University of Łódź
Faculty of Philology
Institute of English Studies

Marek Molenda

Investigating the process of EFL lexicogrammatical consultation in the Web 2.0 environment

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Instytut Anglistyki

Marek Molenda

Badanie procesu pozyskiwania informacji leksykalno-gramatycznych w środowisku Sieci 2.0 przez uczących się języka angielskiego jako obcego

Rozprawa doktorska napisana pod kierunkiem
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Pracę tę dedykuję mojej kochanej żonie Marcie, która nigdy nie zwątpiła, że pewnego dnia zostanę doktorem nauk. Dedykację kieruję także do mojej wspaniałej Rodziny, która zawsze wspierała moje wysiłki.

I dedicate this dissertation to my beloved wife, Marta, who has never doubted that her husband would one day become a PhD. I also dedicate this dissertation to my wonderful family for all their support.

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A wise man proportions his belief to the evidence.
David Hume

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Introduction

The distinction between "ought" and "is", as explained by David Hume (1739), is one of the most important dilemmas as regards the validity of any research project. While research implications by necessity represent the more questionable "ought", the design of data collection for any experiment normally aims to be as close as possible to "is", i.e. the set of objective properties of a given object. Although it is impossible to maintain a perfect separation between these two elements, I strongly believe that research designed with this distinction in mind is a more credible source of information.

As a follower of this principle, I was dissatisfied with what I perceived to be an intrusion of "ought" into the zone reserved for "is" in a number of observation-based studies of dictionary use. In those studies, researchers aimed to check how proficient learners were at using dictionaries and other consultation sources by asking them to perform various tasks; the problem, however, lies in the fact that the subjects were requested to use specific sources, which were pre-selected for them. Therefore, the researchers mostly verified how proficient learners were at using tools which they "ought to" be using. In a modern digital world, it even seems uncertain whether dictionaries as such are the "main course" of learners' lexicographical diet, or maybe merely an "appetizer".

My concern was that the aforementioned studies record and attempt to interpret learners' activity performed in an artificial environment, and thus they might not reflect the "is" upon which our "ought" is constructed. Therefore, I decided to create an observation-based research project in which learners will be given as much freedom as possible to choose any source for their tasks. Without any prior assumptions formulated as hypotheses, I created purposefully broad research questions; the aim was just to observe how the subjects interact with consultation sources and what these interactions mean for language teachers and learners.

In this introductory part, I would like to outline some basic assumptions behind my research project and explain how this dissertation might contribute to the ongoing discussion on the use of reference works in EFL language comprehension/production. Although a number of studies on this subject (cf. Welker, 2010) have already offered some guidelines, new research directions are still being sought, especially given the limitations of the current methods (e.g., Hatherall, 1984, p. 184; Weigand, 1998, p. 574; Tarp, 2009, p. 11, etc.). Thus, I hope to have succeeded in expanding the research framework by focusing on the elements that seemed to have been underrepresented (be it for technical or methodological reasons) by authors to date.

While detailed information concerning the assumptions upon which this study is based is presented in the following chapters, two major aspects deserve to be mentioned in the introduction. Firstly, the focus of the project is on learners of English as a foreign language. While the methodology

used in the research project might also be applied in the case of native speakers, this particular study was undertaken in order to provide a better understanding of the subjects' use of reference works across two languages. Therefore, it is pedagogical implications of the study that are of major interest, and, accordingly, the analysis of the data is centered around them.

In addition, one of the key premises of the research is that there exist tangible benefits to relaxing formal constraints on the way in which the subjects are allowed to select and use their reference works. Compared to traditional methods of research on dictionary use – as described by Welker (2010) – this shift towards a more holistic approach necessitates the increased focus on human behavior related to the use of reference works. Therefore, this research is grounded in the behavior-oriented Activity Theory, which has already been utilized in different contexts of psycholinguistic studies, but which has had a limited impact on projects related to learners' search for information.

Since this work begins by examining the history of pedagogical sources, it was deemed necessary to present some basic terminology used in this genre of studies. More precise definitions can be found in the following chapters, but for the sake of clarity, it is necessary to introduce the concepts of consultation or lookup understood as the activity of finding language-related information in a specific source.

The source of information, such as a dictionary, is usually referred to as a reference work. It can be understood as "Any product, such as a published book or a computer software, that allows humans to store and retrieve information relatively easily and rapidly" (Hartmann & James, 2002, p. 28). This definition entails that reference works include dictionaries and thesauri, but they are not limited to these forms of presenting lexical information. Nevertheless, dictionaries and thesauri are traditionally the main focus of pedagogically oriented research on the process of consultation. This branch of language studies is referred to as pedagogical lexicography. It is mostly concerned with "design, compilation, use and evaluation of pedagogical dictionaries" (Hartmann & James, 2002, p. 107), i.e., reference works designed for didactic needs of teachers or learners of foreign languages. While in this study the scope of interest is broadened to reach beyond pedagogical dictionaries, the research framework still relies on standards set by pedagogical lexicography.

This dissertation is divided into six chapters; I begin by outlining the history of the earliest consultation sources with special emphasis on the division between monolingual and bilingual sources. In the second chapter, I show how these fundamentally different types of dictionaries came together to form the monolingual learners' dictionary (MLDs); I also present the criticism of MLDs and some possible ways of rebutting certain critical claims directed at them. The third chapter is devoted to the history of Polish-English and English-Polish consultation sources. In addition, the last section describes types of sources which are available to contemporary Polish learners of English. The next two chapters are devoted to research perspectives on dictionary use by learners – the fourth

chapter presents key approaches to such research along with requirements for a revised research framework, while in the fifth chapter I describe key elements necessary to develop such a framework, i.e. Web 2.0, Activity Theory and screen capture technology. This methodological introduction is followed by a description of the research study in the sixth chapter. In addition to quantitative and qualitative results, this chapter also contains implications for researchers and language teachers who would like to better understand the process of lexicogrammatical consultation.

1. History of reference works

It seems relatively difficult (if not impossible) to enumerate all the reference works that contributed to the development of pedagogical lexicography. Moreover, certain works which had a significant influence on the content and form of modern sources were not originally designed as pedagogical dictionaries or even as dictionaries as such. Therefore, the choice of sources in this chapter is limited to represent the most important trends, such as the divide between the monolingual and multilingual sources or the evolution of motivation for building materials specifically for language learners.

The historical perspective on reference works lies within the domain of two sub-disciplines of linguistics, namely lexicology and lexicography. While the two differ in their approach towards reference works – in lexicology these sources are regarded as means of describing lexical items (Halliday & Yallop, 2004, p. 5), while lexicography aims at studying dictionaries as such (Jackson, 2002, Introduction, para. 1) – they share the same interest in the history of development of reference works. Thus, the following subchapters draw from both aforementioned branches of linguistics in order to provide a short description of the history of reference works.

1.1. India

As it is remarked by Halliday and Yallop (2004), many cultures might have developed "highly elaborated theories of speech function and rhetoric" (p. 16), but it was the evolution of writing that made language users focus on grammar and vocabulary. Typically, the first reference works were glossaries whose aim was to explain the meaning of words that could be found in important cultural and/or religious works, but which became obsolete with time (ibid, p. 16). Such was also the case of the first glossaries created in India in the third and second century BC, whose creators aimed at explaining more problematic words that could be found in the Vedas. Those religious texts had been over a thousand years old at the time when the aforementioned dictionaries were published (Halliday & Yallop, 2004, p. 16).

Another milestone was a Sanskrit dictionary – the *Amera Kosha* (or *Cosha*[1]) compiled in the seventh century AD by Amera Sinha and translated into English by Henry Thomas Colebrooke in 1808 (Wilson, 1832, p. 72). Its timelessness can be best exemplified by the fact that as late as 1832, Wilson (p. 72) mentioned it as "one of the most celebrated dictionaries" that are "now used in India".

1 The word *Cosha* (as used by Wilson, 1832) or *Kosha* (as used by Halliday & Yallop, 2004) stands for a *dictionary* or *vocabulary* (Wilson, 1832, p. 70)

Colebrooke himself praised the value of the source in the preface to his work where he wrote the following words:

> The celebrated *Ameracosha*, or Vocabulary of Sanscrit by Amera simha, is, by the unanimous suffrage of the learned, the best guide to the acceptations of nouns in Sanscrit. The work of Panini on etymology is rivalled by other grammars, some of which have even obtained the preference in the opinion of the learned of particular provinces: but Amira's vocabulary has prevailed wherever the Sanscrit language is cultivated; and the numerous other vocabularies, which remain, are consulted only where Amera's is either silent or defective. It has employed the industry of innumerable commentators, while none of the others (with the single exception of Hlmachandra's) have been interpreted even by one annotator. Such decided, preference for the *Ameracosha*, and the consequent frequency of quotations from it, determined the selection of this as the basis of an alphabetical dictionary, and suggested the expediency of also publishing the original text with an English interpretation. (Colebrooke, 1832, p. 1)

One distinguishing feature of *Amerakosha* is the fact that the information within this dictionary is grouped according to categories that the lexical items belong to. From religion ("gods, demons; their arms...") to art, time, "sin and virtue", human behavior, agriculture, urban constructions, warfare etc., *Amerakosha* provides one with a thorough linguistic (as well as historical) description of Sanskrit as it was used in the seventh century BC (Colebrooke, 1832, pp. IV-VI), but, most importantly, it also inspired the following generations of dictionary makers. For instance, Roget acknowledged this classification as "one source of ideas for his *Thesaurus*" (Halliday & Yallop, 2004, p. 16).

Two other important works, both of which date to the twelfth century, were *Abihidhana Kintamani* and *Desinamamal*, both authored by Hemacandra – "a Jaina monk who lived in Gurjat between 1088 and 1172 at the court of King Kumarapala (...)" (Banerjee, 1931, p. XXXIII). The latter dictionary, written in Prakrit, contained "the *Desi* words and their meanings in *Tadbhava* equivalents" (Banerjee, 1931, p. XXXVII), that is words that are supposed to origin from sources other than Sanskrit, as well as their counterparts derived from Sanskrit (Grierson, 1920; Khars, 1992). However, rather than a single work of a gifted author, this dictionary is a manifestation of strong lexicographical traditions in India. In his introduction to the English edition of *Desinamamal* Banerjee wrote:

> (…) Hemacandra had a long series of predecessors who wrote lexicons of 'Desi' words and he was perhaps the last representative of this host of writers. This extensive literature on Prakrit lexicography seems to have perished irrecoverably and we have to console ourselves merely with the names of the authors presented in the Commentary. (1931, p. XXXIX)

This observation is also confirmed by Halliday and Yallop, who claim that "By this time [the twelfth century] Indian scholarship in grammar and phonology had reached a high degree of sophistication, and dictionary-making took its place as a part of a systematic description of language"

(2004, p.16). Thus, with the long history and well-developed traditions of compiling reference works, India seems to be one of the most important landmarks on the historical lexicographer's map of the world.

1.2. China

Another Asian country in which the art of dictionary-making started relatively early was China. However, Chinese dictionaries differed considerably from those created in India or certain other places, as they focused chiefly on the lexical component of the lexicogrammar. This phenomenon is explained by Halliday and Yallop, who claim that

> The Chinese paid little attention to grammar: since Chinese words are invariant, the question of why words change in form, which was what led Indians, Greeks and Arabs to study grammar, simply did not arise. (2004, p. 16)

The first recorded Chinese reference work is *Erya* ("Treasury of Fine Words") – a lexicon which dates to the third century and which is considered "a classic work of Chinese literature" (Kuiper & Young, 2013). One of the Thirteen Confucian Classics, it is not a dictionary of characters, but a collection of vocabulary with explanations – definitions and information on usage (ibid.). Its design resembles a thesaurus, with three grammatical categories (i.e. nouns, verbs, and figurative expressions) and sixteen thematic labels, such as Buildings, Music, Plants, etc. (Schipper, 2015).

After the appearance of *Erya*, Chinese lexicological works developed in three directions (Halliday & Yallop, 2004, p. 17), namely recording dialect words, investigating the origin of written characters, and describing the sounds of words. The first category is best exemplified by *Fangyan* written by Yang Xiong (53 B.C. – 18 A.D.), one of the pioneers of systematic research on spoken language in China. The meaning of the title, namely "regional speech" (Groves, 2008), seems to aptly describe the content of this work, as it "recognizes common, dialectical, and ancient words, and classifies synonymous words according to their sources and origins, besides exploring their mutual relationships" (Pan, 2005, p. 723). Thus, apart from providing the basis for both diachronic and synchronic analysis of the Chinese language, it is also an important source of information on history, culture, and tradition.

In terms of investigating the origins of written characters, the most important work mentioned by Halliday and Yallop (2004) was *Wen Jie Zi* by Xu Shen, created approximately in the year 100 A.D. Its main function was to trace the etymology and evolution of the graphical form of characters, as opposed to their semantics. Therefore, alternative meanings and/or pronunciations within that work are listed only when they are "similarly graphologically relevant" (Bottéro & Harbsmeier, 2008, pp.

249-250). The well-constructed research method and scientific approach to the linguistic data constitute distinctive features of this dictionary that are still appreciated by modern scholars. For instance, Bottéro and Harbsmeier remark that "*The Shuowenis* [alternative spelling] not merely an important source for the historian of natural science, it is itself a remarkable monument of scientific inquiry" (2008, p. 271).

As regards the last approach, namely focusing on sounds and rhymes, the earliest preserved dictionary is *Qieyun* (600 A.D.). While that work was predated by other rhyme dictionaries – some of them are even mentioned in the original preface to the *Qieyun*, written by its author Lu Fayan (Pulleyblank, 1984, p. 133) – this particular reference work continues to provide valuable information on historical pronunciation. This focus on the production of spoken language attests to the uniqueness of Chinese lexicography and has allowed the researchers to discover the Middle Chinese variety of the language. The importance of this approach, as well as the source itself, was aptly summarized by Ramsey:

> Middle Chinese (or Ancient Chinese), Karlgen's reconstructed language of the Qieyun dictionary, is the hub of our understanding of the history of Chinese. It is the oldest attested sound system. Still older stages of the language are adumbrated in ancient Chinese literature, of course – after all, Chinese writing was well over two thousand years old when Lu Fayan picked up his brush at the wine party that night. But where older works give only tantalizing hint, the *Qieyun* dictionary gives an explicit statement of the system of oppositions. The *fanqie*, cumbersome though they might be, make all the difference in the world. Without them the history of Chinese before modern times would be dark indeed. (1987, p. 131)

In conclusion, the beginnings of the Chinese lexicographical traditions were, to a certain extent, unique – firstly, owing to meticulous research and scientifically valid study methods that can be found even on the earliest recorded works; secondly, because of many directions of development of reference works. From thesauri enriched with definitions and usage information, to etymological dictionaries, to pronunciation dictionaries, to character dictionaries, Chinese traditions undoubtedly form one of the most important and interesting parts of the global lexicography.

1.3. The Islamic World

One of the first recorded attempts at creating a dictionary-like resource in the Islamic world was made by Abu ʻAbd ar-Raḥmān al-Khalīl ibn Aḥmad ibn ʻAmr ibn Tammām al-Farāhīdī al-Azdī al-Yaḥmadī (718-786 A.D.), commonly known as Al-Farahidi or Al-Khalīl, one of the most important Arab scholars. Though he never completed his work (Halliday & Yallop, 2004, p. 17), his contributions to

the early studies of the language seem to be of utmost significance. This talented philologist contributed to "phonology, grammar, lexicography", while his interest in pronunciation, for instance metrics and prosody of Arabic prose and verse (Ryding, 1998, p. IX), helped him devise a dictionary in which words were ordered according to a phonological principle (Halliday & Yallop, 2004, p. 17).

Nevertheless, despite Al-Farahidi's considerable contributions to the development of dictionaries, the Persians are considered to have been the "leading lexicographers" of the Islamic world (Halliday & Yallop, 2004, p.1 7). One of their first works was a dictionary of literary Persian, written by one of "the earliest poets still remembered", namely Abu Hafs Soghdi, who lived in the early 9th century A.D. (Katouzian, 2013, p. 121). Unfortunately, this work is now lost and the first dictionary of Persian that is available nowadays is *Loḡat-e fors*, by Asadī Ṭūsī (born circa 999/1000 A.D., died circa 1072/73 A.D.) who was a poet, a linguist, and a copist (Khaleghi-Motlagh, 2011). His dictionary is "a lexicon, composed to define the unfamiliar phrases found in Darī poetry for the people of Arrān and Azerbaijan" and it is considered to be "the oldest extant Persian dictionary based on examples from poetry." (ibid., pp. 699-700).

Another important reference work created in Persia is one of the first recorded bilingual dictionaries, namely *Moqaddemat al-adab* – a Persian-Arabic dictionary by Abu al-Qasim Mahmud ibn Umar al-Zamakhshari, an eleventh-century scholar (Mackenzie 2011). What followed were many bilingual glossaries, especially Persian-Indian ones, since "the influence of the Persian language and literature in India and the need for Persian manuals and dictionaries led Indian men of letters to compile dictionaries as early as the end of the 13th century" (Deylam, 2011, p. 388). Thus, both Indian and Persian scholars contributed to the development of a new category of reference works, which extended beyond the L1 background and facilitated intercultural communication.

1.4. The Mediterranean

One of the oldest reference works in the world was discovered in 1975 in the area of what used to be an ancient city of Ebla (3500 – 1600 BC), located thirty miles southwest of Aleppo. This source consists of texts and translations engraved in cuneiform on clay tablets; the languages are Sumerian and Eblaite (Stanley, 2007, p. 141). Most of the texts deal with "administrative routines and foreign relations of the place" (Roger & Moorey, 1991, p. 150), however they also contained lexical lists designed probably "for use in training scribes" (ibid, p. 150). The importance of these tablets for the archaeologists as well as historical lexicographers was stressed by Stanley (2007), who say that,

> Many of the tablets contain both Sumerian and Eblaite inscriptions, and there are many "dictionaries" or bilingual lists contrasting words in the two languages. It is this use of older Sumerian "international" diplomatic language in conjunction with Eblaite that allowed Pettinato[2] to decipher the new language. It has also served to clarify the scholars' understanding of Sumerian. Until the discoveries at Ebla, there existed no dictionaries of Sumerian and other languages written current with the time Sumerian was spoken, leaving pronunciations and other phonetic aspects of the language unclear. The Ebla archives, with their diversity of subjects, this dualistic style, and their vast numbers, have thus, among other contributions, improved the ability of scholars to interpret the intricacies of Sumerian (p. 150).

Unlike in the case of Sumerians, little is known about the beginnings of Egyptian lexicography; while Halliday and Yallop (2004) mention the fact that "the Egyptians produced thesaurus-like topic dictionaries as early as 1750 B.C." (p. 18), none of them survived, as opposed to a number of early Greek sources. Most of the glossaries created by the ancient Greeks are related to works of one particular poet, namely Homer. Like in India, some lexical items present in his works became obsolete with time and needed to be explained to the contemporaries. Such was also the purpose of Philitas (or Philetas) of Cos (c.340 B.C. – c.270 B.C.), a "Greek poet and grammarian, regarded as the founder of the Hellenistic school of poetry", who complied a dictionary of rare words from Homer, but, also, supplemented it with information concerning Greek dialects, and other sources ("Philitas of Cos*",* 2008). Another important work related to Homer's poems, later translated into Latin as *Lexicon Graecum Iliadis et Odysseae*, was created in the first century B.C. by Apollonius the Sophist, a grammarian and philosopher (Chaudon, 1786, p. 242).

It should be noted that some peoples under Greek influence also created their own reference works. One such example can be *Glossai*, a dictionary with explanations of Greek and Macedonian words, created by a Macedonian author – Amerias – who lived in the 3rd century B.C. (Smith, 1849, p. 142). Also the Romans – as heirs to Greek tradition, culture, and philosophy – engaged in lexicographical studies. Since they were much preoccupied with relations between the languages, they developed etymology-oriented research directions that had prescriptive and didactic purposes. The major trends in Roman lexicography are aptly summarized by Coleman (2010), who mentions two prominent scholars, i.e. Varro (116 – 27 B.C.) and Verrius Flaccus (55 B.C. – 20 A.D.):

> Arguments about linguistic change and especially etymology and synonymity were vigorously pursued by Roman scholars such as Varro (Marcus Terentius Varro) and Verrius Flaccus (Marcus Verrius Flaccus), who were heirs to Greek philosophical theories about the relative influence of anomaly and analogy as catalysts for linguistic change. From the Antonine period onward, antiquarian impulses combined with notions of linguistic purity to prompt the collection and explication of rare or obsolete words. Collections of etymologies, many of them

2 Professor Giovani Pettinato deciphered and named the Eblaite language.

> fanciful, and the didactic habit of compiling glosses to aid first- or second-language learners monopolized lexicographical study into the High Middle Ages. (Coleman, 2010, para. 1)

Another civilization that contributed to the development of early European lexicography were the Byzantines. Their most prominent work was *Suda*, "a tenth-century etymological and explanatory dictionary of around 30,000 entries from literary works in Ancient, Hellenistic and Byzantine Greek and Latin" (Halliday & Yallop, 2004, p. 18). This work seems to be a relatively rare combination of a glossary and an encyclopedia; its very name ("bulwark", "fortification") suggests the main premise behind compiling this dictionary, i.e. to preserve and protect classical knowledge (Mahoney, 2009).

1.5. Dictionaries of the English-speaking world and the influence of foreign sources

Since the main purpose of this dissertation is to focus on the EFL aspect, more space is devoted to the development of English language lexicography and lexicology. The reasons are twofold: firstly, as it is mentioned in the previous section, specific features of given languages can impact the directions of development of reference works as well as their didactic value (cf. the section on Chinese lexicography); secondly, the majority of the innovative educational solutions proposed by lexicographers, especially in the 20th Century, can be associated with the English-speaking world and embedded in its culture, history etc. Regardless of whether in the positive or negative sense (cf. Humblé, 2001), the history of development of didactic reference works was influenced to a large extent by the experience and attitudes of British and North American lexicographers.

Nevertheless, I would like to stress that the aforementioned evolution did not occur in isolation and, whenever necessary, the external influences are cited, especially in the periods where the lexicography of the English-speaking world was developed as a response to some external influence. Finally, it must be stressed that the following section does not aspire to be a comprehensive account of all the milestones in the evolution of the English language lexicography – instead, its aim is to focus on selected works that were representative of given trends and eras.

1.5.1. The beginnings

The beginnings of reference works in England are usually associated with the arrival of the Roman Church (597 A.D.) and the need for educated monks who had to be literate both in doctrines of faith and Latin – the official language of the church at the time. Thus, many Latin texts collected in monastery libraries were enriched with comments and one-word translations into English. Since those were usually placed in between the lines of manuscripts, they are referred to as *interlinear glosses* (Jackson, 2002, Chapter 1, Section 4, para. 1). The importance of these early bilingual reference

works was stressed by Hüllen (1989), who claims that they mark the beginnings of bilingual lexicography – both in terms of dictionaries and thesauri – since the glosses, once collected in one work, were arranged either alphabetically or thematically. With all these relatively modern assumptions, it should also be noted that a typical *glossarium* (Latin for glossary) was usually based on one work, or collections of works from one author, and it comprised mostly the words that were considered to be more problematic than common vocabulary items. Therefore, Murray (1900) claimed that the glossaries were predecessors of the 17th-century dictionaries of difficult words.

The oldest English glossaries are: *The Épinal-Erfurt Glossary* (also abbreviated to *EE Golossary*), *The Leiden Glossary*, and *The Corpus Glossary* (Murray, 1990, para. 10). Their names are derived from places where they are stored nowadays. More specifically, *Corpus* stands for Corpus Christi College in Cambridge, while two copies of *The Épinal-Erfurt Glossary* are stored respectively in Épinal, France, and Erfurt, Germany.

Interestingly, the former copy of *The Épinal-Erfurt Glossary* is considerably older, as it was written in Southumbria "during the last quarter of the 7th century", while the latter manuscript was created during "the first or second quarter of the 9th century" in Cologne (Lapidge, 2008, p. 35). Despite certain differences between the two versions, they have a similar number of Latin lemmata (approximately 3,700), out of which roughly 1,100 are accompanied with Old English interpretamenta (translations). The authorship, or at least a certain level influence on the text, is ascribed to Aldhelm (639-709), a poet and scholar who, as it was pointed out by Lapidge (2008, p. 34), probably also contributed to the creation of a certain number of interlinear glosses which were later used to create yet another reference work, namely *The Leiden Glossary.*

The Leiden Glossary was compiled circa 800 A.D. at St. Gallen. Its creation is attributed to Theodore of Tarsus (602-690) and Hadrian of Canterbury (died in 710) who were teachers in the Canterbury school during the era of development of Anglo-Saxon scholarship (Gretsch, 2006, p. 27). Since in Medieval Europe "manuscripts were copied and re-copied" (Murray, 1990, para. 7), the aforementioned glossaries served as a basis for yet another source, namely *The Corpus Glossary* whose only extant copy dates back to the 8th century. Given the number of words which were copied from the *EE Glossary*, Lindsay (1921) described it as "a fuller version of the *EE Glossary*" (p. XIII) rather than an independently created reference work.

In the early 11th century, English lexicography made considerable progress owing to another *glossarium*. It was compiled as a thematically arranged list, created by Ælfric of Eynsham, a prolific writer and author of many important publications on religion, hagiography etc., but also educational dialogues between a teacher and students, known as *Colloquy* (Hall, 2009). The two aforementioned works, together with Ælfric's *Grammar,* are considered to be parts of one of the earliest complete "courses" in Latin for Old English speakers. In this course, thematically arranged entries of the

Glossary – with categories from cosmology to social structure, to weapons, to plants – served the purpose of providing "supplementary vocabulary for students of beginning and intermediate Latin" (Hall, 2009, p. 203). Thus, interestingly, one of the first English reference works was already rooted in the emerging FL pedagogy, and its aim was to teach new vocabulary items rather than enhance comprehension or codify the language.

The pedagogical potential of glosses was especially appreciated in Great Britain where Latin (in continental Europe "not yet so dead") was perceived as "entirely foreign" (Murray, 1990, para. 3), since it bore little or no resemblance to forms utilized by Tutonic or Celtic users. Therefore, it was acquired "by slow and painful labour" (Murray, 1990, para. 3). Such a situation encouraged the collection and expansion of glossaries, which eventually led to compilation of more extensive sources, namely vocabularies (from Latin *vocabularium*).

Another reason for the compilation of *vocabularia* was a growing demand for instructional materials, since at the time Latin was a lingua franca not only for the clergy, but also for scholars, educators, and academics working at medieval universities, such as Oxford (founded in 1167) or Cambridge (1230); (Jackson, 2002, Chapter 4, Section 1, para 4). Two most important works form that era are *Hortus Vocabulorum,* or *Garden of Words,* compiled around 1430 and first printed in 1500 and *Promptorium Parvulorum, Storeroom for Young Scholars* (or *Children,* according to Halliday & Yallop, 2004, p. 19), which dates back to 1440 and was first printed in 1499 (Jackson, 2002, Chapter 4, Section 1, para. 4). Both those works are attributed to Geoffrey "the Grammarian" of Norfolk, also known as Galfridus Grammaticus or Galfridus Anglicus. It should be noted that the latter work was fairly extensive, with as many as approximately 12 000 words (Halliday & Yallop, 2004, p. 19).

Finally, it should be noted that the 13th century witnessed the emergence of the word "dictionary" (Halliday & Yallop, 2004, p. 9). First used in its Latin form, namely "dictionarius", i.e. "of words", ("dictionary", 2017), the term became anglicized in the 16th century ("dictionary", 2005).

1.5.2. Multilingual sources in the Renaissance era

The beginnings of the Renaissance era mark an important change in the history of reference works. In continental Europe, the introduction of the printing press by Gutenberg circa 1439 (first imported into Great Britain by William Caxton in 1476) made reference works more accessible to the public. In England – after a relatively stagnant period of the Norman rule, with French and Latin as dominant languages, and "the rich and cultured tongue of Alfred and Ælfric (…) left for generations without literary employment" – English started gaining significance, which was also reflected by the evolution of reference works (Murray, 1990, para. 12). Moreover the "burgeoning interest in the

vernacular languages of Europe" (Jackson, 2002, Chapter 4, Section 1, para. 4) further increased the aforementioned trend.

This rise in interest in the national language was not limited to England; many other European countries underwent such processes, which, in tandem with socioeconomic changes, resulted in the increased needs for sources that could embrace linguistic differentiation of the continent. Hence, it became profitable to create multilingual sources for craftsmen, merchants and other representatives of the emerging middle class who did not necessarily know Latin (Humblé, 2001, p. 31).

Nevertheless, it should also be noted that apart from shifting attention to the locally spoken languages, the Renaissance era was the period of the revival of interest in classical Greek and Roman works. Thus, Latin still exerted significant influence on English lexicography. However, the nature of this relationship changed, with more emphasis on comprehension and word coinage. The nature of this process is described by Jackson:

> Latin took on a new significance during the period of Renaissance, as scholars rediscovered the literature of Roman authors and made their work known, both through publication in the original language and through translations into English. It is the latter that are of particular significance. When translators came across a Latin word for which they could not find a ready equivalent in English, a common solution would be to 'borrow' the Latin word into English. Since Latin had been for so long the common language of academic discourse, this practice seemed the most convenient to many translators. However, since many readers would not be as familiar with Latin, such translators appended a glossary of such 'borrowed' words to their translations. (2002, Chapter 4, Section 1, para. 4)

All of the aforementioned changes contributed to the increase in importance of reference works, which, eventually, led to dictionaries becoming political tools – central to the notion of national identity – rather than mere reference works (Humblé, 2001, p. 31). This implication, as well as many other long-term results are described in the following sections, which are arranged according to the most important trends and cover the parallel development of multilingual and monolingual sources and its implications for foreign language teaching, its policies and attitudes.

As it is mentioned earlier in the text, the creation of multilingual sources in the Late Middle Ages or Early Renaissance was of more utilitarian than political nature. The first recorded source of this type is a German-Italian word list from 1447 (Humblé, 2001, pp. 29-30) which was soon followed by a number of other resources, notably François Garon's *Vocabulary of five languages: Latin, Italian, French, Spanish and German* which "proved so popular after its publication in Venice in 1526 that by the 1546 edition it had been extended to cover eight languages" (Hale, 1994, p. 159). Other important sources of the era, listed by Jackson (2002 Chapter 4, section 2, para. 4), include John Palsgrave's *Eclarcissement de la langue francoyse* (1530) and Randle Cotgrave's *A Dictionarie of the French and English Tongues* (1611) for English and French; *A Wordle of Wordes* (1598) for

English and Italian, and Richard Percyvall's *Bibliotheca Hispanica* (1591) for Spanish, English and Latin.

It should be noted that Palsgrave's dictionary is considered to be of utmost importance for the history of French linguistics, as it was the first complete account of the lexicogrammar of the language. As it was stated in the introduction to the 1852 edition of this reference work: "Un fait très-remarquable, c'est que Palsgrave, un Anglais, fut le premier qui réduisait la langue française sous des réglés grammaticales et tenta de la fixer par l'autorité des exemples.[3]" (Palsgrave, Génin & Du Wés, 1851, p. 3).

This example shows that at least some of the early multilingual reference works were not biased towards one group of users. Unlike certain modern bilingual dictionaries which were found by Humblé (2001) to "give tacit preference" to the audience of the country in which the publishing house is located (p. 36), bilingual sources of the early modern era were created with little or no bias, especially if developed under the supervision of non-native speakers. One noteworthy example is the work of Jacopo Strada who died in 1588 "why working on an eleven-language dictionary" (Hale, 1994, p. 159, as cited in Humblé, 2001, p. 30).

The pragmatic approach to multilingual reference works can be seen as a response to the changing landscape in foreign language pedagogy. The emergence of new groups of learners, such as merchants and travelers, meant that dictionaries were no longer an exclusive domain of scholars or clergy. Thus, the sources became more practical and accessible, with focus on attractive form and basic mnemonic techniques. This increase in variety contributed to a split between two major types of sources, which are in contemporary times (as of 2018) known as textbooks and dictionaries. The predecessors of textbooks, though still sharing some characteristics of reference works, also possess certain distinguishing features, such as:

- limited vocabulary range,
- larger units translated as a whole (phrases/sentences),
- thematic arrangement of vocabulary items.

One such example are French-English dialogues published circa 1483 by William Caxton, in which the translated text is, at the same time, a rhymed (in the French version) "advertisement" of the course:

FRENSSHE ENGLISSH

3 [It is] a remarkable achievement that Palsgrave, an Englishman, was the first one to systematize the French language by means of grammatical rules, and to attempt to make the systematization permanent using the authority of examples.

Qui ceste liure vouldra aprendre	Who this booke shall wylle lerne
Bien pourra entreprendre	May well entreprise or take on honde
Marchandises dun pays a lautre,	Marchandises fro one land to anothir,
Et cognoistre maintes denrees	And to knowe many wares
Que lui seroient bon achetes	Which to hym shal be good to be bought
Ou vendues pour riche deuenir.	Or solde for riche to become.
Aprendes ce liure diligement;	Lerne this book diligently;
Grande prouffyt y gyst vrayement.	Grete prouffyt lieth therin truly.

(Caxton, 2009, p. 3)

This format of parallel dialogues was used throughout the book in order to present vocabulary items arranged according to selected categories ("Furniture, Utensils, Plate and Clothing" – ibid, p. 7) or pragmatic functions ("Salutations. How to Take Leave of Folk" – ibid, p. 5).

The shift towards thematic vocabulary collections and mnemonic techniques can also be seen in innovative works by Jan Ámos Komenský (Comenius). One of them is his theoretical treaty on teaching and learning, published in 1632 in Czech and 1657 in Latin, namely *Didactica Magna* in which he says:

> 3. The study of languages, especially in youth, should be joined to that of objects, that our acquaintance with the objective world and with language, that is to say our knowledge of facts and our power to express them, may progress side by side. For it is men that we are forming, and not parrots. […]
>
> 4. From this it follows, firstly, that words should not be learned apart from the objects to which they refer. Secondly, that the complete and detailed knowledge of a language, no matter which it be, is quite unnecessary, and that it is absurd and useless on the part of anyone to try to attain it. (Comenius, ed. Keatinge, 1896, pp. 203-204)

These prerequisites for successful teaching were later applied in another important work by the same author, namely *Orbis Virtualius Pictus*, first published in 1658. The *Visible World in Pictures*, as the title is translated to English, was indeed one of the most important books in the history of reference works. It can be described as the world's first picture dictionary, with lithographs containing numbers and corresponding names written in various languages, including English. Interestingly, the names are rarely separated and provided in the form of lists – instead, they are incorporated into short texts or series of sentences which are constructed on the basis of the information presented in the pictures. Owing to this feature, *Orbis Pictus*, further to being a reference work, is also considered to be the "the forerunner of the illustrated schoolbook of later times" (Sadler, 2017). Both versions, i.e. the lists as well as the texts, are presented in Figure 1 and Figure 2.

Potherbs. Olera.

Pot-herbs	*Olera*
grow in Gardens,	nascuntur in hortis,
as *Lettice*, 1.	ut *Lactuca*, 1.
Colewort, 2.	*Brassica*, 2.
Onions, 3. *Garlick*, 4.	*Cepa*, 3. *Allium*, 4.
Gourd, 5.	*Cucurbita*, 5.
The *Parsnep*, 6.	*Siser*, 6.
The *Turnep*, 7.	*Rapa*, 7.
The *Radish*, 8.	*Raphanus minor*, 8.
Horse-radish, 9.	*Raphanus major*, 9.

Figure 1. Sample word list from *Orbis Pictus* (Comenius, 1887, p. 29)

The *Fire* gloweth, burneth and consumeth to ashes.	*Ignis* ardet, urit, cremat.
A *spark* of it struck out of a *Flint* (or Firestone), 2. by means of a *Steel*, 1. and taken by *Tynder* in a *Tynder-box*, 3. lighteth a *Match*, 4. and after that a *Candle*, 5. or *stick*, 6. and causeth a *flame*, 7. or *blaze*, 8. which catcheth hold of the Houses.	*Scintilla* ejus elisa e *Silice*, (Pyrite) 2. Ope *Chalybis*, 1. et excepta a *Fomite* in *Suscitabulo*, 3. accendit *Sulphuratum*, 4. et inde *Candelam*, 5. vel *Lignum*, 6. et excitat *Flammam*, 7. vel *Incendium*, 8. quod corripit Ædificia.

Figure 2. Sample text found in *Orbis Pictus* (Comenius, 1887, p. 20)

The aforementioned pragmatic approach to compiling reference works meant that there existed few limitations to their form and contents. Thus, the history of further development of these works, though fruitful and interesting, does not seem to be freighted with significance in terms of controversies, shaping language policies, or changing the public outlook on languages and how they should be used or taught. Nevertheless, this relatively uneventful period should not be confused with stagnation. On the contrary, it shows how this particular branch of lexicography reached its maturity earlier than many others, a phenomenon aptly described by Humblé: "It is true that 17th century dictionaries were astonishingly good, and until recently there was not much reason for change" (2001, p. 36).

The modern standards in the multilingual English lexicography should be ascribed chiefly to Lewis and Short and their work *A Latin Dictionary* (1870), as well as Liddell and Scott, the creators

of the *Greek-English Lexicon* (1846), (Halliday & Yallop, 2004, p. 22). However, as it was indicated before, the process of improvement and development of these resources was of a more evolutionary nature, without too many controversies or implications for educational policies.

1.5.3. Development of monolingual reference works in the early modern era

Unlike multilingual resources, monolingual dictionaries[4] have always been more likely to become entities of significant value that extends beyond their practical purpose. This phenomenon can be explained in terms of Baudrillard's theory in which any book is not only a tool, but also an object which holds "a place and function in the *système des objets*[5]" (Baudrillard, 1972, as cited in Humblé, 2001, p. 23). Due to their mono-cultural context, monolingual dictionaries are normally rooted in one and only one national "système". Thus, there is relatively little space for the negotiation of meaning or intercultural mediation. While most other books (e.g. literary works) are free to "travel" to any part of the world, monolingual dictionaries occupy a fixed position in a given language group. Their exclusive character marks the group identity and can even become a unifying factor.

Humblé (2001) attributes the special position of reference works to the processes that occurred mostly during the modern era, and he based this claim on the famous quotation by Baurdrillard (1972), who states that,

> Aujourd'hui la consommation – si ce terme a un sens autre que celui que lui donne l'économie vulgaire – définit précisément ce stade où la marchandise est immédiatement produite comme signe, comme valeur/signe, et les signes (la culture) comme marchandise. (p. 178).[6]

However, a more thorough investigation of the origins of monolingual dictionaries shows that even long before these relationships between culture, trade, and values were as significant as they are nowadays, monolingual dictionaries were already important as quasi-religious entities, sometimes being the key to understanding certain important texts – be it stories of gods and their deeds, or canonical literary works (cf. first glossaries in India, or Greece). Thus, far from being purely practical tools, monolingual reference works have long been an important part of history, culture and literature of many nations, and their modern status – Humblé's starting point – is just a continuation of a trend that was already well-constituted in the ancient times.

4 These sources are henceforth referred to as "native speaker reference works/dictionaries".
5 System of objects.
6 Nowadays, consumption – if this term has a sense different from the one given to it by everyday economics – defines precisely the state in which merchandise is immediately produced as a sign, [or] as value/sign, and signs (i.e. culture) [are produced] as merchandise.

Nevertheless, the impact of the changes that occurred in the modern era should not be underestimated, since they brought about a substantially revised approach to reference works, by marrying them with politics, power, and the sense of national pride. In order to stress its importance, Humblé (2001) decided that this functional shift should be the second of the two aforementioned reasons for which monolingual reference works seem to be detached from their utilitarian function.

The new dimension of the aforementioned symbolic value of native speaker dictionaries began to take shape during the Renaissance era when the first source of the new type was published in 1612 in Florence, Italy. The publisher of that work titled *Vocabulario* was *Accademia della Crusca* – a Florentine committee who set out to "exalt the Florentine language" (Humblé, 2001, p. 31). *Vocabulario* was compiled by collecting all the words that were considered genuinely Italian at the time, though in fact many of them were only found in the local dialect. Despite these shortcomings, the idea of using a dictionary to codify and standardize one's language was adopted by many other institutions, since the lexicographers and grammarians soon realized that the compilation of a reliable and comprehensive dictionary was one sign of the achievement of their country's maturity, just as the lack of grammars and dictionaries indicated the dominance of a foreign power or the weakness of a truly national feeling (Collison, 1982, p. 18).

The most notable European example of using dictionaries to prove one's superiority was the *Dictionnaire de l'Académie française* (*Academia Dictionary*), a dictionary compiled in the years 1639-1694 by the French Academy – a newly-founded academic entity established by Cardinal Richelieu in 1634. This decision was a part of the politically motivated movement to codify and unify the French language, an action deemed necessary to create a unified state and strengthen the king's position (Roegiest, 2006, p. 205).

Thus, the purpose of this source was mostly standardization of the language, as opposed to a purely descriptive point of view. King Louis XIV of France states this explicitly his in his *Lettres Patentes pour l'Établissement de l'Académie Françoise,* where he stresses the importance of rules that need to be established in order to make the French language become "elegant" as well as capable of expressing matters connected with arts and sciences (Louis XIV, 1995, p. 9). The same thought is later restated in Article XXIV of the *Statuts et Règlements de l'Académie Françoise*, which reads as follows:

> La principale fonction de l'Académie sera de travailler avec tout le soin et toute la diligence possible à donner des règles certaines à notre langue et à la rendre pure, éloquente et capable de traiter les arts et les sciences.[7] (ibid, p. 19)

7 The chief function of the Academy will be to work with as much care and diligence as possible to give our language

This approach means that the purpose of the monolingual dictionary is to be a fixed point of reference, a source of pure and correct language rather than a descriptive tool containing information about actual usage. Such a philosophy of creating reference works necessitates investing considerable effort to maximize comprehensiveness, as any item which is not included might be outside of what is permissible in a given language. While multilingual dictionaries are expected to differ in their coverage, any item missing from a national monolingual dictionary is likely to be conspicuous by absence and, thus, incorrect.

Apart from setting standards of comprehensiveness, the *Academia Dictionary* helped shape the design of modern monolingual sources. One of its features is including a definition for each lexical item. Such definitions can, at times, consist of words which are more sophisticated than the target item itself. For instance, the word *donner* (to give) is explained as "Faire don, faire present, gratifier quelqu'un de quelque chose[8] ("Dictionnaire de l'Academie Francoise", 1694, p. 341)".

Another innovative feature of the dictionary is the occasional use of explanations instead of definitions. One such entry is for the word *tué*, (killed), which provides information concerning noble and ignoble death: "On dit, qu'*Un homme a esté bien tué*, pour dire, que Celuy qui l'a tué, l'a attaqué en homme d'honneur. Et, qu'*Il a esté mal tué*, pour dire, qu'On l'a tué en trahison, qu'on l'a assassiné[9]" (ibid., p. 604). Interestingly, the potential of such a way of presenting lexical and grammatical information was re-used in learners' dictionaries in the 20th century.

Certainly, the French Academia dictionary helped set many other lexicographical standards, but these three were mentioned by Humblé (2001) as most relevant to the EFL context and, thus, to the further discussion. The results of the transfer of these standards to the English-speaking world were described the following section, in which I shall comment on the process of creation of the most important monolingual reference works in the history of English lexicography.

1.6. Towards the universal dictionary of English: Difficult lexical items

The first attempts at creating monolingual dictionaries in the English-speaking world had very little in common with the aforementioned politically motivated approach. Instead, their purpose was far more utilitarian, since they aimed at explaining certain problematic words, especially to the learners

fixed rules and to make it pure, eloquent, and fit for talking about art and science.

8 make [somebody] a gift, give a present, reward somebody for something.

9 One can say that a man died a noble death when the one who attacked and killed him was a man of honor. And, the one who died an ignoble death was killed by treason or assassination.

who lacked the knowledge of "classical languages, especially Latin" (Jackson, 2002, Chapter 4, Section 2, para. 4). In 1604, Robert Cawdrey created the first work of this kind, namely *A Table Alphabeticall of Hard Usuall Wordes*, "which gave the spelling and meaning of about 2500 words" (Halliday & Yallop, 2004, p. 20).

The main purpose of that work was far from reinforcing the position of "correct" English in the society. On the contrary, it opposed the ideas of many scholars who were, at this time, concerned with the influx of "foreign" words connected with the Renaissance achievements, particularly in domains such as arts, medicine and science (Read, 2016). The scholars such as Thomas Elyot, John Checke, and Thomas Wilson claimed that more accessible English words should be used instead (Starnes & Noyes, 1991, p. 8). However, Cawdrey adapted a more descriptive approach and decided to present the language as it was used by the scholars to the public. This was clearly stated in his famous introduction to the dictionary, where he wrote:

> A Table Alphabeticall, conteyning and teaching the true writing, and vnderstanding of hard vsuall English wordes, borrowed from the Hebrew, Greeke, Latine, or French. &c.
>
> With the interpretation thereof by plaine English words, gathered for the benefit & helpe of Ladies, Gentlewomen, or any other vnskilfull persons.
>
> Whereby they may the more easilie and better vnderstand many hard English wordes, which they shall heare or read in Scriptures, Sermons, or elswhere, and also be made able to vse the same aptly themselues.
>
> Legere, et non intelligere, neglegere est. As good not read, as not to vnderstand[10]. (Cawdrey, 1994, para. 1).

Although still far from imposing certain norms on the society, this first English monolingual dictionary shared certain features of the more prescriptive sources. Firstly, it was created with native speakers in mind; secondly, its design showed an attempt at creating a "popular" resource, which was supposed to be used by a relatively wide audience.

Other authors soon followed, and the second dictionary that contained hard words, namely *An English Expositor*, was published in 1616 by John Bullokar. This source was more comprehensive than Cawdrey's dictionary and it provided more "expansive explanations" (Jackson, 2002, Chapter 4, Section 2, para. 10). The third noteworthy work from the same era was *The English Dictionarie* by Henry Cockeram, published in 1623. This reference work was important for several reasons: firstly, it was the first one to have the word *dictionary* in its title (Read, 2014); secondly, it was one of relatively few monolingual dictionaries that openly invited "Strangers of any Nation" to use them

10 To read, and to not understand, is to neglect

(Jackson, 2002, Chapter 4, Section 2, para. 15); and – most importantly – it contained both high- and low-register lexical items. The author justified his choice by writing in the preface:

> The second Booke containes the Vulgar words, which whensoever any desirous of a more curious explanation by a more refined and elegant speech shall looke into, he shall then receive the exact and ample word to expresse the same: Wherein by the way let me pray thee to observe that I have also inserted (as occasion served) even the *mocke-words* which are ridiculously used in our language, that those who desire a generality of knowledge may not bee ignorant of the sense, even of the *fustian termes,* used by too many who study rather to bee heard speke than to understand themselves. (Cockeram, 1930, pp. XV-XVI).

By adopting this strategy, Cockeram chose the middle-of-the-road approach, wherein both the prescriptive and descriptive aspects of the language deserved the lexicographer's attention. Although in the following years the focus was to be shifted to correctness, this early attempt at reconciling language as it is spoken and language as it should be spoken, constitutes a noteworthy example of a balanced approach to language policy.

