cloudy. Her face and neck were quite **badly burned**.*

3 CHEMICALS [transitive] to damage or destroy something by a chemical action: *Quite a lot of household chemicals can **burn your skin**.*

4 FUEL [intransitive and transitive] if you burn a fuel, or if it burns, it is used to produce power, heat, light etc:

*The boiler **burns oil** to produce heat. greenhouse gases caused by the **burning of fossil fuels***

5 FAT/ENERGY [transitive] if you burn fat or calories, you use up energy stored in your body by being physically active: *Taking a brisk walk every morning is a great way to **burn calories**. a **fat-burning exercise***

6 LIGHT [intransitive] if a light or lamp burns, it shines or produces light: *A lamp was **burning in the kitchen window**. The hall light was still **burning**.*

7 FEEL HOT AND PAINFUL [intransitive and transitive] if a part of your body burns, or if something burns it, it feels unpleasantly hot: *The hot peppers **burned my mouth**. My eyes were **burning from the smoke**.*

8 FACE/CHEEKS [intransitive] if your face or cheeks are burning, they feel hot because you are embarrassed or upset: *I could feel my cheeks **burning as I spoke**.*

9 CD [transitive] if you burn a CD or DVD, you record music, images, or other information onto it using special computer equipment

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

She peered out through the crack in the curtains.

CRACK noun

1 GAP [countable] a very narrow space between two things or two parts of something **crack between** *He squeezed into a crack between two rocks.* **crack in** *He could see them through a crack in the door. She opened the door a crack and peeped into the room.*

2 BREAK [countable] a thin line on the surface of something when it is broken but has not actually come apart **crack in** *There were several small cracks in the glass.*

3 WEAKNESS [countable] a weakness or fault in an idea, system, or organization **crack in** *The cracks in their relationship were starting to show. The first cracks are beginning to appear in the economic policy.*

4 SOUND [countable] a sudden loud noise like the sound of a stick being broken **loud/sharp crack** *There was a*

sharp crack as the branch broke off. **crack of** *We could hear the crack of gunfire in the distance. a crack of thunder*

5 JOKE [countable] *informal* a clever joke or rude remark **crack about** *I didn't like his crack about her being overweight. He's always making cracks about how stupid I am.*

6 ATTEMPT [countable] *informal* an attempt to do something [=shot] **crack at** *I'd like a crack at climbing that mountain. The competition's open to anyone- why don't you have a crack?*

7 DRUG [uncountable] an illegal drug that some people take for pleasure: *crack addicts*

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

They may have to float a loan to raise the money for renovations.

FLOAT verb

1 IN THE AIR [intransitive always + adverb/preposition] if something floats, it moves slowly through the air or stays up in the air: *I looked up at the clouds floating in the sky. Leaves floated gently down from the trees.*

2 MUSIC/SOUNDS/SMELLS ETC [intransitive always + adverb/preposition] if sounds or smells float somewhere, people in another place can hear or smell them: *The sound of her voice came floating down from an upstairs window.*

3 WALK GRACEFULLY [intransitive] to walk in a slow light graceful way [=glide]: *Rachel floated around the bedroom in a lace nightgown.*

4 IDEAS [transitive] to suggest an idea or plan in order to see if people like it: *We first floated the idea back in 1992.*

5 MONEY [transitive] *technical* if the government of a country floats its money, the value of the money is allowed to change freely in relation to money from other countries: *Russia decided to float the rouble on the foreign exchange market.*

6 COMPANY [transitive] to sell shares in a company or business to the public for the first time **float something on something** *The company will be floated on the stockmarket next year.* → **flotation (1)**

7 CHEQUE [transitive] *American English* to write a cheque when you do not have enough money in the bank to pay it

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

He fired one shot before his gun jammed.

JAM verb

1 PUSH HARD [transitive always + adverb/preposition] to push something somewhere using a lot of force, until it can move no further: *He jammed his foot on the accelerator and the car sped off. A chair had been jammed up against the door.*

2 MACHINE [intransitive and transitive] also **jam up** if a moving part of something jams, or if you jam it, it no longer works properly because something is preventing it from moving: *The front roller has jammed on the photocopier.*

3 BLOCK [intransitive and transitive] also **jam up** if a lot of people or vehicles jam a place, they fill it so that it is difficult to move [=cram]: *Crowds jammed the entrance to the stadium. jam into* *They all jammed into the car.*

4 MUSIC [intransitive] also **jam out** to play music in an informal way with other people → **jam session**

5 RADIO [transitive] to deliberately prevent broadcasts or other electronic signals from being received, by broadcasting signals on the same wavelength

Zapisz znaczenie hasła potrzebne do tłumaczenia podkreślonego wyrazu w podanym niżej zdaniu (wpisz tylko **numer znaczenia** hasła):

Zapisz **czas** jaki był potrzebny na wykonanie całego zadania:

Extra warmth from sunlight can put an additional load on the air-conditioning system.

LOAD noun

1 WORK the amount of work that a person or machine has to do: *The computer couldn't handle the load and crashed.* **a light/heavy load** (=not much or a lot of work) *Hans has a heavy teaching load this semester. My work load has doubled since Henry left. They hired more staff in order to spread the load.*

2 WORRY a problem or worry that is difficult to deal with: *When someone is depressed, the extra load of having financial problems can make the situation worse. Knowing he was safe was a load off my mind*

(=I felt less worried). *Coping with ill health was a heavy load to bear.*

3 WASHING a quantity of clothes that are washed together in a washing machine: *I've already done three loads of laundry this morning.*

4 WEIGHT the amount of weight that something is supporting: *a load-bearing wall. It increased the load on the wheels.*

5 ELECTRICITY technical an amount of electrical power that is being produced