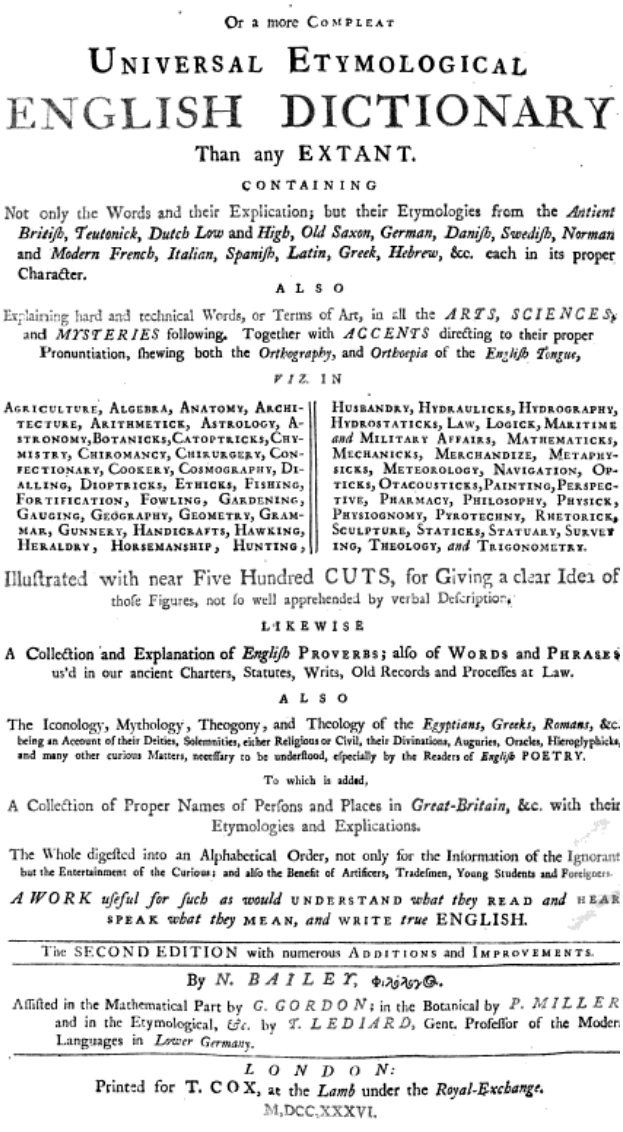
Finally, it should be noted that none of the aforementioned sources were truly original. They all made extensive use of the materials collected before; the authors copied previous versions, adding their own language data. For instance, Cawdrey drew on the glossary from the *English Schoole Master* (1596 by Edmund Coote), and Cockeram openly admits to having copied and improved the entries from both Cawdrey and Bullokar (Jackson, 2002, Chapter 4, Section 2). Those works were further expanded, and new dictionaries were created on their basis. Jackson lists some works that followed, i.e. *Glossographia* by Thomas Blount (first published in 1656), where the author firstly introduced etymological data and "historical observations"; *The New World of English Words* by Edward Phillips (1658); and *An English Dictionary* by Elisha Coles (1696), which even contained "canting terms", i.e. thieves' slang words (ibid., Chapter 4, Section 2).

1.7. Towards the universal dictionary of English: Comprehensiveness and Etymology

The beginnings of the 18th century in England witnessed a change in approach to the role of reference works. With *A New English Dictionary*, attributed to John Kersey (published in 1702), the first attempt was made to "include all words and to define their meaning" (Halliday & Yallop, 2004, p. 20). This work was already more prescriptive than its predecessors, as it was aimed at a relatively wide audience, and the inclusion of many common words was justified by the need to teach correct spelling: "(...) the main design of which, is to instruct Youth, and even adult Persons, who are ignorant of the Learned Languages, in the *Orthography*, or true and most accurate manner of Spelling, Reading

and Writing the genuine Words of their Mother-toungue" (Kersey, 1969, The Preface section, para. 1).

Two other works that followed, i.e. *An Universal Etymological English Dictionary* from 1721 and *Dictionarium Britannicum* – published in 1730 by Nathaniel Bailey – constitute a considerable contribution to British lexicography, as they paved the way for the first truly comprehensive English dictionary (Jackson, 2002, Chapter 4, Section 3, para 5-10). While both dictionaries enjoyed popularity, it was revised *Dictionarium Britannicum* that proved to be the more comprehensive repository of linguistic and encyclopedic knowledge. Bailey introduced a number of novel solutions, including an extensive collection of technical and scientific terms, coherent etymological information, a list of proverbs, pronunciation aids, and figures whose aim was to illustrate the meaning of the more difficult lexical items. The scope of changes can be illustrated by the cover page of the 1736 edition, Presented in Figure 3, which lists all the new improvements added by the author and other contributors.



Or a more COMPLEAT

UNIVERSAL ETYMOLOGICAL ENGLISH DICTIONARY

Than any EXTANT.

CONTAINING

Not only the Words and their Explication; but their Etymologies from the *Antient Britiſh, Teutonick, Dutch Low* and *High, Old Saxon, German, Daniſh, Swediſh, Norman* and *Modern French, Italian, Spaniſh, Latin, Greek, Hebrew*, &c. each in its proper Character.

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VIZ. IN

AGRICULTURE, ALGEBRA, ANATOMY, ARCHITECTURE, ARITHMETICK, ASTROLOGY, ASTRONOMY, BOTANICKS, CATOPTRICKS, CHYMISTRY, CHIROMANCY, CHIRURGERY, CONFECTIONARY, COOKERY, COSMOGRAPHY, DIALLING, DIOPTRICKS, ETHICKS, FISHING, FORTIFICATION, FOWLING, GARDENING, GAUGING, GEOGRAPHY, GEOMETRY, GRAMMAR, GUNNERY, HANDICRAFTS, HAWKING, HERALDRY, HORSEMANSHIP, HUNTING, HUSBANDRY, HYDRAULICKS, HYDROGRAPHY, HYDROSTATICKS, LAW, LOGICK, MARITIME *and* MILITARY AFFAIRS, MATHEMATICKS, MECHANICKS, MERCHANDIZE, METAPHYSICKS, METEOROLOGY, NAVIGATION, OPTICKS, OTACOUSTICKS, PAINTING, PERSPECTIVE, PHARMACY, PHILOSOPHY, PHYSICK, PHYSIOGNOMY, PYROTECHNY, RHETORICK, SCULPTURE, STATICKS, STATUARY, SURVEYING, THEOLOGY, *and* TRIGONOMETRY.

Illuſtrated with near Five Hundred CUTS, for Giving a clear Idea of those Figures, not ſo well apprehended by verbal Deſcription.

LIKEWISE

A Collection and Explanation of *Engliſh* PROVERBS; alſo of WORDS and PHRASES us'd in our ancient Charters, Statutes, Writs, Old Records and Proceſſes at Law.

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The Iconology, Mythology, Theogony, and Theology of the *Egyptians, Greeks, Romans*, &c. being an Account of their Deities, Solemnities, either Religious or Civil, their Divinations, Auguries, Oracles, Hieroglyphicks, and many other curious Matters, neceſſary to be underſtood, eſpecially by the Readers of *Engliſh* POETRY.

To which is added,

A Collection of Proper Names of Perſons and Places in *Great-Britain*, &c. with their Etymologies and Explications.

The Whole digeſted into an Alphabetical Order, not only for the Information of the Ignorant but the Entertainment of the Curious: and alſo the Benefit of Artificers, Tradeſmen, Young Students and Foreigners.

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LONDON:
Printed for T. COX, at the *Lamb* under the *Royal-Exchange*.
M,DCC,XXXVI.

Figure 3. The title page of the *Dictionarium Britannicum*, Bailey, 1736

The attempts to create the most comprehensive source were further reinforced by the public debate concerning the codification of the English language. Jackson (2002, Chapter 4, Section 4, para 1-10) stressed that many from among the most prominent intellectuals of the era (including Daniel Defoe, Jonathan Swift, Joseph Addison and Alexander Pope) supported the idea of a prescriptive dictionary. The first attempt at creating such a source was Benjamin Martin's *Lingua Britannica Reformata*, published in 1749. This work containing information on etymology, orthography, word sense and a number of collections of specialized vocabulary, such as the extended science section (Mugglestone, 2014, p. 208), was definitely another step towards a more comprehensive and universal source.

Interestingly, Martin's views on the subject of prescriptiveness and correctness differed from the more radical opinions shared by the members of the Académie Française. On the contrary, he believed that language is a changing means of communication, and most distinctions are arbitrary. He made this point explicit in the *Physico-Grammatical Essay* – an introduction to his work – where he wrote the following:

> And more than a just account of the original, progress, and present state of our tongue, I know of nothing that can be done: for as to the pretence of fixing a standard to the purity and perfection of any language, while the state of the people remains unchanged and unmix'd with others, is utterly vain and impertinent, because no language as depending on arbitrary use and custom, can ever be permanently the same, but will always be in a mutable and fluctuating slate; and what is deem'd polite and elegant in one age, may be accounted uncouth and barbarous in another. Of this truth none I think can doubt, as we have such numerous instances of it in the fore going part of this essay, to which perhaps two or three centuries may add as many more. (Martin, 1749, p. CXXXVII)

Martin's methods and opinions constituted an unquestionable contribution to the art of dictionary making, but they were soon overshadowed by the work of Dr Samuel Johnson. His *Dictionary of the English Language*, published in 1755, is nowadays considered as “a landmark not only in setting high professional standards in lexicography but also in establishing the role of the lexicographer as an authority on the 'correct' spelling, pronunciation and definition of words” (Halliday & Yallop, 2004, p. 20). One of the most interesting documents concerning the dictionary was Johnson's *Plan of the Dictionary of the English Language* from 1747, where the author outlines the key characteristics of a comprehensive and prescriptive reference work. Those were described in detail by Jackson (2002, chapter 4, section 5) who mentions the most important points raised by Dr Johnson, that is:

- the dictionary should be general and only some specialized terms should be incorporated in it, especially since technical vocabulary items are often derived from foreign words

- the more recent loanwords which still appear to be foreign should be clearly separated from those that are assimilated in the language
- common words should be included in the work to assure comprehensiveness, but also to make sure that their forms and usage are standardized
- one pronunciation standard should be introduced, especially in the case of stress placement
- each basic (non-derived) word should be traced to its original form, so that the recent additions to the language, such as slang words of uncertain origin, are not included in the dictionary
- information on inflection and syntax would be provided – it should be noted that as early as 1747 Jones remarked that the syntax is too irregular to be considered as a set of rules, and each word should be described separately in terms of its preferred syntactical patterns – an approach which was re-discovered by many prominent linguists of the 20th century, such as Firth or Halliday
- each lexical item should be accompanied with a definition, and multiple word senses shall be grouped in a logical way – from the most intuitive, to the most metaphorical meaning
- usage properties should be explained by means of labels (e.g. obsolete lexical items)
- the dictionary should include examples – normally in the form of citations from reputable authors.

While the majority of the above propositions constitute the core requirements of modern lexicography, and Johnson's dictionary is considered to be "the most famous single work of biographical art in the whole of literature" (Bate, 1977, p. 19), the eminent author did not succeed in meeting all his goals. Just like Martin – his predecessor – Johnson concluded in the end that he "flattered himself" that he would be able to "fix the language" (Johnson, 2009, p. 251). He also commented on the ineffectiveness of such an approach, referring to the aforementioned French Academy:

> When we see men grow old and die at a certain time one after another, from century to century, we laugh at the elixir that promises to prolong life to a thousand years, and with equal justice may the lexicographer be derided, who being able to produce no example of a nation that has preserved their words and phrases from mutability, shall imagine that his dictionary can embalm his language, and secure it from corruption and decay, that it is in his power to change sublunary nature, or clear the world at once from folly, vanity, and affectation.
>
> With this hope, however, academies have been instituted, to guard the avenues of their languages, to retain fugitives, and repulse intruders; but their vigilance and activity have hither to be in vain; sounds are too volatile and subtle for legal restraints; to enchain syllables, and to lash the wind, are equally the undertakings of pride, unwilling to measure its desire by its

> strength. The French language has visibly changed under the inspection of the academy; (Johnson, 1792, p. 13).

However, as the author states later in the document, although the prescriptive approach is bound to be unsuccessful, it is still worth applying, as this seems to be the best way of "preserving" languages. The message is further strengthened by the fact that Johnson referred to national sentiments when he added that: "In hope of giving longevity to that which its own nature forbids to be immortal, I have devoted this book, the labour of years to the honour of my country, that we may no longer yield the palm of philology to the nations of the continent" (ibid, p. 14).

Thus, Johnson's doubts regarding the ability to codify the language stemmed from the fact that he considered it to be technically impossible. However, it cannot go unnoticed that the author understood the emotional value of national monolingual dictionaries and supported the use of those reference works as political instruments. Finally, despite all the contemporary reservations about the purpose and the rationale behind the dictionary, it is certain that Johnson's work was a milestone in the history of lexicography. Not only did it help set new professional standards, but it also contributed to the development of new techniques that could be used in order to create more reliable reference works.

One of the most important improvements was the use of citation slips. Johnson would rely primarily on third party quotations, which he copied from the books by – as it was mentioned – the authors that he considered reputable (McEnery, 2001, p. 106). The cut-up pieces of paper, each containing one citation, would remain one of the most important tools in lexicography until the advent of computers. However, even in the era of the dominance of digital technologies, the idea behind collecting citations until one obtains a large and varied database of hand-picked examples, remains essentially the same.

Another attempt at creating a fully comprehensive source was *A New Dictionary of the English Language*, published in 1836/1837 by Charles Richardson. Its most distinguishing feature was the use of Horne Tooke's principle, which said that groups of words were derived from notions which had only one original meaning. For instance, he insisted that *barn, baron, bargain, barge* and *bark* were derived from the basic meaning of the word *bar*, which means "defense" (Jackson, 2002, Chapter 5, para. 2).

The use of this principle to trace word etymologies attracted some criticism, notably from Noah Webster, who claimed that – while the rule itself might be correct – neither Tooke, nor Richardson, managed to find the correct primary words (Webster, 1837). Thus, despite some popularity, this reference work constitutes an example of a source in English lexicography. On the

other hand, the next noteworthy dictionary was a milestone achievement, and – very much like the *French Academia Dictionary* – it is one of the sources whose history still continues nowadays, with its most recent updates in December 2018 (as of December 2018).

The roots of the *Oxford English Dictionary (OED)* – for this is the work which became a successor to Johnson's ideas – can be traced to the proposals of the *Unregistered Words Committee*, a unit of *The Philological Society* – a group constituted in 1842 (Jackson, 2002, Chapter 5, Section 1, para. 1). After the early attempts to improve the existing sources, the members of the group decided to create a new, more comprehensive and scientific work. This proposal was advanced by Richard Chenevix Trench, who suggested that a new reference work should be based on the comparative philology – a method that stressed the importance of etymology – especially that a similar project had been already underway in Germany, under the supervision of the Grimm brothers (ibid, para. 1). Trench also provided a list of things that needed to be changed in order to create a better source. In his paper, *On Some Deficiencies in our English Dictionaries*, he listed seven major problems, namely:

> I. Obsolete words are incompletely registered; some inserted, some not; with no reasonable rule adduced for the omission of these, the insertion of those other.
>
> II. Families or groups of words are often imperfect, some members of a family inserted, while others are omitted.
>
> III. Oftentimes much earlier examples of the employment of words exist than any which our Dictionaries have cited; indicating that they were earlier introduced into the language than these examples would imply; and in case of words now obsolete, much later, frequently marking their currency at a period long after that when we are left to suppose that they passed out of use.
>
> IV. Important meanings and uses of words are passed over; sometimes the later alone given, while the earlier, without which the history of words will be often maimed and incomplete, or even unintelligible, are unnoticed.
>
> V. Comparatively little attention is paid to the distinguishing of synonymous words.
>
> VI. Many passages in our literature are passed by, which might be usefully adduced in illustration of the first introduction, etymology, and meaning of words.
>
> VII. And lastly, our Dictionaries err in redundancy as well as in defect, in the too much as well as the too little; all of them inserting some things, and some of them many things, which have properly no claim to find room in their pages (Trench, 1857, p. 3).

The list of the required changes shows that the standards set by Jones remained largely valid, although there still existed certain imperfections in terms of the practical realization of his assumptions.

When the work on the dictionary began in 1857, two first editors, i.e. Herbert Coleridge and Frederick Furnivall, were responsible chiefly for preparing the materials, e.g. collecting citation slips or securing access to historical sources. In 1878, James Murray was appointed editor, and in 1879 the contract to publish the dictionary was signed with Oxford University Press (Jackson, 2002, Chapter 5, Section 2, para. 5).

In 1888, the first volume was published, containing entries for "A" and "B", but it would take 40 years and three more editors (Henry Bradley, William Alexander Craige, and Charles Talbut Onions) to finish the work in 1928. Neither Murray nor Bradley lived long enough to see the completion of their opus magnum.

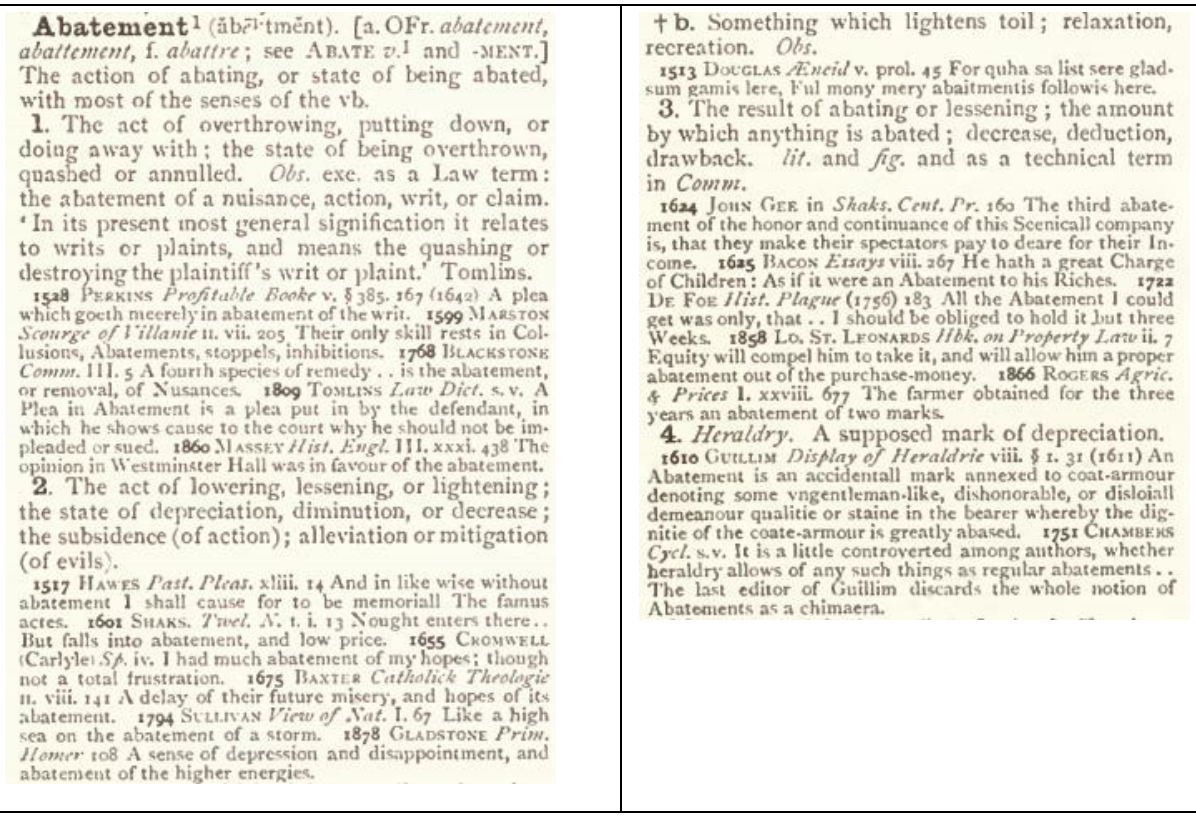
Since the dictionary was supposed to be a truly comprehensive work, its structure is relatively complex. The headwords are accompanied by a number of pieces of information related to their historical and contemporary usage. Table 1 below illustrates the distribution of the lexical information between four major categories, as described by Jackson (2002, Chapter 5, Section 3).

Headword			
Identification	**Word form**	**Signification**	**Illustrative quotes**
• Spelling (including irregular forms) • Basic etymology (is it a loanword) • Pronunciation • Part of speech, word class	• Morphology • Full etymology • Evolution of the form • Remarks on word history	• Evolution of meaning • Definition for each sense	• Arranged chronologically, accompany each definition

• Usage notes, e.g. semantic domain • List of historical spellings • Inflection (if irregular)			

Table 1. Categorization of information included in the entries of the *Oxford English Dictionary*, based on Jackson (2002).

The information included in the dictionary reflects the principles proposed by Trench. The diachronic approach is visible in all four major categories, and it is manifested by focusing on the evolution of spelling, evolution of meaning, etymology, and the principle of arranging illustrative quotations chronologically. Therefore, most of the space used by a typical OED entry – with the exception of entries for rare words – is devoted to examples, preceded by a comparatively short section including other information. An example of entry from OED is shown in Figure 4.



Abatement[1] (ăbē·tmĕnt). [a. OFr. *abatement*, *abattement*, f. *abattre*; see ABATE *v.*[1] and -MENT.] The action of abating, or state of being abated, with most of the senses of the vb.

1. The act of overthrowing, putting down, or doing away with; the state of being overthrown, quashed or annulled. *Obs.* exc. as a Law term: the abatement of a nuisance, action, writ, or claim. 'In its present most general signification it relates to writs or plaints, and means the quashing or destroying the plaintiff's writ or plaint.' Tomlins.

1528 PERKINS *Profitable Booke* v. § 385. 167 (1642) A plea which goeth meerely in abatement of the writ. 1599 MARSTON *Scourge of Villanie* II. vii. 205 Their only skill rests in Collusions, Abatements, stoppels, inhibitions. 1768 BLACKSTONE *Comm.* III. 5 A fourth species of remedy . . is the abatement, or removal, of Nusances. 1809 TOMLINS *Law Dict.* s.v. A Plea in Abatement is a plea put in by the defendant, in which he shows cause to the court why he should not be impleaded or sued. 1860 MASSEY *Hist. Engl.* III. xxxi. 438 The opinion in Westminster Hall was in favour of the abatement.

2. The act of lowering, lessening, or lightening; the state of depreciation, diminution, or decrease; the subsidence (of action); alleviation or mitigation (of evils).

1517 HAWES *Past. Pleas.* xliii. 14 And in like wise without abatement I shall cause for to be memoriall The famus actes. 1601 SHAKS. *Twel. N.* I. i. 13 Nought enters there . . But falls into abatement, and low price. 1655 CROMWELL (Carlyle) *Sp.* iv. I had much abatement of my hopes; though not a total frustration. 1675 BAXTER *Catholick Theologie* II. viii. 141 A delay of their future misery, and hopes of its abatement. 1794 SULLIVAN *View of Nat.* I. 67 Like a high sea on the abatement of a storm. 1878 GLADSTONE *Prim. Homer* 108 A sense of depression and disappointment, and abatement of the higher energies.

†**b.** Something which lightens toil; relaxation, recreation. *Obs.*

1513 DOUGLAS *Æneid* v. prol. 45 For quha sa list sere gladsum gamis lere, Ful mony mery abaitmentis followis here.

3. The result of abating or lessening; the amount by which anything is abated; decrease, deduction, drawback. *lit.* and *fig.* and as a technical term in *Comm.*

1624 JOHN GEE in *Shaks. Cent. Pr.* 160 The third abatement of the honor and continuance of this Scenicall company is, that they make their spectators pay to deare for their Income. 1625 BACON *Essays* viii. 267 He hath a great Charge of Children: As if it were an Abatement to his Riches. 1722 DE FOE *Hist. Plague* (1756) 183 All the Abatement I could get was only, that . . I should be obliged to hold it but three Weeks. 1858 LD. ST. LEONARDS *Hbk. on Property Law* ii. 7 Equity will compel him to take it, and will allow him a proper abatement out of the purchase-money. 1866 ROGERS *Agric. & Prices* I. xxviii. 677 The farmer obtained for the three years an abatement of two marks.

4. *Heraldry.* A supposed mark of depreciation.

1610 GUILLIM *Display of Heraldrie* viii. § 1. 31 (1611) An Abatement is an accidentall mark annexed to coat-armour denoting some vngentleman-like, dishonorable, or disloiall demeanour qualitie or staine in the bearer whereby the dignitie of the coate-armour is greatly abased. 1751 CHAMBERS *Cycl.* s.v. It is a little controverted among authors, whether heraldry allows of any such things as regular abatements . . The last editor of Guillim discards the whole notion of Abatements as a chimaera.

Figure 4. Entry for "abatement" in OED. Source: Coleridge *et al.* (1857/1828, p.10)

Apart from the differences between the volume of examples and remaining contents, it should be noted that all quotations contain extensive bibliographical information included directly in the main entry. This data comprises the year of publication, the surname of the author, and the title of the work. By contrast, the accessibility of comprehensive data concerning synchronic description of collocations and denotations seems to be missing from OED.

Regardless of the aforementioned shortcomings, OED remains the most comprehensive English dictionary to date. As of 2018, the Second Edition, originally published in 1989, is available in the printed form. The digital online version, however, is being constantly developed by revising old entries and adding new words. All these changes are expected to be included in the Third Edition, which was officially announced in 2000.

1.8. The "national" monolingual dictionary and its impact upon the modern society: The case of the USA

While in the case of England, the creation of a comprehensive national dictionary was a matter of reasserting its power and demonstrating the nation's scholarly progress, the relatively young American nation across the ocean had more radical expectations. One of the prime examples is the legacy of one of the most prominent American intellectuals at the time, Noah Webster (1758 – 1843). Dubbed the "Father of American scholarship and education" (Saraceni, 2015, p. 63), Noah Webster is known for his prescriptive approach to the language evolution. He is also one of relatively few people in the history of languages who managed to alter the linguistic forms used by the native speakers almost single-handedly.

The essence of Webster's reforms was simplifying American English spelling in order to establish a closer correspondence to pronunciation. While this aim was not deprived of practical value, the author of the reform clearly pointed towards the extralinguistic, political, and economic benefits. Those were explicitly stated in his *Dissertations on the English Language*, published in 1789. The explanation reads as follows:

> But a capital advantage of this reform in these states would be, that it would make a difference between the English orthography and the American. This will startle those who have not attended to the subject; but I am confident that such an event is an object of vast political consequence.
>
> For the alteration, however small, would encourage the publication of books in our own country. It would render it, in some measure, necessary that all books should be printed

> in America. The English would never copy our orthography for their own use; and consequently, the same impressions of books would not answer for both countries. The inhabitants of the present generation would read the English impressions; but posterity, being taught a different spelling would prefer the American orthography.
>
> Besides this, a *national language* is a band of *national union*. Every engine should be employed to render the people of this country *national*; to call their attachments home to their own country; and to inspire them with pride of national character. However they may boast of Independence, and the freedom of their government, yet their opinions are not sufficiently independent; an astonishing respect for the art and literature of their parent country, and a blind imitation of its manners, are still prevalent among the Americans. Thus a habitual respect for another country, deserved indeed and once laudable, turns their attention from their own interests, and prevents their respecting themselves. (Webster, 1789, pp. 397-398)

One of the major vehicles for introducing the reforms in question was to be the dictionary. Nevertheless, the first reference work authored by Webster, i.e. *A Compendious Dictionary of the English Language*, published in 1806, was still largely based on the British works. However, its successor – *An American Dictionary of the English Language* – was a genuinely American reference work (Jackson, 2002, Chapter 6, Section 1, para. 6-7).

Webster's decision was not universally accepted, and his opponents quickly united around a more conservative author, Joseph Emerson Worcester. This author published his own work, entitled *A Comprehensive Pronouncing and Explanatory Dictionary of the English Language*, in 1830. The appearance of this reference work, which still adhered to the British standards, and the subsequent accusations of having plagiarized Webster's work, led to the so-called *Dictionary Wars*, "a literary skirmish full of hurt feelings, character assassination, and sock puppetry driven entirely by book sales" (Stamper, 2014). The conflict itself was not centered around the British-American distinction, instead focusing mostly the comprehensiveness of the sources (Stamper, 2014). However, it was also clear that the victor would set standards for the North American variety of English. Since the Merriam-Webster publishing house emerged victorious from this feud, it became clear that Noah Webster had succeeded at creating a dictionary that imposed hitherto unknown linguistic standards on a large language community.

Thus, the dictionary strengthened its position as a prescriptive tool, i.e. the one that tells the users what to do, as opposed to describing the language as it is. Ironically, the 1961 edition of the Merriam-Webster dictionary, i.e. the Third Edition, fell victim to the prescriptivist approach. While there were many reasons to criticize *Webster's Third* and its editor Philip Gove, the general public was not interested in the shortcomings such as the omission of proper nouns, the elimination of pronunciation guide, or the lack of capitalization (Morton, 1995, p. 172). The most troubling feature of Gove's *magnum opus* was the decision to focus on the language as it was used, by reducing the number of labels that had separated the colloquial and the "correct" language forms in the previous

editions, and by expanding the definitions of certain "controversial" words, notably *ain't*. This decision caused a lot of criticism which

> (...) rested less on lexicographical criteria than on judgments about the social status of words and the fear that by readily accepting changes in usage, the Third Edition would corrupt the mother tongue and contribute to the widespread decay already at work in American society. (Morton, 1995, p. 174)

The case of the Third Edition showed that many speakers of American English were emotionally attached to dictionaries as things that helped them maintain the division between "good" and "bad" language. This difference could be easily extrapolated to certain social groups, as it was mentioned by Jackson (2002). This author, upon analyzing the entry for *ain't* in the Second and Third Edition, remarks that even though the latter version describes the word as *colloquial* – with certain senses explicitly marked as *substandard* – the critics "missed the condemnation contained in 'illiterate'", which was the previously-used label (Chapter 6, Section 3, para. 13).

The conviction that the dictionary should be primarily the collection of the "correct" linguistic items was further strengthened by the popularity of a number of subsequent reference works whose title and/or description contained the word *collegiate* (Jackson, 2002). This was to stress that they were designed chiefly for the educated users (ibid, Chapter 6, Section 3). Published both in the US and the UK, the collegiate dictionaries seem to have capitalized on the existence of the education-based division within the societies, wherein the monolingual dictionary could become the artifact of the more elite group.

1.9. Conclusions

This chapter shows that despite a considerable time gap between the first recorded attempts at creating glossaries and more contemporary sources, the dictionary managed to maintain its dual status – as a tool and as a symbolic artifact. Although monolingual sources seem to have been more likely to become symbols of religion, authority, cultural identity or political influence, multilingual dictionaries which were described in this chapter were not deprived of their symbolic stratum either. On the contrary, multilingual sources seem to have represented ideas which extended borders of territories in which they were developed. From one the first attempts at building an international trade network in Bronze Age, to Medieval doctrines of states united by language and religion under the Universal Power, to the beginnings of globalized trade in the Renaissance, bilingual sources proved to be useful tools for enabling these processes.

From the learner's perspective, multilingual sources presented in this chapter appear to be more accessible. This is mostly due to the fact that nearly all monolingual sources described in this chapter were created primarily for native speakers, and no or little regard was given to needs of FL students. However, despite the long tradition of separation between the two types of sources, this status quo was not maintained. The next chapter shows how monolingual sources were adapted to meet the needs of the market of foreign language education.

2. The monolingual dictionary as a resource for EFL/ESL students

The principles of the monolingual dictionary were transferred to the EFL/ESL pedagogy in the first half of the 20th century. Cowie (2009) lists four pioneering works which made this transition possible, namely:

- *English Vocabulary for Foreign Students* by Simeon Potter (1930),
- *The New Method English Dictionary* by Michael West and J. G. Endicott (1935),
- *A Grammar of English Words* by Harold E. Palmer (1938),
- *Idiomatic and Syntactic English Dictionary* by Albert S. Hornby, Edward Gatenby, and Harrold Wakefield (1945).

Those works were innovative on a number of levels, but the most important aspects are the presentation of the grammatical patterns and the treatment of problematic vocabulary and phraseology. All the authors seemed to understand that the structure of the monolingual dictionary, which emphasizes the importance of definitions, could not be transplanted into the learners' dictionaries without major changes. Thus, their attempts focused on creating a solution which would enhance the ease of access to word properties while eliminating the elements of L1 present in the bilingual sources.

The creation of the theoretical background for the development of the learners' dictionary can be attributed to the works of Henry Sweet. In his *The Practical Study of Languages: A Guide for Teachers and Learners* (Sweet, 1899), he devoted an entire chapter to such aspects as the inclusion of idioms, the importance of grammar or the user needs. Sweet proposed that "a learners' dictionary should provide detailed information about a limited number of words, with phonetic transcriptions, simple defining language and plentiful examples" (Brunfaut & Banerjee, 2004). In addition to proposing changes, Sweet also criticized the contemporary trends in lexicography for not being adjusted to the needs of the learners (Sweet, 1899).

The educators' dissatisfaction with the lexicographical resources was manifested in the attempts at making the lexicogrammatical information more accessible. In order to achieve this goal, it was necessary to change the way the language and its usage were perceived. The new perspective was summarized by Hanks (2008), who distinguished three assumptions about the language which led to the development of EFL/ESL monolingual reference works:

1. Language in use is highly patterned. Each word is typically associated with only a small number of syntactic patterns.

2. Ordinary everyday communication consists of utterances based on patterns of usage built up around a small number of very frequent words, each of which is used in a comparatively small number of patterns or structures. At the same time, usage also encompasses a very large number of other possible and actual words and structures, some of which are used only very rarely.
3. The verb is the pivot of the clause. In the front matter of OALD, Hornby asserts: "Verb patterns are the most important", and urges learners to "spend a few hours studying ... verb patterns", as "the ordinary grammar-book and dictionary usually fail to supply adequate information on such points. (ibid, p. 90).

Such an approach necessitated the re-structuring of the dictionary in order to meet learners' needs. One of the major modifications was the change in emphasis in relation to the order in which the entries were presented. Etymology ceased to be the key element in listing the meanings of a given item, so the more popular meaning could be presented as the first one. In order to illustrate this change, Hanks (2008, p. 91) gives an example of the word *camera* which could finally be described primarily as a device that takes pictures, while its original meaning – referring to a small room – was to be moved to a less prominent position, or even deleted altogether.

2.1. Early monolingual dictionaries for language learners

The idea of simplifying and systematizing the lexicogrammatical information in dictionaries was born owing to the Vocabulary Control Movement of the 1920s and 30s. According to Cowie (2009), the aim of the researchers was to identify the words and phrases which were key to successful communication. The American psychologist and educationist Edward L. Thorndike considered the scope as well as frequency of lexical items to be crucial factors in this process, while the British linguist Harold E. Palmer conducted research on polysemy, derivation, and functional aspects of vocabulary (ibid., pp. 385-400).

The first of the sources mentioned at the beginning of the chapter, authored by Simeon Potter, suffered from the problems typical for the early transitional period. For instance, some items were still translated, and the definitions written in formal English offered little information to students (Cowie, 2009, p. 385). On the other hand, Potter's dictionary introduced parallel sentences whose aim was to illustrate structural variation by means of sentence synonymy; this innovation stood the test of time, and it can still be found in a number of EFL sources.

Further improvements were made by the authors of *The New Method Dictionary*, who focused on the way in which the vocabulary and phraseology was presented. The first goal, namely the simplifying of the definitions, was achieved by limiting defining vocabulary to 1,490 items. The second enhancement was the redefining of the role of examples, whose function was no longer limited to presenting the target lexical item in use. Instead, they were also employed to illustrate the usage of idioms and fixed expressions (Cowie, 2009, p. 394).

From among the above-mentioned pioneers of learners' dictionaries, Palmer was the first author to focus on grammar. He developed a list of simplified verb patterns to make it possible for students to understand how a given verb is used in a sentence. The patterns were arranged in the form of substitution tables which presented 27 basic ways of combining verbs with other parts of the sentence (Smith, 1999, p. 58). The design of the tables reflected the property of the language which is nowadays referred to as the Open Choice Principle (Sinclair, 1991). In the dictionary, this is manifested by the assumption that upon defining the type of the clause or sentence, each presented segment can be substituted by a number of other words with similar or identical syntactic properties (cf. Erman & Warren, 2000). However, Palmer also recognized the limitations of such an approach, as he proposed that highly idiomatic phrases should be described in separate sections of a dictionary entry (cf. Bartsch, 2004, p. 32).

Cowie (2009) mentions that in addition to devoting much attention to the Verb Phrase, Palmer also focused on the Noun Phrase constituents, namely "determinatives" (determiners). This "strikingly modern" (ibid., p. 390) approach made it possible to enrich the dictionary with a pedagogically useful umbrella term for various parts of speech – such as possessives, articles, or quantifiers – which serve to express the reference of the noun in a given context.

The last important change proposed by Palmer was the introduction of the division between content and function (grammatical) words. The former category was described as "words of special utility (such as names of plants, animals, parts of the body... and such-like semi-technical words)", while the latter were "words which may occur in any context and which are common to any subject" (Palmer, 1921, p. 128). According to Bartsch (2004), Palmer wanted to show that the meaning of the content words is relatively stable, while the meaning of the function words, such as "put" or "get", can be easily modified when they form collocations (p. 32).

Palmer's findings, combined with the innovations introduced by the preceding researchers, were used by Albert Sidney (or Sydney) Hornby, whose dictionary proved to be so successful that it created a new category of reference works, namely the Advanced Learners' Dictionaries (ALDs). The dictionary was first published in Japan in 1942 as *Idiomatic and Syntactic Dictionary of English* (ISDE). Hornby could not witness this success of his, as he was repatriated from the country in 1941

(Jackson, 2002, Chapter 11, para. 4). However, the manuscripts brought by the author to England were printed by the Oxford University Press, firstly as *A Learners' Dictionary of Current English* (1948), then with the title *The Advanced Learners' Dictionary of Current English* in 1952. Its current name, *Oxford Advanced Learners' Dictionary* (OALD), dates back to 1974.

As regards its contents, the dictionary offers a number of refinements to the methods used by the aforementioned authors. In terms of grammar, Palmer's idea of verb patterns is retained, but access to the information is substantially simplified. Hornby decided to use revised tables to minimize the number of grammatical labels assigned to the verbs and, at the same time, make it possible to modify the sentences (Cowie, 1998, p. 10). For instance, the inclusion of Subject and Verb under one category "allows the inversion of subject and verb found in interrogative sentences (...), and the deletion of the subject associated with imperatives, to be included alongside plain declaratives without distortion of the tables" (ibid, p. 10). In addition, the tables are supplemented with notes, which facilitates grammatical transformations, such as the formation of sentences in the passive voice (Cowie, 2009, p. 399).

The presentation of vocabulary in Hornby's dictionary is simplified to meet both the encoding and decoding needs of advanced students. The ISDE word list is, as remarked by Cowie, (2009), largely based on the *Concise Oxford Dictionary* aimed at native speakers, but the definitions are simplified in order to avoid circularity. An example of this change is the definition of the word *malnutrition*, worded in the former source as "insufficient nutrition", and changed to "not getting enough food or the right sort of food" in the ISDE. While Hornby did not decide to impose strict limits on his defining vocabulary, he avoided more complex structures. Instead, the explanatory sentences are used, such as "Cables are laid under the ground or on the ocean bottom" for *cable* (Hornby, Gatenby & Wakefield, 1942, as cited in Cowie, 2009, p. 401). In addition, some definitions and synonyms are inserted into examples, especially if the presented phrases have a meaning which is limited in comparison to the general definition (Cowie, 2009, p. 401).

In terms of collocations, the ISDE incorporates a number of items from the *Second Interim Report on English Collocations*, (Palmer, 1933), in which both Hornby and Palmer sought to list and classify English collocations. The authors of the report recognized the need to present the collocations in the most basic form, i.e. reduced solely to the set of core elements which contribute to the creation of meaning. This approach is adopted in the ISDE, where certain collocations are presented in the form of phrases rather than full sentences (Jackson, 2002, Chapter 11, para. 6). Cowie (2009) remarked that the "succession of short examples" is used by Hornby in order to help interpret the meaning (p. 402). For instance, in the case of the adjective "heavy", one can find the following set of examples: "a heavy blow (i.e. having great force behind it); a heavy fall (i.e. causing shock); a heavy

heart (i.e. weighed down with sorrow) ...” (Hornby, Gatenby & Wakefield, 1942, as cited in Cowie 2009, p. 402).

The features of the ISDE discussed above seem to constitute the synthesis of the previous innovations, introduced in order to create an accessible monolingual source which would facilitate both encoding and decoding of the linguistic contents. While the authors of the first advanced learners’ dictionaries challenged the traditions of mainstream lexicography, they still relied on the core design features of the native speakers’ dictionaries. Thus, all the words were still accompanied with definitions, and the examples were created by the lexicographers themselves, rather than being retrieved from a body of texts representing actual language usage. Those concerns, among others, were being gradually addressed as the learners’ dictionaries attracted more users.

2.2. Further development of learners’ monolingual reference works

Unsurprisingly, the first person to revise the design of the advanced learners’ dictionary was Hornby himself. Though in the beginning there was no threat of competition, he actively continued research on verb patterns and the presentation of collocations. In 1954, he published *A Guide to Patterns and Usage in English*, whose purpose was to provide further guidance on the grammar used in the dictionary. In the introduction, the author stresses the importance of productive skills by stating that,

> (…) the learner is, or should be, more concerned with sentence-building. For this he needs to know the patterns of English sentences and to be told which words enter into which patterns. He needs to know where certain words have their normal places in the sentences, and (for example, for adverbs and adverb phrases) what alternative patterns these are.
>
> (…)
>
> It is important, too, that the student, when he learns a noun or adjective, should become familiar with the patterns in which that noun or adjective is normally used. When he learns such adjectives as *kind* and *thoughtful*, for example, he should learn to use them in such sentence patterns as 'It was kind (thoughtful) of you to get tea ready for me’ or ‘How kind (thoughtful) of you to get tea ready for me!’ (Hornby, 1962, pp. V-VI).

The results of the research conducted in order to compile the aforementioned guide to the English grammar were used in the second edition of *The Advanced Learner's Dictionary of Current English* (Hornby *et al.*, 1962). Notably, it features a number of new collocational patterns, based on the noun and adjective complementation. Thus, phrases such as “readiness for a change” or “fearful of the consequences” are treated systematically and classified according to their lexical properties (Cowie, 2009, p. 404).

The Second Edition was also published in 1970 as a "bilingualized" dictionary (English – English/Chinese), wherein certain sections of the entry, such "headwords, the meanings of polysemous entries, the senses of run-on derivatives, and example sentences wherever they occur" are translated into Chinese (Cowie, 2009, p. 405). This created a new category of dictionaries, which "is best described as a monolingual (learner's) dictionary where every definition of a lexical unit is followed by a translation of the unit into the mother tongue of the user" (Bogaards, 2003, pp. 31-32). It should be noted that the success of the bilingualized dictionaries is attributed by many researchers (e.g., Laufer & Melamed, 1994) to another source co-authored by Hornby, namely the *Oxford Student's Dictionary for Hebrew Speakers* (Hornby & Reif, 1985).

The increased awareness of the ways of teaching English grammar led Hornby to introduce a number of improvements in the Third Edition of his dictionary (Hornby, Cowie & Windsor, 1974). One of the major revisions included the more comprehensive and systematic information on the verb phrase, especially transitivity. Other improvements included giving more prominence to phrasal verbs (Cowie, 2009) and the introduction of the *sb*/*sth* abbreviations (Jackson, 2002, Chapter 12, Section 6).

In 1978, *Longman Dictionary of Contemporary English* (LDOCE; Procter, 1978) became the first monolingual alternative to the Oxford dictionary. Based on the findings of the studies of English grammar, primarily Quirk *et al.* (1972), it contains a number of innovative features. According to Fontenelle (2009), one of the most important innovations was the introduction of double labeling, such as [D5], in which the capital letter represents the word class (in this case, ditransitive verb with two different objects), while the number marks the syntactic frame (followed by a that-clause). The lowercase letters that followed symbolize optional elements, such as the optional relative pronoun "that" preceding certain defining relative clauses. In addition to the verbs, the labels cover the nouns and adjectives, which is considered by Fontenelle (2009) to be a major improvement in comparison to Hornby's methodology (p. 416).

Another departure from Hornby's ideas which could be found in the first edition of the LDOCE is the use of limited defining vocabulary (Jackson, 2002, Chapter 11, para. 7). Thus, the authors revived the approach which had been proposed by West and Endicott a decade before the publication of the ISDE. It needs to be noted, however, that the number of defining words is larger than the 1,490 items originally proposed by the above-mentioned authors, as it was increased to 2,000 words, which are listed in an appendix. While the number of 2,000 definitely had a marketing value, not all the definitions could be accurately written with the items from the list. When words from outside this collection were needed, they were written in upper case, suggesting that the user should refer to another entry in the case of comprehension problems (Fontenelle, 2009, p. 418). Such an

approach could be compared to using the hypertext in the digitized versions of advanced learners' dictionaries.

The mention of the digital technology is relevant in the case of the LDOCE 1, as this was the first advanced learners' dictionary to be re-produced in digital form. However, contrary to the current online dictionaries, it was not available to students. Instead, it was sent to various research groups in the form of a Computerized Dictionary, i.e. the one in which the information concerning the structure of the source was encoded and easily retrievable (Fontelelle, 2009, p. 422). In other words, a researcher using the digital version of LDOCE was able run a query which would fetch words encoded by means of certain grammatical labels.

Such an approach was innovative in comparison to Machine-Readable Dictionaries (MRDs), (Hartmann & James, 2002, p. 91). These sources are typically found in the form of structured data, with tags representing the information necessary to drive the typesetting process. Thus, in contrast to the Computerized Dictionary mentioned above, the researcher using the MRD would not be able to fetch grammar labels, but a query might be formulated to show text formatting, such as all words in bold or in italics (Fontelelle, 2009, p. 422).

Along with the publication of the second edition of LDOCE in 1987, another innovative monolingual learners' dictionary appeared on the market, namely the *Collins COBUILD English Dictionary* (COBUILD; Sinclair *et al.*, 1987). This reference work was compiled under the supervision of the famous corpus linguist, John Sinclair, and it is considered to be the world's first dictionary based on the results of computer corpus research (Jackson, 2002, Chapter 11, para. 12). The corpus itself, dubbed the Collins/Birmingham University International Language Database (hence the abbreviation COBUILD) consisted of 20.3 million words, including 7.3 M in the main corpus, and 13.3 M in the reserve corpus.

The main premise behind the compilation of the COBUILD was the assumption that the analysis of the actual language provides more accurate information than lexicographical techniques, even if the results "seemed counterintuitive, or contradicted analyses in other dictionaries" (Moon, 2009, p. 442). Such an approach was the result of Sinclair's view of the language analysis which was described by Moon (2009) as "emphasis on authenticity of data, the importance of context, including social context, the inseparability of form and meaning, and the interdependence of lexis and syntax" (p. 442). In practical terms, this meant that instead of relying solely on the syntactic patterns of the words, Sinclair sought to explain how the collocations are built for specific items rather than word classes. This approach is best exemplified by a quotation from Sinclair's predecessor, John Firth, who claimed that "one of the meanings of *night* is its collocability with *dark*" (Firth, 1957, p. 196). Therefore, according to Sinclair's view of the language, the dictionary definition of "night" should

contain the collocation “dark night”, rather than just the grammar label suggesting that it might be preceded by an adjective. It should be noted that although the preceding MLDs contained collocations, their choice was not scientifically grounded in the analysis of the frequency of (co)occurrence in the language.

The research methods used in the development of COBUILD influenced the way in which the lexicogrammatical material is presented in the dictionary. The implications of such decisions are described by Moon (2009), who lists major characteristics of the Collins dictionary, as compared to the OALD and LDOCE. Firstly, as words were selected on the basis of the frequency of occurrence, the more obsolete items do not appear in the COBUILD dictionary, though they can be found in the aforementioned rival publications. By contrast, certain derivatives which proved to be linguistically productive, such as the adjectives formed with the prefix *un-*, are given separate entries to facilitate user access. The second implication of the frequency-based approach is the ordering of senses within an entry – in many cases, the historic sense of a given word proved to be obsolete and, consequently, its position on the list of entries is demoted according to its perceived usefulness, expressed in the frequency of occurrence. Such an approach constitutes a clear departure from the lexicographical standards set by the *Oxford English Dictionary*. Thirdly, the analysis of collocation patterns found in the corpus improved the space management by giving more prominence to the lexical items which are richer in terms of collocations and forming new meanings.

Apart from the frequency of occurrence, Sinclair and his team benefited from access to examples retrieved from the set of actual language data. This led them to draw conclusions on the meaning and context of occurrence of lexical items. One of their findings, described by Moon (2009), was that “high-frequency general nouns (*fact*, *matter*, *time*, *way*, etc.), (...) were used in semi-fixed phraseological units which were neither opaque nor fully compositional, but had particular pragmatic functions.” (p. 444). As these formulaic chunks necessitated some classification, it was proposed that they be divided according to their pragmatic functions, such as apologizing, in the case of *sorry* or substituting other words for *thing* (Moon, 2009, p. 444).

The practical applications of the research just discussed can be found in the definitions (dubbed “explanations”, by the authors; Moon, 2009, p. 449) used in COBUILD. These were full sentences, designed to “sound like the teacher explaining the meaning in the classroom” in order to “give some idea about the general context” (Jackson, 2002, Chapter 11, para. 11). This approach had been used as an auxiliary strategy for explaining certain words in many sources including the *Academia Dictionary* or, more recently, ISED, but COBUILD was the first dictionary to contain all its definitions constructed solely according to this pattern. The benefit of such definitions is conveying the information concerning the pragmatic value of a given item. For instance, the definition for the

word *jukebox,* i.e. "A *jukebox* is a record player in a place such as a pub or a bar. You put a coin in and you choose the record you want to hear" (Sinclair *et al,* 1987, as cited in Jackson, 2002, Chapter 11, para. 14) contains pragmatic information on places in which a jukebox might be found, as well as the objects (coins) which are culturally associated with the word in question.

Another novelty introduced in COBUILD was the inclusion of all the senses, sometimes discrete, under one headword. Additional entries were created for derivatives, such as the nouns ending with *-ness*, which had been "undefined and often unexemplified, at the ends of entries for the words from which they derived" in other MLDs (Moon, 2009, p. 446). The former solution proved to be a more controversial one, and it was not universally adopted as an MLD standard. On the other hand, separate entries for the high-frequency derivatives, as well as ones which are semantically distant from the headwords, can be found in all contemporary advanced learners' dictionaries (as of March 2018).

The last important feature of the Collins dictionary is the presentation of the lexicogrammatical information in the extra column. This text space, located right to the main column, contains extra information on the properties of a given and related lexical items, such as synonyms and antonyms (Jackson, 2002, Chapter 11, para. 17). In addition to this innovation, the extra column is also used to present grammar patterns, similar in their functions to the previously described solutions. However, their design was radically simplified by replacing the numbered patterns with abbreviations, such as *V* for verb, *N* for noun or *O* for object (Moon, 2009, p. 452). The idea of a simplified set of abbreviations was also implemented and developed in other MLDs; however, the recent trends aim at limiting the formal presentation of grammatical patterns, choosing examples instead (ibid, p. 452).

The findings of the research team working on the Collins dictionary were also applied by other publishers, leading to the publication of revised, corpus-based versions of all the major sources (OALD 5, LDOCE 3 and COBUILD 2) in 1995, the so-called "year of the dictionaries" (Jackson, 2002, Chapter 11, para. 18). In the same year, a new dictionary appeared on the market, namely the "Cambridge International Dictionary of English", abbreviated as CIDE (Procter, 1995). As the name suggests, the information provided in the source covered international variants of English, including the most common mistakes made by speakers of 16 languages (Jackson, 2002, Chapter 11, para. 18). Extending the coverage of the dictionary to international learners was possible owing to the Cambridge Learner Corpus containing learner data annotated for errors (Nesselhauf, 2005, p. 281). The last feature of the dictionary was the division of entries: unlike the COBUILD research team, the editors decided to keep separate entries for each sense of a given lexical item.

Seven years after the "year of the dictionaries", the last MLD entered the market, namely the Macmillan English Dictionary for Advanced Learners (MEDAL; Rundell, 2002). Published much later than the competition, the first edition already contains a number of features which had become standard by then, such as limited defining vocabulary, semantic labels, lists of synonyms and antonyms, or the definitions which mixed the "canonical" LDOCE style with the explanations similar to the ones in COBUILD (Bogaards, 2003). In MEDAL, text boxes have three major uses: to provide a list of semantically related lexical items and/or collocations, to help avoid mistakes and misunderstandings by suggesting the counterparts from the less offensive register, and to help understand the differences between British and American English (Bogaards, 2003, p. 51).

While the introduction of MEDAL completes the list of MLDs available nowadays, one more category of advanced learners' reference works deserves a mention in this section. This category, namely production dictionaries, refers to sources which were designed specifically to help learners encode linguistic message. Although the attempts to facilitate the production of correct and idiomatic language can be seen throughout the history of the MLDs, from the earliest sources to MEDAL, the researchers concluded that specialized production-oriented sources need to be added to learners' repertoire of sources.

One of the most important features of production sources is the fact that they are based primarily around categories; each category contains lexical items which are related to a given subject. Many of the earliest sources, such as the ones described earlier in this chapter, followed this design, although their aim was education rather than production. *Amera Kosha*, Ælfric's *Glossary*, Comenius' *Orbis Pictus* or *Roget's Thesaurus*, among others, were all designed either to be studied like textbooks or to be used as quasi-encyclopedic sources. However, this did not exclude the productive use of those works, should the user be in need of words connected with a given domain.

The first attempt to supplement the information found in the MLDs with the production-oriented materials was made in 1981, when the *Longman Lexicon of Contemporary English* was published (McArthur, 1981). The dictionary contains entries for 15,000 most common English words, arranged into categories (e.g. Life and Living Things, The Body, People and Family, etc.) and sub-categories, such as Liking and Not Liking or Good and Evil found under the label Feelings, Emotions, Attitudes and Sensations (Jackson, 2002, Chapter 12, para. 51-56). The items in the dictionary are based on the LDOCE definitions, but the entries are deprived of the more elaborate sets of information, offering basic lexicogrammatical data instead.

The next big step in developing the production-oriented learners' dictionary was another source from Longman, namely the *Longman Language Activator* edited by Della Sumers and Michael

Rundell (1993). The preface, written by a recognized linguist – Randolf Quirk – explains the rationale and the expectations underlying the development of such sources:

> The conventional dictionary has become better and better during the many generations since Longman published Samuel Johnson's great work in 1755. But better and better at basically the same job: explaining what someone else has said or written; that is, converting words into meanings for the passive partner in communication.
>
> For the active partner, striving to convert meanings into words, such a dictionary is less helpful, and the Longman lexicographers have now produced a radically different type of dictionary with precisely this active partner's needs in mind.
>
> Moreover, by attracting users to major 'Key Word' entries such as SUMMARIZE, The Longman Language Activator performs a double function. It presents linguistic – not just lexical – information in a rich, convenient and production-oriented way. This transcends word boundaries (*in short* is there) and grammatical categories (a *rundown* is there, but also *to sketch out*). Secondly, the Activator gently obliges users by this format to train themselves in preparatory thought and planning. They are encouraged to single out a word representing the beginnings of what they want to state and are then helped to home in on 'ideas boxes' in which semantically relevant and suggestive expressions are presented. An initial skeleton can thus be fleshed out and be given not merely a satisfying fullness but the desirable linguistic precision. (Quirk, 1993, p. F7).

An interesting passage in this description offered by Professor Quirk is the one which suggests that a dictionary should be a habit-forming device, and the phrase "obliges (…) the users to train themselves" suggests the existence of the cognitive load imposed on the learner in order to master extra skills necessary for language production. Such an approach seems to suggest that retrieving the sought information is not the only goal of the source; however, there is no mention of potential obstacles stemming from the fact that the learners need to adjust to the new type of a dictionary and find the relevant information simultaneously.

Another important feature of the dictionary is the fact that it is based on the three-tier structure. Unlike the aforementioned "Longman Lexicon", the highest-order entries do not refer to tangible real-life objects. Instead, they refer to concepts, such as "good", "to accept" or "revenge". The highest-order entries represent different parts of speech, and each meaning attributed to a given concept constitutes a separate section. For users' convenience, a box was added to provide guidance to sets of items representing each concept. The layout is presented in Figure 5:

Figure 5 Example entry from "Longman Language Activator" (Rundell & Summers, 1993, p. 1143).

Figure 5 shows the three-tier structure of the dictionary, wherein the headword (key concept) is firstly broken down into meanings, and each meaning is divided into numbered sets of words. Each set contains alphabetically arranged vocabulary presented by means of grammatical labels, pronunciation encoded in the IPA, definitions, and examples. This approach to the presentation of lexical units at the basic level is similar to the solutions found in "Longman Lexicon of Contemporary English", while the higher-order structure is more developed in order to facilitate the lookup based on meaning.

The editors stressed the fact that the innovative design improves the using and the learning of vocabulary. In terms of usage, the dictionary was supposed to give better results than the bilingual sources, because it provides explanation for each option instead of showing a list of choices and hoping that the learner would verify the meaning of each option and choose the right one (Scholfield, 1993, p. F17). The learning claims refer to the assumption that the dictionary helps bridge the gap between being communicative and being proficient in English. According to Meara (1993), the

attempts at promoting communication over accuracy, such as focusing on the most essential 2,000 words, might constitute a problem for the more advanced learners who are able to use the said items effectively, but the results usually do not meet native speakers' standards. Besides, there seems to be little encouragement to go beyond the set of vocabulary under consideration. According to the author, the way in which lexicogrammatical information is presented in the Activator might offer the incentive necessary to expand one's lexicon.

The competitors reacted to the appearance of the Activator on the market, but their response did not lead them to publish separate volumes. Instead, they extended the capabilities of their digitized dictionaries to the subject-based word search. However, before describing those functions of the dictionaries, and before describing digitized learner sources as such, it is deemed necessary to present the critical opinions concerning the "classic", i.e. printed, MLDs.

2.3. The criticism of monolingual learners' dictionaries

In this section, I would like to present arguments against the use of monolingual learners' dictionaries presented by Philippe Humblé – a lexicographer and researcher who published his book *Dictionaries and Language Learners* in 2001, causing a discussion about the usefulness of the MLDs. The following sections also contain acronyms for MLDs which correspond to their current (as of 2018) names, that is: CALD for *Cambridge Advanced Learner's Dictionary*, COLLINS for *Collins English Dictionary*, LDOCE for *Longman Dictionary of Contemporary English*, MED for *Macmillan English Dictionary* and OALD for *Oxford Advanced Learner's Dictionary*. All those sources, with the exception of MED, were reviewed by Humblé's book.

Humblé's critique of the MLDs is based on two basic premises, namely:

1. Dictionary users have two major types of needs: *decoding needs* and *encoding needs*,
2. Monolingual dictionaries for learners are artifacts of culture.

The first premise is that learners use dictionaries either to understand a given concept or to encode the concepts and ideas in the foreign language. This is provided to them in bilingual dictionaries by offering translation equivalents. The decoding is the easier process, as the context makes it possible for the learner to choose the right word, should there be more than one equivalent. The encoding, however, necessitates a more profound knowledge of lexical items, including register, syntax, pragmatics, and other word properties (ibid, p. 16). Therefore, the learner needs to be able to locate considerably more information, potentially across multiple sources.

The decoding needs seem to be neglected by the MLDs in three ways: in the case of the most basic words, physical objects, and the most advanced (i.e. rare) items. The first problem refers to the very design of the dictionary; in the MLDs the definition for each item is obligatory, even though at times understanding it requires more linguistic knowledge than understanding the concept itself. For instance, the definition of *cat* from the Cambridge Advanced Learners' Dictionary (CALD, formerly CIDE) reads as follows: "a small animal with fur, four legs, a tail, and claws, usually kept as a pet or for catching mice, or any member of the group of similar animals such as the lion" (Walter, 2008). Such use of dictionary space seems to be redundant, and the definition appears to serve purely "decorative" purposes, such as maintaining the consistency of the entry design.

In terms of physical objects, the definition is still more important than other means of communicating the meaning. For example, no MLD (as of March 2018) contains the picture which would explain what the *bearing* is, while all of them contain definitions for this word. The COLLINS COBUILD definition created according to their unique rules of providing explanations might be considered the most useful, as it mentions the key components of the bearing (Collins COBUILD Advanced Learner's Dictionary, 2003). However, other dictionaries offer little information which would be helpful to learners, as their definitions are similar to the one found in OALD: "a part of a machine that supports a moving part, especially one that is turning" (Oxford Advanced Learners' Dictionary, n.d.).

The last claim concerning the inefficiency of the MLDs' receptive use is connected with the more advanced items, such as low-frequency words/phrases or the less popular senses of a given word. Humblé remarks that those are items which need more attention, as the learners might have never seen them before. Therefore, he proposes that the more difficult a given word or phrase be, the more examples should be used to illustrate its meaning (ibid, p. 62). This requirement does not seem to be met by the MLDs either; instead, the choice of definitions and examples can be sometimes confusing for the learner. I shall illustrate this problem with examples from the contemporary online versions (as of June 2017) of the MLDs and the sense of the word *tread* which refers to the act of walking. Figure 6 below presents the entries for the item in question:

3 [transitive, intransitive] **tread (something)** (*formal* or *literary*) to walk somewhere • *Few people had trod this path before.* • *He was treading quietly and cautiously.*
Source: Oxford Advanced Learner's Dictionary
LITERARY **to walk:** *He trod heavily and reluctantly up the stairs.* *I sometimes see him flash past in his sports car as I tread **my weary way** (= walk in a tired way) to work.*

Source: Cambridge Advanced Learner's Dictionary

If you **tread** in a particular way, you walk that way.

[literary]

She trod casually, enjoying the touch of the damp grass on her feet. [VERB adverb]

Source: Collins-COBUILD Advanced Learner's Dictionary

6 WALK **[intransitive, transitive always + adverb/preposition]** *literary* to walk

David trod wearily along behind the others.

Source: Longman Dictionary of Contemporary English

1 [INTRANSITIVE/TRANSITIVE] BRITISH to walk or step on something

Tutilo kept his eyes on the cobbles, treading carefully.

tread on: *As she stumbled in the dark, she trod on something hard.*

Soucre: Macmillan English Dictionary

Figure 6 Entries for "tread" (=*WALK*) in Advanced Learners' Dictionaries

All of the entries presented below consist of very general definitions, and most of them refer solely to the act of walking. The only exception in this case is the Macmillan dictionary, where the editors decided to present the sense of stepping on something and going somewhere in one entry. Those remain separated in other sources. Most of the dictionaries contain the label "Literary" which is supposed to help the learner understand that the register used might be more sophisticated than everyday language.

In all presented cases, the information is limited to providing a very general definition based on synonyms ("tread=walk"). There is little explanation of how these two words differ and what connotations the word "tread" actually evokes. Learners who turn to examples for further explanation may find that Oxford and Macmillan suggest that *treading* is walking carefully, while Longman and Cambridge refer to the weariness of the person performing the action. This might create two different mental pictures of the word in the learners' minds; the Collins's example does not help avoid the confusion either, as it associates the word with a relaxed person who is walking leisurely.

Similar concerns were raised in relation to the second important function of the dictionary, i.e. language production. Entries for basic words, which have negligible decoding value because of their design, are potentially more useful as regards providing syntactic information and collocations for encoding activities. However, Humblé found that this potential was not realized, since entries for basic words often contained no examples or syntactic information. For instance, in the CALD's entry for the word "cat" discussed above, the description does, admittedly, contain items related to the topic of cats, yet at the same time it fails to present any collocations connected with the word, such as "stroke a cat" or "a feral cat". Yet, it can be assumed that if the advanced learner ever needs to find

the word “cat” in a dictionary, it would be solely because of their encoding needs, which should, therefore, be given more attention.

Another area in which, according to Humblé, MLDs could be significantly improved is the use of examples. He claims that they should be carefully selected in order to present syntactic properties of lexical items. Moreover, they ought to be accompanied with explicit syntactic information; otherwise, learners who use them to deduce the properties of a word might easily arrive at erroneous conclusions (ibid., pp. 69-77). In practical terms, this means that examples cannot be added to an entry in a haphazard manner; instead, they ought to be divided into groups which represent syntactic properties of a given item. Furthermore, these groups should be clearly labeled in order to prevent learners’ confusion.

Some examples in MLDs are indeed accompanied with simplified syntactic labels, but in certain cases the choice and arrangement of illustrative phrases seems to be insufficient to fully inform the learner of word properties. Examples found in entries for the phrasal verb “to revel in”, presented in Figure 7, are used in order to illustrate this problem.

<table>
<tr><td>She's revelling in her newly found freedom.
He revelled in his role as team manager.</td></tr>
<tr><td>Source: Cambridge Advanced Learner's Dictionary</td></tr>
<tr><td>Revelling in her freedom, she took a hotel room and stayed for several days. [VERB + in]
Cats positively revel in heat, whether natural or man-made. [VERB in noun]</td></tr>
<tr><td>Source: Collins COBUILD Dictionary</td></tr>
<tr><td>He revelled in his new-found fame.</td></tr>
<tr><td>Source: Longman Dictionary of Contemporary English</td></tr>
<tr><td>She is revelling in the adulation of the media.</td></tr>
<tr><td>Source: Macmillan English Dictionary</td></tr>
<tr><td>to enjoy something very much
• She was clearly revelling in all the attention.
• He revelled in the freedom he was allowed.
• revel in doing something Some people seem to revel in annoying others.
• She revelled in defying the critics.</td></tr>
<tr><td>Source: Oxford Advanced Learner's Dictionary</td></tr>
<tr><td>Figure 7 Entries for “revel in…” in Advanced Learners’ Dictionaries</td></tr>
</table>

Even though there are two major constructions involving the phrasal verb in question, namely "revel in" + Noun and "revel in" + Gerund, only one dictionary (OALD) provided sufficient information for the learner to be able to use both of them productively. While examples in Oxford and Collins dictionaries were arranged by means of syntactic labels, as postulated by Humblé, the remaining sources did not contain any of the features discussed previously. As a result, only one out of five entries actually met both criteria for a reliable production-oriented MLD.

According to Humblé, deficiencies in the lexicogrammatical material is presented stem from the fact that the MLDs are descendants of monolingual sources directed at native speakers. The author argues that "Dogs and cats keep on wandering through the pages of learner's dictionaries because these dictionaries inherited them from native speakers' dictionaries designed for ideological purposes." (2001, p. 35). This observation is made while referring to the inclusion of definitions for most basic concepts, but this statement can also be extended to other features of MLDs. For instance, learner dictionaries overemphasize the role of definitions, while failing to provide sufficient quality and quantity of examples for encoding/decoding needs. This might be attributed to the fact that in native speakers' monolingual dictionaries examples were mostly illustrative, and their aim was to present the most typical use of a given word. Users of MLDs, on the other hand, need examples that comprehensively cover all the uses of a given item, especially if they encounter the word for the first time.

As it is shown in the preceding sections, the monolingual dictionary has been a powerful artifact of culture, and its history is inseparably intertwined with politics and religion. Humblé's criticism is based on the assumption that design inspired by ideologically motivated resources for native speakers might be ineffective for EFL/ESL learners, because it does not promote quick access to the information sought. However, the validity of this argument might be questioned if one assumes that dictionary use is not limited to decoding and encoding. Tono (2001, pp. 15-58) suggests that the third function might be vocabulary learning, which includes incidental learning (cf. Welker, 2010, p. 192). One might postulate that although the cognitive effort that the learner has to make in order to find information in an MDL might slow down the process of decoding or encoding, or even require occasional use of other sources, it might also extend the attention span devoted to a given item, thus increasing the chances of memorizing it. In short, learning a language might be a more important goal than being able to encode or decode the message more effectively. This assumption is reflected in the Involvement Load Hypothesis proposed by Hulstijn and Laufer (2001), described in more detail in Chapter 4.

Finally, it should be noted that Humblé's arguments refer to reference works as of 2001. MLDs at that time were published as printed versions, and CDs with dictionaries were considered to

be additions which mostly just replicated the contents in the printed version (Oppentocht & Schutz, 2003, p. 215) such as the Third Edition of CALD (Walter, 2008). Designing such sources necessitated making a number of uncertain decisions concerning the elements which should be omitted due to capacity limitations of printed dictionaries. On the other hand, lexicographers were aware of the fact that practically unlimited storage space offered by digital resources would be the future of lexicography. Such belief was shared by Humblé himself (2001, p. 18), but also by many other researchers, e.g. Oppentocht and Schutz (2003, pp. 215-216) or Halliday and Yallop (2007, p. 94).

2.4. Monolingual electronic dictionaries for language learners

The term "electronic dictionary" was defined in Hartmann and James (2002) as "a type of reference work which utilises computers and associated technology to present information on-screen." (p. 47). Nesi (2009, p. 458) extends this definition by remarking that the first collections of that type were compiled by computerized systems, but they were only readable to humans in the form of a printout. Those first sources were used mostly by lexicographers and researchers, and they were not available to individual consumers (e.g., LDOCE 1 and COBUILD 1 described in the preceding sections).

In the 1970s, electronic dictionaries became available to customers in the form of Portable Electronic Devices (PEDs). Nesi, (2009, p. 460) claims that the trend started with the formulation of the idea of *Dynabook*, a personal portable computer described by Kay in 1968 (Kay & Goldberg, 1977). Manufacturers of portable devices, such as Canon, Hewlett-Packard, Texas Instruments and many others soon joined the race to produce the most effective personal dictionary. Those tools differed in the way they stored and displayed information, but there were some key features that all of them shared, such as being multilingual, providing keyboard-based search and displaying results on a built-in screen (Nesi, 2009). One exception to this rule was *Speak & Spell* by Texas Instruments – a system which was originally designed to help young native speakers learn the correct spelling of commonly-confused words. Equipped with a socket for cartridges with language data/spelling games, a small display, and a speaker which pronounced the words, it was the first multimodal monolingual portable dictionary.

The growth in the market of handheld dictionaries caused the need to classify available devices according to their pedagogical/translation value; such classification was proposed by Yagi and Nakanishi (2003), who proposed the division into "partial content" devices, which contained basic information about a given word, and "full content" dictionaries which were based on more comprehensive data sets, often licensed from international publishing houses. However, even the most advanced and well-compiled portable dictionaries suffered from a number of inherent weaknesses such as a small size of the screen, a high price, and being confined solely to one device (Nesi, 2009 p. 466). These limitations made PEDs hard to use in the classroom context, forcing the manufacturers to focus on the market of personal learning aids.

After the decrease in computer hardware prices in the 1980s, dictionaries available on disks and floppy drives became a viable alternative to PEDs. Between 1988 and 1995, Collins, Oxford, and Longman started to offer their dictionaries to PC users; this change marks the beginning of the era in which computer-readable software would be in the center of publishers' attention, eventually leading to the demise of printed lexicographical sources. This change was also visible in the domain of

learners' dictionaries, starting with *Longman Interactive English Dictionary* (Summers, 1993), followed by *Collins COBUILD on CD-ROM* (Sinclair, 1995), and the *Longman Interactive American Dictionary* (Summers, 1997).

From the beginnings of digitized learners' sources, the editors seem to have been aware of the most obvious advantage of computerized data storage, namely the ability to include large amounts of information. All the aforementioned pioneering digital MLDs offered additional resources which made them more comprehensive than their printed counterparts. Some supplementary materials were electronic reproductions of other printed sources, e.g. the *Longman Dictionary of Language and Culture, A Dictionary of Common Errors*, *A pronunciation Dictionary*, and *An English Grammar* which comprise the *Longman Interactive English Dictionary* (Nesi, 2009, p. 469). However, given the multimodal features of personal computers, it also became possible to include sources which had not been previously available via dictionary, such as audio files and videos including mini dramas in *Collins COBUILD on CDROM* (Nesi, 2009, p. 469).

After the early experimental phase of the development on electronic MLDs, there appeared attempts at simplifying and unifying user experience; as a result, many of the supplementary modules were deleted from the following editions of COBUILD and LDOCE while OALD, MED and CALD already entered the market in the form which was reduced to the core MLD with limited supplementary materials (Nesi, 2009, p. 469). By the end of the first decade of 2000s, the electronic MLDs seem to have matured, and it seems that a consensus was reached on how to balance comprehensiveness with ease of access to information. As a result, dictionaries became relatively similar, although every publisher tried to add some unique features (Molenda, 2012). For instance, OLAD 8, features iWriter (a virtual guide to writing in English), while LDOCE 4 offers recordings of all the example sentences and phrases found in the dictionary. Despite the differences, common core features to be found in every digital MLD available on CD/DVD-ROM seem to be standardized across the sources; the list of most important functionalities, as described in Molenda (2012) and Molenda and Kiermasz (2013), includes:

- full contents imported from printed MLDs,
- searchbox which supports Boolean queries,
- customizable graphical user interface (GUI),
- recordings of headwords, usually in Received Pronunciation and General American,
- hyperlinks to other entries or resources,
- supplementary examples not found in printed MLDs,

- a thesaurus or thesaurus-like thematic collections,
- illustrations with clickable contents,
- instructional materials, such as interactive exercises, tables with irregular verbs etc.

In addition to dictionaries available on a disk, electronic sources can also be distributed by means of the World Wide Web. This mode of providing users with lexicogrammatical information was initially inferior to solutions available via CD ROM or DVD ROM. The beginnings of online dictionaries in the second half of the 1990s could be described as quite chaotic; Nesi (2009) remarks that many works available were of questionable copyright status, while legally uploaded dictionaries were mostly outdated sources whose copyright protection expired, such as the 1913 edition of Webster's *Revised Unabridged Dictionary* (Porter, 1913). Finally, public domain community-based projects (e.g. *FILE*) were considered to be poorly supervised and thus unreliable (Storrer & Freese, 1996, as cited in Nesi, 2009).

Despite all the shortcomings, the early days of online dictionaries gave rise to ideas which helped develop major types of Internet-based lexicographical sources available nowadays (as of 2018). Firstly, community projects such as *FILE* helped establish knowledge-oriented crowdsourcing, i.e. a system in which encyclopedic or lexicogrammatical knowledge is provided, revised, and re-cycled by the community of users. This "bottom-up lexicography" (Carr, 1997) helped create widely used sources, such as Wiktionary ("Wiktionary: About", n.d.). The second important mode of providing dictionary information was conducting parallel word search in a number of sources. One of the first platforms that aggregated results from multiple online dictionaries was One Look, founded in 1996 ("About One Look", n.d.). As of 2018, the platform provides access to search results from over 1,000 dictionaries. Finally, a new category appeared, namely dictionary-like tools which aspired to translate text rather than showing information concerning particular lexical items. The first online machine-translation service available free of charge was Babel Fish, launched in 1997, (Dubey, 2008) which was later followed by other competitors, notably by Google Language Tools launched in 2006 (Och, 2006).

The development in web-based sources was also noticed by publishers of learner dictionaries, and those who wanted to compete for learners' attention were faced with a difficult dilemma. Though publishing dictionary contents free of charge was a form of advertising, it also entailed the risk of students' satisfying their lexicogrammatical needs without purchasing the dictionary as such. Therefore, publishers either offered subscriptions (MEDAL and OALD launched in 2002) or they provided a free version with less functionality, such as CALD launched in 1999 (Nesi, 2009).

In 2009, when I first started my investigation into functionalities of online dictionaries, all of the available sources had been stripped of basic functionalities. My pedagogical recommendations at the time were to train learners to diversify sources, as each dictionary featured a different set of functions available for free. For instance, MED (Macmillan English Dictionary, formerly MEDAL) was the only source to offer recorded pronunciation and synonyms, while only LDOCE featured visual materials (Molenda, 2012). However, in 2010, OALD online[11] – previously classified as the least useful tool (ibid.) – was redesigned by adding a number of features that transformed it into the first fully-fledged online MLD. These included full access to pronunciation transcription and recordings, a comprehensive and searchable set of visual materials, full access to usage notes, collocations, thematic vocabulary collections, synonyms, grammar notes, etc.

The change made by OALD editors seems to have had an impact on the market of online MLDs, as nowadays (as of 2018) all the major sources feature full contents of their dictionaries, including supplementary information which is not to be found in printed versions. For instance, LDOCE[12] online provides recorded pronunciation for all the examples used in each entry and a number of illustrative sentences from the corpus, while CALD[13] gives access to their visual thesaurus and offers a free account to create personalized lists of word senses available upon login.

Ample amount of storage space encouraged lexicographers to enrich their sources with additional contents which had been previously unavailable to students due to conscious space-saving decisions. For instance, in OALD online, Oxford editors provide etymology in an expandable section named "Word Origins". Etymological information included there is simplified in order to be more comprehensible to students. Figure 8 presents an example entry for the word "bitter":

Figure 8 OALD online etymological information for the word "bitter" (adjective)

Additional space offered by dictionaries was also used to provide more examples, as proposed by Humblé (2001). For instance, the previously discussed word "cat", whose description in ALDs provoked Humblé's criticism, is much more thoroughly described in the online version of OALD, as shown in Figure 9.

[11] https://www.oxfordlearnersdictionaries.com/
[12] https://www.ldoceonline.com/
[13] https://dictionary.cambridge.org/

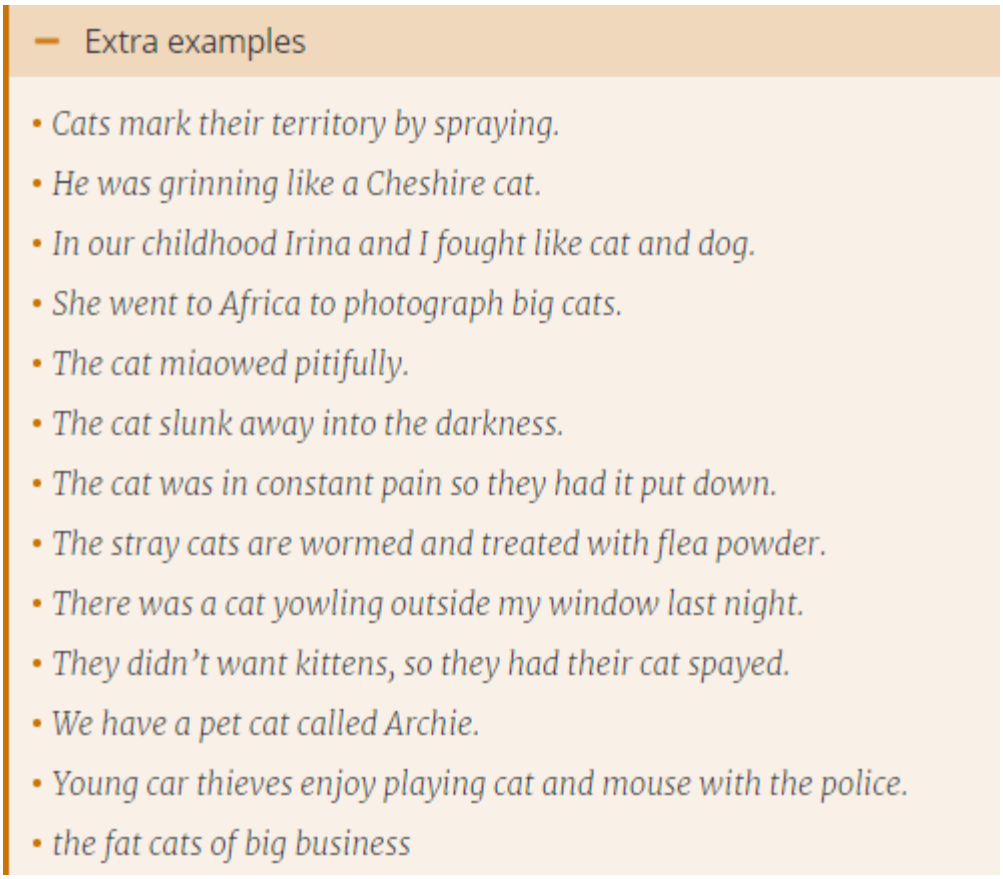


Figure 9 Extra examples accompanying the word "cat" in OALD. Note that collocations are not highlighted.

While this usage note provides comprehensive information on collocations related to the word "cat", it still does not meet the standards postulated by Humblé with regards to the grouping and marking of collocations. Such collocations are, however, offered by LDOCE online in the form of a special usage box which contains phrases and sentences from the corpus which are arranged according to syntactic properties, as presented in Figure 10:

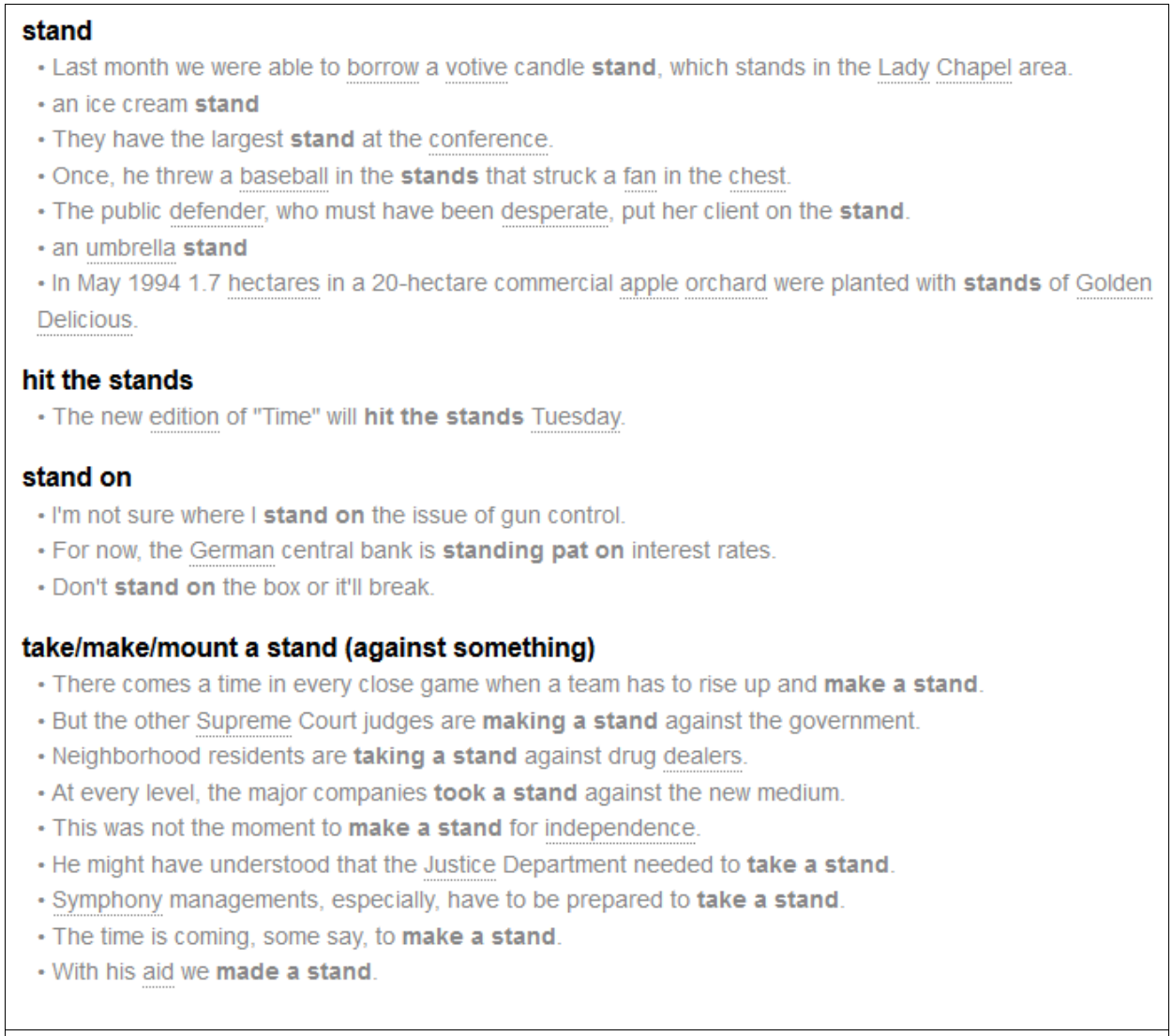


Figure 10 Corpus examples for "stand" in LDOCE. Note that the underlined words are hyperlinks to entries for corresponding words.

Such arrangement of linguistic data meets the requirements proposed by Humblé, especially given the fact that authentic examples presented in Figure 10 were pre-selected in terms of syntax and meaning, and their comprehensibility appears to be controlled by the lexicographer. This is especially important in light of criticism of the use of raw corpus data in dictionaries; the doubts which were raised concerned the fact that corpus examples are too lexically dense (Humblé, 2001, p. 83) and too syntactically complicated (Ahmad *et al.*, 1992) for students to be able to use them effectively. LDOCE approach, which consists in using made-up examples in the main entry and controlling the parameters of corpus examples in the added section, seems to address those problems.

The advantages of digital delivery of MLD contents convinced Macmillan to phase out the printed version of MED. In a blog post from 2012, under the telling title "Stop the presses – the end of the printed dictionary", Michael Rundell – the editor of MED – listed reasons for which printed dictionaries had not future. Apart from the aforementioned aspects of spatial constrains and multi-

modal communication, he stressed the importance of keeping the language source updated, since "a printed dictionary would be updated once every four or five years, but – in the intervening period – the language didn't stop developing" (Rundell, 2012, para. 5).

The decision to fully digitize an MLD and continue updating it online means that the notion of editions is obsolete, as the source can be revised immediately when the need occurs. This responsiveness to change also entails the growth in importance of users who might help identify shortcomings or suggest new entries. Indeed, Macmillan have been trying to engage the users to help improve their dictionary by building a vocabulary-oriented ecosystem around their MLD. Even in the era of "no-frills" online MLDs, this system was already well-developed (Molenda, 2012). As of 2017, it comprises of dictionary games, a "BuzzWord" (word of the day) section, a dictionary blog, and – most-importantly – "Open Dictionary" where users can suggest new entries. Another MLD that mentions regular updates as their core feature is OALD online. While it does not offer any option to help build a dictionary, it features a blog and lists of recently added words which are uploaded on a monthly basis.

Michael Rundell (2012) finishes his blog post with an optimistic conclusion that "exiting print is a moment of liberation, because at last our dictionaries have found their ideal medium" (ibid., para. 6). This sentiment, albeit expressed less directly, is also visible in works of other lexicographers. Humblé (2001), Jackson (2002), or Nesi (2009) all admit that the digital revolution is bound to change dictionaries and help them develop as useful reference tools.

2.5. Conclusions

In this chapter, the history of MLDs was explained in the context of their value for learners and the controversy surrounding the fact that for many ages the monolingual and bilingual sources had been kept apart from one another in regard to their symbolic functions. It appears that despite certain reservations and some justifiable criticism, the idea of transplanting monolingual sources into global EFL/ESL education proved to be a successful one. MLDs constitute a valuable addition to the repertoire of previously developed tools, but their novelty was relatively short-lived. It seems that in the age of digital information, it is necessary to re-define the dictionary as such – a process that is almost certain to significantly change the way in which consultation sources are used.

The considerations of the role of the dictionary in the digital environment shall be continued in the subsequent chapters, based on research results. However, prior to this analysis it is necessary to focus on the local context in order to provide the description of tools available to subjects who

participated in this research project. Therefore, the chapters to follow will be preceded by a brief history and analysis of the relevant reference works available in Poland.

3. Reference sources for Polish learners of English

While the monolingual dictionaries are universal for all the learners of a given language regardless of their nationality, users of each L1 also have access to multilingual sources. Such sources can vary in quality and quantity across various countries, so in order to gain the fullest possible understanding of learners' choices during the lookup process, they need to be listed and described. Accordingly, this chapter contains a brief history of Polish-English and English-Polish dictionaries, followed by a short review of traditional dictionaries available to Polish learners. Finally, it addresses the question of all the non-dictionary resources available to students online.

3.1. History of Polish-English and English-Polish dictionaries

The beginnings of Polish-English and English-Polish lexicography date back to polyglot dictionaries of the Renaissance. The first reference work which provided, among other languages, parallel lists of Polish and English words was a 10-language Ambrogio Calepino's *Dictionarium decem linguarum…* published in Lyon in 1585 (Podhajecka, 2013, p. 449). The fact that this source paired English and Polish words was an exception, as lexicographers of the era preferred sources in which Polish was accompanied by German and Latin. This set of languages can be found in nine polyglot dictionaries with a Polish component published between 1526 and 1596 (Kuraszkiewicz, 1986, p. 732, as cited in Podhajecka, 2013). While between the years 1603 and 1789 five dictionaries were published which included Polish and English, they "were meant for decoding Latin texts into the respective vernaculars, not for Polish-English or English-Polish translation, let alone for direct communication" (Podhajecka, 2013, p. 444).

There was, however, a notable exception, namely Julian Antonowicz's *Gramatyka dla Polaków...* published in 1788. Three of its sections serve to present the English grammar, once the fourth one is a list of useful words and expressions. Like in the case of Comenius, the words are arranged according to categories, albeit without supplementary visual aids. A lot of attention is paid to everyday vocabulary, such as names of objects or professions. In addition, the source features the most-frequently used formulae for everyday communication divided into categories, such as greetings, apologies etc. Notably, the source also includes a short section on English proverbs. However, the most interesting aspect for this discussion is the way in which the author decided to present single words/lexical items. Examples of such entries are presented in Figure 11:

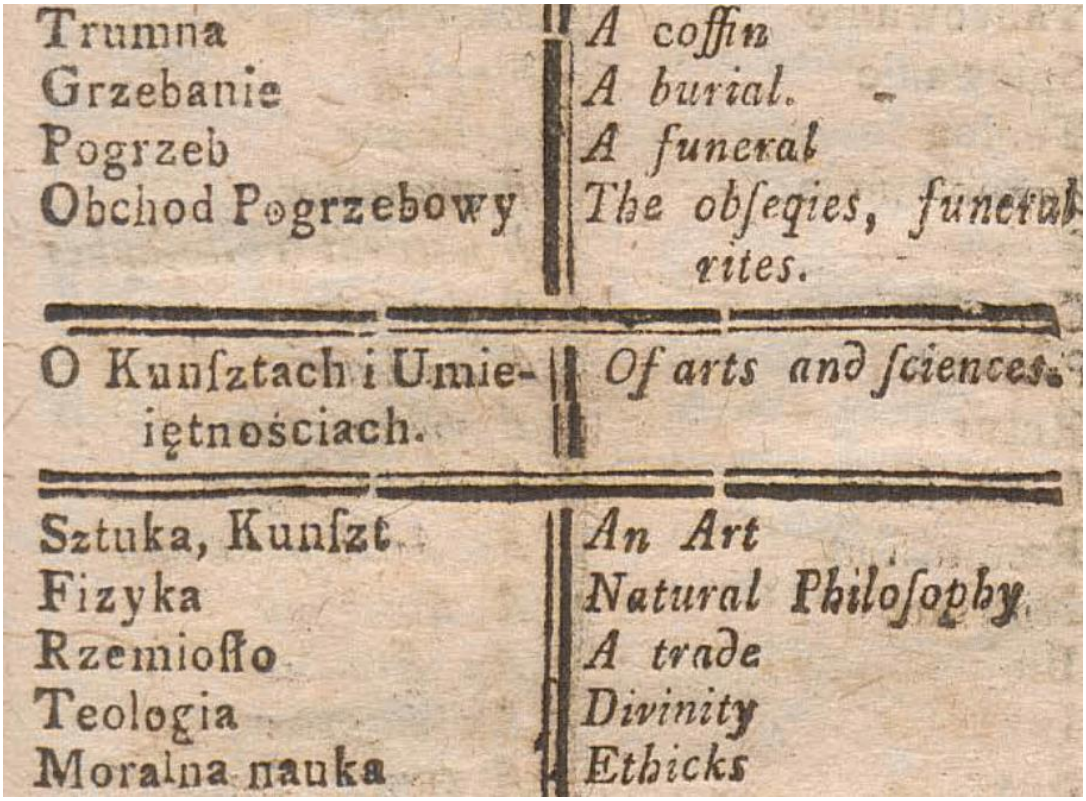


Figure 11 Sample entries from Antonowicz's "Gramatyka dla Polaków..."
Source: Antonowicz, 1788, p. 127

Examples in the table above show that the author chose simplicity over complexity, as the words are presented with little additional information, other than their counterparts. The only lexical property that can be inferred from such an entry is countability of certain nouns, marked with an indefinite article. It needs to be stressed, however, that a separate list of irregular verbs is included in one of the preceding sections of the book.

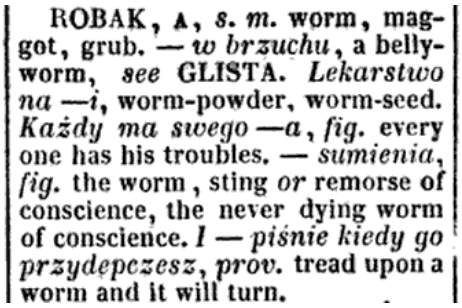
While Antonowicz was a Polish EFL pioneer, especially given the fact that he is considered to be the first recorded EFL teacher in the history of Poland ("Antonowicz Julian", n.d.), his Polish-English dictionary does not contain any innovations in terms of vocabulary presentation or comprehensiveness. In fact, his 38-page long word list could hardly be classified as a dictionary by modern standards. However, since Antonowicz's major aim was not to help scholars or translators, but to make beginners start using English as a foreign language (Antonowicz, 1788, p. IX), it needs to be concluded that his reference work is well-adjusted to the needs of the target audience of the time.

Over sixty years after the publication of *Gramatyka dla Polaków...*, Erazm Rykaczewski, Polish linguist and translator, created the first fully-fledged bilingual Polish-English and English-Polish dictionary ("Rykaczewski Erazm", n.d.). Two volumes, namely *A complete dictionary English*

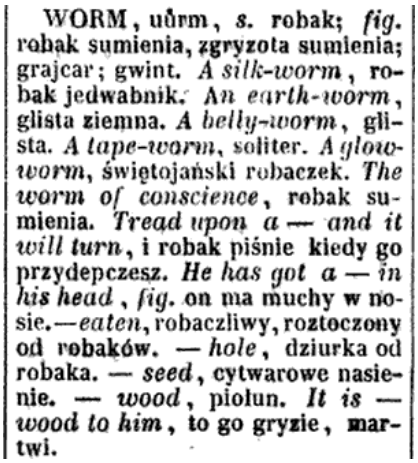
and Polish and Polish and English[14]" and *Dokładny słownik polsko-angielski i angielsko-polski*[15] were published in Berlin, in 1849 and 1851, respectively. As the volumes were created primarily for Polish learners of English, the dictionary material was not distributed evenly. As a result, the English-Polish version (Rykaczewski, 1851) contains an extensive section covering English grammar and a pronunciation guide which cannot be found in the Polish-English volume.

In the introduction to the latter volume, Rykaczewski (1851) wrote that his purpose was to create a dictionary to develop productive skills of Polish students of English, especially beginners (ibid, p. VII). With this end in view, the author decided to include examples of both spoken and written language for Polish and English. Therefore, in addition to standard language, colloquial phrases such as "bald arse" (Rykaczewski, 1849, p. 21) in English and "to nie chychy" (Rykaczewski, 1851, p. 21) in Polish were included in dictionary entries.

Even though Rykaczewski's dictionary was designed primarily for Polish learners, both Polish-English and English-Polish volumes contain comprehensive information which is arranged according to the standards that are still widely used in modern multilingual lexicography. Entries from the dictionary are presented in Figure 12.



ROBAK, A, *s. m.* worm, maggot, grub. — *w brzuchu*, a belly-worm, *see* GLISTA. *Lekarstwo na —i*, worm-powder, worm-seed. *Każdy ma swego —a*, *fig.* every one has his troubles. — *sumienia*, *fig.* the worm, sting *or* remorse of conscience, the never dying worm of conscience. *I — piśnie kiedy go przydepczesz*, *prov.* tread upon a worm and it will turn.



WORM, uûrm, *s.* robak; *fig.* robak sumienia, zgryzota sumienia; grajcar; gwint. *A silk-worm*, robak jedwabnik. *An earth-worm*, glista ziemna. *A belly-worm*, glista. *A tape-worm*, soliter. *A glow-worm*, świętojański robaczek. *The worm of conscience*, robak sumienia. *Tread upon a — and it will turn*, i robak piśnie kiedy go przydepczesz. *He has got a — in his head*, *fig.* on ma muchy w nosie. — *eaten*, robaczliwy, roztoczony od robaków. — *hole*, dziurka od robaka. — *seed*, cytwarowe nasienie. — *wood*, piołun. *It is — wood to him*, to go gryzie, martwi.

Source: Rykaczewski, 1849, p. 303	Source: Rykaczewski, 1851, p. 463

Figure 12 Entries for "robak" and "worm" in Rykaczewski's dictionary

Both entries contain translation equivalents, information about grammatical properties of the word (part of speech, grammatical number, etc.), as well as usage-related labels (e.g. "fig."). There are no examples related to the literal meaning; however, some lexical patterns might be deduced from

14 The full name of the dictionary reads as follows: "A complete dictionary English and Polish and Polish and English, compiled from the dictionaries of Johnson, Webster, Walker, Fleming and Tibbins, etc., from the Polish lexicon of Linde and the Polish German dictionary of Mrongovius"

15 "Dokładny słownik polsko-angielski i angielsko-polski, czerpany z najlepszych źródeł krajowych i obcych; a mianowicie ze słowników polskich: Lindego, Mrongoviusa i Ropelewskiego; z angielskich: Johnson, Webster, Walker, Fleming-Tibbins, i innych"

formulaic phrases which are marked with italics. Such a way of presenting lexical properties of a given word seems to be problematic for several reasons: firstly, the number of examples seems to provide insufficient information on lexical properties of a given item; secondly, the learner might find it confusing that semantically unrelated terms, such as compound words (e.g. *wormwood*) are not visually separated from phrases related to the first meaning of the headword; thirdly, the lack of explicit information concerning grammatical patterns might prevent accurate productive use of English words and phrases.

Rykaczewski's dictionary was followed by Jan Józef Baranowski's "Anglo-Polish Lexicon" and *Słownik Polsko-Angielski* published in 1884. As a soldier, engineer, inventor, and scientist, Baranowski could easily be called a "jack of all trades", but this versatility also meant that he was – unlike Rykaczewski – not a professional philologist who devoted his career to studying languages ("Baranowski Jan Józef", n.d.). Therefore, his dictionary contains considerably less information concerning collocations or usage of a given word or phrase. On the other hand, Baranowski's work offers comprehensive information on English pronunciation, including transcription provided for each entry. Both the aforementioned features, i.e. lexicogrammatical information (cf. entry for "robak" in Figure 13) and the phonetic transcription, are presented in Figure 12.

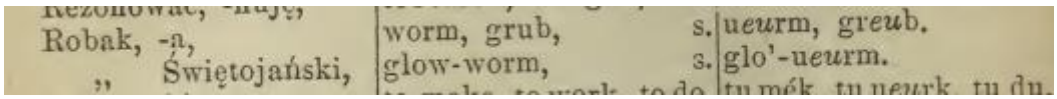
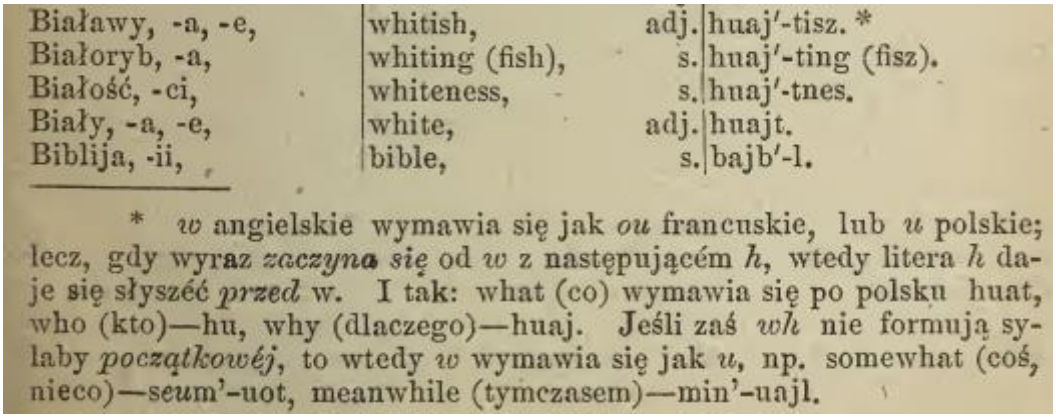

Robak, -a, worm, grub, s. ueurm, greub.
„ Świętojański, glow-worm, s. glo'-ueurm.

Figure 13 Entry for "robak" in Baranowski's dictionary
Source: Baranowski, 1884, p. 282

In addition to including phonetic transcription in a dedicated column and to providing an extensive introductory section on pronunciation, Baranowski also decided to add footnotes in which he explained the most important pronunciation principles. An example of such a footnote is presented in Figure 14, which shows information about the pronunciation of the *(-)wh-* combination.



Białawy, -a, -e,	whitish,	adj.	huaj′-tisz. *
Białoryb, -a,	whiting (fish),	s.	huaj′-ting (fisz).
Białość, -ci,	whiteness,	s.	huaj′-tnes.
Biały, -a, -e,	white,	adj.	huajt.
Biblija, -ii,	bible,	s.	bajb′-l.

* *w* angielskie wymawia się jak *ou* francuskie, lub *u* polskie; lecz, gdy wyraz *zaczyna się* od *w* z następującém *h*, wtedy litera *h* daje się słyszéć *przed* w. I tak: what (co) wymawia się po polsku huat, who (kto)—hu, why (dlaczego)—huaj. Jeśli zaś *wh* nie formują sylaby *początkowéj*, to wtedy *w* wymawia się jak *u*, np. somewhat (coś, nieco)—seum'-uot, meanwhile (tymczasem)—min'-uajl.

Figure 14 Footnote for words containing the *(-)wh-* combination in Baranowski's dictionary
Source: Baranowski, 1884, p. 4

Therefore, it might be concluded that while Baranowski's dictionary was in many respects less comprehensive than Rykaczewski's, it was the first dictionary for Poles to offer thorough information on the intricacies of English pronunciation.

During the first three decades of the 20th century, the number of Polish and English bilingual dictionaries was growing, albeit relatively slowly due to Poland's complicated political situation (Podhajecka, 2015 p. 243). Given the fact that the country had only re-gained its independence in 1918, many of people of Polish origin – mostly political and economic refugees – lived in diasporas in Great Britain and the United States. Members of those diasporas created a number of Polish and English bilingual dictionaries, but according to Podhajecka, "their dictionaries were small, unsophisticated and targeted at inexperienced users" (2015, p. 244).

Meanwhile, the need for a revised comprehensive Polish and English bilingual dictionary led the publishers based in the Second Polish Republic to offer – in addition to some pocket and abridged editions – two major reference works, i.e. Władysław Kierst's *A Dictionary: Polish-English and English Polish* (1926-1928) and Jan Stanisławski's *An English-Polish and Polish-English Dictionary* published in 1929. Both those sources, similar in their lexicogrammatical coverage, successfully replaced Rykaczewski's outdated work (Podhajecka, 2015).

In 1945, when it was decided that the post-war Poland should become a communist state, the Iron Curtain effectively created two separate markets for Polish and English bilingual dictionaries. The most comprehensive work in the Western world was *Kosciuszko Foundation English-Polish and Polish-English dictionary* (1959–1961). Since Kosciuszko Foundation is based in New York, the main focus of this reference work is the American variety of English. In contrast, the British variety was promoted in Poland, where the aforementioned lexicographer Jan Stanisławski, along with Wiktor Jassem as an editor, continued to publish the considerably revised and extended pre-war

dictionary from 1929. According to Podhajecka, “the two dictionaries virtually monopolized the two markets, foreign and domestic, until the turn of the twenty first century” (2015, p. 246).

While the Kosciuszko Foundation dictionary, adjusted to the needs of Polish EFL learners (as opposed to the US-based ESL learners), is still available on the market, the Stanisławski dictionary ceased to be updated. Nevertheless, it is still one of the more comprehensive sources of linguistic information, especially given the fact that it aspired to include – in addition to core English vocabulary – technical terms, everyday language, and phonetic transcription written according to the IPA standards. Thus, a considerable number of labels, such as “myśl” for “myślistwo” (hunting) or “tok” for “tokarstwo” (turnery) can be found in this source.

It was also decided – most likely for the sake of space – that all the parts of speech should be included under one headword. Therefore, the consecutive sections of an entry are separated with Roman numerals followed by grammatical labels, such as “vi” for intransitive verbs or “s” for substantives. An example entry presenting these features can be found in Figure 15.

amount [ə'maunt] I *vi* 1. (*o liczbach, kwotach itp*) wynosić (**to** __ tyle to) 2. równać się (**to sth** czemuś); być równoznacznym (**to sth** z czymś); oznaczać (**to sth** coś) || (*o człowieku*) **he won't ~ to much** nie będzie z niego wielkiej pociechy; prochu nie wynajdzie III *s* 1. kwota; ilość; liczba; suma; **a large ~ of** __ dużo ...; **any ~** nieprzebrane ilości; mnóstwo; **to the ~ of** __ do wysokości <do kwoty> ... 2. znaczenie; **of little ~** małego znaczenia, o małym znaczeniu

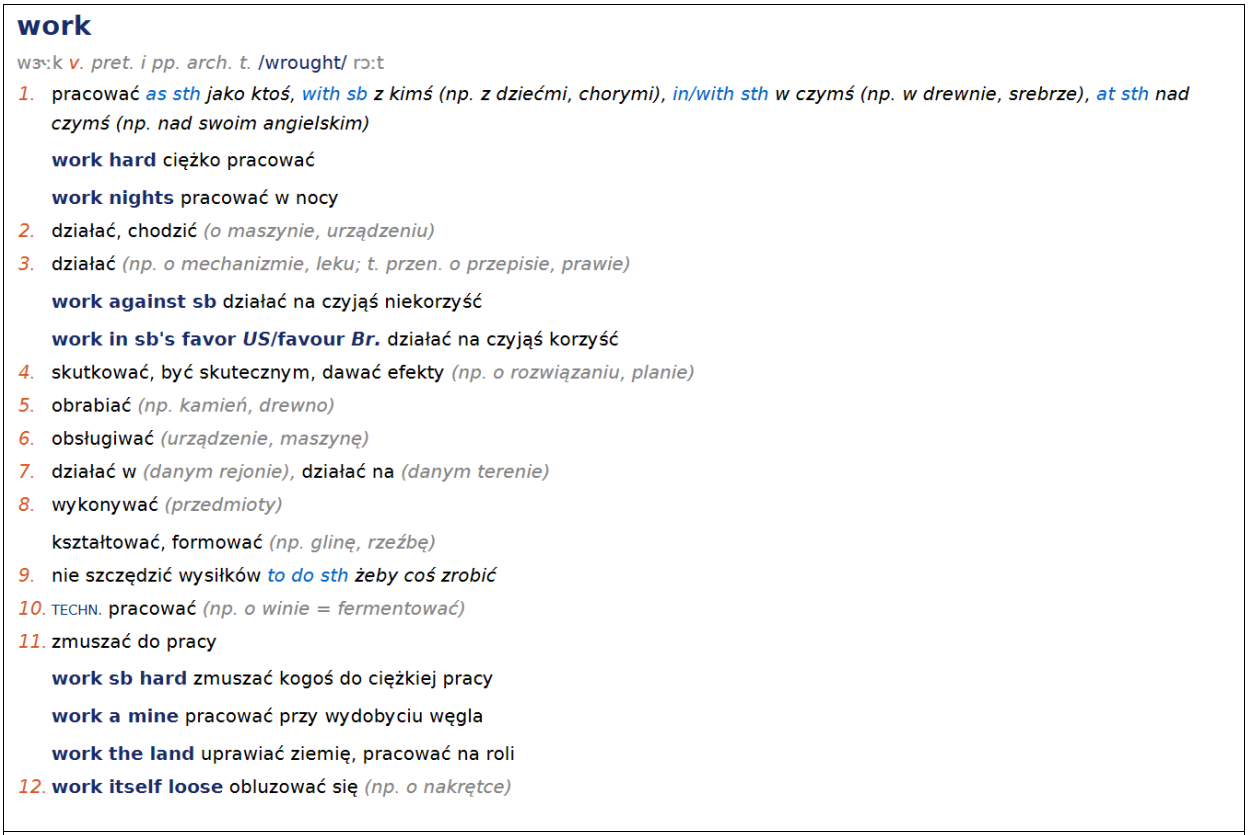
Figure 15 Parts of speech in Stanisławski’s dictionary.
Source: Stanisławski, 1964, p. 23

Interestingly, Stanisławski also decided to use the underscore symbol to replace the concept of “something” (e.g. “a large [amount] of _” presented in Figure 15), which contrasts with those British lexicographers who proposed using a complex system of grammatical patterns to show which combinations were possible.

3.2. Traditional bilingual dictionaries for Polish learners of English

The adjective "traditional" used in the title of this subchapter refers to dictionaries which were published in print by a n editing house that specializes – at least partly – in offering books as physical objects which can be purchased in bookshops. By contrast, all digital-only publications, with no pagination, no volumes and no division into editions are excluded from this list.

As it was mentioned in the previous subchapter, one of the most comprehensive bilingual Polish and English dictionaries, i.e. the Kosciuszko Foundation dictionary, is still available on the market as of 2017. The dictionary, renamed *Nowy Słownik Fundacji Kościuszkowskiej*, was revised in 2003 and again in 2008 by the team which included Poland-based philologists under the supervision of Jacek Fisiak. The most up-to-date version of the reference work is also available as an application which can be downloaded at a charge from a number of digital stores, including Microsoft Store, Google Play, and Apple App Store. The dictionary includes 142,000 lexical units (Fisiak, 2008), and it is designed to represent North American English. Its simplified structure and a substantial number of examples (cf. Figure 16) make it both accessible and relatively comprehensive.



work

wɜ:k *v. pret. i pp. arch. t.* /wrought/ rɔ:t

1. pracować *as sth jako ktoś, with sb z kimś (np. z dziećmi, chorymi), in/with sth w czymś (np. w drewnie, srebrze), at sth nad czymś (np. nad swoim angielskim)*

   work hard ciężko pracować

   work nights pracować w nocy
2. działać, chodzić *(o maszynie, urządzeniu)*
3. działać *(np. o mechanizmie, leku; t. przen. o przepisie, prawie)*

   work against sb działać na czyjąś niekorzyść

   work in sb's favor *US*/favour *Br.* działać na czyjąś korzyść
4. skutkować, być skutecznym, dawać efekty *(np. o rozwiązaniu, planie)*
5. obrabiać *(np. kamień, drewno)*
6. obsługiwać *(urządzenie, maszynę)*
7. działać w *(danym rejonie)*, działać na *(danym terenie)*
8. wykonywać *(przedmioty)*

   kształtować, formować *(np. glinę, rzeźbę)*
9. nie szczędzić wysiłków *to do sth żeby coś zrobić*
10. TECHN. pracować *(np. o winie = fermentować)*
11. zmuszać do pracy

    work sb hard zmuszać kogoś do ciężkiej pracy

    work a mine pracować przy wydobyciu węgla

    work the land uprawiać ziemię, pracować na roli
12. **work itself loose** obluzować się *(np. o nakrętce)*

Figure 16 A part of the entry for "work" from "Nowy Słownik Fundacji Kościuszkowskiej" Source: Fisiak, 2008

The simplicity of the entry presented in Figure 15 was achieved by reducing the number of grammatical labels and by focusing on examples and semantic labeling, which makes facilitates learners' access to word usage patterns. Also, the fact that the dictionary is available in the electronic form made it possible to increase the spacing between entries, thus improving the overall accessibility.

While the Kosciuszko Foundation dictionary is considered to be one of the most comprehensive Polish-English and English-Polish reference works, in 2002 there appeared a competitor which could claim the title of "the Dictionary" for Polish users of English. Created jointly by Oxford University Press and PWN (Państwowe Wydawnictwo Naukowe – National Scientific Publishers), the dictionary is available – as of 2018 – in the printed form and as an online paid subscription service. The PWN-Oxford dictionary features over 500,000 lexical units, along with British English pronunciation, a large number of examples, and semantically-oriented usage patterns (Linde-Usiekniewicz, 2002). Its certain features resemble the method of data presentation used by Stanisławski (cf. Figure 17) which seems to constitute the continuation of the "domestic" school of Polish and English bilingual lexicography.

work

the part until he was ~ uczył się roli, aż ją opanował doskonale
word-play /'wɜ:dpleɪ/ *n* gra *f* słów
word processing, WP *n* Comput przetwarzanie *n* tekstów
word processor *n* Comput procesor *m* tekstów
wordsmith /'wɜ:dsmɪθ/ *n* **to be an accomplished ~** umieć doskonale posługiwać się słowem
word stress *n* Ling akcent *m* wyrazowy
word wrapping *n* Comput zawijanie *n* tekstu
wordy /'wɜ:dɪ/ *adj [person]* wielomówny; *[explanation]* rozwlekły
wore /wɔ:(r)/ *pt* → **wear**
work /wɜ:k/ I *n* [1] (physical or mental activity) praca *f* **(on sth** przy czymś, nad czymś**)**; robota *f*; **to be at ~ on sth** pracować nad czymś or przy czymś; **he has already started ~ on the film** rozpoczął już pracę nad filmem; **they've finished ~ on the building/road** skończyli pracę przy budowie domu/drogi; **to go to** or **set to** or **get to ~** zabrać się do pracy or roboty; **to go to** or **set to** or **get to ~ on sth** zabrać się do czegoś, wziąć się za coś; **we set to ~ painting the kitchen** zabraliśmy się za malowanie kuchni; **to put** or **set sb to ~** dać komuś zajęcie; **we put him to ~ cleaning the garage** kazaliśmy mu wysprzątać garaż; **to put a lot of ~ into sth** włożyć w coś dużo pracy or wysiłku; **she put a lot of ~ into preparing the meal** włożyła dużo pracy w przygotowanie posiłku; **it was hard ~ digging the garden** skopanie ogrodu wymagało wiele wysiłku or pracy; **to be hard at ~** ciężko or pilnie pracować; **your essay needs more ~** musisz jeszcze popracować nad esejem; **there's still a lot of ~ to be done** jest jeszcze dużo pracy, trzeba jeszcze wiele zrobić; **I've got ~ to do** mam pracę or robotę, czeka mnie praca; **to make short** or **light ~ of sth** wykonać coś szybko *[job, task]*; **he made short ~ of that pizza** pochłonął tę pizzę błyskawicznie; **to make short ~ of sb** rozprawić się z kimś szybko; **it's all in a day's ~ (for sb)** to chleb powszedni (dla kogoś) fig; **'good** or **nice ~'** (on written work) „dobra praca"; (orally) „dobra robota"; **it's hot/thirsty ~** od tego robi się gorąco/chce się pić [2] (employment) praca *f*; robota *f* infml; **to be in ~** mieć pracę, pracować; **to be out of ~** nie mieć pracy; **to be off ~** (on vacation) być na urlopie; **to be off ~ with flu** mieć zwolnienie z powodu grypy; **to look for ~** szukać pracy; **to start** or **begin ~** (daily) rozpocząć pracę; (for the first time) zacząć pracować; **to stop ~** (at the end of the day) kończyć pracę; (on retirement) przestać pracować; **nice ~ if you can get it!** infml nie każdy ma takie szczęście!; **day/night ~** praca dzienna /nocna; **full-time/part-time ~** praca w pełnym/niepełnym wymiarze godzin; **place of ~** miejsce pracy [3] (place of employment) praca *f*, miejsce *n* pracy; robota *f* infml; **to go to ~** pójść do pracy; **don't phone me at ~** nie dzwoń do mnie do pracy; **there's a canteen at ~** w pracy mamy stołówkę [4] (building, construction) prace *f pl*, roboty *f pl* **(on sth** przy czymś**)**; **the building ~ is still going on** prace budowlane jeszcze trwają, budowa jeszcze trwa [5] (papers) praca *f*, robota *f*; **to take one's ~ home** zabierać pracę or robotę do domu; fig nawet w domu nie potrafić zapomnieć o pracy; **spread your ~ out on the table** rozłóż się ze swoją robotą na stole [6] (product, single item) (artwork, novel) dzieło *n*; (written, musical) utwór *m*; (essay, report) praca *f* **(on sth** na temat czegoś**)**; **the ~s of Shakespeare/Mozart** dzieła Szekspira/Mozarta; **a ~ of art** dzieło sztuki; **a ~ of fiction** dzieło literackie; **a ~ of genius** dzieło geniuszu, genialne dzieło; **a ~ of reference** publikacja encyklopedyczna [7] (output, achievement) (of artist, author) dzieła *n pl*, prace *f pl*; (of students) praca *f*, prace *f pl*; **an exhibition of ~ by young artists** wystawa dzieł or prac młodych artystów; **is this all your own ~?** czy to wszystko to twoje własne dzieła?; **to mark students' ~** poprawiać prace studentów; **his ~ isn't up to standard** jego praca pozostawia wiele do życzenia; **the research was the ~ of a team** badania były dziełem zespołu; **this attack was the ~ of professionals** ten atak był dziełem zawodowców; **I hope you're pleased with your ~!** iron no i co? zadowolony jesteś? [8] Phys praca *f* [9] (research) praca *f* badawcza, badania *n pl* **(on sth** nad czymś**)**; **there is still a lot of ~ to be done on the virus** należy jeszcze przeprowadzić wiele badań nad wirusem [10] (effect) **to go to ~** *[drug, detergent]* działać; **the weedkiller has done its ~** środek chwastobójczy zadziałał
II **works** *npl* [1] *(+ v sg/pl)* (factory) fabryka *f*, zakład *m* przemysłowy; **~s canteen** stołówka zakładowa or fabryczna; **cement ~s** cementownia; **printing ~s** drukarnia [2] (building works) roboty *f pl* budowlane; **public ~s** roboty publiczne [3] infml (everything) **the (full** or **whole) ~s!** pełen zestaw; wszystko, co trzeba [4] liter (actions) uczynki *m pl*; **good ~s** dobre uczynki [5] (mechanism) mechanizm *m*; (of clock) werk *m*
III *modif [clothes, shoes]* roboczy; **~ phone number** numer telefonu do pracy
IV *vt* [1] (drive) **to ~ sb hard** zmuszać kogoś do wysiłku; gonić kogoś do roboty infml [2] (labour) **to ~ shifts** pracować w systemie zmianowym; **to ~ days/nights** pracować na dziennej/nocnej zmianie; **to ~ a 40-hour week** mieć czterdziestogodzinny tydzień pracy; **to ~ one's passage** Naut popłynąć jako członek załogi; **to ~ one's way through university** pracować podczas studiów *(żeby na nie zarobić)*; **to ~ one's way through a book/document** przeczytać (z mozołem) książkę/dokument [3] (operate) *[person]* obsługiwać, posługiwać się (czymś) *[machine]*; **do you know how to ~ the microwave?** czy wiesz, jak posługiwać się kuchenką mikrofalową?; **this lever ~s the sprinkler system** ta dźwignia uruchamia zraszacz; **the pump is ~ed by hand** to ręczna pompa [4] (exploit commercially) eksploatować *[oilfield, mine, seam]*; **to ~ the land** or **soil** uprawiać ziemię, pracować na roli; **it's a theme that's been ~ed to death** to temat już wyeksploatowany [5] (have as one's territory) *[representative]* objeżdżać, obsługiwać *[region]*; *[artist]* dawać występy w (czymś) *[casinos, nightclubs]*; **beggars/prostitutes ~ the streets around the station** na ulicach wokół stacji jest pełno żebraków /prostytutek [6] (consume) **to ~ one's way through two whole cakes** spałaszować dwa całe ciastka infml; **to ~ one's way through the whole amount** wydać całą sumę [7] (*pt, pp* **worked, wrought)** (bring about) **to ~ miracles** działać cuda; fig dokazywać cudów, działać cuda; **the landscape started to ~ its magic on me** zacząłem ulegać czarowi krajobrazu [8] (use to one's advantage) **to ~ the system** potrafić się dobrze ustawić infml; **can you ~ it for me to get the tickets?** czy możesz załatwić mi bilety?; **how did you manage to ~ it?** jak ci się udało to załatwić?; **she ~ed it so that I didn't have to pay** tak to zaaranżowała, że nie musiałem płacić [9] (fashion) ur|obić, -abiać, wyr|obić, -abiać *[clay, dough]*; formować, obr|obić, -abiać *[metal, gold]*; **to ~ sth to a soft consistency** wyrabiać coś do miękkości; **to ~ gold into jewellery** robić biżuterię ze złota [10] (embroider) wyszyć, -wać, wy|haftować *[design]* **(on sth** na czymś**)**; **to be ~ed in blue silk** być haftowanym niebieskim jedwabiem; **~ three rows of cross-stitch** zrób trzy rzędy krzyżykami; **~ eight rows in rib** (in knitting) przerób osiem rządków ściągaczem [11] (manoeuvre) **to ~ sth into sth** włożyć coś do czegoś *[slot, hole]*; **he ~ed the peg out of the crevice** wyciągnął kołek ze szczeliny; **~ the paintbrush into the corners** staraj się pomalować rogi; **to ~ the lever up and down** poruszać dźwignią w górę i w dół; **we ~ed some concessions out of them** udało się nam skłonić ich do pewnych ustępstw [12] (exercise) ćwiczyć *[muscles]* [13] (move) **to ~ one's way through a crowd** przedrzeć się przez tłum; **we were ~ing our way towards the exit** posuwaliśmy się w stronę wyjścia; **to ~ one's hands free** wyswobodzić ręce; **to ~ the rope loose** rozwiązać sznur; **his belt ~ed its way loose** pasek mu się rozwiązał; **to ~ its way into sth** dostać się or trafić do czegoś *[bloodstream, system, food chain]*; **damp was ~ing its way up the walls** wilgoć osiadała coraz wyżej na ścianach; **start at the top and ~ your way down** zacznij u góry i posuwaj się w dół [14] US (solve) rozwiąz|ać, -ywać *[problem, crossword]*
V *vi* [1] (engage in activity) pracować; **to ~ as a midwife/teacher** pracować jako położna/nauczyciel; **to ~ at the hospital/the factory** pracować w szpitalu/fabryce; **to ~ at home** pracować w domu; **to ~ at sth** pracować nad czymś; **she's ~ing hard at her French** dużo pracuje nad francuskim; **you must ~ at your service** musisz popracować nad serwisem, musisz poćwiczyć serwis; **to ~ for sb** pracować u kogoś or dla kogoś; **to ~ for Grant and Company** pracować w Grant and Company; **to ~ for a living** zarabiać na życie; **he's ~ing for his finals** przygotowuje się

Figure 17 A part of the entry for "work" from the PWN-Oxford dictionary
Source: Linde-Usiekniewicz, 2002, pp. 1366-1367

In the PWN-Oxford dictionary, Stanisławski's design is reflected mostly in the two-tier system of dividing lexicogrammatical material within entries, in which the Roman numerals are used for different parts of speech, while the Hindu-Arabic numerals represent word senses.

In terms of semantic labels, PWN-Oxford differs considerably from the Kosciuszko Foundation dictionary. In the former, such labels are hyperonyms which precede translation equivalents. For instance, in the case of the word "work" – in the sense of putting something into something else (cf. Figure 17) – the definition starts with the word "manoeuvre", followed by Polish equivalents, and, finally, possible collocates presented in square brackets "*[slot, hole]*". Since the

labels as well as the collocates presented in the example are written in English, it might make them quite confusing for the less knowledgeable user, who might need to look them up to understand concepts which they represent. By contrast, in the Kosciuszko Foundation dictionary, the Polish-to-English translation features Polish semantic labels as well as Polish collocates, which might enhance the comprehension of a given lexical item. Despite this doubt concerning the way in which lexicogrammatical information is presented in the PWN-Oxford dictionary, it needs to be stressed that its sheer volume makes it undeniably the most informative Polish and English bilingual source available on the market to date.

In addition to the two major reference works discussed above, there are many other bilingual dictionaries for Polish learners of English offered by various publishing houses. Those include (but are not limited to): Buchmann, Edgard, Harald, Langenscheidt, Lingea, Lingo or Pons. However, none of their works is as comprehensive as the two aforementioned sources. While I was not able to properly research all the sources available, especially given the popularity of the English language and the size of the market, it seems that Humblé's (2001) observation concerning the fact that bilingual sources are similar in their design holds true in the case of Polish-English and English-Polish printed dictionaries. The main differences that I was able to find concerned the comprehensiveness – not only in the "width" of the source, i.e. the number of headwords, but also "depth-wise", for instance with regard to pronunciation (no transcription vs IPA vs other systems), the use of labels, the number of examples or the way of presenting collocations. Nevertheless, all the sources seemed to follow either the design used by PWN-OXFORD or the one of the Kosciuszko Foundation dictionary.

In addition to the dictionaries under consideration, publishing houses such Oxford University Press or Cambridge University Press offer bilingualized sources which feature simplified MLD-like entries enriched with some basic translation equivalents. Out of these dictionaries, "Cambridge Learner's Dictionary", edited by Colin McIntosh, is available online free of charge. An entry from this reference work is presented in Figure 18.

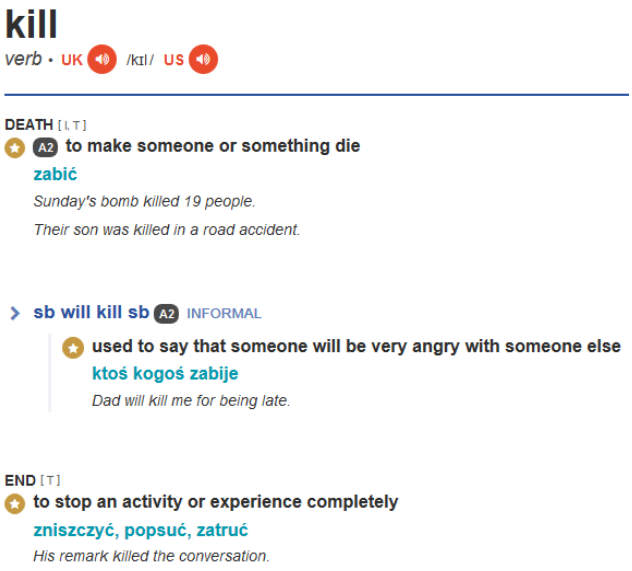


Figure 18 A part of the entry for "work" from *Cambridge Learner's Dictionary*
Source: McIntosh, 2011

Since this dictionary is aimed primarily at less advanced students, its structure is largely simplified, and only the most important collocations/usage patterns are provided. In addition, information about pronunciation is limited solely to the RP variety. As far as Polish equivalents are concerned, their role is reduced to providing basic translation for a given (sub)entry; therefore, there are no translations for formulaic phrases which are presented in the entry – instead, the learner needs to try to understand them on the basis of Polish equivalents and their own prior knowledge of the language. Nevertheless, some formulae are presented as separate entries, such as "sb will kill sb" presented in Figure 16. Such structuring of a dictionary entry makes it impossible to use this type of reference works for Polish-English translation. Therefore, bilingualized dictionaries offer more help to students in terms of learning or decoding than in the case of encoding needs.

3.3. Other reference works for Polish learners of English

Given the fact that neither PWN-Oxford, nor the Kosciuszko Foundation dictionary are available online free of charge, many other sources can compete to claim the title of the most widely used Polish and English bilingual dictionary. One such source is an entirely web-based dictionary named *Diki*, created by a group of English teachers from an online English school eTutor.pl. It features, as of 2017, 415,622 entries, 2,904,716 examples and 14,252 illustrations ("O słowniku języka angielskiego Diki", n.d.), making it one of the most comprehensive dictionaries available free of charge. An entry from *Diki* is presented in Figure 19.

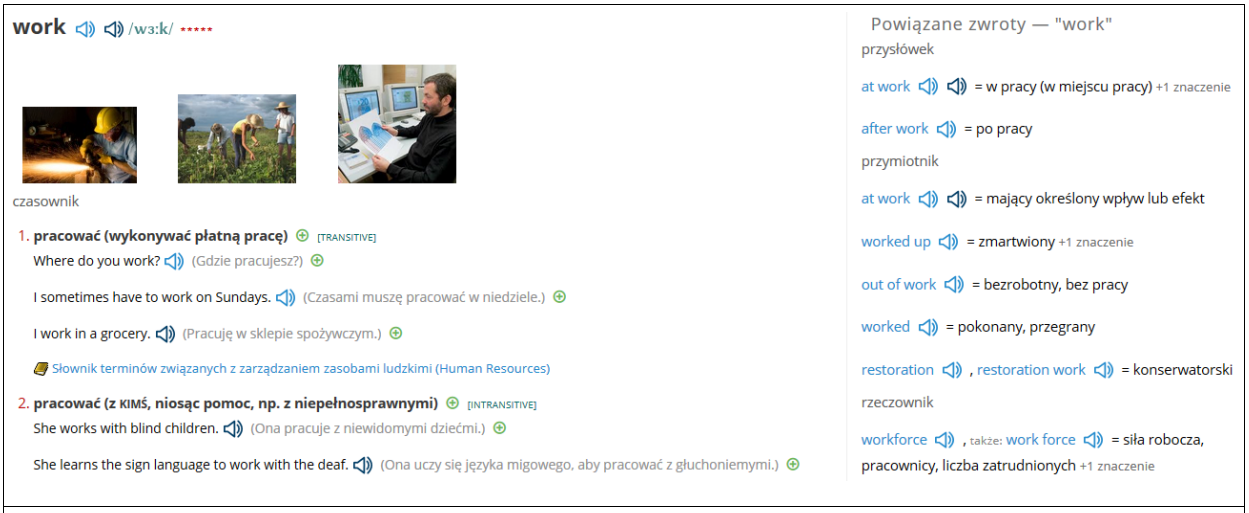


Figure 19 A part of the entry for "work" from *Diki*
Source: Kowalczyk, 2017

The entry in the example shows that the dictionary uses a simplified structure, with minimal labeling. This does not mean, however, that *Diki* features space-saving strategies used in traditional sources. For instance, all the examples are full sentences rather than phrases, while certain symbols used for abbreviating words, such as the tilde, were eliminated. In addition, recorded pronunciation is available for the example sentences, making *Diki* similar to LDOCE.

One of the most interesting features of the dictionary is the use of the two-column system in which the left column provides basic word senses, while the right one seems to list formulaic phrases. However, upon scrolling to the bottom of the right-hand side list, one may also find an integrated dictionary of collocations. While it is not as well-separated from other contents of the column as it is in the case of LDOCE or OALD, its contents are similar in terms of lexical coverage to other collocation dictionaries. Collocations from this column are presented in Figure 20.

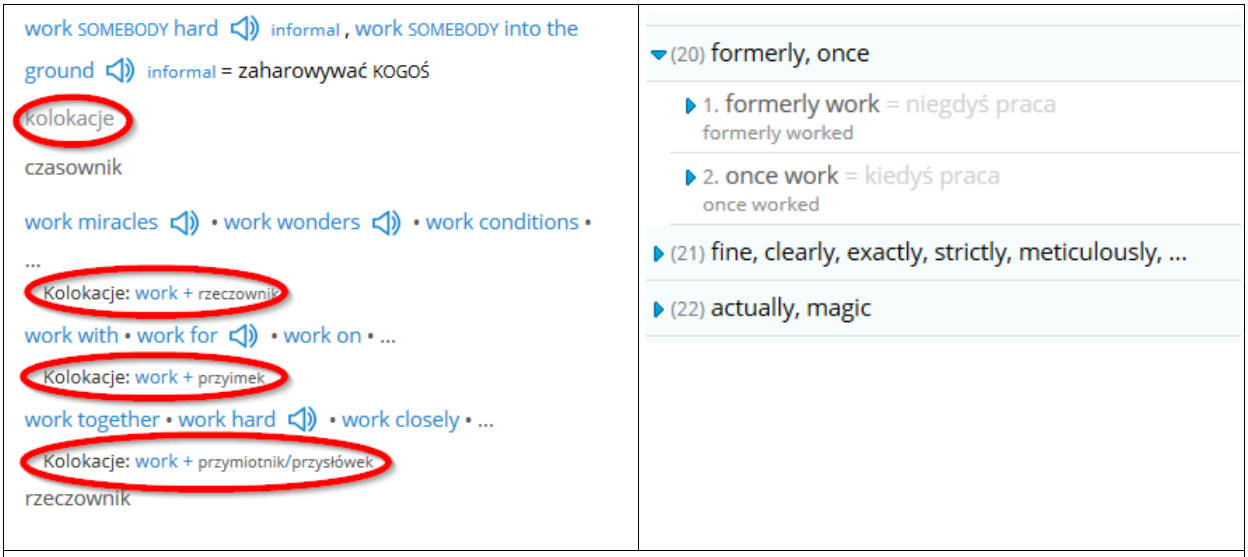


Figure 20 Collocations in *Diki* – Left: Collocation module marked (circled by the author); Right: A set of collocations from the dictionary
Source: Kowalczyk, 2017

In Figure 20, the headers for various categories of collocations are marked in order to make them more visible; it is likely that without such a change, some users are not able to realize that their reference work actually contains a built-in dictionary of collocations. However, this problem with graphical user interface seems to be insignificant in comparison to issues related to the quality of the data. This is visible in the second column in Figure 19, which shows some entries that were (as confirmed by the authors) machine-translated from English to Polish. While the collocations – presumably "(I/you/she...) once worked..." and "(I/you/she...) formerly worked..." – are correct, their rendition into the Polish language is faulty, as it contains Noun Phrases as opposed to Verb Phrases. In sum, both the advantages and shortcomings of *Diki* show potential problems which one might encounter while using Internet resources designed by companies that do not have a strong tradition in dictionary making. On the one hand, they might be surprisingly comprehensive and informative; on the other hand, though, certain information presented there is more likely to be inaccurate.

Other services that belong to the same category of reference works as *Diki* include dictionaries such as *Getionary* or *Pons*, which both offer translations arranged as long lists of lexical counterparts. Pons online dictionary, rooted in the tradition of printed sources, contains certain basic labels (i.e. grammatical number, transitivity, and hyperonyms), while *Getionary* offers no labels whatsoever; despite this difference, both these dictionaries present vocabulary in the form of lists of words or phrases coupled with their translation equivalents.

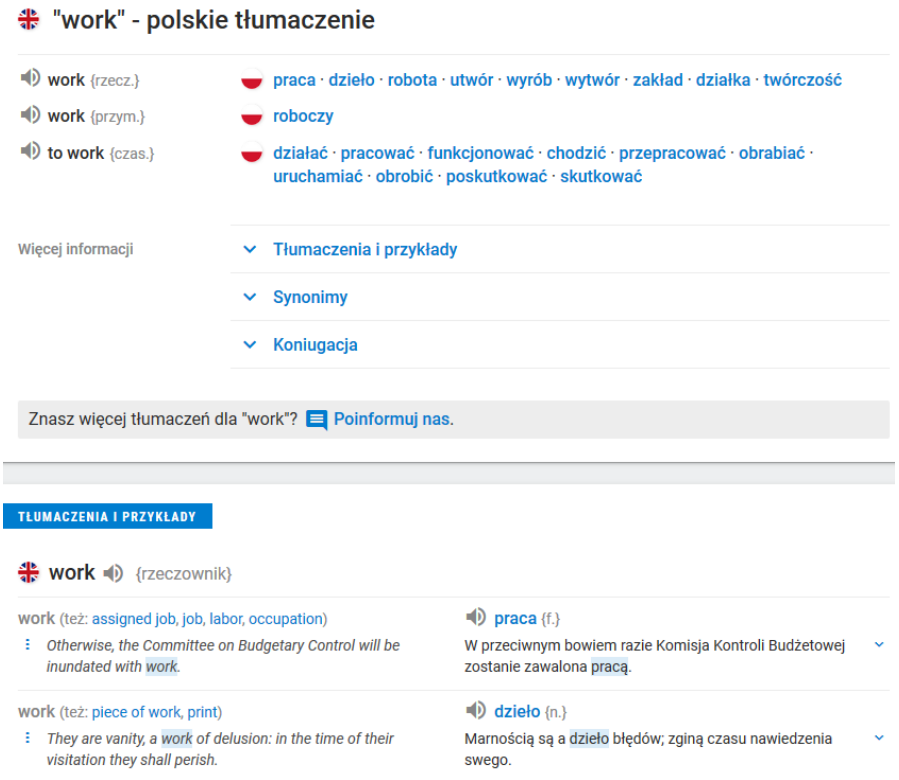
The striving for simplicity is also visible in the next category of sources which are based on the idea of presenting a large number of translation equivalents, but with little added information. Such sources rely primarily on parallel corpora and/or translation memories which make it possible

to show the user how a given word or phrase was rendered into another language by human translators. Given their corpus-based origin, dictionaries of that kind are similar to concordancers in the fact that they allow one to run a query that fetches longer phrases, such as “the idea is that” or “work is done”. As long as such phrases appear in the database, they will be presented to the user along with their translation equivalents. Another feature which is rooted in corpus linguistics is the ability of these aligned databases to show the preview of longer strings of words which appear before or after the sought phrase. This approach, also known as Key Word In Context or KWIC (Luhn, 1960), provides the learner with information on how and why a given phrase was used in the text.

The phrase-based search, combined with access to context, might be an important tool in the context of the encoding function of a reference work, as the learner is able to look up entire phrases that they would like to render in another language, as opposed to choosing the headword and searching for tables with potential collocations. In addition, data produced by certified human translators which comes from varied sources might be considered relatively reliable in comparison with machine translation.

Two major dictionaries based on parallel corpora, available free of charge for Polish learners of English as of 2018, are *Linguee* and *bab.la*. Both of them are similar in their design, as their entries start with basic translation equivalents deprived of context (not available for phrases), followed by a number of examples from actual texts. Entries from both dictionaries are presented in Figure 21.

(1)



(2)

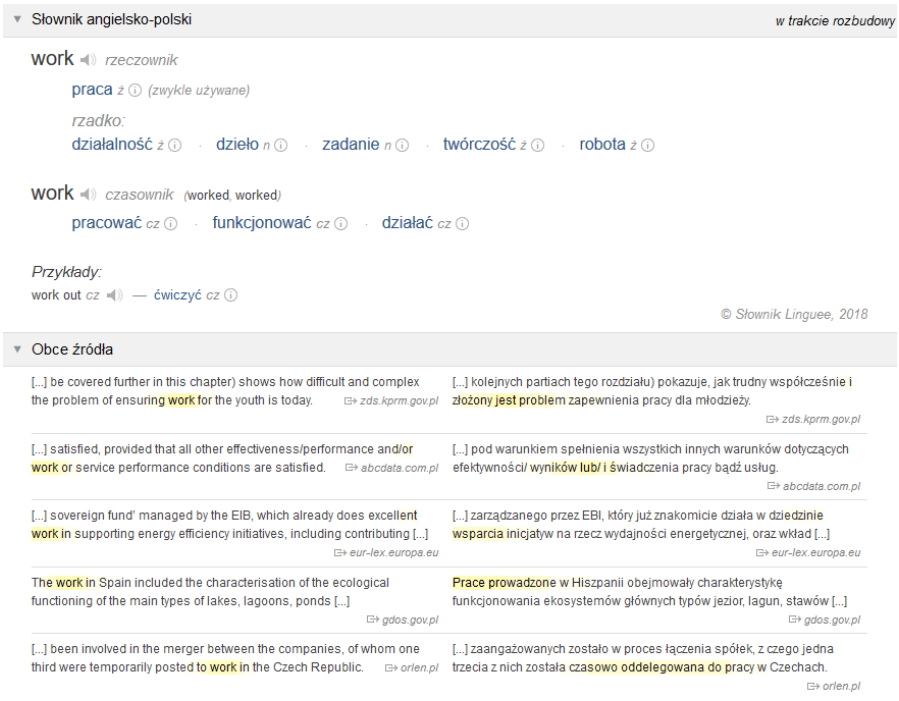


Figure 21 Comparison of entries for "work" from *bab.la* (1) and *Linguee* (2)
Sources: (1) Schroeter and Uecker (2017); (2) "Linguee" (2018)

One of the most important features of dictionaries based on aligned language data is the fact that corresponding words and phrases are highlighted; this highlighting is usually accurate, although in some cases it might stretch beyond the corresponding phrase, such as "to work" paired with "czasowo oddelegowana do pracy" ("temporarily posted to work") in (2).

Both *bab.la* and *Linguee* offer access to source material which appears to be largely composed of databases of official EU documents (transcripts of Parliament debates, official bills, international agreements, etc.). Other sources include an array of websites which contain the same information in multiple languages. This data is often gathered by an automated web crawler, also known as "bot" or "spider", ("Linguee Bot information", 2017) and may, therefore, be less reliable. Nevertheless, given the number of available translations which the learner can compare, it is less likely that incidental quality issues will cause serious problems to users of these dictionaries.

Aligned language data is also available to learners in the form of non-dictionary tools. These include on-line encyclopedias, such as Wikipedia, which are available in multiple languages. Therefore, they might serve as a way of finding translations for technical terms. Wikipedia contains a dedicated list which makes it possible to view any article in other languages, thus affording access to translation equivalents. Since many of such sources are created by the community of users, it is possible to encounter occasional inaccuracies or missing links to existing articles in other languages. Nevertheless, given its coverage – approximately 5.5 million articles in English and 1.1 million articles in Polish as of 2018 – it is one of the most comprehensive databases for terminology from each domain of science.

Another group of user-made sources of lexicogrammatical information are various discussion fora built by their communities. An advantage of such resources is that questions posted there are not limited to words, but they may concern longer phrases or groups of sentences; in addition, many problems are given in-depth analysis. For example, in a question concerning the use of "yours faithfully" vs "yours sincerely" from *WordReference* ("Yours sincerely vs Yours faithfully", 2006), the following aspects were mentioned:

- The situation when the name of the recipient of the letter is known/unknown to the sender
- The situation in which the recipient in known in person
- Possible generational differences between usage patterns
- Differences between British English, US English, and Canadian English
- Differences in levels of formality represented by those formulae
- Usage patterns for other substitutes, such as "sincerely yours" and "sincerely", and "yours truly"
- Language standards set by the English Civil service regulatory bodies
- Prescriptivism vs usage for language formulae

- Discussion on the future of salutations used in formal letters

While in the case of this particular discussion, the accuracy of verifiable information was high, it is to be expected that certain threads contain factual mistakes or common misconceptions regarding the language. In addition, any student using such a tool needs to be aware of the fact that information presented in the discussions might become outdated, and therefore irrelevant. In addition to the aforementioned *WordReference* forum, there exist a number of other similar sources, such as *UsingEnglish* or *Learn English Forum*. Language-centered discussions can also be found on social media, for instance Facebook groups *Learn English* or *Angielski: Nauka Samodzielna*.

Some platforms also offer user-generated glossaries which can be browsed like any other electronic dictionary. For instance, a *ProZ.com* website offers a collection of terms added by professional translators. In this case, users ask how to translate a given word or phrase, and possible answers and suggestions are presented in the form of a forum-like discussion in which it is possible to up-vote the answers. In addition, as shown in Figure 22, the forum-based format, enables the user to show their level of confidence regarding their own suggestion and to post links to possible external sources.

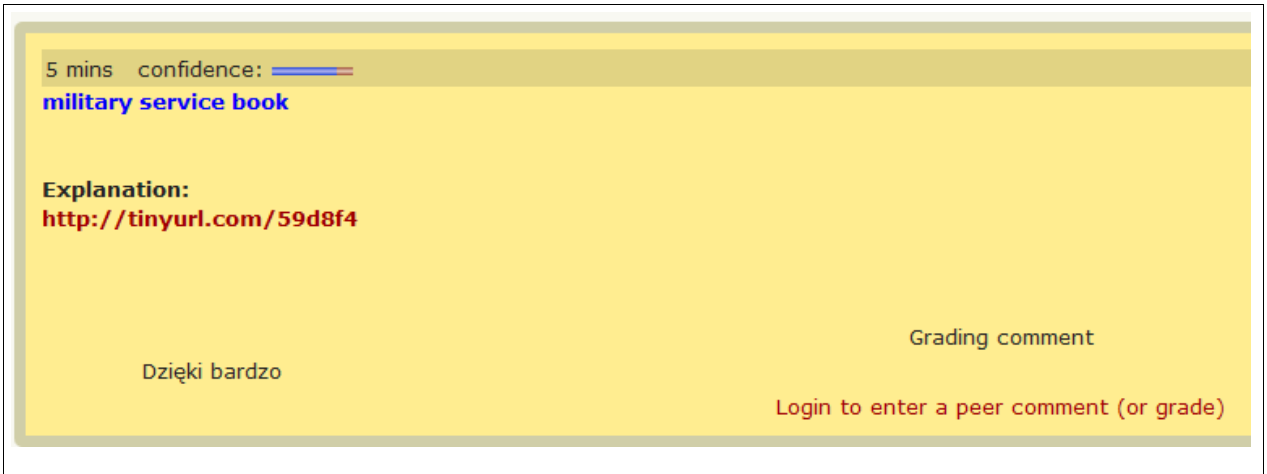


Figure 22 A post from *ProZ.com*
Sources: (1) Schroeter and Uecker (2017); (2) “Linguee” (2018)

In another crowd-sourced glossary, namely *Urban Dictionary*, (Peckham, n.d.), one might find information about slang, non-standard and taboo words. Most entries consist of definitions and examples, and they can be up-voted by the users, thus offering some degree of reliability. *Urban Dictionary* might be particularly useful for comprehension purposes, as it is (as of 2017) regularly updated by the community.

The potential of gathering information about new lexical units from users is also exploited by makers of traditional dictionaries. As it was mentioned in the context of building communities around

ALDs, MED online offers a crowd-sourced *Open Dictionary* which can be built by the users. Its submission guidelines, presented in Figure 23, require that the word/phrase be new and used by other speakers of English.

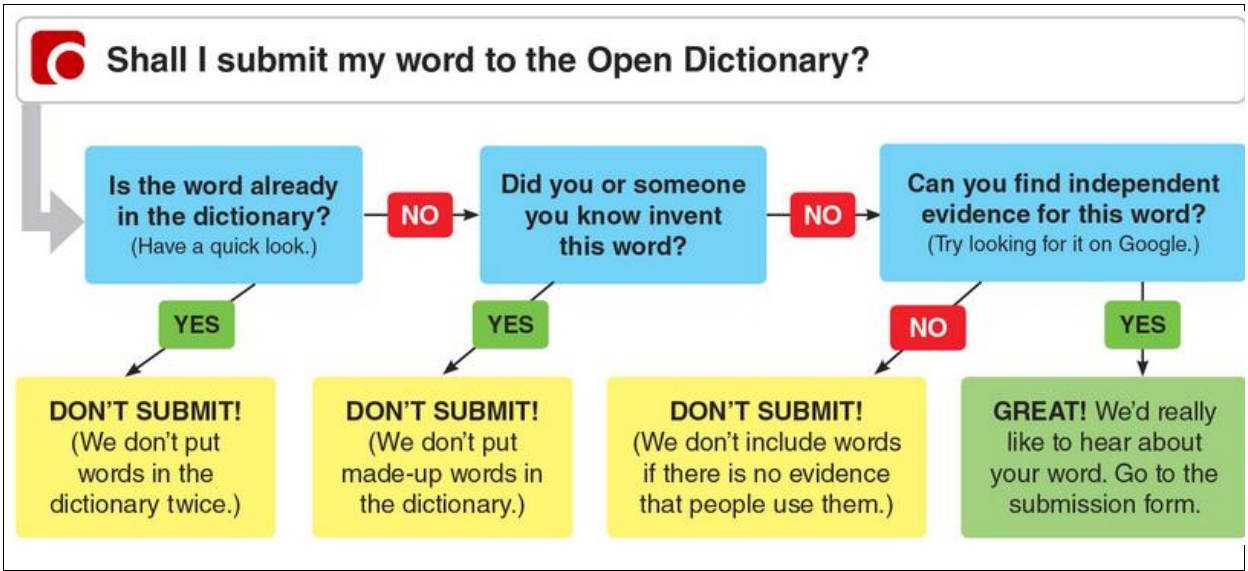


Figure 23 Submission guidelines for MED's *Open Dictionary*
Sources: "How to add a word to the Open Dictionary" (n.d.)

In order to encourage users to submit entries, the submission form is reduced to most important information – it only provides textboxes for the term, its definition, and examples (marked as optional). Therefore, additional information – such as part of speech or usage labels – is added by professional lexicographers, who review submitted entries.

The last source of language information for EFL/ESL learners might be an automated translation system such as *Google Translate*. While such services might provide accurate translations for certain phrases, their capabilities for providing comprehensive information about words is largely limited. For example, in the case of the Polish word "zamach", *Google Translate* provides equivalents such as "attempt" and "assassination" ("Google Translate", n.d.), but no information is given about collocations or the context in which those two translation equivalents might be used.

3.4. Conclusions

Although the tradition of Polish-English and English-Polish dictionaries dates back to the Renaissance, their potential usefulness, and thus demand, was comparatively limited until the last decade of the 1900s. Along with political changes that opened Poland to globalized trade and travel, the ability to speak English gained much importance. As a result of this relatively abrupt change, the selection of comprehensive dictionaries became limited to PWN-Oxford/Kosciuszko Foundation Dictionary duopoly, while a number of smaller dictionaries were developed for less advanced learners and users.

In parallel with the aforementioned change, there occurred a significant development in the area of digital sources – firstly, in the form of CDs and DVDs, then the web-based solutions. With an increase in popularity of the Web, Polish EFL learners gained access to a variety of free digital reference works. While their comprehensiveness, in traditional terms, might not yet pose a challenge to the traditional dictionaries mentioned above, it should be noted that they offer functionalities, such as phrase lookup or searchable databases with examples, which extend beyond information available in digitized printed sources.

As a result, a Polish EFL learner with access to the Internet might be able to find lexicogrammatical information in a number of varied sources. From traditional bilingual and multilingual dictionaries – which developed and "matured" over the ages – to electronic-only glossaries, to I and other community-built resources, there exists a considerable potential for finding information, verifying its quality and learning how to use words or phrases productively. Given the presented historical context, one might venture a claim that never in the history of lexicography has it been so easy to obtain high-quality lexicogrammatical information as it is today.

4. Research into dictionary use: Basic concepts and research directions

Even though research into dictionary use is a relatively young discipline, finding information in a lexicographical source is complex enough to be approached from various angles and to be researched by means of a number of different tools. However, regardless of its complexity, there exists a relatively high degree of uniformity as to the names used to refer to this process.

Welker (2010, p. 8) remarked that the process of consulting a dictionary is most often referred to as "lookup" (or "look-up"), although some researchers, such as Varantola (1998), had proposed a structured approach in which a "look-up" is a single action, while search should refer to a structured set of actions whose purpose is to find the information sought.

Another term, which is synonymous with the broad sense of the word "lookup", is "consultation". According to the "Dictionary of Lexicography", "consultation" should be defined as "The act of using a reference work to look up (i.e. seek, find and retrieve) required information" (Hartmann & James, 2002 p. 28). Some researchers, such as Gouws (2018), also used the term "consultation procedure", which seems to be similar to the "search" mentioned above.

In addition, Bothma and Tarp (2012) made a distinction between the intra-lexicographical and extra-lexicographical consultation (p. 92). The former refers to the specific action of using a dictionary to retrieve information sought, while the latter takes into account a broader context, as it describes the operations performed by the user before consulting a dictionary (e.g. reasons for consulting the resource) as well as the decisions made upon the consultation.

4.1. Information found in dictionaries: Lexicogrammar

The purpose of consultation is to discover certain properties of the language, often referred to as lexical knowledge/information. This information might be perceived as referring to the properties of words or, more precisely, lexical items (Haliday & Yallop, 2004, pp. 3-4), that is units of lexicogrammar – "a vast network of choices through which the language construes its meanings" (Halliday & Yallop, 2004, p. 3). As its name suggests, lexicogrammar should consist of two different entities – lexicon, or vocabulary of a language, which is the classification of units according to their content (meaning), and grammar which deals with formal patterns in which the units interact. Lexicogrammar, however, is not a new system which rejects the categories of lexicon and grammar, but rather it is an attempt to acknowledge the fact that the language functions as one integrated system rather than two discrete subsystems. In his work on lexicogrammar, Halliday (1961) stated that approaching the language from the purely grammatical or purely lexicological perspective

("grammarian's dream" and "lexicologist's dream") is impractical for the purpose of language analysis. Instead, language ought to be analyzed as a continuum between lexis and grammar, as expressed by Halliday and Matthiessen, who claimed that "grammar and vocabulary are not two separate components of a language – they are just the two ends of a single continuum" (2004, p. 7). In this context, syntagmatic and paradigmatic choices made by the users lead to four major plains of language analysis: syntagmatic + lexical (collocation and word attracting/repulsing each other), syntagmatic + grammatical (assigning words to grammar classes), paradigmatic + lexical (word sets) and paradigmatic + grammatical (analysis of systems and their options) (Sardinha, 2013).

Among the authors writing on lexicography and lexicology, Halliday and Yallop (2004) are a minority as regards the use of the term lexicogrammar and its derivatives to denote the properties of language which might be discovered by dictionary users. However, from a pedagogical point of view, it seems to be a reasonable choice to adopt a wider perspective, in which lexis is still the most important part, but which does not exclude the possibility of finding grammatical information in the dictionary. Such an approach seems to be justified in view of the fact that dictionaries can be classified and reviewed as grammar resources (e.g. Iannucci, 1978; Boogards & van der Kloot, 2001; Hoekstra, 2010). In addition, in EFL pedagogy there are at least two models of the mental lexicon that postulate that lexicon and syntax are a continuum, namely the Cognitive Grammar Model and the Construction Grammar Model (Turula, pp. 71-72). Therefore, in the following subchapters, terms such as lexicogrammar/(lexicogrammatical) information, etc. are used instead of lexicon, with the exception of direct quotations.

4.2. Reasons for using dictionaries

One of the most important branches of dictionary-oriented research is related to dictionary use. This approach entails the existence of interaction between the dictionary and the learner. Depending on the angle from which this interaction is approached, it is possible to focus on a number of aspects of this process. Therefore, various taxonomies and classifications have been developed over time.

Focusing on possibly the broadest category, i.e. reasons for which dictionaries are used, Wiegand (1977, as cited in Welker, 2010) proposed that interaction between the learner and the dictionary, named the situation of use, be divided into two categories, namely satisfying one's productive/receptive communicative needs, as opposed to all other uses, such as vocabulary learning (pp. 70-81). Listing the "other" uses, the author goes so far as to acknowledge the "anomalous" use, e.g. using a dictionary as a stand for other objects (Wiegand, 1987). By contrast, a simplified classification is proposed by Tono (2001, pp. 15-36); it consists of vocabulary learning, decoding,

and encoding. Tono also admitted that there exists the potential for the fourth category, i.e. translation, but this possibility is not explored further (ibid., p. 15).

Another important notion was proposed by Tarp (2009), who argues that "Dictionary consultation takes place when users with a specific type of need occurring in a specific type of extra-lexicographical situation think that this type of need can be satisfied by consulting a dictionary and therefore take action in this direction." (p. 278). Therefore, it is necessary to distinguish between the user situation that can be described as a need to consult the dictionary and the user situation that only occurs when this need is actually met. In this process, the learner is transformed from a potential user into an actual user (ibid.).

4.3. Aspects of dictionary use

Two most obvious elements of the process of using the dictionary is the user and the consultation source itself. However, a number of other aspects can be mentioned in this context, and they can be broadly divided into user-oriented aspects (expectations, skills etc.), dictionary-oriented aspects (e.g. effectiveness of given types of dictionaries), and the lookup-oriented ones (e.g. verification strategies using in the process of looking up lexicogrammatical information).

Many researchers use a more finely grained classification, such as Tarp (2009), who proposed that research be divided according to the following aspects of dictionary use:

a. the types of user situations,
b. the types of users,
c. the types of user needs,
d. the users' usage of a dictionary, and
e. the degree of satisfaction of the user needs. (p. 279)

While these aspects are presented as discrete categories, according to the author they are interrelated, and it is not possible to investigate solely one of them without considering others as important factors that might change the interpretation of the results (ibid., p. 279).

A broader classification was proposed by Hulstijn and Atkins (1998, pp. 7-9, as cited in Welker, 2010); these authors divided the dictionary use research into the following categories:

a. The attitudes, needs, habits and preferences of dictionary users
b. Text or word comprehension
a. Text or word production
b. Vocabulary learning
c. Dictionary-related performance in testing
d. Teaching dictionary skills

e. Critical comparisons and reviews of dictionaries.

Welker (2010, p. 9) added that the last category does not belong to the group of aspects connected with empirical research. Therefore, he proposes that it should be considered irrelevant in the context of studies on dictionary use.

4.4. Needs of dictionary users

While all lexicographers create their dictionaries with a certain target audience in mind, the proposals for a systematic study of needs of dictionary users (or reference needs) appeared relatively late in the history of consultation sources. The shift towards a more user-oriented perspective can be attributed to the First Conference on Lexicography organized at Bloomington (IN), which is best remembered for Householder's statement: "Dictionaries should be designed with a special set of users in mind and for their specific needs" (Householder, 1967 p. 279).

Although some authors wrote about this topic (see Welker, 2010, p. 22 for a comprehensive list and Tono, 2001, pp. 39-50 for a cross-study), the most systematic approach is offered by Tarp (2009), who divides human needs into the following categories:

- natural versus historical-cultural needs,
- recognized versus non-recognized needs,
- objective versus subjective needs, and
- genuine versus artificial needs (ibid., p. 280).

Only in the first category can dictionary needs be classified without any doubt under one label, i.e. as historical-cultural. In contrast, it seems that in all other categories they might be classified under both labels.

In the case of the second pair, the user might either recognize or fail to recognize the need to use a consultation source. As regards objective vs subjective needs, the distinction might be blurred to the point when both these needs "may correspond" (Tarp, 2009, p. 281). However, if there are any differences, their nature lies in the distinction between knowing what one needs (subjective) and merely being able to recognize the existence of the need (objective). In this context, Tarp stressed that research into dictionary use which focuses solely on "informants' own answers" might be of "little scientific value" due to the vagueness of subjective needs (ibid., p. 282).

The last division, namely genuine vs artificial needs, is related to the symbolic value of the dictionary (or any other object of culture) mentioned in the foregoing chapter in relation to Humblé's (2001) criticism of monolingual sources. Tarp (2009) referred to a marketing phenomenon whose nature is the creation of an artificial need to buy something in the user. This need might lead researchers to try to exaggerate the teaching/learning potential of certain language sources if they

need to sell well (ibid., p. 282). It is also possible that such a need creates a drive in the learner to choose those consultation sources which are more skillfully marketed to them.

Finally, Tarp used the term *lexicographical needs* to denote the needs of the learner which might be solved by means of the dictionary and which can be described by the aforementioned labels. These needs can be further divided into *function-related needs, such as the need to find information about a given lexical item in one specific situation, and usage-related needs*, i.e. needs for specific reference skills necessary to interpret dictionary data (Tarp, 2009, p. 283).

Another and more specific classification of dictionary users' needs was proposed by Humblé (2001), who described encoding needs, which might be defined as lexicographical needs necessary to encode a message in another language, and decoding needs, which are related to understanding messages in a given language. This distinction corresponds to Wiegand's (1977) idea that the main type of lookups is motivated by the willingness to solve "actual communication conflicts" (ibid., pp. 70-81, as cited in Welker, 2010).

Humblé (2001) also stressed the fact that most likely there exist dictionary needs which have not yet been discovered. Those might be compared to Tarp's subjective needs, but in the case of Humblé's analysis, needs are only realized in the context of tools which are available; in other words, one might think that the need is realized perfectly until there appears a better source which would further improve the process of lexicogrammatical consultation (pp. 54-55). Interestingly, those considerations lead both authors to conclude that asking users to describe the ways in which they use dictionaries (by means of questionnaires or interviews) is not a reliable tool for analyzing their needs (Humblé, 2001, p. 53; Tarp, 2009, p. 282).

4.5. Skills of dictionary users

Cowie (1983, as cited in Welker, 2010) listed "the learner's known or anticipated language skills" (p. 143) as one of the major factors in designing dictionaries. Nevertheless, in 1994 Béjoint stated that there was little advancement in terms of investigating dictionary users' skills (p. 154). Most of the studies at the time were isolated instances of researchers' focusing on one particular skill, such as finding multi-word items, use of a dictionary for reading, studies into good dictionary users, etc. (see Tono, 2001, p. 51 for a list of studies).

However, the most comprehensive and one of the most frequently cited lists was proposed by Hilary Nesi (1999) in her report on reference skills in higher education. Nesi divided forty skills into six stages. First four of them are related to the lookup activity; these start from "Before study" and end in "Interpreting entry information", and they seem to satisfy Tarp's (2009) function-related needs. The other two usage-related sets are connected with the ability to learn from the dictionary and to understand lexicographical issues. It should be noted that Nesi (1999) proposed a different division, namely skills that pertain to the process of dictionary consultation (Stage 1-5) and those which are independent from it (Stage 6). The full classification is presented in Table 2.

Stage one: Before study
1. Knowing what types of dictionary exist, and choosing which dictionary/ies to consult and/or buy 2. Knowing what kinds of information are found in dictionaries and other types of reference works
Stage two: Before dictionary consultation
3. Deciding whether dictionary consultation is necessary 4. Deciding what to look up 5. Deciding on the appropriate form of the look-up item 6. Deciding which dictionary is most likely to satisfy the purpose of the consultation 7. Contextual guessing of the meaning of the look-up item 8. Identifying the word class of the look-up item
Stage three: Locating entry information
9. Understanding the structure of the dictionary 10. Understanding alphabetization and letter distribution 11. Understanding grapho-phonemic correspondence (and the lack of it)

12. Understanding the use of wildcards in electronic dictionary searches 13. Choosing amongst homonyms 14. Finding derived forms 15. Finding multi-word units 16. Understanding the cross-referencing system in print dictionaries, and hyperlinking in electronic dictionaries
Stage four: Interpreting entry information
17. Distinguishing the component parts of the entry 18. Distinguishing relevant from irrelevant information 19. Finding information about the spelling of words 20. Understanding typographical conventions and the use of symbols, numbered superscripts, punctuation 21. Interpreting IPA and pronunciation information 22. Interpreting etymological information 23. Interpreting morphological and syntactic information 24. Interpreting the definition or translation 25. Interpreting information about collocations 26. Interpreting information about idiomatic and figurative use 27. Deriving information from examples 28. Interpreting restrictive labels 29. Referring to additional dictionary information (in front matter, appendices, hypertext links). 30. Verifying and applying look-up information
Stage five: Recording entry information
31. Sifting entry information 32. Deciding how to record entry information 33. Compiling a vocabulary notebook or file of index cards 34. Using the notebook section of an electronic dictionary
Stage six: Understanding lexicographical issues
35. Knowing what people use dictionaries for 36. Knowing lexicographical terminology 37. Understanding principles and processes of dictionary compilation 38. Recognizing different defining and translating styles 39. Comparing entries

40. Dictionary criticism and evaluation
Table 2 Nesi's classification of dictionary skills Source: Nesi, 1999, pp. 53-54

Since Nesi's (1999) classification pertains mostly to the academic context, it might be argued that at the lower levels of language education some skills might be too advanced, and therefore irrelevant. Another issue that should be mentioned in this context is the fact that some of the presented skills are strongly related to specific technicalities of dictionary lookups, such as understanding of alphabetization – a skill which might be deemed unnecessary in the case of electronic sources (Atkins, 1996, p. 527). Therefore, the set of dictionary skills should never be considered as a definite list; instead, its relevance depends on contextual factors, such as access to tools, language level, digital literacy, etc.

4.6. Research methods employed in studies of dictionary use

Since using a dictionary is a relatively complex process, in which many factors might contribute to the final outcome, a wide variety of research methods have been employed to date in order to understand the nature of dictionary consultations. Most of those methods were also criticized for producing unreliable results (Lew, 2004). In my description, inspired by comprehensive lists provided by Nesi (2000), Tono (2001), Lew (2004), Tarp (2009) and Welker (2010), I show basic advantages and shortcomings of all major approaches. Results of specific studies are then quoted in the following section in which more attention is given to research whose objectives and methods concur with mine.

4.6.1. Questionnaires

Questionnaires constitute one of the oldest methods of research into reference needs; according to Welker (2010), the first study of this kind was conducted in 1955 and published in 1962 by Barnhart. Interestingly, questionnaire-based research on Polish students of English, conducted by Tomaszczyk (1979), is still widely cited as one of pioneering works.

Welker (2010) proposed classifying survey questions into three types, namely:

a. about facts which are remembered by the informants quite easily (e.g., how many dictionaries they own, when and why they bought them);
b. about their use of dictionaries;
c. about their opinions (e.g., if they are satisfied, which dictionary or dictionary type they prefer, what should be improved). (ibid., p. 12).

He concluded that while type a. and c. questions might be useful to the researcher (though type c. should be approached with more skepticism), type b. is likely to be highly unreliable. In this context, a number of studies refer to the classic criticism of questionnaires in dictionary use research, offered by Hatherall (1984):

> Are subjects saying here what they do, or what they think they do, or what they think they ought to do, or indeed a mixture of all three? Do they all define the categories in the same way – and in the same way as the researcher? When all is said and done, do we not, on this basis, arrive at a consensus on how subjects are likely to behave when faced with a particular questionnaire, rather than authentic data on what they use the dictionary for? (p. 184).

In the following paragraph of the paper under consideration, Hatherall referred to the example of adults who report that they brush their teeth in order to prevent cavities; however, when the matter was examined closely, it was found that they only do it once a day, and just before breakfast, which makes the entire action pointless (Packard, 1975, as cited in Hatherall, 1984). This example serves to illustrate how far things that people actually do might be from the perceived value or meaning of such actions. Hatherall therefore concludes that observation should be the only reliable source of information on subjects' dictionary use (ibid., p. 1984).

General shortcomings of questionnaires, which are specific to all types of surveys mentioned by Welker (2010), were listed by Zöfgen (1994). These factors are: problems with respondents' comprehension/interpretation of questions, the influence of wording of questionnaire items on the responses, and non-representative samples.

4.6.2. Interviews

Tarp (2009) argued that questionnaires and interviews should be treated as a separate set of tools in dictionary research, even though it is not always the case within sociology (p. 285). Welker (2010) pursues the idea by presenting advantages of interviews over questionnaires which seem to lie in the fact that there is direct synchronous communication between the researcher and the subject. Owing to this advantage, informants' knowledge can be better verified and both the interviewer and interviewee are able to ask the other side for clarification (p. 14).

Despite the differences mentioned above, Welker (2010) also claimed that both questionnaires and interviews share one feature, namely the fact that their items can be described as either closed-ended or open-ended questions (p. 14). In the latter case, the classification and interpretation of data might be relatively difficult and time-consuming. Combined with the fact that interviewing respondents also requires more time than collecting data by means of questionnaires, it is understandable that there have been relatively few such studies, as remarked by Zöfgen (1994) and Welker (2010).

Despite their limitations, interviews are still used in dictionary use research, as it can be seen in some recent works, such as Hamouda (2013), Liu (2014) or Tulgar (2017). Nevertheless, it should be noted that in none of these studies were they used as the only method of data collection; instead, they seem to constitute auxiliary research tools.

4.6.3. Observation

Since dictionary use can be considered to be a type of an activity, it seems intuitive that the most reliable source of information on users' behavior is observation of their interaction with the dictionary. Zikmund, 1997 (as cited in Tarp, 2009), recommended this method by claiming that,

> The major advantage of observation studies over surveys, which obtain self-reported data from respondents, is that the data do not have distortions, inaccuracies, or other response biases due to memory error, social desirability, and so on. The data are recorded when the actual behaviour takes place. (p. 265).

In a similar vein, Nesi (2000) stressed the advantages of observation over questionnaires:

> However, whereas the data regarding user behaviour obtained by questionnaire may be suspect, because subjects misunderstand questions, fail to recall, or falsely claim to behave in ways that they perceive to be desirable, observation-based research avoids these problems by setting subjects observable tasks, and collecting data either during the task itself, or immediately following its completion. (p. 33)

The same author also remarked that observation-based research is concerned with "generating hypotheses rather than testing them" (Nesi, 2000, p. 33). The hypothesis might be based on variables such as the type of a dictionary used for a given task, the degree to which is it used, and the time spent to look up words (ibid., p. 33). Those variables focus mostly on the relation between the learner and the consultation source. Such an approach was also adopted in Nesi's (2000) distinction between observation of natural instances of dictionary use – in which the learners can choose "whether and to what extent" to use a dictionary – and controlled instances of dictionary use, when reading dictionary information is necessary to complete the task (ibid., p. 33).

Wiegand 1998 (as cited in Welker, 2010) proposed a different classification of observation:

- open – hidden
- mediated – unmediated (mediation is achieved by means of recording and/or transmitting devices, such as cameras)
- actively participative – passively participative
- the annotations are structured – unstructured
- field observation – laboratory observation (pp. 570-583).

In this classification, observation-based research is approached from the perspective of tools used to conduct studies and settings in which they are conducted, including the researcher and their role. Unlike in the case of Nesi (2000), little attention is paid to the type of the task. Both classifications seem to complement each other in creating a comprehensive set of labels to be used in observation studies.

Both Wiegand and Nesi also proposed a critical perspective on observation-based dictionary research. Wiegand (1998, as cited in Welker 2010) commented on the fact that the observation only reveals external aspects of lookups, while the internal motivations remain unknown to the researcher (ibid., p. 574). By contrast, Nesi (2000), focused on more practical aspects, i.e. the size of the sample and the question of whether it might be representative by stating that,

> In observation-based research, it is clearly necessary to make a compromise between size of sample, on the one hand, and level of investigation, on the other. Broadly speaking, the greater the number of research questions, the smaller the sample that can be observed. (p. 54).

4.6.4. Protocols

While observation described in the previous sections might be recorded – inter alia – by means of protocols, the notion of the *protocol* in metalexicography is traditionally ascribed to self-recorded observations od participants' own lookups (Wiegand, 1998, as cited in Welker, 2010). Such protocols can be divided into two categories, namely written protocols and oral protocols. The classification of written protocols is described in Table 3.

Category	Comments
Directive / Non-directive	In the case of directive protocols, subjects are asked to perform specific actions.
Controlled / Uncontrolled (or Verified / Unverified – in Tarp, 2009)	Controlled protocols require of the researcher to take notes and compare results with subjects' annotations.
Structured / Semi-structured / Unstructured	Structured protocols rely solely on ready-made answer forms, semi-structured protocols allow some free annotation, and unstructured protocols do not impose any formal constraints on the annotation.
Embedded / Retrospective	Embedded protocols are created during lookups, after each action (or partial act – Welker, 2010, p.17); retrospective protocols are created after the end of all consultation activities.
Table 3 Classification of written protocols in metalexicography Sources: Lew, 2004; Tarp, 2009; Welker, 2010	

The second category of self-reported dictionary use data are oral protocols or think-aloud protocols. In this method, users are asked to verbalize their thoughts connected with a given task. The idea of "thinking aloud" was proposed by Clayton Lewis (1982), but Wiegand (1998, as cited in Welker, 2010) also mentioned Karl Bühler in this context. Tono (2001) stated that think-aloud protocols belong to the category of "participatory" psychology, whose main goal is to elicit respondents' intentions, beliefs, and to discover rules which govern their behaviors. Within this field, verbalizing participants' thoughts is used to "clarify the very nature of cognitive processes" (ibid., p. 68).

4.6.5. Tests and experiments

According to Tarp (2009), tests in metalexicography are used primarily to evaluate to which degree consultation sources can "help users to satisfy their needs" (p. 288). Nesi (2000) stressed that test-based studies are especially useful in the case of discrepancy between "observable behaviour and widely-held belief" (p. 32). Tests are, therefore, considered to be integral parts of experiments by both Nesi (2000) and Tarp (2009), who agree that without measuring the outcome of the experiments by means of test-like tools, the former would be unreliable.

Tono (2001, pp. 70-72) classified experimental designs used in metalexicography into three types: pre-experimental (one group); quasi-experimental (two non-randomly selected groups) and true experimental (two randomly selected groups of dictionary users). In all cases, a variable is introduced to one of the groups (or the only group in the case of pre-experimental design), and the results are later compared with the test group initial performance, as well as control groups, if possible.

Nesi (2000) listed some potential shortcomings of experimental design which could undermine the credibility of the study (p. 32):

- Failing to provide equivalence (e.g. in terms of dictionary use experience) between the test group and the control group
- Subjects' unfamiliarity with particular sources which they are supposed to be using during the test
- Designing test items with a particular dictionary in mind, thus creating a bias "towards the type of information available in dictionary entries" (p. 32)
- Using reading comprehension tests in which respondents might use context instead of a dictionary in order to comprehend certain lexical items.

Finally, the author stressed the fact that tests are product-oriented, and as such they cannot provide extensive information on the nature of the lookup process.

4.6.6. Log files

Log files are records of users' interaction with the electronic dictionary; as such they can be divided into registration of the input provided by input devices (e.g. mouse, keyboard, etc.) and registration of transactions between "the user's computer and the database where the dictionary is located" (Tarp,

2009, p. 14). Although only the latter type is known to have been used in lexicography, "[…] this does in no way imply that the first method is irrelevant to lexicography" (ibid., p. 14).

An obvious benefit of using log files is that they reveal what information was sought and – probably more importantly – what information was not found in a dictionary (Bergenholtz & Johnsen, 2005, p. 117). Another advantage of this solution was described by Welker (2010, p. 21), who stressed the fact that log files provide a completely unobtrusive context for recording lookups and searchers. Finally, Tarp (2009) proposed using log files not only to conduct quantitative research, but also to focus on qualitative aspects such as "individual user's look-up pattern" (p. 289).

It should be noted that since log files are not markedly different in terms of outcome form observation studies, the criticism presented in section 2.1.3 is also valid in their case. This is corroborated by Tarp's (2009) final remarks on the shortcomings of this method (pp. 289-290).

4.7. Research into dictionary users' behavior

It seems difficult to embrace the extent to which dictionary use studies have been conducted so far. An attempt made by Welker (2010) to briefly recapitulate such studies from 1962 to 2010 resulted in an extensive catalogue which uses 382 pages to cover over 220 different research projects. Similar, albeit less comprehensive lists can also be found in Nesi (2000), Lew (2004) or Tarp (2009). As a whole, those publications attempt at presenting a wide picture of all the contemporary approaches and techniques employed in dictionary use.

Nevertheless, in the case of the present thesis the focus is shifted to specific approaches and research techniques. Since my research methods cannot be easily classified into one of the aforementioned categories, I decided to focus on specific papers whose methods can be meaningfully compared with mine. This does not entail a complete unanimity of aims, as sometimes studies using very different methods might concur with my research objectives. In the following sections, I try to comment on those projects as well.

Since my research is based on techniques which might constitute a sub-category of observation, one of the first keys for identifying relevant studies is their experimental, observation-based nature. In this category, especially important are log files and research on electronic dictionaries, as they constitute two major elements of my work. Another important aspect is related to the choice of consultation sources. Since my research aims, inter alia, at showing which sources are chosen by students, studies which answer this question are also described in the following section. Being ready to use the greatest variety of sources is especially relevant in the case of advanced learners of English, who are also subjects of my study. Therefore, special attention was paid to studies identifying dictionary choice of this group.

4.7.1. Observation-based research on dictionary use

This section describes dictionary research in which the use of consultation sources was observed and recorded by researchers. Excluded are log files and digital observation methods (described in 4.7.2) as well as studies that rely solely on self-reporting techniques, such as Descamps and Vaunaize (1983).

One of the earliest studies of videotaped dictionary use is Ard (1982), who combined this method with other three approaches, namely user comments, think-aloud protocols and analysis of learners' language production (writing). The results indicate that certain types of language errors are likely to occur when learners use bilingual dictionaries.

Tono (1984) presented the results of a study conducted in a strictly controlled environment; the learners were asked to use faux dictionaries to look up nonsense words in order to ensure that every user looks up the same piece of information. One of the findings, which is also found in later studies, is the discovery that given multiple definitions (sub-entries), learners almost always focus on the first one, regardless of its relevance in a given context. In addition, syntactic information is oftentimes disregarded, and dictionaries are considered to be too complex.

Contrary to Tono (1984), Tomaszczyk (1987) claims to have observed an unrestricted search process – i.e. without any limitations imposed on the quality and/or quantity of lookups – of an undefined number of Polish students. Tomaszczyk listed learners' problems such as lack of dictionary skills, over-reliance on bilingual dictionaries and unwillingness to "consult reference works at all" (p. 140). Such attitude is also reported in a more systematic study by Laufer (2011), who claimed that learners who were given ALDs and a bilingual dictionary "had difficulty finding the right verbs, but often they thought they knew the collocations and did not think it was necessary to consult the dictionary" (p. 29).

Similar results are reported by Bareggi (1989, as cited in Cowie, 1999), who stressed the lack of consultation skills and the tendency (also mentioned by Tono, 1984) to rely on the first entry in a consultation work. The existence of this issue is also confirmed in later research, such as Al-Ajmi (2002). His study of the use of bilingual dictionaries by English students in Kuwait showed that being unable to locate the correct sense of a polysemous word is by far the most common users' error. Interestingly, a group which differed in many aspects from the one in Al-Ajmi's study – as it consisted of balanced samples of Asians and Europeans who used mostly MLDs – produced very similar results (Nesi & Haill 2002). In the description of their results, three most frequent problems are as follows: "1. The wrong entry or subentry was chosen (…); 2. The information provided in the entry was

misinterpreted (…); 3. Subjects did not realize that the meaning indicated in the entry was slightly different from contextual meaning (…)" (p. 282).

Instead of focusing on dictionary-related problems, Tono (1991) attempted to define characteristics of successful dictionary users; key factors stressed by the author are: good analytic skills which help the user decide when to use a dictionary, and language proficiency sufficient to understand information presented in the entry. In addition, it was found that understanding dictionary conventions is not necessarily correlated with language proficiency.

Research conducted by Atkins and Varantola (1997) was one of the first studies in which subjects were allowed and actively encouraged to choose from a number (over a hundred) of consultation sources. However, this possibility was mostly due to circumstances – the subjects participated in the *EURALEX Oxford Workshop on Dictionary Use*, so access to such an impressive number of dictionaries was more a by-product of the settings rather than a pre-requisite for the study. This is best illustrated by the fact that the second group, based in Tampere, Finland, only had six sources to choose from.

The idea of providing subjects with a choice of sources was pursued by Varantola (1998), who observed four advanced Finnish students of English using a monolingual dictionary, a bilingual dictionary, and an encyclopedia. In this study, functions and frequency of consultations of the said sources are described separately for each one. Most lookups started in bilingual sources, which were used firstly to find equivalents, and also as a secondary device in confirming one's hypothesis concerning given lexical items. In contrast, monolingual dictionaries were used mostly to aid language production and – to a lesser extent – to confirm subjects' predictions.

Varantola's study design was adopted by Frankenberg-Garcia (2005). One of the major changes was broadening the list of consultation sources to include not only dictionaries, but also "corpora, term banks, search machines and other resources" (p. 337). Since the task was to translate the text, the most frequent function of the tools under consideration was to provide an equivalent, followed by confirming one's predictions, finding a collocate, choosing alternatives, and verifying spelling.

In the first half of the 2010s, the number of observation-based studies seems to have decreased, probably due to log files and electronic dictionaries gaining popularity. Nevertheless, there appeared another category which might be promising in the context of dictionary use studies. This category is eye-tracking technology. Eye-tracking studies on the use of electronic dictionaries (EDs) do not usually aim at exploring specifically digital features, such as the increased number of lookups per minute via paper dictionaries (PDs), the use hypertext, or Boolean queries. Instead, they focus on learners' attention paid to specific elements of the dictionary entry.

One of the earliest eye-tracking studies is Tono (2011). The author manipulated entry design to check how students respond to changes. This was done by giving subjects' access to dictionaries with various features removed or redesigned in order to capture how their attention is distributed between the elements of the entry. According to the researcher, this is "the first attempt to employ an eye tracker to precisely catch the eye movements of dictionary users in search of information in a dictionary entry" (pp. 151-152). In another study, Lew *et al.* (2017) used eye-tracking to investigate how students interact with dictionary illustrations. The source used in the study was LDOCE online, and the main finding is that attention is usually distributed evenly between the definition and the visual materials.

4.7.2. Electronic dictionaries and log files

The meaning of the term "electronic dictionary" might be problematic in two ways; firstly, it may refer to lexical data bases available only to researchers (Welker, 2010 p. 271); secondly – as proposed by Lew and de Schryver (2014) – its meaning might be narrowed down to standalone software packages which should, along with online sources, be classified under the umbrella term "digital dictionary". In the present work, the term is used in the traditional sense, namely every dictionary available to students in the digital form.

Such a definition excludes electronic glosses, which are similar to hypertext, but in research projects they "present information consistent with the context [of the study]" (Welker, 2010, p. 271). Nonetheless, my description contains studies of links referring students to actual dictionaries in the form of hypertext as long as their context is relevant.

Krantz (1991) was the first researcher to study the use of electronic dictionaries in their earliest form, i.e. digitized print dictionaries available via a PC. In that study, learners read the text while checking words in an English-Swedish BD or LDOCE, depending on the group to which they were assigned. All the key strokes were recorded. The author reports that the post-test revealed very similar vocabulary retention scores in both groups. In turn, Koga (1995) focused on traditional vs electronic sources by comparing three groups, i.e. non-dictionary, Electronic Dictionary and Paper Dictionary group in a reading comprehension task. The ED group had the best comprehension score, though they – quite predictably – were behind the no-dictionary group in the speed of reading.

Another aspect, namely vocabulary learning was described in Inami *et al.* (1997). In the study, learning with Eds and PDs were contrasted; while Eds were reported as more effective, it is mostly owing to lookup speed, as the difference disappeared with the elimination of the time limits imposed on learners. In another study comparing EDs and PDs, Nesi (2000a) compared two versions of the same source (OALD) which were both used to complete a reading task. The results of the

comprehension test taken by the subjects after the task were not significantly different, but the author reports that EDs scored considerably higher in terms of user satisfaction.

Laufer and Hill (2000) created a digital environment for a dictionary-related task, including a pre-test, text to read (task proper), and dictionary information (both in the form of bilingual and monolingual data). The use of these elements was recorded in the form of log files. While the two participating groups – Israeli and Chinese – differed in their scores, use of strategies, lookup patterns, etc., globally the highest word retention score can be attributed to the strategy in which both bilingual and monolingual data is used to complete the task.

In the same year, Tono (2000) focused on a more finely grained comparison, in which he proposed different entry designs for BDs. In that study, one of the first to investigate the effects of Graphical User Interface (GUI) on English learners' lookup behavior, three major types of GUIs were used. The author characterizes them as traditional (similar to PDs), parallel (similar to corpus-based dictionaries described in the preceding chapter) and layered (tabbed menus). The results suggest that the parallel design is the most effective "in the case of derivatives, idioms and compounds, which require the user's prior knowledge of microstructure of the entry" (p. 860).

Despite a number of studies claiming that paper dictionaries are inferior to electronic sources, both in experimental tests involving comprehension and user satisfaction, some studies conducted in the early 2000s suggested that in the case of word retention, PDs are the more preferable option. The foundations for this claim might be found in Hulstijn and Laufer (2001), who proposed the Involvement Load Hypothesis. According to the authors, a task which requires more effort, such as the lookup process in a printed dictionary, is more likely to leave a memory trace. This hypothesis was confirmed by Koyama and Takeuchi (2003), but another study, by Osaki *et al.* (2003), showed no significant differences between the PD and ED groups in both immediate and delayed vocabulary tests.

This discussion is continued in a comparison between paper and electronic dictionaries (in this case, Portable EDs) made by Kobayashi (2006). According to the author, the major benefit of the EDs is the increased number of searches which might enhance vocabulary learning – understood as a conscious process. On the other hand, in the case of reading tasks, this ease of access might lead to a decreased inferring and limited interaction with the context, which results in lower vocabulary retention.

As electronic dictionaries were gaining popularity amongst learners and teachers in the second half of the 2000s, there was an increase in the number of research projects whose purpose was to study dictionary use without necessarily focusing on comparisons between the sources. For instance, Lew and Doroszewska (2009) tried to replicate Laufer and Hill's (2000) research study, but with focus shifted to animated pictures whose aim was to present facial expressions, body reflexes, etc.

The authors report that despite the introduction of this novelty, the learners nevertheless prefer L1 counterparts, while the said animated pictures were negatively correlated with word retention.

Another study, conducted by Tseng (2009), focused on the actual lookup process in an online Yahoo! Bilingual dictionary. The results show considerable problems related to lookup skills, as some learners "looked up a word in the dictionary without removing the inflection of it, looked up individual words instead of a fixed expression, did not make good use of the example sentences or phrases provided by the dictionary, or did not take the context into consideration when selecting an appropriate meaning for a word" (p. 98). The author suggests that EFL dictionary users should be:

- taught to remove inflection before looking up a word,
- taught to use other features of the dictionary rather than just a definition/translation (e.g., collocations),
- made aware of the importance of the context in which the sought word appears in the source text. (p. 103).

In addition to preparing recommendations for teachers, researchers also continue to seek the ways to improve sources as well. In a study similar to Tono (2000), Lew and Tokarek (2010) offer a comparison of the effectiveness of different dictionary GUIs in a translation task. The authors listed three different designs:

1. a complete polysemous entry is displayed,
2. a clickable menu of words senses is presented to the learner – upon clicking, the whole entry is opened, but the computer scrolls down to display the section with the selected sense,
3. the same menu as in 2 is used, but the target meaning is highlighted to make it more visible to students (p. 193).

The results indicate that the third type of the menu is most effective both in terms of "speed and task success" (ibid., p. 193).

In addition to focusing on the types of the electronic dictionary menu, Lew also targeted one of the most characteristic features of EDs, i.e. word prediction. In a paper co-authored with Roger Mitton (Lew & Mitton, 2013), the researchers stress the importance of the word prediction feature as a measure to counter misspellings. They conclude that the dictionaries still need to be improved in this aspect, especially given learner needs which stem from the unsystematic sound-letter relationship in English.

In one of first studies on the use of mobile dictionaries, Rahimi and Shahab Miri (2014) found that using the mobile version of LDOCE (i.e. application, not the responsive website), is useful in terms of improving general language proficiency vis-à-vis the printed version of this source.

Finally, a team of researchers from Mannheim used log files to observe the interaction with online dictionaries. In their first study (Kopeling *et al.*, 2014), they compared a substantial number of lookups in order to show that they are related to the frequency of occurrence in the corpus, and therefore corpus data is a reliable tool for compiling dictionaries (it seems from the text that the issue of reliability of corpus data was a subject of much debate prior to the publication). In their second study, (Müller-Spitzer *et al.*, 2015), the authors used Wiktionary – a Wikipedia dictionary – to confirm the previous thesis, but also to "present a technique to investigate the time-course of look-up behaviour for specific entries" (ibid., p. 1).

4.7.3. Choice of sources

In studies of dictionary use, many researchers have investigated the level of popularity of certain types of consultation sources (e.g. bilingual vs monolingual dictionaries) among the learners. In addition to describing and comparing the frequency of use for specific types, they have also been asking users to voice their opinions concerning specific dictionaries.

In one of the early studies of dictionary use, Tomaszczyk (1979) noted that the majority of learners prefer BDs, although the use of MDs was more common in respondents with higher level of language proficiency. In addition, bilingual dictionaries were found to be "superior" (p. 116) to monolingual sources.

The tendency to rely on BDs can be found in a number of other studies, notably Baxter (1980), Bensoussan, Sim and Weiss (1984), El-Badry (1990), Schmitt and McCarthy (1997), Zacarias (1997), Assirati (2003) or Frankenberg-Garcia (2011). Especially relevant to the Polish context is Lew's study from 2004, in which the author reported that 91% of Polish students preferred bilingual dictionaries, while only the remaining 9% used monolingual sources to be their primary consultation tool (p. 176). One of the reasons for such a distribution of answers is the fact that "monolingual dictionaries are used very rarely by learners at all levels except the highest" (ibid., p. 175).

Certain researchers also divide dictionary use into smaller sub-categories in order to discover the differences between different uses of selected types of sources. In Sora (1984), Italian learners preferred looking up unknown lexical items in MDs, but in the composition task, BDs were their primary choice. On the other hand, Snell-Hornby's (1987) Swiss and German students used MDs and BDs on a daily basis, but "but with only a very hazy idea of their identity" (p.176).

In a large-scale multi-national study by Atkins and Varantola (1998), types of dictionaries used were correlated with respondent's language proficiency (verified in the test which constituted a part of the research) as well as their preferences with regards to specific skills. The results indicated that the more proficient students show a higher likelihood to be using MDs, while the number of

students who would never use and MD increases inversely proportionally to the decrease in the respondents' language level. Nevertheless, even in the most proficient group, BDs remained sources of choice, as opposed to MDs (45% vs 29%). In specific tasks, the use of MDs also declined with the level of language proficiency, but in that case, monolingual sources were often the most-frequently used ones. For example, the distribution of responses for the most proficient group, when asked which source they use to verify the meaning of already-known words, was as follows: MDs – 70%; BDs – 25%; both – 5%.

In the Polish context, similar research was conducted by Jakubowski (2001), who also found preference for bilingual sources. However, the breakdown of dictionary use into specific types of tasks showed that learners prefer MDs to gather information on usage, pronunciation and synonyms; in the case of decoding activities, MDs were considered to be more beneficial in reading and listening, while BDs dominated in the field of L2-L1 translation.

Conceição (2004) focused on the third basic function of the dictionary (other than encoding and decoding), namely vocabulary learning, to discover that Brazilian ESP students consider monolingual dictionaries to be slightly better from their bilingual counterparts in terms of improving one's receptive lexicon, as used in reading tasks. Höfling (2006) stressed the possibility of combining the use of bilingual and monolingual dictionaries in one search; in her study, learners usually started their search with MDs and then used BDs to clarify any doubts whenever those occurred. Finally, Chen (2011) focused on the slightly under-researched category of bilingualized dictionaries. The findings are that Chinese learners use those sources in the way in which they were intended to be used, i.e. by taking advantage from both the L1 and FL sections. In addition, bilingualized consultation sources are more popular than MDs, most likely because they are "a more powerful resource than the BD or MD in terms of its effectiveness for vocabulary learning" (p. 193).

The last category of research into dictionary choices – namely electronic dictionaries (EDs) – was formed relatively late as compared to other dictionary use studies. In one of the pioneering studies on the learners' approach to EDs, Leffa (1991) discovered that the assessment of such sources was positive. In the paper, it is described that amongst the positive comments the most important was the speed of access to data, while negative remarks were mostly related to extra-dictionary technical issues (e.g. lack of access to a PC). The ease of access was also mentioned by Guillot and Kenning (1994), who claim that electronic dictionaries encourage spontaneous lookup and increase learner curiosity about the words.

Opinions concerning the usefulness of electronic dictionaries constitute a considerable portion of the study by Tang (1997), who used surveys, observation, interviews, and assignments to investigate the consultation sources as well as their use by the learners. While students' comments concerning EDs are reported to be generally positive, the researcher also found that it was the group

of learners who possessed advanced knowledge of the English grammar that mostly benefited from using electronic sources. More positive feedback about electronic dictionaries was described in Winkler (2001). In a comparison study of students' opinions concerning electronic versions of monolingual dictionaries and bilingualized dictionaries (BLDs), BLDs were preferred, but in both cases, learners appreciated the multimedia: pronunciation, visual materials and interactive games.

In Nesi (2003), Chinese students voiced their opinions on the following sources: PEDs, MED (on a CD-ROM), and bilingual English-and-Chinese translation software. While learners were enthusiastic about the PEDs (mostly due to its additional, non-dictionary functions), they recognized the superiority of the MED. In terms of tasks, MED, followed by bilingual software, was preferred for computer-assisted reading and writing, while portable dictionaries seemed to help learners in dealing with paper-based materials, as well as speaking and listening.

With the growing popularity of online sources, some studies started to separate this category from regular EDs. For instance, Chun (2004) found that while Korean learners used mostly PDs, the online, easily accessible dictionaries were the most popular EDs, superseding sources available as PEDs and CDs. Interestingly, similar questions directed at Lithuanian students only four years later, in Petrylaitė, Vaškelienė and Vėžytė (2008), showed learners' preference for EDs both in the domain of BDs and MDs. In addition, students are reported to have listed a number of advantages of electronic sources (quick access, ease of use, great variety, no fees, possibility of receiving updates), which is contrasted with only one advantage of PDs, namely portability.

In Molenda's (2012a) study of advanced Polish learners, the vast majority of respondents showed their preference for online bilingual sources. Only 2.73% of the respondents used MLDs as their daily drivers for lexicogrammatical consultation. In the two-part question in which the subjects were firstly asked whether a given feature (e.g. recorded pronunciation) is available in online dictionaries, and then whether they know such dictionaries, the second part scored lower for each item. This might indicate that learners predict the existence of certain features they did not see, which might be a sign of a rather optimistic approach towards the possibilities offered by online technologies.

Another relatively optimistic result was reported in the study of Hong Kong students by Chan (2014). The research reported there shows that the learners are able to successfully switch between ALDs in order to find the required information. In addition, they were encouraged to use multiple consultation sources by their teachers.

Finally, a new and growing trend to use mobile sources is described in a recent study by Hyun Ma and Cheon (2018). In the survey-based section of the study, over 95% of Korean learners preferred bilingual to monolingual and bilingualized dictionary, while 100% (N=96) confirmed that the mobile application was their dictionary of choice. It needs to be stressed, nevertheless, that such results come

from one of the countries in which PEDs have enjoyed immense success. The question of the use of mobile dictionaries in the local context in which this work operates remains open.

4.8. Criticism of previous studies and research methods

It is certainly true that all the previous studies into dictionary use deserve praise and recognition, especially given the fact that this is a relatively young branch of research which only had limited time to set rules, standards, and procedures. Nevertheless, certain directions of studies into dictionary use have been criticized, almost since the beginnings, by experts in pedagogical lexicography themselves. Works such as Hatherall (1984) or Tarp (2009) are oftentimes quoted in this context, but their criticism seems to be warranted, as it might lead to the more accurate understanding of the nature of the use of consultation sources. In addition to well-established criticism, this section also contains some of my own reservations which were found to be particularly relevant in the context of designing my study.

One of the most widely raised concerns related to the findings of studies into dictionary use is the question of the reliability of respondents' own opinions voiced by means of interviews, questionnaires, etc. Hatherall's (1984) criticism of questionnaires, quoted in 4.6.1, still seemed to be valid to Tarp in 2009, which prompted the author to say:

> Although Hatherall's critical comments have often been quoted in lexicographical literature, many lexicographers still carry out user research by means of questionnaires, arriving at conclusions which even a modest sociological knowledge would show to have no scientific warranty (p. 285).

Without naming specific studies, it needs to be stressed that some of such works suffer from a number of problems, such as the lack of a representative sample or low number of respondents. For example, in a synoptic table by Welker (2010, pp. 333-336) which summarizes questionnaire-based studies into dictionary use, the lowest number of respondents used in a single study was 3, followed by 16.

Given the above doubts concerning dictionary use, it might seem that observation-based methods are better in terms of accurately capturing learners' behavior. Such an approach was supported in Hatherall (1984), where the author claims that direct observation is "the only reliable method of collecting data on dictionary user behaviour" (p. 184). Nevertheless, in the same paper, the limitations of such studies are described as follows:

> Ideally […] the researcher would actually watch users in action. But this, too, causes problems. Under such conditions it would probably be difficult for the subjects to behave normally as users. Also, it is unlikely that all the information the researcher needs would be retrievable via the visual medium. And finally, such an exercise is so time-consuming that the sample is likely to remain unrepresentatively small. (ibid., p. 184)

Those potential shortcomings of observation-based research are, to a certain extent, possible to overcome with log files. In this method, students do not need to be recorded by any external equipment, because the program that collects their data normally runs in the background. However, as it is mentioned in 4.7.2, only certain types of log files have been used to date. While they are able to capture the words which were looked up, no or little data is available concerning the lookup process. This problem is explained in Müller-Spitzer *et al.* (2015):

> However, the method is limited because the researcher – as is the case for all observing methods – has no control over the research process. In other words, it is hardly possible to find out anything about the background of the observed users, the contexts of dictionary use, the success of the look-up process etc. (p. 1)

The same authors also cite Lew (2011), who stressed – among other drawbacks of the method – the fact that researchers "cannot be sure that the user has selected an even remotely appropriate tool for the job" (p. 7, as cited in Müller-Spitzer *et al.*, 2015). This criticism – or, more appropriately, my disagreement with its essence – is the central element of the critique of studies which I would like to offer.

My line of assessing the usefulness of previous studies is related to the concept of choice in terms of dictionary tools. I would like to argue that focusing on the choice of a dictionary is as important as performing the task itself in observation-based studies. I believe that limiting this choice might be problematic on a number of levels.

For researchers, the limited-choice approach creates a situation in which the learners do not show their actual full ability to find lexicogrammatical information; instead, it is their ability to use a particular tool that is subject to verification. This might decrease the number of strategies that learners have at their disposal while performing the task. In addition, even if the researcher offers some basic training in using a given tool, it might be hard to compare it with learners' experience (sometimes measured in years) with using dictionaries of their own choosing. Therefore, I find it warranted to claim that studies in which subjects' choice of lexicographical sources is limited carry some burden of artificiality. This shortcoming seems to be especially relevant in the context of modern learners who have a substantial number of sources available online free of charge (cf. Chapter 2), many of which are not even dictionaries per se (cf. the function of Google search engine in Boulton, 2017)

Secondly, the limited-choice situation might be pedagogically harmful to students who – once being forced to use sources which do not meet their expectations – might develop a dislike for otherwise useful tools. An example of such a situation might be premature use of a dictionary which is not well-adjusted to learners' abilities. The decision to give learners sources which are too complex might be conscious and controlled (cf. Miller & Gildea, 1984), but when the researchers conclude that subjects encountered considerable lookup problems during the study (e.g. Jain, 1981), the question of whether that is due to their general lack of dictionary skills or to the inability to use the particular source assigned by the researcher becomes a major issue. By the same token, the use of artificial consultation sources, created specifically to be used in a given task (e.g. Laufer & Hill, 2000), might give the learners the feeling of failure or achievement which does not necessarily correspond with one's actual consultation skills.

The choice of sources in dictionary use research is a crucial decision for a researcher to make; one of the most positive aspects of the limited-choice approach is the fact that it is considerably easier to control experimental settings if the variation in sources is removed or limited as a variable. This makes it possible to focus on the fine-grained aspects, such as the effect of grammar labels on the comprehension score. However, I propose that the widest possible access should be given to learners in order to conduct empirical research into more general subjects, such as the profile of a dictionary user. In addition, all the other aspects (such as settings, tasks, or timing) should be as close to the actual dictionary use conditions as possible, even if were to lead to the increase in the number of external variables. Otherwise, the research might "require users to look up words they would not necessarily wish to look up, in dictionaries they would not normally consult, for purposes that they may not understand or subscribe to (…)" (Nesi & Haill, 2002, p. 277).

4.9. Conclusions: Requirements for a new framework of dictionary use studies

Given the criticism presented in the previous subchapter, it might be concluded that a new research framework that addresses the issues discussed above would enhance the quality of research on dictionary use. Therefore, I decided to propose a framework whose purpose is to make studies into general dictionary use as close as possible to Hatherall's (1984) ideal observation, but without most of the limitations of log files. The requirements envisaged are as follows:

1) The framework should provide access to actual search and lookup activities,
2) The settings (choice of sources, tasks etc.) should be as close as possible to those in which subjects' actual searches and lookups take place,
3) The gathering of the data should be unobtrusive for the subjects.

Such requirements can most easily be met in the online environment, which is the most natural one for most learners, while providing easy access to a wide variety of consultation sources. Since in this framework the researcher does not control which source is used by the subjects, it seems impractical to employ log files, which solely record mouse and keyboard activity. Instead, full visual information is necessary in order to interpret participant' actions. Therefore, the last requirement reads as follows:

4) The researcher should have full access to the visual context surrounding the search and lookup activity.

Point 4) is most likely to evolve with time; with the development and integration of improved research techniques (e.g. unobtrusive eye tracking), the notion of context might be considerably broadened. By contrast, points 1) – 3) are an extension of universally-accepted standards proposed by researchers such as Hatherall (1984) or Tarp (2009). The framework based on those pre-requisites is presented in the next chapter.

5. Research Framework

This chapter provides information on the research framework that was used to conduct my study. It begins with the description of modern online dictionary use environment, also known as Web 2.0. Then, the chapter presents the theoretical research framework – Activity Theory – which is used to conduct analysis of students' lookup actions online on multiple levels of granularity. Finally, the screencasting technique is described as a practical realization of the assumptions found in the Activity Theory.

5.1. Web 2.0

The name Web 2.0 is considered to have been first used in a paper by DiNucci (1999), in which the author correctly predicts the ubiquity of web-based solutions such as smartphones, car on-board computers, or responsive website design (pp. 32, 221). Another important aspect of this concept, namely active users' participation, is described in Berners-Lee (2000), who called it the "read/write web". While the latter publication did not contain the name Web 2.0 as such, its ideas are definitely reflected in the descriptions provided by the organization which popularized the term worldwide – the publishing and training technology-oriented company O'Reilly Media, Inc.

The CEO of the said company – Tim O'Reilly – used a series of Web conferences to promote the term in 2004 (Hosch, 2018), while a year later an article appeared on the company website which explains in detail all the basic assumptions behind the concept (O'Reilly, 2005). Since this publication is considered to be the key to understating Web 2.0 (cf. Bloch & Crosby, 2008; Pegrum, 2009; James, 2014), I present the affordances of online consultation sources from O'Reilly's perspective.

One of the first notions that contribute to the idea of Web 2.0 is using the Internet as a platform – as opposed to a specific operating system. The example of Google cited in the text (ibid., p. 1) shows that already in 2005, certain functionalities of the programs sold for specific platforms, such as e-mail client, were being moved online. As of 2018, companies such as Google or Microsoft offer a number of services online, notably fully-fledged office suites, picture editors, etc. In the case of such solutions, the operating system is of secondary importance, as users only need a Web browser to be able to access exactly the same program from a variety of devices.

This has profound consequences for dictionary users, as they do not have to be limited to choosing a single dictionary. As it is mentioned in Chapter 2, all MLDs, along with many other sources, are available online for free. In addition, they are regularly updated, which makes buying a non-upgradeable software package an even less attractive alternative. On the other hand, free-of-

charge mobile applications are still relatively rare. While dictionaries such as Diki.pl and Linguee (cf. Chapter 2) offer such possibilities, all the ALDs (as of 2018) still require making a payment or choosing a subscription plan. However, as it was predicted by O'Reilly (2005), their websites are constructed in such a way that they can be easily displayed on mobile devices owing to their compatibility with the principles of *responsive web design* (Marcotte, 2011). Therefore, any student with Internet access can easily use them without having to make a purchase, which might be especially useful if their mobile device is not compatible with the applications offered by the publishers. An example of a mobile-responsive entry is presented in Figure 23.

Figure 24 Mobile-responsive entry for "great" in LDOCE online

It should be noted that dictionary websites contain commercials, such as the one that can be found in Figure 23. However, to date, there is no evidence that such banners might have considerably negative impact on learners' ability to use the dictionary.

Another advantage of online sources predicted by O'Reilly is the ability to synchronize one's data across different devices. While in the basic form this can be done by synchronizing browser bookmarks, some services offer more advanced options. For instance, the CALD website, discussed in Chapter 2, not only offers the ability to compile and save lists of selected word senses, but it also gives the learner the chance to revise their knowledge by playing customized word games.

Given the fact that Web 2.0 is regarded to be a social phenomenon (Bloch & Crosby, 2008) in which the "write" aspects (Berners-Lee, 2000) are equally as important as the ability to retrieve

information, it is not surprising that many consultation sources are nowadays co-created by their users. To be sure, the consultation tools that are outcomes of this trend are described in Chapter 2; however, there is also a less obvious aspect of one's agency in forming the Web. Since most of the activity online is tracked and recorded, the users' behavior might impact the outcome of online searches, such as page ranking (O'Reilly, 2005). While this is not the only factor that determines what dictionary appears on the top of the list when students type the phrase such as "Polish-English dictionary online" in the search box, it is true that the order of sources presented by the search engine depends on the Internet traffic. This feature of Web 2.0 might facilitate access to useful websites, but it can also make it more difficult for users to find new and potentially better solutions.

Finally, the data gathered from a number of users can also be utilized in a more explicit manner, in which active participation is encouraged. Since the websites – including dictionaries – can be constantly updated, O'Reilly (2005) claims that they should live in the mode of "perpetual beta" (p. 4), i.e. new experimental features should be tested with active participation of the users. An example of such an approach can be found in OALD online, whose creators offered their users free participation in the beta version of the Grammar Checker program.

Figure 25 Invitation from OALD publishers to participate in the beta Grammar Checker program (retrieved in June 2018).

Such an offer might be potentially beneficial for the students, but this approach also limits competition by making it considerably easier to improve the quality of popular sites at the expense of the less-frequently visited ones, which do not possess the advantage of the large quantity of user-generated feedback.

In order to conclude the description of Web 2.0, two more aspects should be addressed, namely the modern-day view of it (as of 2018) and its criticism. Form the contemporary perspective, the term itself lost its novelty (Hosh, 2018), as it ceased to represent promising proposals for the

future, but rather merely describes the reality that might be taken for granted by many users, including language students. This, however, constitutes its strength in the context of the present study, since using Web 2.0 for consultation purposes is expected to be the standard which is shared by all the participants who might be considered "digital natives" (Prensky, 2001; Sharma & Barrett, 2007).

In addition, the contemporary value of Web 2.0 for education is mostly related to the ability to create contents and share them worldwide with other users, thus engaging in communication. It should be noted that this aspect does not seem to occupy such a central position for O'Reilly (2005), as it does in the modern interpretation of the term. The stressing of the importance of tools such as wikis, blogs, fora or social media seems to be dominant nowadays (Motteram & Sharma, 2009; Wang & Vásquez, 2012; Stanley, 2013; Johnson, 2014, and many others), and part of it might be attributed to another concept which emerged at the similar time, namely Integrative CALL (Computer-Assisted Language Learning) described in Warschauer (2004). This concept embraces all the most important features ascribed to Web 2.0-based learning nowadays, namely:

- The use of multimedia and Internet as key platforms for learning
- Socio-cognitive learning (knowledge is developed in social interaction)
- Focus on authentic materials and authentic discourse
- Learners' agency in the digital world.

Therefore, Warschauer might be considered to be one of the researchers and educators who "translated" the term Web 2.0 into the language of education (cf. Motteram & Sharma, 2009; Wang & Vásquez, 2012), but this transition seems to have departed from the original meaning of the term. Given the fact that dictionary use research is concerned more with tools than learners' agency in social interactions, I use the term as it is explained by O'Reilly (2005).

Finally, it should be stressed that the very concept of Web 2.0 entails the existence of the previous, potentially less developed, form of the Net, namely Web 1.0. (O'Reilly, 2005, p. 1). Web 1.0 is often seen as a place in which communicating things was reserved for big companies, such as media outlets, while the user was merely a spectator. This distinction is, nevertheless, relatively blurred, as it is mentioned by Berners-Lee in one of the interviews:

> Web 1.0 was all about connecting people. It was an interactive space, and I think Web 2.0 is, of course, a piece of jargon, nobody even knows what it means. If Web 2.0 for you is blogs and wikis, then that is people to people. But that was what the Web was supposed to be all along. (Laningham, 2006)

Therefore, the idea of Web 2.0 as something radically different from Web 1.0 should be approached with certain caution. However, it is useful as a label which accurately describes the full repertoire of modern tools and resources, including dictionaries and other sources.

5.2. Activity Theory

Given the fact that within Web 2.0, the consultation process is mediated via computer-based devices, I would like to propose that the theory which embraces and explains human-computer interactions be used to analyze and describe learners' digital searchers and lookups. One of the most prominent theories in this field is Activity Theory (henceforth AT), which was put forth before the invention of the computer, yet it provides a coherent set of tools for describing the way in which humans interact with the digital environment.

5.2.1. History of Activity Theory

Activity Theory in its first form was developed in the 1920s and 1930s by Soviet social scientists Lev Vygotsky, Alexander Luria, Sergei Leonidovich Rubinshtein, and Alexei Leont'ev. According to Sannino *et al.* (2009), it might be seen as a response to the turbulent post-revolution times in which those researchers created new frameworks for better understanding of human behavior (p. 8). Since the 1960, the ideas included in AT started to penetrate to the Western academic world (Sannino *et al.*, 2009), until they finally became truly international in the 1980s (Podolskiy, 2012, p. 85). In this context, Nardi (1995) mentions the role of Leont'ev's (1974) paper "The Problem of Activity in Psychology", which was at the time "widely available in English in university libraries" (p. 7)

The first foundation for the early version of the theory is Vygotsky's cultural-historical psychology, which was later developed by Luria with whom Vygotsky shared the belief concerning the central role of language as the tool for the mediation of behavior (Wilson, 2006). The next important contribution was Rubinshtein's idea that the activity does not only change the outside world, but it also has an impact on the person performing the action (Häyrynen, 1999, p. 120). Finally, Leont'ev, opposed Vygotsky's proposals by focusing on the materialistic aspects of human activity, such as the context, tools, etc., in his 1987 paper admitted that it was mostly Marx's focus on the activity that is sensory and practical interaction with the material world that convinced him to shift his attention from the abstract to the material (Leont'ev, 1978). Leont'ev's contributions carry enough innovation to be considered by some authors (e.g., Sannino & Nocon, 2008) to constitute a separate "second generation" of AT, which connects its modern understanding with its beginnings. However, certain other researchers, such as Wilson (2006), do not make this distinction, while still recognizing Leont'ev's crucial role in developing modern AT.

The next step in the development of Activity Theory was its adaptation in the Western world. The most well-known interpreter of the Soviet research into human behavior was a Finnish researcher Yrjö Engeström (1987). His original research was conducted from the perspective of educational

applications, but later it shifted towards information science (Wilson, 2006). Particularly important in this context is the applicability of AT to the analysis of human-computer interaction (HCI) which was developed in the 1990s (Rivers *et al.*, 2009, p. 313). Nardi (1996), stressed its superiority over previous cognitive approaches by claiming the following:

> Activity theory is not a rejection of cognitive science (…) but rather a radical expansion of it. One reason we need this expansion is that a key aspect of HCI studies must be to understand things; technology – physical objects that mediate activity – and cognitive science have pretty much ignored the study of artifacts, insisting on mental representations as the proper locus of study. Thus we have produced reams of studies on mentalistic phenomena such as "plans" and "mental models" and "cognitive maps," with insufficient attention to the physical world of artifacts – their design and use in the world of real activity (…). (ibid, p. 14).

This passage explains why Leont'ev's materialistic approach might have offered an attractive alternative to previous studies that were pre-occupied with the analysis of mental activity. Nevertheless, the actual adaptation of AT tools to the requirements of HCI studies is a difficult process which resulted in a number of theoretical models (Wilson, 2006).

5.2.2. Modern Activity Theory

The most important assumption of the modern version of AT is the fact that human actions are goal-oriented, or – in Leont'ev's words – they need to have a motive behind them. Leont'ev proposed the following explanation of this property of human behavior:

> …different activities are distinguished by their motives. The concept of activity is necessarily bound up with the concept of motive. There is no such thing as activity without a motive; 'unmotivated' activity is not activity that has no motive, but activity with a subjectively and objectively hidden motive. (Leont'ev, 1977, p. 164)

The second important claim is that human behavior should be seen as a structured, hierarchical process. In this hierarchy, activities are the highest-order entities, which can be broken down into actions and, on the most basic level, operations. The relationship between the elements, based on Leont'ev (1978), is presented as a diagram by Wilson (2006):

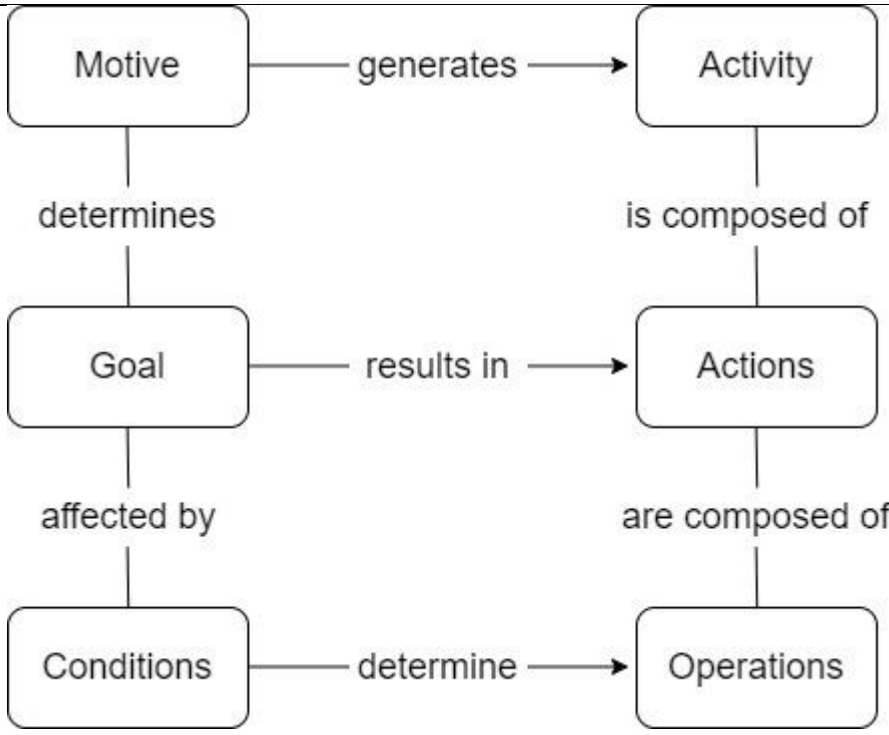


Figure 26 Hierarchy of activities actions and operations in Activity Theory
Source: Wilson, 2006, p. 8

Such an approach, in the context of dictionary use research might resemble the division between the searches and lookups. However, the AT version is more finely grained, offering three levels of analysis, as well as their counterparts expressed in internal decisions (motive and goal) or external conditions. It should be noted that those elements are not constant in AT; instead, one learns how to perform a certain activity, thus automatizing its execution. For instance, learning to type using a QWERTY keyboard for the first time might be considered to be an activity, with its own goals, actions, operations, and conditions. Later on, once one learns how to perform this task, it might be considered to be a mere automatized operation in the activity of finding lexicographical information online. However, in case of problems, such as switching to the AZERTY keyboard, the typing might once again be elevated to the level of activity. This idea is expressed by Smørdal (1998), who claims the following:

> Development of cognition is thus a process moving actions to operations, and operations into actions (e.g. instances of breakdowns). As the degree of routinisation increases, the action is moving towards operation. (p. 256)

In practical applications of AT, such as observation-based dictionary use studies, the researcher does not always have access to the full spectrum presented in Figure 25, especially in the case of motive and goal. However, given the fact that each activity is motive-oriented, the researcher

might gather important data about users' internal behavior on the basis of its external manifestation, such as lookups and searches (Rivers *et al.*, 2009, p. 314).

The next key feature of AT is the assumption that human activity always happens in context. From tools to other people, to community rules or norms, every human decision to act is influenced by a number of factors, also known in AT as *context parameters* (Huang & Gartner, 2009). While there exist various models of such interaction, three of them seem to be the most frequently cited. The first model was proposed by Leont'ev (1978) and expanded by Engeström (1987). Both versions are presented in Figure 27.

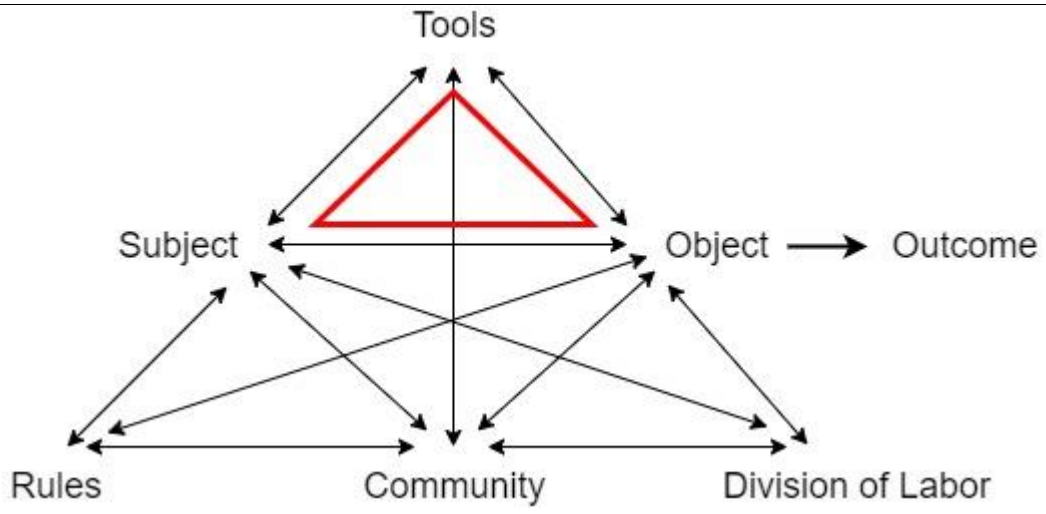


Figure 27 Leont'ev's (1978) and Engeström's (1987) model of Activity Theory. Original Leont'ev's triangle marked in red.
Source: Buchem *et al.*, 2011, p. 7

In the original triangle, the more materialistic, tool-based approach is stressed, while the expanded version focuses on societal factors, such as rules, community and the division of labor. In the description of the triangle by Buchem *et al.* (2011, pp. 7-8), the starting point for both models is Subject, which might be either individual or collective. The process of achieving their objective (Object) is mediated by internal or external Tools. Internal Tools are strategies, plans etc., while External Tools can be further subdivided into the categories of non-digital objects or digital online resources. Community provides a sociocultural space in which the activity takes place, while Rules help minimize conflicts in subjects' interaction with the Community. In addition, they affect the way in which the Subject progresses towards the Objective. Finally, Division of Labor can be interpreted as a mediator between the Community and the Object.

Buchem *et al.* (2011) propose that the Subject be the most important element of the triangle, with all of their relations to other elements described by one of three Dimensions (levels). The first level is Ownership, which might be interpreted as possessing and being able to use something. In the

case of the relation between the dictionary user and the dictionary, it is possessing the dictionary or access to it, along with the ability to "orchestrate" the use of more than one consultation source to achieve the Object (ibid, p. 11). The second Dimension is Control, which can be manifested in the ability to select sources to be used at the previous level, to customize them, and to reuse their contents (ibid, p. 12). Finally, Literacy represents the ability to build the long-term learning process with selected tools by aggregating knowledge from a number of sources (including communities), and by using highly developed quality assessment skills (ibid., p. 13).

An alternative model of AT, proposed by Bedny and Karwowski (2001), is presented in Figure 28.

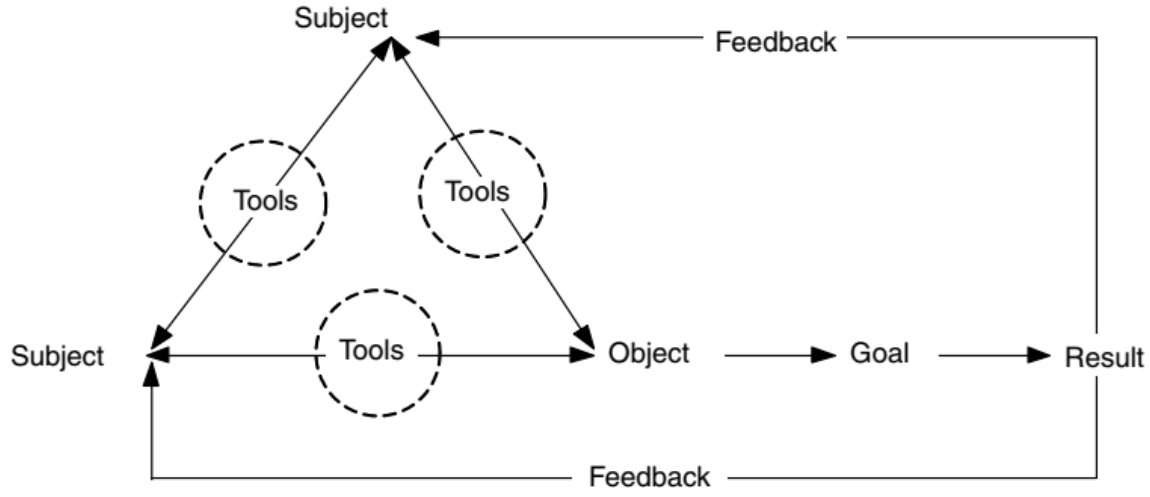


Figure 28 Alternative model of AT proposed by Bedny and Karwowski (2001)
Source: Bedny and Karwowski, 2007, p. 40

The first distinguishing feature of then above model is the fact that intersubjective social interaction (Subject-to-Subject) is stressed as an important factor for the activity. This interaction, like all other interactions within the triangle, is mediated by Tools, which, therefore, become the ubiquitous property of the activity, and which cannot be separated from other elements at any level of interaction. Finally, the authors stress the role of results (as different from idealized Object) and the importance of feedback whose aim is to help "coordinate the activity" (Bedny & Karwowski, 2007, p. 40). It should be noted that the shape of the triangle in this particular case is chosen solely because the authors wanted to present the model interaction with two subjects focusing on one Object (ibid., p. 40). The shape is likely to change depending on the number of participants or their choice of the Object or Goal (same vs different). By suggesting the possibility of working together on different Objects or Goals, the authors disagree with Engeström's (1999) proposition that "that in collective activity subjects always must share the same object of activity" (Bedny & Karwowski, 2007, p. 41).

Regardless of the model of Activity Theory that is chosen by the researcher, one of the most important features of this approach is the fact that the activity is always mediated by tools. According to this view, humans exist in an object-oriented world whose elements (objects) have certain natural as well as cultural properties (Rivers *et al.*, 2009, p. 314). External tools (such as dictionaries) are of particular interest for researchers, because they exist in two worlds, namely the physical, objective reality, as well as the symbolic world of the user. Gorskaya *et al.* (2001, p. 3) propose that the notion of *artifact* be used to denote an object which is, in some way, influenced by human beings. The dictionary, therefore, is an artifact, more specifically a *cognitive artifact*, since it is human-made and it contains information that might facilitate cognition of other artifacts (e.g., an entry for the word "car") without them being directly available to the user (ibid., p. 3).

However, it depends on the user how and whether they decide to utilize something that is a cognitive artifact designed to be a dictionary. The process of changing any object into a tool is described in by Gorskaya *et al.* as follows:

> Take a hammer. A hammer is just a hammer; following Marx; we can say that it only becomes a *tool* by becoming 'socialized', that is by entering the production process. This socialization is critical to the determination of its status. What is interesting is that the determination process is governed by an emphasis on user need and user skill, not on the object as a physical entity. (Gorskaya *et al.*, 2001, p. 2).

Therefore, it may be concluded that each tool, regardless of its original purpose, might be used as a dictionary as long as the combination of user skills and user needs make this possibility feasible and potentially beneficial for them.

5.3. Screen capture

The requirements for an unobtrusive observation system that allows the subject to interact with various artifacts during the process of lexicogrammatical consultation can be met by a tool found in another area of study, namely the research on the writing process. The tool, referred to as screen capture or screen casting (Seror, 2013, p. 4), can be used for recording various parameters, such as the tools used in the writing process (Geisler, 2001), interplay between various texts (Slattery, 2003), or it can serve as a source of material for stimulated recall analysis (Swarts, 2004).

The aim of a screen capture piece of software is to create a video file which shows every action that takes place on the screen. As it is not limited to recording a single computer program, subjects can use any tool that they deem useful for the completion of the task. Whatever is seen by them will also be seen by the researcher analyzing video recordings. The second criterion – the unobtrusive observation – can be met by configuring the screen capture software to work in the background. Owing to this feature, screencasts can "reduce disruptions […] thereby enhancing the ecological validity of the data observed" (Seror, 2013, p. 3).

A major disadvantage of using screen casts is the fact that the data needs to be transcribed manually before it can be analyzed, thus increasing the amount of work and decreasing the size of the sample. While this limitation is true for many observation-based dictionary studies (Hatherall, 1984, p. 184), screen casts remain less productive in terms of the amount of data than certain other methods, such as log files. Nevertheless, the fact that screen capture provides opportunities for hidden, mediated, and passively participative field observation (Wiegand 1998), makes it an option which has the potential to address the concerns summarized by Hatherall (1984).

The transcription and analysis of screen casting data is described in detail in Geisler and Slattery (2007), who provide the framework which combines theoretical assumptions of Activity Theory with the tools offered by screen capture technology. Their basic assumptions, with my comments on the lexicographical studies, are as follows (ibid, pp. 188-190):

- Human behavior is goal-oriented. Learners who engage in activities such as lookups do it for a reason (completing the test, obtaining a grade etc.). Therefore, each activity should be considered in the context of its larger goal, i.e. that one might assess its success rate.
- Human behavior is hierarchical. At the highest, most conscious, level are Activities (why does one do things?), followed by Actions (what does one do?), and Operations (how does one do it?). Moving between those levels in analysis is necessary to understand human behavior.
- Human behavior is both external and internal. Certain processes happen in one's minds alone, while some require the interaction with external world. A lookup activity is always a mixture of both.
- Human behavior is always mediated. Tools – both mental and external – become the only way to engage in any activity. Therefore, when talking about the lookup process one needs to remember that the learner always possesses a set of mental tools (dictionary skills) which dictate the way of interacting with the contents of any consultation source.
- Human behavior develops over time. This aspect, related to the constant dismantling and re-building of the hierarchy of Activities, Actions and Operations, means that different subjects, when recorded on a single occasion, might perform the same tasks on different levels. For example, looking for information in a dictionary of collocations might be an automatized

Operation for one student, while another – who has just discovered this tool – will need to perform at the level of conscious Actions to arrive at the same result.

In terms of transcription and analysis of the recorded data, Geisler and Slattery (2007) propose the division between the First-order and Second-order phenomena. The former can be seen on the screen while re-playing the video material. In the AT language, they constitute collections of Operations, recorded along with their parameters. An example from Geisler and Slattery (2007, p. 194) is presented in Table 4:

Time	**Artifact**	**Writer (subject)**	**Operation**	**Tool**
026.59	Another recommendation	Tom	read next message	Eudora Pro
027.19			go to Word	Word
027.24	Letter for Tom	Cheryl	open document	Word

Table 4: Record keeping for First-order Phenomena
Source: Geisler and Slattery, 2007, p. 194

The model for analyzing human behavior presented in Table 25 differentiates between artifacts, i.e. objects to which changes are applied, and tools that are used to complete a given operation. In the context of lexicographical research, I propose that artifacts be consultation sources and that tools be their specific sections, such as the searchbox, list of synonyms, pronunciation information, etc. This level of granularity is necessary to provide information on which sources are used, but also on how they are used by the student.

The question of how consultation sources are used also necessitates analyzing sequences of First-order Phenomena in order to discover how they are combined to form Actions or Activities. This analysis was labelled "Inferring Second-order Phenomena" by Geisler and Slattery (2007, p. 195). The term "inferring" refers to internal behavior which cannot be accessed directly, but it can instead be discovered by means of its external manifestations. In theory, various interpretations of combinations of factors may be identified, but Geisler and Slattery claim that in reality, their number is "relatively constrained" (ibid., p. 195). The most important ones are listed below. They are based on the authors' ideas, which are re-interpreted to be used in studies in pedagogical lexicography (ibid., pp. 196-197):

- Duration, which is time difference between consecutive operations. In the case of observation of students' activity, it seems important to measure how much time is spent on interpreting information presented in a single screen. This approach might provide clues as to how easy/difficult it is for the subject identify the information sought or lack thereof.

- Actions, as they are described in AT.
- Breakdowns, especially on the part of the learner – as opposed to technological breakdowns stressed by Geisler and Slattery (2007). Looking for lexicographical information online is expected to lead to some problems and dead ends, which are of considerable value for researchers assessing one's consultation skills.
- Artifact ecologies, or collections of artifacts used to carry out certain actions. In this case, the quantitative analysis might provide information about similarities across learners' decisions in the consultation process, while focusing on the performance of individuals is likely to help identify behavior typical for the successful and unsuccessful student.
- Transitions between artifacts might show how many sources the subject is willing to consult in order to find the information sought; in addition, the manner of switching between various sources (for instance, word-based vs tool-based online search) might reveal certain regularities in search patterns.

Given the nature of the consultation process, I propose that all the aforementioned phenomena be presented in the context of subjects' success to find lexicogrammatical information. This general concept can be translated into a number of parameters depending on the level at which it is used. Firstly, the ratio of successfully completed activities to the unsuccessful ones offers information concerning one's general ability to find lexicogrammatical information. Secondly, the number of actions necessary to lead an activity to a successful completion might indicate learners' proficiency in using a given tool. In addition, the number of actions comprising unsuccessful activities might offer a better insight into the nature of failure.

5.4. Conclusions

The-object oriented nature of Activity Theory stresses the importance of tools and their significance to their users. This further supports the idea, presented in the previous chapter, that research into dictionary use should make it possible for subjects to choose their sources. Otherwise, the use of two similar dictionaries – one "socialized", and the other one never before seen by the subject – might produce very different results in the same person.

Secondly, the number of potential sources of knowledge available to students in the environment of Web 2.0 seems to considerably exceed the possibility of the researcher to try to mimic or reproduce this world in controlled laboratory-like settings. The possibility of students' "socializing" anything that is available online to serve as a dictionary – regardless of whether this process is successful – suggests that modern studies might depart from focusing on dictionaries and,

instead, concentrate on whatever subjects use as dictionaries. Therefore, I propose that more attention should be paid to pedagogically-oriented observation-based studies conducted into *consultation sources* – a term that includes, but is not limited to, dictionaries. Such research should not be restricted by the choice of tools provided by the researcher; instead, it should focus on actual artifact ecologies and their interactions.

A similar, though not identical, idea was proposed by Tarp (2018). In his paper on the concept on the dictionary he wrote,

> As was seen, the dictionary form is frequently defined too narrowly as a book, a wordlist, etc. The term *reference resource* (or *work*), which has been proposed by various scholars, was therefore highlighted because it does not only embrace the 'traditional' book form but also clay tablets, papyrus rolls and the different types of digital dictionary (i.e. all the hitherto known forms of dictionaries).
>
> *Reference resource* reflects much better that dictionaries are not designed to be read from one end to another but to be used in order to achieve punctual information. This also implies that dictionaries can be consulted and that the lexicographical data contained in them are accessible in one way or another. These reflections are valid both when dictionaries are designed to be consulted manually by their users (i.e. the traditional way of using them) and when they are conceived to be consulted automatically as in the case of a small but growing number of dictionaries that support and are integrated into other digital tools (e.g. the various spelling and grammar checkers). In this respect, dictionaries could also be called *consultation tools*. (Tarp, 2018, p. 254).

Tarp's idea is very rational from the perspective of a lexicographer, but it is still too narrow for language pedagogy, in which many potentially useful sources of lexicogrammatical information were not created to be dictionaries. Therefore, it is proposed that consultation sources be treated as the broadest term, that includes in it all reference resources/consultation tools, which, in turn, include both traditional and integrated dictionaries.

This extended definition might also be applied in the case of learner skills. Similar to the previous term, consultation skills include all the dictionary skills, but they also encompass the use of the non-dictionary resources, such as fora, Q&A sections, corpora or search engines. While this study is not intended to provide a definite catalogue of such skills, some examples are presented in the subsequent chapter.

6. The Study

Since the study uses a new approach to consultation behavior, its goal is primarily hypothesis formation. Therefore, the most pertinent questions and the most important findings are those concerning the behavior of the subjects during the consultation process. In addition, the research provides information concerning the feasibility of similar projects in the future.

6.1. Research questions

The most important research questions formulated in the study are related to two major opportunities offered by screencast-based research on consultation sources described in the previous chapter. The first set of questions is, therefore, related to students' choices which can be easily observed by means of screencasts. The major question is formulated as follows:

Q1: What consultation sources are used by the subjects?

- What are the most frequently used consultation sources?
- Do subjects use solely dictionary sources, or do they rely on other tools as well?
- How varied is the subjects' repertoire of sources?
- Are the subjects able to choose sources which best suit the requirements of a given task?
- Are the subjects able to assess the quality of information found in various sources?

The second set of questions refers to the behavior of the subjects during the process of consultation. Since the learners who participated in the study were allowed to freely choose their sources, it is assumed that the recorded consultation process reflects their natural behavior relatively faithfully. From the pedagogical perspective, both the success and the failure during the consultation process can provide valuable information concerning learners' methods for finding the relevant lexicogrammatical information. Especially important are repeated patterns of behavior, defined as similar or identical sequences of operations which are used by multiple students to complete a given task. Such findings can be used to build models for "good" and "bad" learners in terms of their consultation skills (cf. Rubin, 1957 and Stern, 1975). Therefore, the second set contains the *how* questions:

Q2: How do the subjects use consultation sources?

- What types of actions do learners take in order to complete the task? Are there any similarities, or are the actions unique for each individual?
- What sequences of operations do learners perform to complete a given task? Is it possible to identify any regularities?

- Do subjects use any particular sequences of operations which might be of pedagogical value for learners or teachers?
- In which areas do subjects fail to find relevant information? What might cause the failures?

The last set includes questions related to the assessment of the tools used in the research:

Q3: What is the feasibility of screencast-based research into learner use of consultation sources?

- How difficult is the data collection?
- How likely is the data gathered to represent real-life behavior of dictionary users?
- How difficult is it to develop clear criteria for the transcription and markup of the data?
- How difficult is it to transcribe the data?
- What improvements might be suggested for further research?

6.2. Subjects

Advanced learners of English were chosen as a target group for the study. Those students are expected to have gained the most experience in using lexicographical tools during their EFL instruction. In addition, they are also able to understand and use the widest variety of consultation sources, including native speakers' dictionaries, fora or authentic materials. Therefore, all subjects were BA and MA students of English at the University of Łódź. According to the University guidelines, their proficiency should be between the C1 and C2 CEFR levels.

The EFL component at the University, referred to as "Practical English", uses placement tests in order to segregate students into semesters, based on their language level. Both the placement tests and Practical English progress tests are administered online via the Computer-Assisted Testing Systems (CATS). The lowest value for a Practical English semester recorded in the research was 5, while the highest was 10, which is equivalent to the final semester of the MA studies.

Given the fact that the transcription of the data was envisaged to be a time-consuming process, the number of participants was limited. The data concerning volunteers who agreed to participate in the study is presented in Table 5:

Student ID	Age	Sex	Practical English semester	Year of studies
1	24	F	10	2 MA
2	25	F	10	2 MA
3	24	F	10	2 MA
4	24	F	9	2 MA

5	21	F	6	2 BA
6	20	F	6	2 BA
7	21	F	5	2 BA
8	20	F	6	2 BA
Table 5: Subjects				

Only one male student agreed to participate in the research. This imbalance was expected, since the majority of students of English at the University of Łódź are female. Nevertheless, the male participant's recording was not transcribed due to the fact that he did not use any sources while completing the task.

6.3. Task

A set of materials was developed in order to investigate and describe the process of subjects' lexicographical consultation. The aim of the materials was to offer the learners exercises which would require them to consult online sources in order to give or verify their answer. Given the uniform experience of the subjects regarding electronic language learning and testing, it was decided that the bulk of the task would consist of online exercises in the format similar to the CATS tests and Practical English exercises used at the University. Therefore, the format of the first exercise (five sentences) is keyword transformation. Target structures were selected from Practical English Teaching Packs used by Practical English teachers at the University as well as various advanced learners' dictionaries (CALD, LDOCE, MED, OALD, COLLINS). However, in order to avoid problems of learners' being already familiar with a given sentence, it was decided that the contents of the phrases be modified.

The second section of the task consists of five missing-word sentences which were also adapted from the aforementioned teaching materials. As was in the previous case, the sentences were modified in order to avoid learners' retrieving them from memory. However, it should be noted that the situation in which the learner sporadically gives the correct answer without consulting external sources does not constitute a serious impediment, as it can be easily excluded from the transcription.

A more problematic scenario might occur when the subject knows the majority of correct answers, as they provide the researcher with little data about their consultation behavior. In order to avoid this problem, attention was paid to assuring the variety, especially in the case of Teaching Packs. Therefore, it was decided that the maximum of two phrases might be used form each Teaching Pack.

Unlike the previously described exercises, the third section of the task contains five sentences in the error-correction format which the learners might be less familiar with. While it was inspired by

the error-correction tasks used in Practical English and Academic Writing classes, the electronic form necessitated a more formalized approach to such a task. Therefore, it was decided to adopt sentences from the researcher's anonymized database of student errors in such a way that each error was limited to one word per sentence, which ought to be replaced with a correct alternative. To avoid students' over-thinking the answers in order to identify mistakes regardless of their intuition, some examples were written in correct English. The format of all the types of questions is presented in Table 6.

Type of question	**Example**
Keyword transformation (5 questions)	**Instruction:** Complete the second sentence so that it has a similar meaning to the first sentence, using the word given. You must use 3-9 words, including the word given.
	Task: Twitter is surprisingly effective when it comes to fundraising. (TOOL) Twitter is ... fundraising. [textbox]
Missing word (5 questions)	**Instruction:** Read the sentences below and think of the word which best fits each space. Use only ONE word in each space.
	Task: Can I get some more of this sloppy ... ? It's so yummy! [textbox]
Error-correction (5 questions)	**Instruction:** Some of the sentences below contain one word which was used incorrectly. Identify these sentences and type in ONE correct alternative. There might be more than one correct answer.
	Task: The road has been coned over due to the accident. Is this sentence correct? [drop-down list: The sentence is correct/The sentence is NOT correct] If this sentence is not correct, which word should be changed? [drop-down list: each word in the sentence is one item; items are arranged according to the word order in the sentence]

	If you found the incorrect word, suggest one alternative. [textbox]

Table 6: Format of questions included in the task

In the process of selecting materials for the task, the focus was on the idiomatic aspect of the English lexicogrammar, since it was expected to elicit a relatively high number of lookups. It was also decided that the examples should be relatively difficult for the subjects, while still remaining within the scope of the official teaching materials used at the University.

The task was digitized with Google Forms, which made it possible to unify sections containing personal data collection with the task proper. Before proceeding to the latter, the subjects were asked to select their year of studies (1-3 for BA and 1-2 for MA studies) as well as the semester of Practical English (1-6 for BA and 1-4 for MA). In addition, they were asked to choose which type of consultation sources they use to complete lexicogrammatical tasks while working on their own. Upon completing the task, the students were also asked to complete a survey whose aim was to determine whether online lookups were their most frequently used way of obtaining lexicographical information. The form also includes information that the data is collected anonymously and that it might be used solely for research purposes.

6.4. Tools

The study was conducted in a computer laboratory which is used for classes and Practical English progress tests. The fact that subjects were accustomed to the room and the equipment within was an important factor in reducing potential technical problems.

The first challenge in the case of screencast recorders was the fact that they might be accidentally shut down while the subjects are working on the task. In addition, they should not slow down the computer to an extent which would be annoying for the user. Thirdly, they should be stable enough to handle a relatively long recording session.

Upon establishing these criteria, available software was examined in a series of tests. The results indicated that Open Broadcaster Software (OBS) was the best option available free of charge. However, despite its reliability and optimization, the program did not (at the time of the research) offer the possibility to hide its button from the taskbar while recording. Therefore, it was decided that the subjects should start their work with OBS already activated and minimized, and that they should be asked to refrain from opening or disactivating the program.

Another tool used in the study was the transcription form which made it possible for the researcher to record actions and operations. Adopted from Geisler and Slattery (2007), the form includes a revised version of the header, with an extended set of labels. The labels are as follows:

- Activity ID – refers to a specific activity, e.g. looking for the meaning of a given lexical item. In order to enable easier browsing of the data, the value includes a student ID separated by a decimal point (e.g. 2.1 is the second activity of the first student).
- Action ID – contains the number for a specific action. The numbers rise linearly, i.e. each new action receives a higher Action ID, regardless of the activity which it belongs to. Therefore, the Action ID number helps trace a student's work step-by-step. In the case of interrupted activities, it is necessary to filter the results by Activity ID in order to obtain a clear picture of all students' actions and operations within a given activity, while omitting all the irrelevant activities that might have taken place in between.
- Operation ID – a specific number assigned to each operation.
- Action type – actions are divided into two sub-categories, namely Verification and Lookup. In theory, Verification is each situation in which the learner has an answer in English, which they want to confirm, while Lookup is looking for a word that they do not know. However, pilot studies showed that some operations might be difficult to define as one of the two labels.
- Action – the description of the action, e.g. "looking for collocation of *defeat*"
- Operation – description of each operation, e.g. "open OALD & type *defeat*". If opening the source and typing the word happened in a quick succession (1-2 seconds), they were registered

as one operation. Operations which were not related to looking for lexicogrammatical information (e.g. completing the questionnaire) were not recorded.

- Time – the moment in which a given operation started (in minutes and seconds).
- Artifact – tool used in a given operation.
- Successful – activities were labelled as successful if they led to subject's obtaining the information sought. It is not relevant whether the information was necessary to complete the task. However, if students arrived at an erroneous conclusion which led them to giving an incorrect answer in the test, this fact is marked as "N" ("no") in the sub-category "Activity successful".

The labels listed above had been originally designed in the first phase of the transcription form development. However, pilot studies showed that other categories might be necessary in order to fully embrace the complexity of subjects' consultation process. The second set of labels is, therefore, a response to researchers' needs for one specific data set. It proved useful in this case, but it might be less convenient to adopt in similar studies.

- Consultation type – value assigned to each action which indicates whether operations therein were conducted solely with dictionaries ("Dictionary"), with a mix of dictionaries and Google search engine ("Mixed") or solely with Google search engine ("Google"). The use of the specific name of the search engine in this category stems from the fact that neither in the pilot study, nor in the study proper, were other search engines used by the subjects. It should be noted that using Google to look for a specific dictionary (e.g. by typing "Cambridge Advanced Dictionary") was still considered to be an operation within the "Dictionary" category.
- Google-aided – refers to the operations in which information was found with Google or with sources which were suggested by Google search engine. For instance, all the operations conducted within a dictionary which was suggested by Google upon typing a phrase such as "cone off dictionary" are considered to be Google-aided. However, if the subject kept the dictionary open and used it during the following activity, its use was no longer labelled as Google-aided. In addition, operations performed on the electronic form containing the test have the "null" value in this category.
- Notes – researchers comments and information about the contents visible on the screen, e.g. "the collocation sought is presented on the screen, but the student seems to fail to notice it".

6.5. Procedure

The aim of the procedure designed for the research study was to reduce the potentially negative impact of the awareness of being recorded. Another important aspect was the stress factor which could potentially impede subjects' performance.

Before starting the procedure, the volunteers were invited into the computer lab. They were asked to sit at their desks and refrain from taking any actions related to the use of computers. At this stage, the OBS software had been running in the background. The researcher then explained that the task was not a test, but it should rather be treated as an opportunity for self-improvement. The subjects were also informed that certain activities that they perform might be recorded in some way. All of them were asked to confirm that they agree to working under such conditions.

Before the subjects were allowed to commence, they were warned not to tamper with the OBS and asked to report any of its malfunctions (as well as any other potential problems) to the researcher. Upon completing the task – for which there was no specific time limit – the OBS was stopped, and the file with the recording was saved by the researcher. At that stage, the learners were informed about the exact nature of the recording. They were also given the opportunity to review the recording and to delete it if so desired. Each participant was given ample time to make a decision. After deciding that they were ready to share their recordings with the researcher, the subjects were asked to sign a written statement which listed conditions of the transfer of rights to the recording.

6.6. Results

All the learners who participated in the study marked online sources as their main source of lexicogrammatical knowledge. In addition, all of them answered "always" to the question about the frequency of using consultation sources for language production and comprehension. Coupled with familiar task format and experiment surroundings, it might be concluded that the experimental environment met the initial criteria of being close to the real-life experience.

The transcription of eight videos includes 1,144 recorded operations, with a relatively high standard deviation (M = 143, SD = 37.94). The lowest number of operations was produced by Student 6 (S6) who performed a total of 83 operations, while the highest number was recorded in the case of S4, with 201 operations.

6.6.1. Numerical data

Upon removing records referring to the operations performed within the electronic form (337), the items in the "Artifact" category were counted. The total of 31 different sources were identified, out

of which nine were used more frequently than 20 times. These sources are presented in Figure 29 (see Appendix 1 for the comprehensive description of sources).

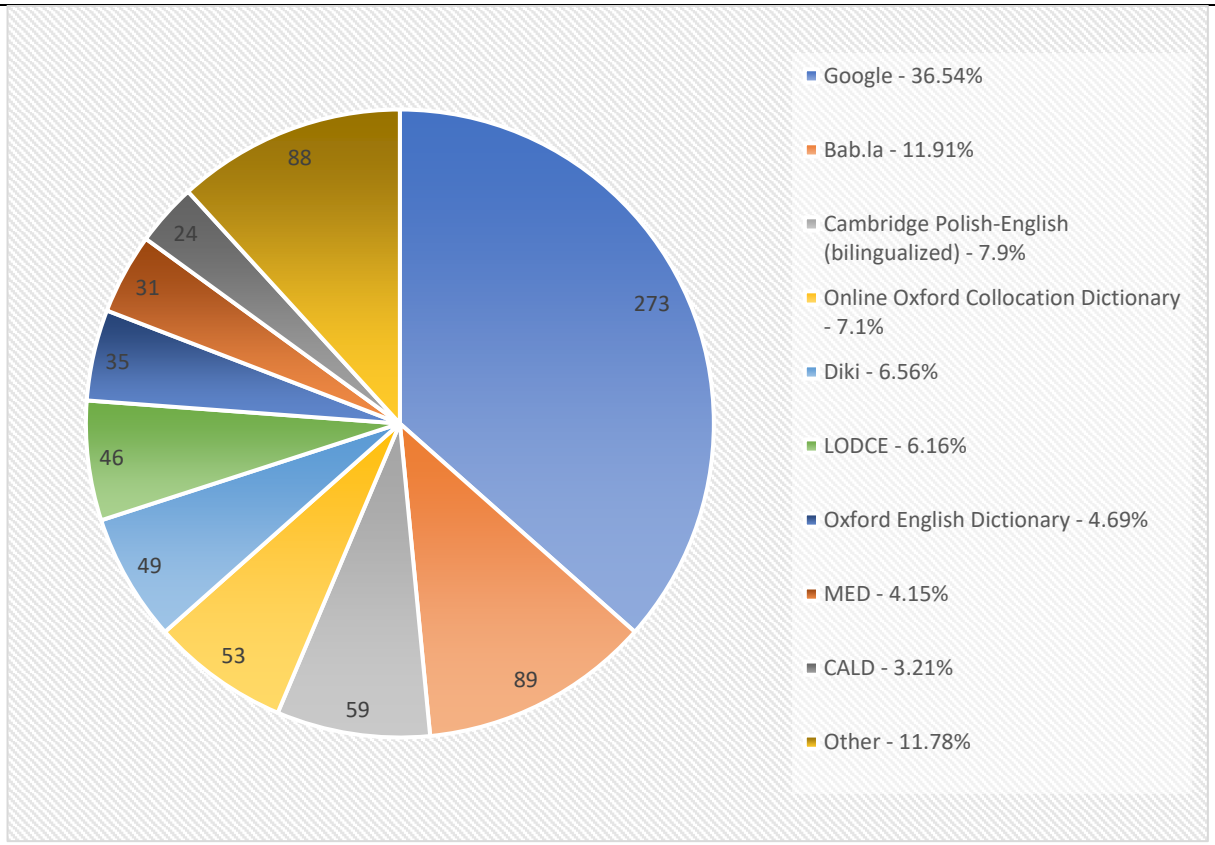


Figure 29 The most frequently used sources.

As expected, the Google search engine constitutes the most important artifact for the subjects. The next two places are occupied by bilingual/bilingualized dictionaries, followed by a collocation dictionary and another Polish-English source. Monolingual learners' dictionaries, with the exception of Collins COBUILD, are also present on the list, but their combined share is approximately 18%.

The list of remaining sources ("Other") is presented in Table 7.

Source	Frequency of use	% value
Linguee	19	2.54%
Dictionary.com	11	1.47%
The Free Dictionary	11	1.47%
Thesaurus.com	6	0.80%

Quizlet	5	0.67%
Urban Dictionary	5	0.67%
Textranch	5	0.67%
translatica.pl	4	0.54%
Academic	3	0.40%
Wikipedia	2	0.27%
word-grabber	2	0.27%
YourDictionary	2	0.27%
Pons	2	0.27%
Merriam-Webster online	2	0.27%
Słownik naukowo-techniczny angielsko-polski	2	0.27%
Google Scholar	1	0.13%
crosswordsonline	1	0.13%
WikiHow	1	0.13%
Bustle.com	1	0.13%
gadżetomania.pl	1	0.13%
Webdicio	1	0.13%
Macmillan education	1	0.13%
Table 7: Sources in the "Other" category.		

The data in Figure 28 and Table 28 show the importance of Google search engine as a consultation source. However, the proportion of Google lookups to those performed with other tools might be underestimated, since a number of sources were accessed via Google, for instance by looking up the word/phrase sought followed by the word "dictionary". In such a case, the search engine helps decide which consultation sources will be used, as opposed to subjects' consciously choosing a specific tool. The proportion of Google-aided operations to operations in which learners consciously chose a different consultation source is presented in Figure 30.

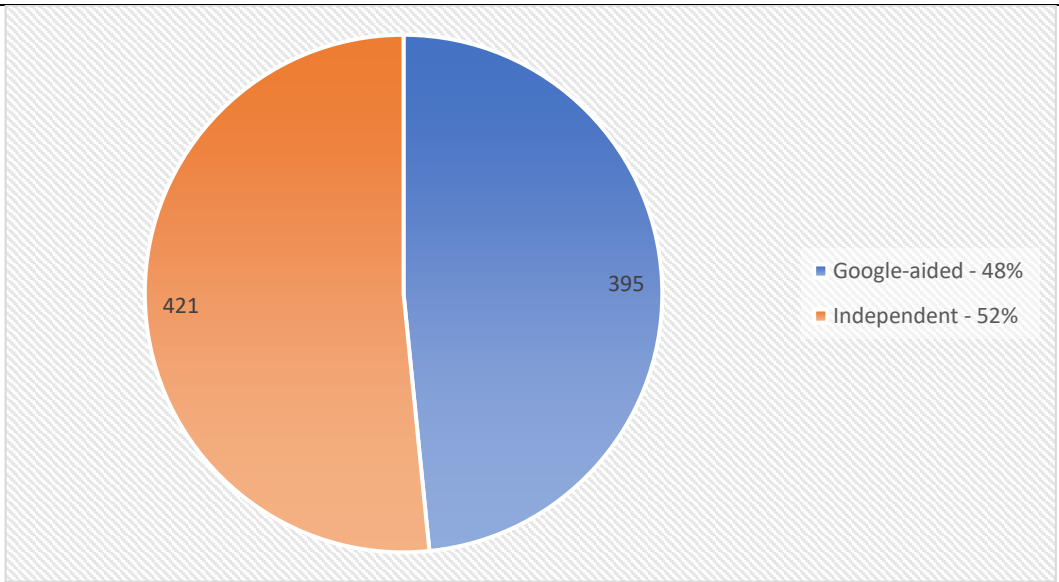


Figure 30 Google-aided lookups versus independent lookups

The data suggests that almost exactly half of the operations were conducted with the use of Google browser. This information is complemented with data about the use of sources at the level of actions, presented in Figure 31.

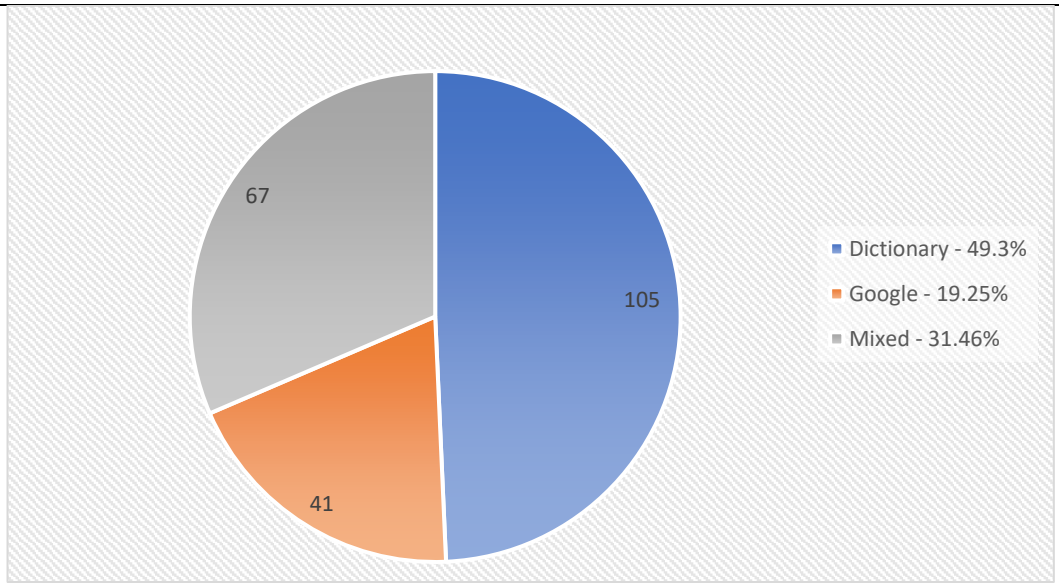


Figure 31 Consultation type

In total, over 50% of all the actions involved at least one operation in which Google was used as a consultation source. Comparing this result with previously-described findings, it appears that Google browser is responsible – directly or indirectly – for approximately half of the results found by the subjects in the lookup process.

At the level of actions, the subjects were successful in 118 cases (54.13%), while they failed to find the information sought in 100 cases (45.87%). The inquiry into the possible relation between the consultation type and the success rate showed no evidence of a statistically significant correlation, with χ^2 (2, $N = 210$) = 4.22; p = 0.127.

6.6.2. Lookup process

In most actions recorded in the research, the subjects used their sources in the most conventional way, i.e. by looking up the item sought, followed by proceeding to the task or to the next source. However, certain actions proved to be non-expected or non-standard behavior. Such cases are described in the following sections.

6.6.2.1. "Cheaping"

The name "cheaping" is a blend word which includes parts of the words "cheating" and "cheap". It was suggested during a discussion about the experiment results by Jan Volín (personal communication, November 16, 2016). The "cheating" element in this term refers to learners' trying to find the answer key to the task instead of trying to discover target structures. This behavior was observed in Ss 1, 2, 3 and 7, who copied and pasted the whole sentence in the Google browser, including the dots which symbolized the missing word, in hope of finding the answer key for the task. Some subjects (e.g. S1) also copied and pasted in Google model sentences in the keyword transformation task, clearly showing that they were not looking for a target phrase, but rather for a set of answers provided by the creators of the test.

This strategy cannot be entirely dismissed as seeking an unfair advantage. Even though it might be expected of a learner to devote their time and attention to analyzing the sentence and finding the best possible answer, searching for the answer key might be a legitimate last-resort solution. However, some of the respondents (e.g. S1) treated it as their primary choice, which was followed by a more conventional lookup only if the answer key could not be found.

Given two possible interpretations of this approach, it was decided that the initial "cheating" message ought to be attenuated in order to include all the cases when the learners try to broaden their knowledge as opposed to completing the task at the lowest possible cost. Nevertheless, regardless of learners' intentions, it is a low-effort method, which seems to justify the use of the word "cheap" in its name.

6.6.2.2. Switching

"Switching" refers to a series of operations during which subjects kept moving from one tab to another at a pace which most likely makes it impossible to read or analyze the contents on the screen. This phenomenon was found in all subjects, although its intensity varied. In addition, it is possible to define two types of switching. The first one is switching between the previously opened tabs, often in a quick succession, such as in the case of S2 presented in Table 8.

Operation ID	Time	Operation	Artifact	Comments
143	40.02	Open the result in MED	MED	S2 just opened a new dictionary website suggested by Google
144	40.05	Go back to results in Google	Google	The page had barely loaded when S2 decided to go back to the Google list of results for her recent lookup
145	40.07	Go back to results in Bab.la	Bab.la	Immediately after opening Google list, the learner went back to the results of a previous lookup in a different dictionary.

Table 8: Switching between different sources performed by Student 2

The other type of switching is alternating between the tab with a consultation source and the tab with the task. The results show that it might be a part of a longer switching sequence, but it can also occur independently. An example of such a sequence of operations, performed by S4, is presented in Table 9.

Operation ID	Time	Operation	Artifact	Comments
58	19.41	Go back to OALD	OALD	S4 concluded her previous lookup and went back to OALD
59	19.5	Go back to the task	Task	
60	19.54	Go back to OALD	OALD	
61	19.59	Go back to the task	Task	
62	20.04	Go back to OALD	OALD	
63	20.06	Go back to "store" (V) in OALD	Task	The learner pressed the "back" button in the browser.
64	20.18	Go back to the task	Task	
65	20.22	Go back to OALD	OALD	

Table 9: Alternating between a consultation source and the test performed by Student 4

Switching in its nature entails very limited interaction with the source or the task. In some cases, learners scrolled the contents or clicked on the "back" button in the browser, as presented in Table 30, but such an occurrence is an exception. Another important aspect of this phenomenon is a relatively short time between the clicks. In the case of the example presented in Table 30, the average time is 5.86 seconds (SD=3.44), and only the transition between operations 63 and 64 exceeds 10 seconds.

6.6.3. Lookup problems

While the phenomena described in the previous sections are difficult to assess from the point of view of being beneficial or detrimental to the lookup process, certain sequences of operations might indicate subjects' problems or errors. Such phenomena can occur at various levels – from mechanical problems with using the sources in the right way to attitudes which make it difficult to diversify lookup methods. Not included in the list are problems which stem from learners' lack of language skills, such as failures to correctly conjugate the verb being sought.

6.6.3.1. Distrust in reliable sources

This particular feature of learners' lookup activity is related to problems in identifying credible sources. For example, S1 (operation 23-37) failed to provide the correct answer, even though she had found it in MED. She tried to cross-check the answer with other consultation sources, but ultimately, she did not decide to use it in the exercise. In a similar way, S8 did not trust the information found in LDOCE (operation 15-20) and decided to verify the information found in that dictionary by trying to use a subscription-based website from an unknown company.

Another variant of this procedure might be defined as over-reliance on one specific source. For example, S3 used mostly bilingualized Cambridge Polish-English dictionary for activities 1–13. In those actions, departures from that source were only sporadic. While this strategy was relatively successful at the beginning, the learner eventually decided to broaden the selection of tools used to look up lexicogrammatical information.

6.6.3.2. Failure to notice the correct answer

One of the most commonly observed problems was the failure to see the correct answer presented on the screen. In order for a sequence of operations to be classified as such a failure, it needs to be clear that relevant information is presented on the screen in a way which strongly suggests that this is the correct answer. This phenomenon was observed in S1, 2, 3, 4, 7 and 8; interestingly, it seemed to appear in a variety of contexts.

Firstly, failures to notice the correct answer were observed both in the Google browser and dictionaries. An instance of the former case was found in S2 (operation 60-63), who failed to notice the picture of food shown in results while looking up the word "sloppy" in the context of food. Only after opening the first dictionary, looking at the entry, and returning to the Google list, did she notice the correct suggestion. In this case, the failure might be attributed to the fact that only three seconds elapsed between the moment when the Google list of results had loaded and the moment when the learner clicked on the first result. The location of the information sought on the screen is shown in Figure 32.

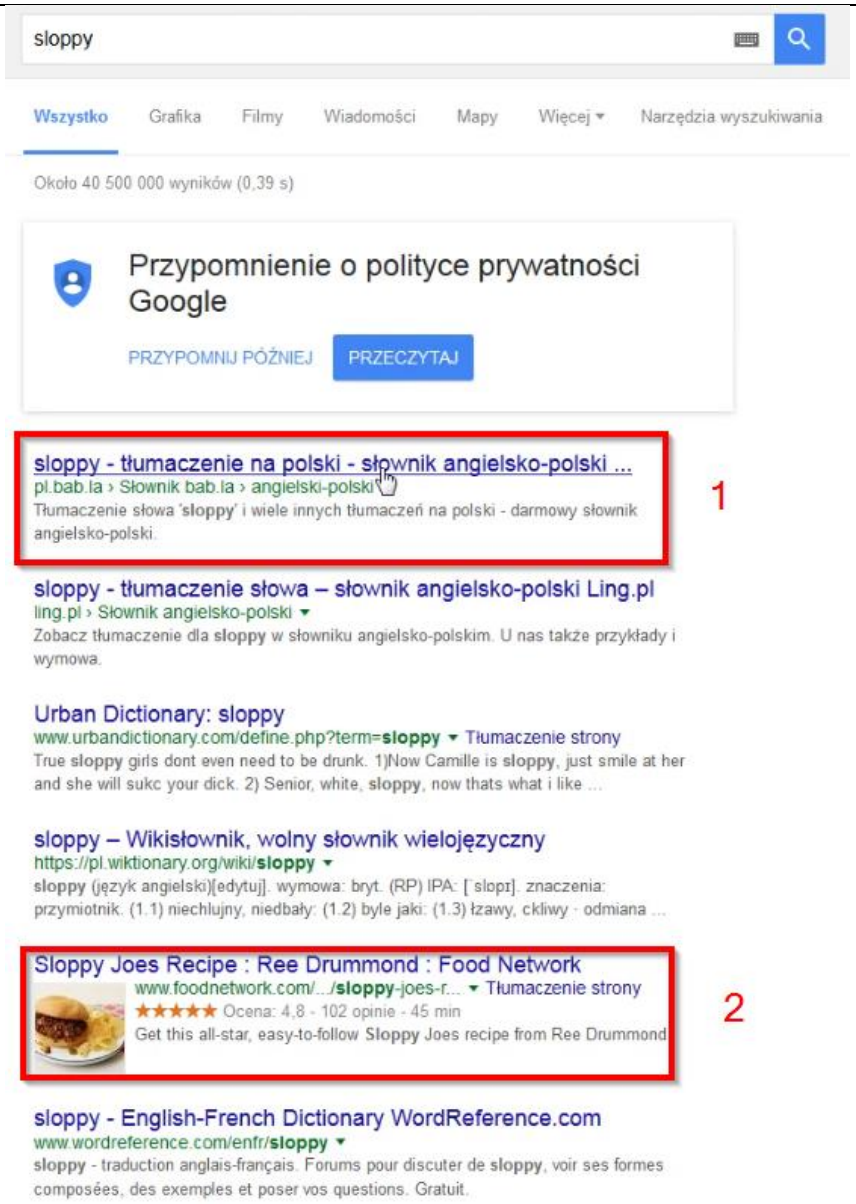


Figure 32 Google page on which S2 failed to find the correct answer, recorded at 00:22:30. Marked in red is the link that the student clicked (1) and the information that she failed to notice (2). The size of the screenshot was adjusted to eliminate blank space on the sides.

It might seem surprising that in this case the learner failed to focus on the picture which is clearly different from all the other elements presented on the screen. However, despite this problem, the relevant information was eventually located, and the learner's final answer was correct.

Problems with the use of dictionaries might also be related to the area which the information sought occupies on the screen; this was shown in a series of operations of S4 who failed to find the correct information twice (operations 86, 88-90), presumably due to the fact that it was located in the sidebar. While technically only in the first case is the information sufficiently clear to suggest the correct answer without further lookup, both cases were presented in Figure 33 in order to compare problematic sidebars in dictionaries.

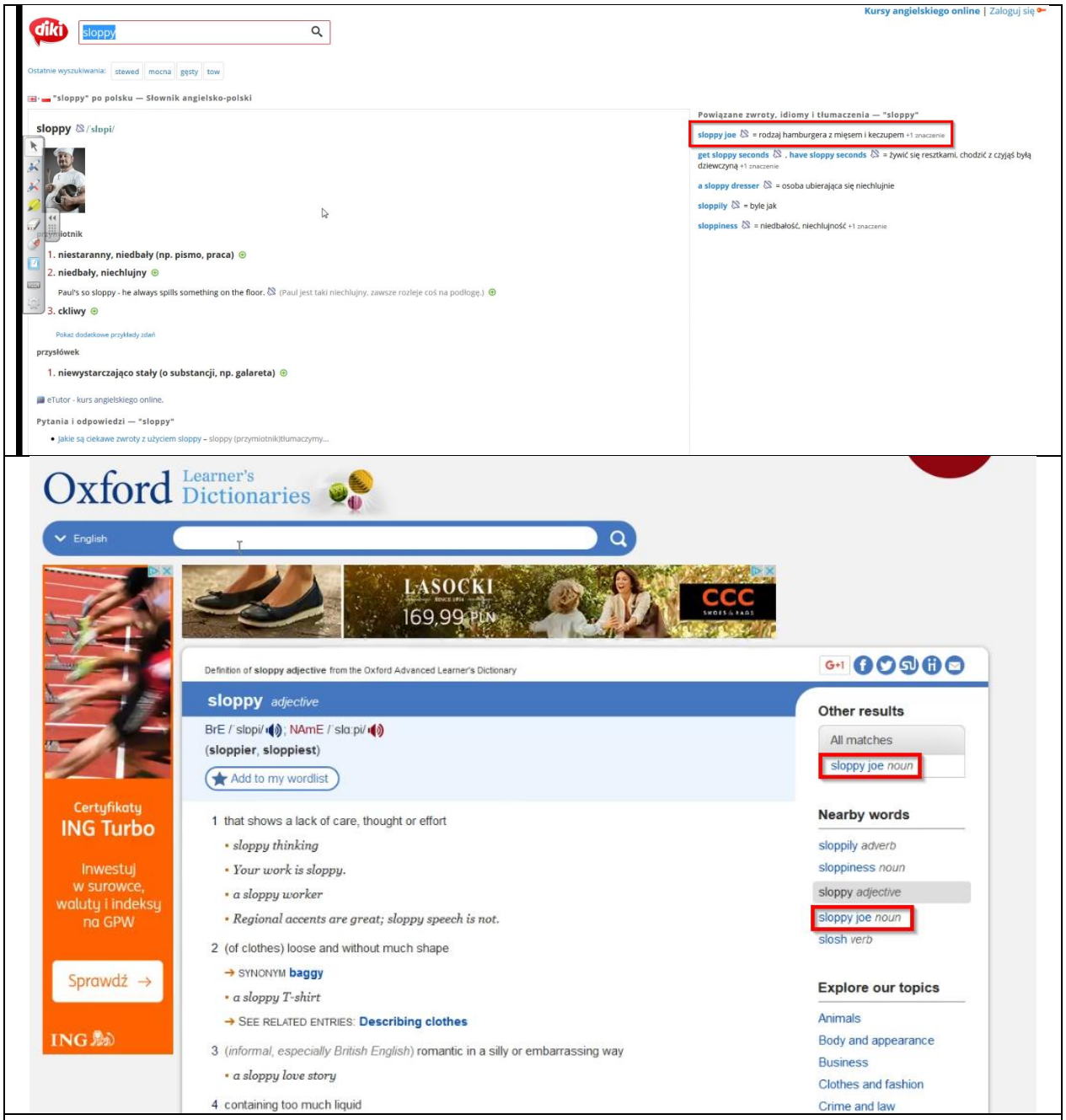


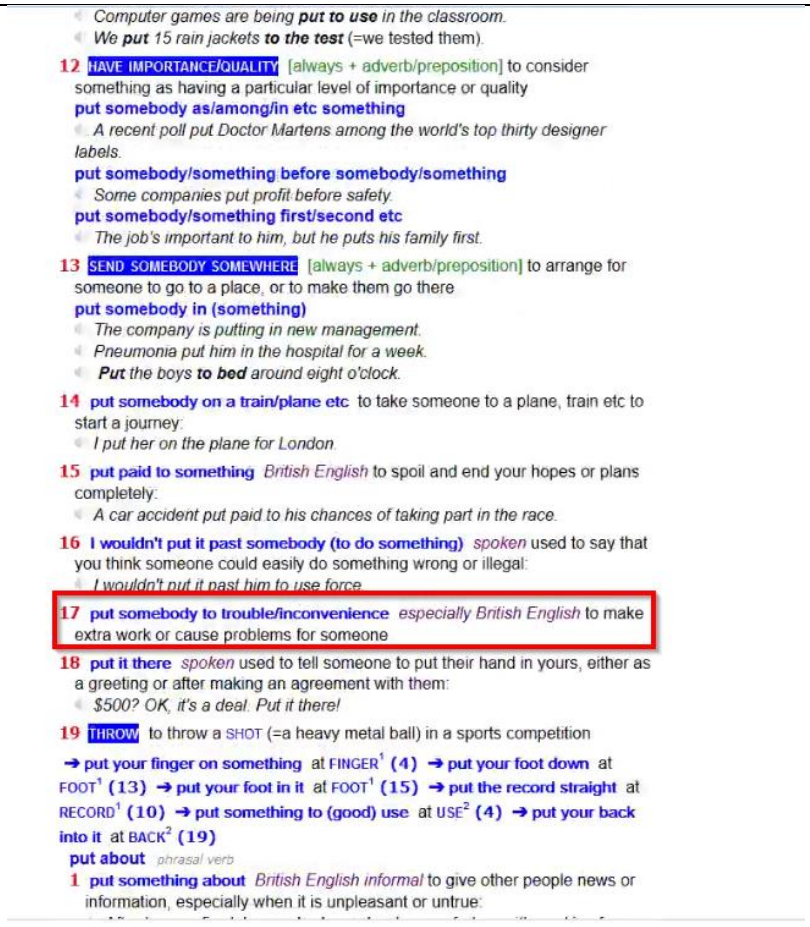
Figure 33 Pages on which S2 failed to notice the correct answer – Diki.pl dictionary (recorded at 00:24:13) and OALD (00:24:28). Marked in red are relevant entries. The size of the screenshots was adjusted to eliminate blank space on the sides.

In both dictionaries, additional information was presented in the sidebar displayed in a very similar location. Therefore, it might be assumed that while working with these sources, the learner did not expect to find relevant information in these areas.

Another important aspect related to the failures to notice relevant information is the failure to scroll down the page to see other meanings of an item presented in a given entry. This behavior was recorded in S4 (operation 68), who spent a relatively long time – 19 seconds – reading the OALD entry for the word "store" (N), but without scrolling down the page. The researcher verified that the

correct collocation – with a definition and an example sentence very similar to the target structure – was presented in the "Idioms" box below. Since finding this box necessitated scrolling, the learner never saw it despite choosing a suitable tool for the task. Interestingly, during the entire action (operations 58-69), the student kept switching between OALD and the task, which lasted 1:37 and did not result in giving the correct answer.

Nevertheless, in some cases even slow and (seemingly) attentive scrolling did not produce the expected results. For instance, S8 was scrolling the entry for "put" (V) in LDOCE for approximately 36 seconds (operation 4), but she did not find the correct answer, even though it was clearly visible on the screen (see Figure 34).


Computer games are being ***put to use*** *in the classroom.*
We ***put*** *15 rain jackets* ***to the test*** (=we tested them).

12 HAVE IMPORTANCE/QUALITY [always + adverb/preposition] to consider something as having a particular level of importance or quality
put somebody as/among/in etc something
A recent poll put Doctor Martens among the world's top thirty designer labels.
put somebody/something before somebody/something
Some companies put profit before safety.
put somebody/something first/second etc
The job's important to him, but he puts his family first.

13 SEND SOMEBODY SOMEWHERE [always + adverb/preposition] to arrange for someone to go to a place, or to make them go there
put somebody in (something)
The company is putting in new management.
Pneumonia put him in the hospital for a week.
Put *the boys* ***to bed*** *around eight o'clock.*

14 **put somebody on a train/plane etc** to take someone to a plane, train etc to start a journey:
I put her on the plane for London.

15 **put paid to something** *British English* to spoil and end your hopes or plans completely:
A car accident put paid to his chances of taking part in the race.

16 **I wouldn't put it past somebody (to do something)** *spoken* used to say that you think someone could easily do something wrong or illegal:
I wouldn't put it past him to use force.

17 **put somebody to trouble/inconvenience** *especially British English* to make extra work or cause problems for someone

18 **put it there** *spoken* used to tell someone to put their hand in yours, either as a greeting or after making an agreement with them:
$500? OK, it's a deal. Put it there!

19 THROW to throw a SHOT (=a heavy metal ball) in a sports competition

➔ put your finger on something at FINGER[1] **(4)** **➔ put your foot down** at FOOT[1] **(13)** **➔ put your foot in it** at FOOT[1] **(15)** **➔ put the record straight** at RECORD[1] **(10)** **➔ put something to (good) use** at USE[2] **(4)** **➔ put your back into it** at BACK[2] **(19)**

put about *phrasal verb*
1 **put something about** *British English informal* to give other people news or information, especially when it is unpleasant or untrue:

Figure 34 LDOCE page on which S8 failed to notice the correct answer (recorded at 00:06:05). Marked in red is the correct answer. The size of the screenshot was adjusted to eliminate blank space on the sides.

In a manner similar to S8, S1 also lost a considerable amount of time due to her failure to notice the correct answer. In this case, however, it was the longest time period of this type recorded in the study, with the overall duration of 01:39. In this period, the learner performed 16 operations (65-80), which consisted chiefly in switching between Google, OED, CALD, and the task. During that time, the learner opened the list of Google results which contained the correct answer – including

the target phrase and a substantial portion of the definition – seven times. The list is presented in Figure 35.

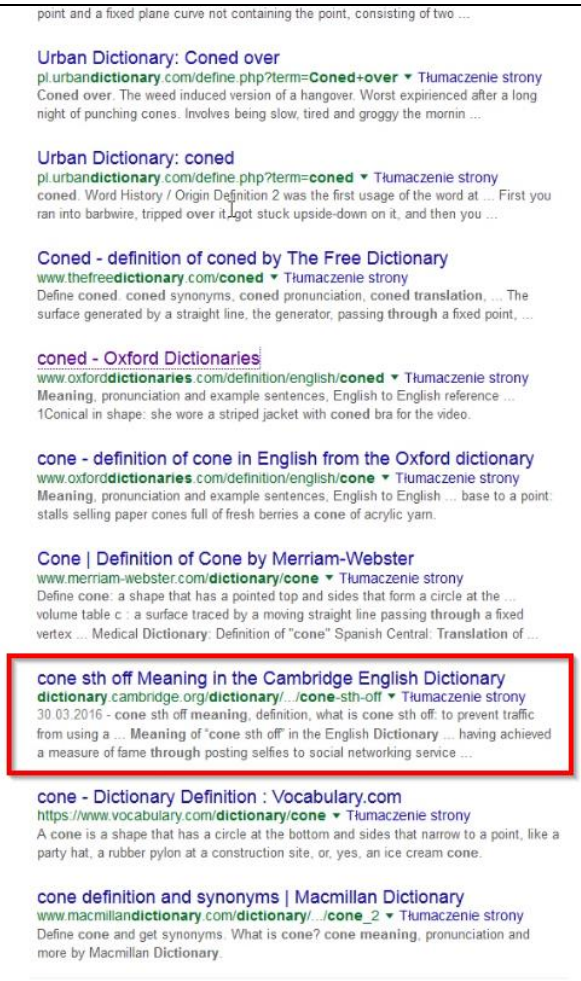


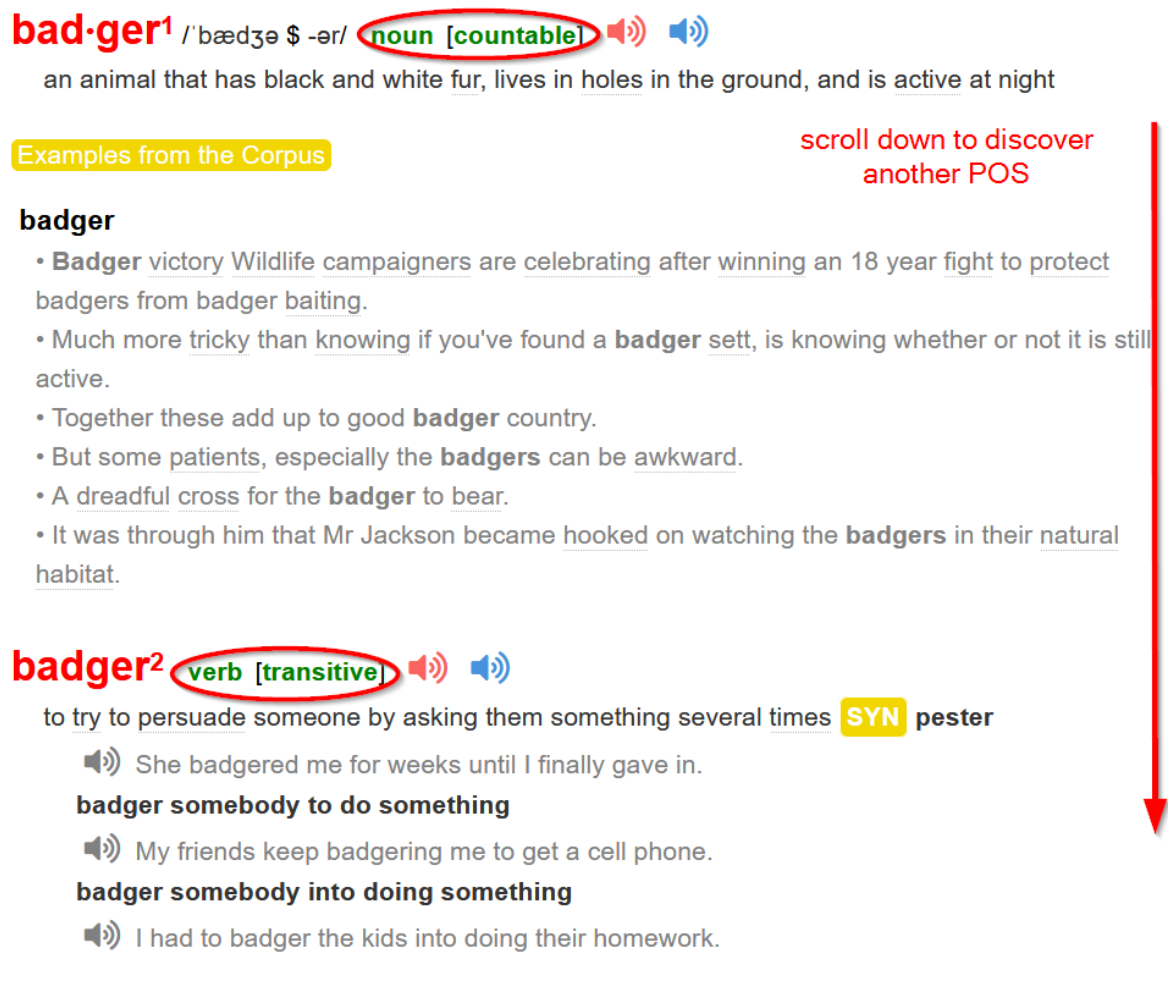
Figure 35 Google page on which S1 failed to notice the correct answer (recorded at 00:20:59). Marked in red is the correct answer. The size of the screenshot was adjusted to eliminate blank space on the sides.

It might be hypothesized that in this case S1 failed to notice the correct answer due to the relatively small font and the large amount of information presented on the screen. However, given the fact that the learner spent a relatively long period of time switching between Google results and other sources, it might also be proposed that a more careful analysis could expedite the lookup process and increase its effectiveness.

6.6.3.3. Wrong POS

Another problem identified in the research was opening and browsing entries in which the part of speech (POS) of the lexical item did not match the target structure. Problems with POS identification might stem from two difficulties: firstly, the learner might fail to understand which part of speech is required in the task (Type 1); secondly, they may be unable to identify POS tags and POS suggestions in the dictionary (Type 2). The latter problem might be exacerbated by the fact that electronic consultation sources vary in terms of their approach to POS (see Figure 36). Some, such as OALD, present only one POS per page, so it is necessary to browse related entries in order to locate the item sought; other, such as LDOCE, present all related entries in the form of a scrollable list, which means that the learner needs to scroll down the page in order to find the relevant entry. Both designs have certain flaws – in the case of the former, the learner might read the entry and assume that there is no more information about a given item in a dictionary, while the latter requires patient scrolling in order to identify the information sought.

(1)



(2)

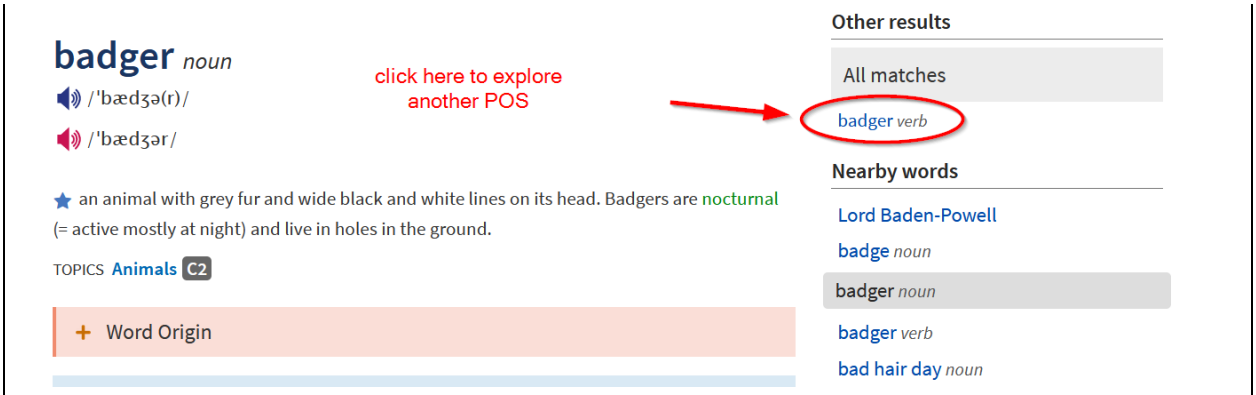


Figure 36 Differences between MLDs in their approach to presenting POS information: (1) LDOCE (one continuous page) and (2) OALD (separate pages). Both entries are for the word "badger"; marked in red are relevant elements. The size of the screenshot was adjusted to eliminate blank space on the sides.

Out of the total of seven operations performed by three students (S1, 3 and 4) which were tagged as "wrong POS", four cases (operations 76, 292, 298 and 316) involved browsing the first entry without much attention given to the POS label. It seems that learners were mostly looking for patterns or collocations rather than information about the part of speech which a given item represented. In two other cases (471 and 482), S4 clicked on the list of related entries in order to choose the incorrect POS, while in one case (559) she did not scroll the list, even though it would have revealed the entry for the sought part of speech (Figure 37).

Figure 37 Webpage with results for *drive* in Online Oxford Collocation Dictionary which the learner (S4) did not scroll to find the entry for the correct part of speech (recorded at 00:32:13). The size of the screenshot was adjusted to eliminate blank space on the sides.

In sum, both predicted types of POS-related problems were observed in the learners. The case of S4 also shows that various types of these difficulties might be observed in one respondent. While the number of operations recorded in the study is not sufficient to make predictions about the proportion of Type 1 to Type 2 problem, their existence suggests that further research into the nature, context and source of POS-related problems might help explain the nature of lookup difficulties in many cases.

6.6.3.4. Incorrect L1 search phrase

In this type of lookup problems, the learner successfully identifies the concept that ought to be used in the search, but then they use the incorrect L1 item in an L1 → L2 dictionary. For instance, S2 (190) used the word "kwintesencjonalny" in attempt to find the correct collocation for the word "tea" (the expected answer was "strong"). While the word "kwintesencjonalny" exists in Polish, its meaning

does not refer to “tea”; it might be assumed that the learner confused it with a similar word, namely “esencjonalny”, whose use would be justified in this context.

Another two instances of this phenomenon were observed in S3 (359-360), who successfully identified the concept of “breaking in” the shoes but could not offer correct Polish words in order to express it. In the first attempt, she used the perfective form of the verb (“rozejść”) instead of the imperfective one (“rozchodzić”). In the second attempt, a non-standard word was used (“rozbić”), which could appear in informal spoken language, but it is not recorded in this sense in any dictionary. In addition, the incorrect perfective form of the verb was retained in the second lookup.

The problems of S3 were mirrored in S4. Firstly, she also did not manage to formulate one query in a way that would have produced translation equivalents in a Polish-English dictionary (500). In this case, however, the problem was related to a certain dictionary convention used in Poland. The convention requires the learner to use the male form in the query which includes words with grammatical gender, such as adjectives. While this requirement might be impractical in the case of electronic dictionaries, which could link all forms to the headword, it is still followed by certain online consultation sources. In the case of S4, the word used was “mocna” (=“strong”, f) instead of “mocny” (m), which caused the dictionary to show no relevant results. Another problem was the use of a colloquial word for the concept of “breaking in” the shoes; the word given by the learner was “wyciągnąć”, which is related to stretching rather than making shoes more comfortable by wearing them (519). This mistake was also observed in S6, who used the word “roznosić” instead of “rozchodzić” in Google search engine (778). Interestingly, in this case the learner used negative feedback from Google’s suggestion and abandoned the search without pressing the button “Enter” to see the full list of results (Figure 38).

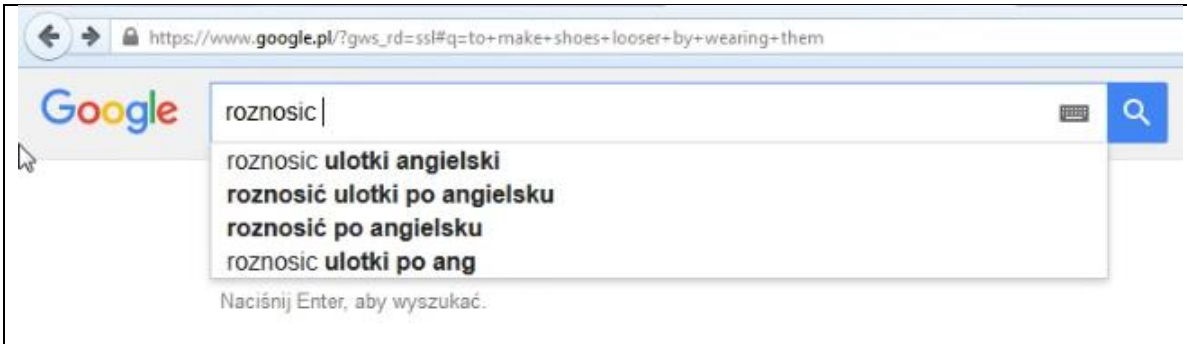


Figure 38 S6’s query for “roznosic” (“roznosić”) recorded at 00:18:33. Feedback from Google provides solely collocations related to “roznosić ulotki” (= “distribute/hand out flyers”), which represent idiomatic Polish. The image was cropped.

Finally, S7 used a non-existent word in order to refer to the concept of congested city streets. The standard Polish translation equivalent is the word “zakorkowany (m)”, but the form used in the study was “skorkowany”. While this word bears resemblance to the target item, and it is a possible

item from the point of view of Polish morphology, its use is neither recorded in any dictionary available to the author nor can it be found in the National Corpus of Polish (Pęzik, 2012; over 1.5 B words).

6.6.4. Operations in successful lookups

The majority of successful lookups observed in the study followed the expected procedure, in which the learner identifies the lexical need, opens a relevant source, types the search phrase, and interprets the information found. Nevertheless, certain operations which lead to subjects' success were less common, and therefore more interesting in the context of describing choices made by the "good learner". The following list presents short descriptions of such operations along with student number and operation ID:

- Conscious use of collocation dictionaries (S4, 491 & S8, 1028 and 1050) – in the first two recorded cases, the learners typed the item sought, followed by the word "collocations" in Google. The third lookup was conducted directly in the dictionary. In all three cases, collocation dictionaries proved to be helpful.
- Paying attention to Google suggestions (S2, 116) – reading Google suggestions while typing the phrase provided S2 with valuable information; unfortunately, in many other cases, Google list was ignored.
- Typing the words which surround the word gap in Google (S6, 784) – although this approach does not guarantee success, it increases the chances of finding the correct collocation. Such lookups might have been more successful if learners had known a tool which uses the Slop Factor, such as SlopeQ concondancer for BNC (Pęzik *et al.*, 2016).
- Using definition-based queries in Google (S6, 749, 752, 774 & 775) – not being able to find the correct word otherwise, the learner used a definition-based query in the form of a question (e.g., "what to do when your shoes are not comfortable"). This approach directed the learner towards non-dictionary consultation sources, such as articles or fora. The lookups by S6 also show that it might be beneficial to try a number of variants of the search phrase in order to find the information sought.
- Using (or attempting to use) advanced search in Google (S7, 949) – the subject used parentheses to make sure that she finds the exact phrase, which helped eliminate the noise produced by fuzzy matches.
- Using browser search (S8, 996 & 1015) – by using the search box built into the browser, the learner was able to quickly scan the page with results for relevant information. This approach might be especially useful in the case of long dictionary entries.

- Using negative evidence while testing a hypothesis in Google (S8, 1035-38) – while lookups to verify a hypothesis were quite common, S8 managed to draw conclusions from the low frequency of occurrence of a phrase in order to decide that this was not the correct answer.
- Looking for collocations outside the target item (S8, 1148) – while the majority of learners were focusing on finding collocations of target items, S8 also focused on the neighboring word. This operation provided relevant negative evidence.
- Using non-dictionary consultation sources. Some examples, such as S7 (898) show that even the sites that are unlikely to be considered useful might, in the right context, help the learner find valuable information. Immediately before operation 898, S7 was searching for adjectival collocations of the Polish word "silnik" ("engine") in order to look them up in a Polish-English dictionary. One of the results which she opened was a consumer technology site *Gadżetomania*, which contained the following words in the comments section: "lubisz duże, *mocne* silniki?" ("do you like big, *powerful* engines?"). The word "mocne" is the relevant lexicogrammatical item which – if used by the learner – would have yielded correct results in most Polish-English dictionaries.

In summary, the majority of successful strategies were related to the use of Google search engine. In these cases, the challenge was formulating the query in a way that would make the search engine "understand" learners' intentions, which was not always fully possible (e.g. in the case of Slop Factor search). Other important types of operations included enhanced lookup capabilities (e.g. using browser search) or using numerical evidence (frequency of occurrence) in order to verify the feasibility of a given answer. It might be concluded that there is a strong resemblance between these actions and the lookup functions offered by corpus concordancers.

6.7. Analysis and conclusions

Despite the limited number of transcribed recordings, the project provided a variety of data on learner activity in the context of the lookup situation. Nevertheless, since the data comes from few subjects, all the conclusions presented in this subchapter ought to be verified by means of targeted research projects. Due to the previously mentioned fact that the research was designed to be hypothesis-forming in its nature, this analysis is aimed at showing a number of potential research directions as well as pedagogical implications for classroom research and application.

6.7.1. Choice of sources

The data in the research seem to reveal the picture in which Google is learners' primary choice for lookups. However, it would be unwarranted to say that Google is as a primary consultation source; instead, it serves a dual function – on the one hand, it presents language data in context (19.25% of all actions), but it also directs the learners towards more traditional consultation sources. Upon removing Google from the list of all websites used, one is left with dictionaries which use the "traditional" format, even though some of them are available solely online and have never been printed (e.g. Diki.pl). Therefore, the role of Google ought to be considered from two perspectives – as a consultation source and as a library which provides access to other materials.

The use of Google as a library which suggests a list of sources with each new lookup was shown to result in certain difficulties. Firstly, it should be noted that Google is a for-profit organization, and that an important part of their business model is the positioning of the results in the browser ("About ad position and Ad Rank", n.d.); in addition, there are external companies who offer positioning services as well. In effect, the results which learners see upon typing a search phrase might not always be sorted by quality (measured as the number of visits and references on other websites), but they might as well be influenced by external factors instead.

Secondly, when a student uses Google to find a word, and they open one of the first results, this leads to a certain degree of randomness in the selection of the sources. This might slow the consultation process, as dictionaries differ in terms of their layout and conventions used. Therefore, if a learner happens to find something they are not used to, they will have to spare additional cognitive effort to process the layout before they are able to look for information. It might be hypothesized that in some cases subjects' failure to locate the information sought was caused by the fact that they did not understand how a given source was designed and what convention it used.

In addition, asking Google to suggest the list of consultation sources seems to relieve the learner of the obligation to consider which sources they would prefer to use. If one has personal preferences for specific consultation sources, it is likely that they know such sources better and that they understand what kind of information they might expect to find there. By contrast, lack thereof might lead to a more chaotic consultation process, as there is no guarantee that the source chosen from the automatically-generated list would meet learners' needs – not only on the level of providing useful information, but also from the perspective of more subjective User Experience. Awareness of one's needs and preferences should not, however, be confused with over-reliance on one particular consultation source. In fact, the learners who needed to consult their preferred source for all information, especially to verify the data found in well-established dictionaries, risked failing to complete the task correctly despite having found the information sought.

Some blame for subjects' failures might also be attributed to consultation sources themselves, especially in terms of usability. Firstly, digitized traditional dictionaries (including all MLDs) and

online dictionaries modelled after them (e.g. Diki.pl) use certain conventions that might be prohibitive. For instance, learners who use them to look up lexical bundles (e.g. S4, 523) succeed only if the exact phrase has an entry or sub-entry in the dictionary. If it appears as a collocation (marked in bold type) in the section with examples, it will not be fetched. Apart from the non-searchability of the database of examples, some sources (e.g. Diki.pl) require exact match in order to retrieve information. This occurred in the aforementioned case of the learner who did not use the masculine form of the adjective in a Polish-English dictionary and saw no relevant results.

In contrast to sharing certain conventions, "traditional" online consultation sources are more inconsistent in terms of their design. This was visible in the case of POS described in previous sections; for instance, in LDOCE, learners had to scroll down a long list, while in OALD they had to use a text box with related entries instead. While it would be unrealistic to expect commercial dictionaries to be exactly the same in the highly competitive market, this variety of approaches to dictionary design, combined with the Google-induced randomness in the choice of sources is likely to result in problems similar to the ones recorded in the research. Moreover, from the teacher's perspective, training learners to use one online MLD might not guarantee success in terms of them being able to the use all MLDs, as was largely the case with their paper counterparts.

Such design problems are mostly avoided by Google, which is a very intuitive tool to conduct the process of lexical consultation. Searching for information directly in this search engine resembles the corpus search, in which learners can verify their hypothesis against a large and varied database of examples. Importantly, they are able to compare the frequency of occurrence for various items, which might produce some valuable negative evidence as to what is more appropriate in English. If this approach does not work, the learners might try a definition-based lookup or try to type the phrase with gaps in it in the hope of discovering the missing items.

However, while Google was better than traditional dictionaries in terms of example retrievability and fuzzy search, it is definitely not as trustworthy a source as dedicated consultation sources. For instance, in the cases in which learners compared frequency, there often was a large difference in the number of results for two competing solutions, but the incorrect phrase never yielded no results. Therefore, Google search requires of learners to define their degree of certainty about each search result, based on the frequency of occurrence and the reliability of sources that contain the search term in question.

It is important to notice that Google also failed to provide enough search functionalities to meet all students' needs. While such cases were relatively rare, the lack of wild cards and Slop Factor made it difficult for some learners to identify item(s) which might be inserted in between the search terms. The existence of such attempts suggests that learners might be ready to use more complex

tools, such as free online corpus concordancers, such as COCA Corpus or SlopeQ for BNC for their lookups. Nevertheless, no case of use of such tools was recorded in the study.

As regards the impact of Web 2.0 tools, it ought to be considered from two perspectives. Consultation sources which can be labelled as typical user-created Web 2.0 contents, i.e. *Yourdictionary*, *Google Scholar* and *WikiHow*, constitute a negligible component of all the lookups, given the fact that they represent less than one per cent (0.53%) of all the operations described in Table 7. While this finding might suggest that Web 2.0 solutions are irrelevant in the context of this research, users actually have a large – albeit covert – impact on the choice of sources. As shown in the study, nearly every time a query is typed in Google, a learner then clicks on one result in order to open a website which might contain information sought. Each such click is registered, making the choice of sources one of key factors in positioning websites by determining User Intent (Montti, 2018). Therefore, it might be safely assumed that each Google lookup conducted by the learners in the study yielded results which were at least partly based on crowd-sourced history of previous searches.

6.7.2. Learner activity

One of the most important characteristics of learner activity found in the study could be classified under the umbrella term of impatience, interpreted as the unwillingness to wait for the results. It was demonstrated on a macro level, when the learners attempted cheaping as their primary approach to lookups, but also on the micro level, when the learners did not wait a couple of seconds for a dictionary entry to open in a browser. In addition, the fact that some entries were consulted for a relatively short period of time, or scrolled up and down without stopping, led to situations in which the correct information was not noticed by the subject.

Nevertheless, this efficacy-oriented perspective seems to be contradicted by a universally observed practice of switching between the sources. In this action, instead of gaining time, the learners seemed to be purposefully wasting it. The exact reason remains unknown, but there are some possible explanations. Firstly, if learners feel the fatigue from having to attentively browse a number of entries, they might be inclined to engage in a "mindless" activity to ease the cognitive load on the brain. Interestingly, the hypothesis of a "mental brake" is one of possible explanations for similar seemingly useless behavior, which is fidgeting (Farley, Risko & Kingstone, 2013, p. 621). Another explanation is that the subjects experienced problems related to their attention span, so they were not able to "hold" information that they wanted to transfer from one digital workspace to another in their head. While the discussion on the reliability of the finding that attention span is narrowing in learners around the world remains open, some sources suggest that abundance of information to process

indeed shortens one's attention span (Lorenz-Spreen *et al.*, 2019). Finally, it is also possible that the switching is caused by these two factors acting in tandem. Regardless of its source, switching – as well as failures to see correct information caused by fast scrolling – reveals some degree of nervousness in subjects' behavior. It remains uncertain whether this situation is caused by the research settings or, rather, it is an inherent feature of the lexicogrammatical lookup.

In terms of more typical dictionary skills, learners experienced problems with POS labels and formulating search phrases in L1. As described in the previous section, some of the blame for the part-of-speech difficulties might stem from the differences in design of consultation sources. Nevertheless, some blame might also be attributed to the subjects, who might have avoided certain problems if they had been specifically looking for a target part of speech. While certain dictionary designs might be perceived as counter-intuitive, in all of the described cases the information was nonetheless available for the learners. In addition, the awareness of parts of speech needs to be even greater if students use non-dictionary sources, such as lists of Google results. In this case, it is often necessary to deduce information from the context, which requires a lot of conscious attention paid to this grammatical category.

Much less can be said about the ability to use correct search terms in the learners' native language. While there definitely exists a problem, its source remains unclear. A possible cause are fatigue-induced slight deformations of the lexical item (e.g. changing one letter), while another possibility is that problems with L1 are inherently related to the "limited linguistic code", i.e. the attrition of language complexity and density in young users of Polish (Ożóg, 2017).

Finally, while the majority of successful lookups might be considered to be "traditional" in terms of types and sequences of operations used, some non-conventional lookups show that learners are ready to experiment with new ways of browsing the contents of consultation sources. This readiness to use unorthodox lookup methods might be especially important in the rapidly evolving online environment, in which there is still a lot of potential to build new and more efficient tools.

6.7.3. Pedagogical implications

One of the most important findings of the study was the fact that the learners might need training to engage in a more thoughtful and attentive use of consultation sources. Therefore, the first recommendation is to help them in the planning of a lookup activity. Instead of rushing to the list of results, the teacher might stop the in-class lookup activity and ask their students to complete a pre-lookup checklist. While the checklist should be customized to best match the teacher's needs, the inclusion of the following items would be advisable:

- What is the POS of the item sought?

- What source would I like to use?
- What do I expect to see in my consultation source upon typing this search term?
- What will I do when my lookup does not produce the expected results? (Compare your plan with other students).

In a similar vein, some steps might be taken to encourage more attentive lookup while browsing with the list of results. For example, the teacher might organize a contest in locating difficult-to-find information in various types of MLDs. The important part in this case is the use of varied sources so that the learners become accustomed to different online dictionary conventions. Another activity that might be useful in this case is the "search engine competition", in which learners can place bets on the source which is most likely to produce more relevant results upon typing a given item. In this context, it is important to compare general-purpose search engines, such as Google, against those used in online dictionaries. In this betting game, learners might also propose sources that they would like to see compete against the one proposed by the teacher. Of course, every lookup should be conducted with the aim of finding a specific piece of lexicogrammatical information.

As it was hypothesized, extensive lookup activity might lead to learner fatigue, which is displayed in actions such as switching. While switching might be a legitimate way of relaxing, it is also advisable to introduce a wider array of relaxation techniques as a part of a longer lookup activity. In addition to reducing the negative impact of constantly looking at the screen, such exercises also show the importance of managing one's level of fatigue while engaging in various mental activities.

In terms of the choice of sources, two seemingly contradictory directions seem to emerge from the data. The first perspective is to focus on selecting one's favorite dictionary (as opposed to any consultation source), which could be used for the widest possible variety of tasks. By devoting time to helping learners choose their preferred tool, the teacher promotes learner autonomy, pays attention to features of various dictionaries, and facilitates testing and comparing dictionaries in a controlled environment. The purpose of such an activity, however, is primarily to make sure that the learners have at least one source at their disposal whose design is clear enough not to be a cognitive burden during the lookup, as witnessed in the research study.

The opposite direction is to have the learners use a number of different consultation sources in order to make sure that they are trained to find lexicogrammatical information regardless of the type of a consultation source they might find. Such activities ought to be organized under teacher supervision in order to help avoid confusion if the learners find it impossible to locate the information sought. Finding the right item should be presented as a challenge, so some elements of gamification might be useful in this case. Most importantly, successful learners should share their solutions, thus building the scaffolding for other users to improve their consultation skills. By contrast, problems do

not have to be shared in public, but learners might be encouraged to self-reflect on the process in order to provide the teacher with some insights into the nature of possible lookup difficulties. While it might seem contradictory, the learners who were encouraged to choose their favorite consultation source ought to engage in this type of exercise as well. This is to avoid another problem revealed in the data, namely over-reliance on one dictionary. In such a case, the teacher ought to explain that each consultation source has its confines, so the purpose of the exercise is to help learners comfortably go beyond their preferred set of tools if necessary.

While all of the aforementioned exercises contained a dictionary component, the data suggests that it is necessary to prepare learners to use other consultation sources, notably Google browser. This can be done either inductively, by assigning lookup tasks before giving explanations, or deductively, by showing various lookup techniques first. These might include picture-based search, definition-based search, use of parentheses and other operators, frequency analysis, analysis of key words in context (KWIC) on the list of results, etc. Again, gamification and scaffolding are encouraged in order to provide learners with an engaging task in a supportive environment.

Techniques for using general-purpose search engines seem to be a good introduction to functionalities offered by some corpus concordancers available free of charge, such as COCA or SLOPEQ for BNC. In addition, these concordances might provide the learners with tools that they are already unsuccessfully trying to find in Google, such as wildcards or SLOP factor. However, in order not to overwhelm the learner with the multitude of lookup settings in corpus tools, it is recommended to only introduce these tools when the learners spot the lexicogrammatical need that Google search cannot address. Under such circumstances, using complex concordancers in the lookup process seems to be justified from the learner's perspective.

In addition, some attention should be given to search phrases used in the context of L1 → FL bilingual consultation sources. While it might appear as a counter-intuitive recommendation for foreign language classes to focus on L1, the examples from the study show that not being able to formulate one's query in accordance with dictionary conventions might lead to problems with finding the information sought. Like in the previous examples, such exercises are recommended to be conducted in the form of a competition, with opportunities for scaffolding in mind. In order to present the gravity of the potential problem, which might not be initially realized by the learners, it is advised to start with more difficult examples, which pose a challenge, such as "rozejść/rozchodzić" described in the study.

In terms of materials development, the teacher should also be aware of the fact that learners might resort to cheaping. Therefore, it is advisable to make sure that the answer key to the task that they would like to assign is not easily available online. If this is the case, it is still possible to slightly

modify the contents of the exercise to make it more difficult to find in the search engine. Finally, the topic of cheaping and its possible consequences might be discussed with the learners in the classroom.

To summarize, it should be added that these implications were not designed to be prescriptivist in their nature. Instead, they embrace the wide array of ways of using consultation tools which were used by the learners during the study. Therefore, no suggestions were given as to how to "convince" the learners to stop using Google or to decrease the number of bilingual lookups. However, it is believed that the most effective tools for finding lexicogrammatical information are not synonymous with the best tools for other tasks, such as learning vocabulary. Therefore, a situation in which a given item is easy to find and just as easy to forget might sometimes be a problem. Hence, it is proposed that the teacher develop at least two sets of consultation skills in their learners – one to quickly find information whenever in need, and another to efficiently record and revise new vocabulary. While this study offers suggestions for the former set of skills, it is important to realize that these two sets might differ or even contradict each other in terms of recommendations for the learners. For example, a task-related lookup is not at all concerned with all the properties of the word, while lookup in order to learn the word should not be narrowed down to one specific use of a given item. In the former case, Google-only search is a valuable tool for the task, while in the latter it will not produce enough information to meet learner's requirements. Therefore, I propose that consultation skills should not be treated as a monolithic set, but rather as tools whose use has to be taught in accordance with core principles of the task that they are used for.

6.7.4. Research limitations and implications

The research framework based upon the Activity Theory seems to have been successful in terms of its primary goal, i.e. describing the nature of learners' lookup activity in the digital environment. Transcription created using the template proposed by Geisler and Slattery (2007) was detailed and flexible enough to provide information about spontaneous choices as well as structured attempts to achieve a given goal. Therefore, the tool may prove useful for this type of research on digital activity whose purpose is hypothesis-formation rather than focusing on a single aspect. In the latter case, the automated tools, such as keyloggers, might prove to be a more practical solution.

The lack of the aforementioned automation of data analysis might reflect negatively on the validity of the results. Given the amount of work which is necessary to accurately describe every operation recorded in the study, it is inevitable to have a considerably smaller sample than what might be produced with the same amount of effort in the case of automated transcription. On the one hand, it is not overly problematic in the case of hypothesis-formation research, because even a single occurrence of a given type of operation might be enough to formulate a hypothesis and use automated

tools on a wider group with a specific goal of finding and describing this type of behavior. However, smaller samples also mean that certain types of operations which are present in the general population may never be recorded. In addition, manual transcription is more prone to problems caused by human error, which may lead to erroneous conclusions, especially in the case of numerical values, such as duration of an operation.

Another problematic area is the need to make decisions about what constitutes an operation. While activities and actions are relatively easy to discern, operations are more problematic and require some arbitrary decisions from the researcher. An example of such a problem is a learner who starts moving their cursor around one text box on a page, then briefly stops, and resumes cursor movements after a short time. The answer to the question of whether this is one or three operations is not obvious, and comparable patterns of behavior found in other subjects might further obfuscate the picture. Also, duration analysis is not a perfect solution, as subjects might perform operations in a very quick succession (e.g. switching), while some other patterns of behavior, such as scrolling the page up and down, might take a considerable amount of time. Therefore, it might be necessary to develop a list of transcription standards for studies in order to ensure consistency of results.

In terms of possible research directions, a number of phenomena observed might be examined in the hypothesis-based focused studies. Firstly, one might investigate the choice of sources, especially in terms of trusted versus distrusted ones, which sometimes appears to be unwarranted. Many factors might be responsible in this case, but a survey among a large pool of students might help clarify and systematize them.

Another important direction is finding information while it is already visible on the page. Fast scrolling, disregard for POS labels or failures to see pictures, which are described in this study, necessitate some further research. Observation in a more strictly controlled environment, possibly with a keylogger, might help answer the questions about the nature of this phenomenon. One more direction is testing the ability of the learners to adapt to frequent change of consultation sources, caused by them frequently opening each new entry in a different source. In this case, some mock-up entries might be created in order to ensure that the learners see them for the first time.

Switching is the next phenomenon worth investigating; as its causes remain unclear, it would be best to first identify its origins and its function for the learner. One of possible directions is correlating its number of occurrences with the amount of time that has passed from the start of the task. The increasing frequency might point to the feeling of fatigue being responsible for this phenomenon. Another method might be the use of think-aloud protocols in order to determine whether switching is related to specific verbalized thoughts, or whether it is a sub-conscious activity. Switching also seems to be a good context to include additional research methods, such as stimulated-

recall sessions, to help understand what the learners think when they start to quickly and "mindlessly" switch between sources, or an eye-tracker study to see where their gaze focuses during this action.

One more interesting pattern identified in learners' operations was the way in which they used search boxes in various sources. There are recorded instances of subjects using dictionaries as if they were Google, e.g. by typing entire phrases, and some of them use Google as if it was a corpus concordance with SLOP factor and wildcards. Again, studies involving mock-ups of dictionaries and search engines might be useful in this context, as they could show the researcher how a learner would respond to a new tool, and which mental protocol for lookup they would employ. Also, it seems crucial to take into account the possible negative effect of habits stemming from Google lookup on any study whose aim is to observe learners perform dictionary search in one pre-selected digital source.

Similarly, the observation of search box queries might help identify problems with L1 in multilingual dictionaries. In addition, some advanced L1 proficiency tests might help the researcher determine learners' ability to express the concepts in their heads with precise words, as opposed to words/phrases which are "close enough", as it was in the case of "*skorkowany" versus "zakorkowany".

Finally, more research needs to be conducted into successful lookups in order to better describe effective actions as well as to discover the ones which are not described in the study. For instance, definition-based lookup as a category has not been given much attention in the literature, while it has the potential to be one of the most powerful tools at students' disposal. In addition, more research based on the hypothesis-forming framework might reveal other patterns of successful lookups, which are not described in this study. Even though this means a substantial amount of work that would need to be invested in order to transcribe enough data, it is the present author's belief that this kind of studies is nonetheless necessary to allow researchers to further and verify new hypotheses.

6.8. Summary and conclusions

At the beginning of this chapter, three major research questions were asked. While specific answers are described in the preceding sections, it seems necessary to summarize the findings. As regards Q1, it is safe to say that learner lookup activity in a temporary digital environment is very different from anything that existed before the age of the Internet. Firstly, it is comparatively more varied – the tools which are used to complete the process do not need to be carefully crafted dictionaries, but oftentimes they are automated search engines whose purpose extends beyond being the source of lexicogrammatical knowledge. In addition, with these search engines, learners might access other non-dictionary sources, such as fora, photo galleries or other websites. Nevertheless, traditional

dictionaries in their digitized forms are also a very important part of this mix. While they are not always optimal tools for every lookup, their contents are still very much relevant for the learners, owing to their accuracy. Given the fact that the contemporary student uses all these tools, often intertwining them into one lookup activity, it seems warranted to refer to learners' skills in finding lexicogrammatical information in various sources as "consultation skills" rather than "dictionary skills". However, despite the variety in sources, it might be claimed that decisions as to which consultation source to use are oftentimes based on the results provided by the search engine. It is hard to automatically equate this type of activity with making uninformed choices, but it is also possible that the process of selecting the most fitting tool is reduced to decisions made by the search algorithm.

The second question (Q2) aimed to explore the ways in which consultation sources are used. While the detailed description of learner actions is provided in sections 6.6.3 and 6.6.4, it might be stated on a more general level that even with a fairly limited number of subjects, regularities were observed. It might suggest a relatively homogenous nature of language learners' lookups, and it is definitely worth considering while designing future studies. Predictably, both successful and problematic operations were observed; it is nonetheless interesting that the problematic operations seem to be a more commonly occurring phenomenon (every type described was witnessed in at least three subjects), while out of nine especially successful lookup strategies, only three were observed in more than one subject.

Q3 dealt with the feasibility of screencast-based research into learner use of consultation sources. In this case the answer might be two-fold – on the one hand it is obvious that the process of faithfully transcribing every operation along with its context is a time-consuming task. In addition, creating universal set of labels for different types of operations presents a considerable challenge. Given this, I doubt whether it is possible to create a standardized set of labels which could be used for any study of this kind. Instead, it seems more likely that such labels and categories would have to be developed separately for each study. On the other hand, such research seems to be beneficial for the teachers and researchers alike. Even a relatively small sample presented in this study revealed regularities which might be worth exploring in separate projects, but they can also be used to develop awareness-raising activities for learners for foreign languages.

As far as implications for the researcher are concerned, the most important finding in this study is that the lookup process observed in modern learners is complex both in terms of tools used and in the number of possible ways of using and combining them to achieve the desired result. Therefore, even if one wishes to focus on one specific aspect of learner lookup, they ought to be aware of a possible impact of the environment on the actions and operations observed in the study. Also, this complexity necessitates a two-pronged approach, with hypothesis-forming research to

discover and catalogue patterns of behavior, problems, etc. on the one hand, and hypothesis-based studies which aim to explain the nature of selected phenomena on the other.

The teacher ought to be aware of the fact that even though learners are used to using online tools in their consultation process, they still require a lot of attention and assistance to do it efficiently. The multitude of possible options coupled with learner reliance on search engines means that there exists a new field of teaching related to consultation skills. One of the biggest challenges for the instructors who would like to teach them include: teaching universal and transferrable ways of finding information in any dictionary, choosing sources optimal for the task, formulating search terms, and staying focused while analyzing input from a wide variety of markedly different sources.

In summary, more research and instruction are necessary in order for the teaching of consultation skills to stay relevant in the contemporary digital world. While not all these skills are guaranteed to be future-proof, many of them certainly will be useful for the learners in the future – possibly not only for the lexicogrammatical lookup, but also in the broader context of information retrieval.

Recapitulation

Throughout most of the history of reference works, their function seems to have been relatively well-defined and unchanging. The rationale for the development of monolingual dictionaries was mostly ideological – grounded in religious or political reasons, while multilingual sources served a more utilitarian purpose, not directly related to one's religious or political goals. For a relatively long time, these differences seemed impractical to bridge, thus causing two separate pedagogical traditions – the more utilitarian and the more ideological one – to evolve in parallel.

The change in this system was brought by attempts to find new teaching tools for English as a lingua franca in a rapidly globalizing world. At the beginning of the 20th Century, language education was becoming increasingly more accessible, and new solutions for advanced non-native users became one of primary goals for experts in EFL pedagogy. The success of monolingual learner dictionaries opened the possibilities for pedagogical lexicography to re-think dictionary design; as a result, bilingualized, production or illustrated learner dictionaries entered the market. This change seems to have relaxed dictionary conventions, thus priming the market for the next shift in dictionary tradition.

The need to distinguish one's MLD from the competition encouraged publishers to turn towards digital resources. Firstly, they used digitized databases in order to augment definitions, usage notes and examples, but soon it became obvious that dictionaries sold as software are more convenient for the user and for the lexicographer alike. In this context, especially important is the fact that a digitized dictionary is not as limited in terms of space as a printed one, which meant that multimedia, example databanks, and interactive content could be easily added to these sources.

In parallel, multilingual dictionaries were also transferred to digital storage media, such as CDs or portable digital assistants. As a result, digitized reference works – both monolingual and bilingual – became widely available, nevertheless still being separated by a paywall from incidental users. This state, however, was changed with the growing popularity of the Internet; while some publishing houses, notably publishers of the most comprehensive Polish-English and English-Polish dictionaries, opted for the subscription-based model, all the MLDs became available online free of charge.

Another addition to this set of tools was the advent of free online-only multilingual dictionaries, which quickly became tools of convenience for a number of learners. While still less comprehensive than their traditional counterparts, they offer basic translation equivalents, along with

multimedia and extra examples. Finally, a Polish learner of English is also able to use a number of non-dictionary consultation sources, such as data from parallel corpora, language fora, automated translators, and many others.

This sudden increase in variety in sources available to language learners was possible largely owing to the fact that posting information online became available to everyday users. Web 2.0 tools – such as fora, personalized websites or video sharing platforms – helped develop new types of community-based consultation sources, but they also provided vital data to dictionary makers and online search engine algorithms alike. In this Web, saturated with information, contemporary EFL learners need to find answers to satisfy their reference needs.

Another result of the transition to Web 2.0 is the fact that the lines between dictionary-based and non-dictionary consultation sources have been blurred. This change requires a new research approach in order to optimally reflect multiple complex aspects of the lookup process conducted in the contemporary Internet. It is believed that focusing on the process as a whole might help form initial hypotheses and isolate selected aspects for further scrutiny. In order to achieve this effect, learner lookups need to be observed in an unobtrusive environment, without any suggestions regarding pre-selected sources, and in conditions as close as possible to actual lookups. Additionally, the data obtained ought not to be limited to lookups aimed at finding purely lexical information. On the contrary, the framework should be flexible enough to incorporate lookups related to larger structures, including grammatical properties of a given item. Therefore, the lexicogrammatical – as opposed to purely lexical – nature of learner lookups needs to be observed in this context.

The bulk of previous observation studies focus on more finely-grained aspects of learners' lookup, conducted in a more controlled environment. They are successful in describing in a detailed way how learners use dictionary-based sources pre-selected or created by the researchers themselves. However, due to this limitation, such studies only partly answer the question of how modern learners actually perform their lookups in real-life scenarios. While learners' choice of reference works was examined in various survey-based studies, the reliability of the survey as a research tool was questioned by several prominent researchers in the field of pedagogical lexicography. Finally, log files used in some studies, despite providing very accurate accounts of learners' clicks, still do not let subjects use sources of their choosing. These findings seem to suggest that the postulated observation of students' use of consultation sources, in conditions as close as possible to their natural lookup behavior, requires a new research framework.

Due to the fact that the requirements for a new research framework were similar to those used in observation-based studies of human-computer interaction, it was decided to explore the applicability of this toolset in pedagogical lexicography. The major assumptions of the Activity Theory as the underlying framework describe human behavior as goal-oriented, hierarchical, and

mediated, with the possibility of inferring internal motives from their external manifestations. One of the most effective methods of recording these manifestations in a computerized environment is screen casting; its major advantage is the ability to record all the visual input that is presented on the screen, including cursor movements. In addition, certain screen casting pieces of software can run in the background, which means that it is sufficiently unobtrusive to have minimal or non-existent effect on learners' ability to complete the task.

It was decided that screen casting software would be used to record the activity of advanced learners of English. These learners have the widest potential repertoire of consultation sources whose contents they are able to understand (including MLDs and materials for native speakers), so it was hoped that this choice would maximize the number of recorded patterns of interaction with various websites. In addition, all the learners confirmed that looking up lexicogrammatical information in free online sources is their preferred choice. Maintaining the lookup environment as close as possible to subjects' everyday learning conditions was assured by designing a task that was similar to their exams (and pre-exam mock quizzes) and by choosing to locate the research site in one of the frequently used classrooms.

Two major research questions were formulated, i.e. the question of what sources are used by learners and the question of how they are used. In addition, a meta-question was posed, which was related to the assessment of feasibility of the proposed research framework and the usefulness of research tools. Due to the relatively low number of participants, the results were analyzed mostly from the qualitative perspective; however, the number of entries produced by the subject was sufficient to warrant some basic quantitative analysis.

The results indicate that a substantial portion of learners' lookups is carried out with Google search engine. This engine also helps learners choose the "right" dictionary for the task, based on the page ranking algorithms. The learners also display some interesting patterns of behavior, rarely mentioned in the literature, such as "cheaping" or semi-conscious switching between open tabs/windows. If the latter phenomenon is a manifestation of impatience and the inability to stay focused, further evidence can be found in the fact that some subjects did not analyze on-screen information long enough to notice the correct answer which was visible there. In addition, problems were identified in the areas such as interpreting part-of-speech labels, formulating the query or choosing which sources are trustworthy. On the other hand, successful lookups were facilitated by using the tools in a more analytic and conscious manner; choosing collocation dictionaries, paying attention to Google suggestions or performing definition-based lookup gave the learners the chance to deal with relatively difficult tasks.

Pedagogical implications of the study are centered around the idea of making learners pay more attention to lookup activities as a conscious and structured process. This proposal requires more

focus both on the sources and on techniques employed while using them. As regards research implications, it seems probable that at least some phenomena described in the study are worth further attention. Focused studies in more controlled environments might target selected types of operations, thus contributing to a better understanding of learner behavior and more insightful pedagogical implications.

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Appendices:

Appendix 1: Sources in the "other" category

Note: link is given whenever the dictionary cannot be found by looking up its name in search engines such as Google or Bing

Source	Description
Linguee	Multilingual parallel database
Dictionary.com	Monolingual dictionary similar to native speaker's dictionaries
The Free Dictionary	Monolingual dictionary similar to native speaker's dictionaries
Thesaurus.com	Thesaurus added to Dictionary.com
Quizlet	Vocabulary learning website
Urban Dictionary	Slang dictionary
Textranch	Automated proofreading service
translatica.pl	Automated online translator by PWN
Academic (enacademic.com)	Dictionary hub
Wikipedia	Online encyclopedia
word-grabber	Scrabble tool; creates words from random letters
YourDictionary	Dictionary hub
Pons	PL-ENG and ENG-PL dictionary
Merriam-Webster online	
Słownik naukowo-techniczny angielsko-polski (tech.dict.pl)	ESP bilingual dictionary including IT, medicine, military, business, mechanics and agriculture
Google Scholar	Google repository of research works
Crosswordsonline (http://www.crosswordonline.net/)	Crossword puzzle solver
WikiHow	Website with tips and lifehacks
Bustle.com	Digital lifestyle magazine
gadżetomania.pl	Consumer technology news
Webdicio	Online monolingual dictionary
Macmillan education	Portal for English teachers

Appendix 2: Transcription

operation number	Act. ID	Action ID	Action type	Action	Op ID	Operation	Time	Artifact	Consultation type	Task code	Google – aided?	Successful	Activ. successful	Student	Comments	Didn't see relevant information	Incorrect Polish	Wrong POS	Doesn't trust credible sources	Doesn't understand correct results	Wrong dictionary	Wrong use of the dictionary	Wrong concept	Impatience
								2016-04-07-1517-52.flv																
2	1.1	1	Verification	Looking for "put into inconvenience"	1	Type in: "put into inconveni9ence"	8:08	Google		1.2	Y			1										
3	1.1	1	Verification	Looking for "put into inconvenience"	2	Click on revised version (Google Suggestion)	8:28	Google		1.2	Y			1										
4	1.1	1	Verification	Looking for "put into inconvenience"	3	Open MacMillan Dictionary (2nd result)	8:37	Google		1.2	Y			1										
5	1.1	1	Verification	Looking for "put into inconvenience"	4	Browse through the list of results (scroll down and back up)	8:41	MED online	Mixed	1.2	Y	N		1	[illegible] correct phrase shown (3rd result – "put someone to trouble/bother/inconvenience") but she ignores it.	1								
6	1.1	2	Lookup	Looking for "inconvenience"	5	Type in: "inconvenience cambridge"	8:45	Google		1.2	Y			1										
7	1.1	2	Lookup	Looking for "inconvenience"	6	Open CALD (1st result)	8:55	Google		1.2	Y			1										
8	1.1	2	Verification	Looking for "inconvenience"	7	Browse through the list of results (scroll down and back up)	8:56	CALD online		1.2	Y			1	Student did not find the correct phrase, as it was not shown in the results									
9	1.1	2	Verification	Giving answer	8	Open the test and type "put **into** inconvenience"	9:07	Test	Mixed	1.2	--	N		1	Evidence that the student did not find the correct answer									
10	1.1	3	Lookup	Looking for answer "in no uncertain terms"	9	Type: "in no uncertain terms" in Google	9:54	Google		1.2	Y			1										
11	1.1	3	Lookup	Looking for answer "in no uncertain terms"	10	Browse through the list of results (scroll down and back up)	10:03	Google		1.2	Y			1	List shows results from The Free Dictionary, MED, CALD (top 3)									
12	1.1	3	Lookup	Giving answer	11	Type correct answer	10:11	Test	Mixed	1.2	Y	Y	Y	1										
13	2.1	4	Lookup	Looking for "(loath) to admit defeat)"	12	Open MED (from previous list of Google results)	11:01	Google		1.4	Y			1										
14	2.1	4	Lookup	Looking for "(loath) to admit defeat)"	13	Shut down MED	11:05	MED online		1.4	Y			1										
15	2.1	4	Lookup	Looking for "(loath) to admit defeat)"	14	Open CALD (from previous list of Google results)	11:07	Google		1.4	Y			1										
16	2.1	4	Lookup	Looking for "(loath) to admit defeat)"	15	Type: "loath"	11:11	CALD online		1.4	Y			1	the phrase sought shown in the dictionary									
17	2.1	4	Lookup	Looking for "(loath) to admit defeat)"	16	Open the test	11:18	Test		1.4	--			1										
18	2.1	4	Lookup	Looking for "(loath) to admit defeat)"	17	Go back to the dictionary	11:21	CALD		1.4	Y			1										
19	2.1	4	Lookup	Looking for "(loath) to admit defeat)"	18	Open the test; Type the answer	11:33	Test	Mixed	1.4	--	Y	Y	1	Student found the phrase sought, but they failed to provide the correct anwer									
20	3.1	5	Verification	Looking for "what life/the future has in store"	19	Type "you never know what future store" in Google	11:53	Google		1.5	Y			1	One of results (2nd, from Pintrest) has the correct example "you never know what the future has in store"									
21	3.1	5	Verification	Looking for "what life/the future has in store"	20	Open the test and type the correct answer	12:01	Test	Non-dictionary	1.5	Y	Y	Y	1	Student found the correct answer in Google									
22	4.1	6	Lookup	Looking for "sloppy joe"	21	Open Google and type "sloppy"	12:57	Google		2.3	Y			1	"sloppy joe" appears as one of suggestions on the drop-down list									
23	4.1	6	Lookup	Looking for "sloppy joe"	22	Click on "sloppy joe" in Google	13:02	Google		2.3	Y			1	pictures of sloppy joe appear									
24	4.1	6	Lookup	Looking for "sloppy joe"	23	Open the test and type the correct answer	13:05	Test	Non-dictionary	2.3	Y	Y	Y	1										
25	5.1	7	Lookup	Looking for "break/wear in shoes"	24	Copy the example and paste it in Google	13:22	Google		2.4	Y			1	"cheaping"									
26	5.1	7	Lookup	Looking for "break/wear in shoes"	25	type in "bab la rozchodzić buty"	13:44	Google		2.4	Y			1										
27	5.1	7	Lookup	Looking for "break/wear in shoes"	26	Open bab.la	13:47	Bab.la		2.4	N			1	results from the Polish-German version									
28	5.1	7	Lookup	Looking for "break/wear in shoes"	27	Change language to English	13:52	Bab.la		2.4	N			1	no results shown									
29	5.1	7	Lookup	Looking for "break/wear in shoes"	28	Go back to the test	14:11	Test		2.4	--			1										
30	5.1	7	Lookup	Looking for "break/wear in shoes"	29	Type "to wear shoes so that the are comfortable dictionary"	14:24	Google		2.4	Y			1	Looking by definition!									
31	5.1	7	Lookup	Looking for "break/wear in shoes"	30	Open the definition of "wear in" from MED	14:39	MED	Mixed	2.4	Y	Y	--	1	Phrase found, bu the search continues									
32	6.1	8	Verification	Verifying whether "wear in" is the correct answer	31	Type in "wear in dictionary" in Google	14:53	Google		2.4	Y			1	Verifying the phrase which was successfully found in MED									
33	6.1	8	Verification	Verifying whether "wear in" is the correct answer	32	Open "wear" in CALD	15	CALD		2.4	Y			1	The correct answer is not to be found on the page									
34	6.1	8	Verification	Verifying whether "wear in" is the correct answer	33	Open the test	15:31	Test		2.4	--			1	The student gave up on the correct answer because it was not in the right dictionary?									
35	6.1	8	Verification	Verifying whether "wear in" is the correct answer	34	Open and browse the entry in CALD again	16:06	CALD		2.4	Y			1	This action is resumed after some hesitation									
36	6.1	8	Verification	Verifying whether "wear in" is the correct answer	35	Open and browse the Google list of results for "wear in"	16:35	Google		2.4	Y			1										
37	6.1	8	Verification	Verifying whether "wear in" is the correct answer	36	Click "back" in the browser; effect: re-open the definition of "wear in" from MED	16:41	MED		2.4	Y			1	The student opened the definition by accident									
38	6.1	8	Verification	Verifying whether "wear in" is the correct answer	37	Open the test and type "wear"	16:53	Test	Mixed	2.4	--	Y	Y	1	Why so distrustful of MED?									
39	7.1	9	Lookup	Looking for "breaks down (as follows)"	38	Copy a part of the task and paste it in Google	16:59	Google		2.4	Y			1	Cheaping or a legitimate strategy? Was she looking for the answer key or collocations?									

40	7.1	9	Lookup	Looking for "breaks down (as follows)"	39	Browse through the list of results (scroll down and back up)	17:03	Google		2.4	Y			1	some relevant results shown (sentences which use the target structure)								
41	7.1	9	Lookup	Looking for "breaks down (as follows)"	40	Open the test	17:13	Test		2.4	--			1	open the test and do nothing								
42	7.1	9	Lookup	Looking for "breaks down (as follows)"	41	Re-open the list of results	17:2	Google		2.4	Y			1	The student seems to have failed to store the answer in her memory								
43	7.1	9	Lookup	Looking for "breaks down (as follows)"	42	Open the test and type "broke"	17:21	Test	Non-dictionary	2.4	--	Y	Y	1	The "cheaping" technique seems to have worked								
44	8.1	10	Verification	Verifying that "suspension" = "zawieszenie"	43	Open Google and type "zawieszenie Wikipedia"	17:54	Google		3.1	Y			1	Starting from hypothesis about a given word								
45	8.1	10	Verification	Verifying that "suspension" = "zawieszenie"	44	Open Wikipedia entry	17:58	Wikipedia		3.1	Y			1									
46	8.1	10	Verification	Verifying that "suspension" = "zawieszenie"	45	Change language to English	18:02	Wikipedia		3.1	Y			1									
47	8.1	10	Verification	Verifying that "suspension" = "zawieszenie"	46	Open the test and select that the sentence is correct	18:06	Test	Non-dictionary	3.1	--	Y	N	1	**Student wrongly identified the incorrect word**								
48	9.1	11	Lookup	Looking for the meaning of "unscrupulous"	47	Type "unscrupulous słownik" in Google	18:36	Google		3.2	Y			1									
49	9.1	11	Lookup	Verifying the meaning of "unscrupulous"	48	Open Bab.la and browse the list of results	18:4	Bab.la		3.2	Y			1									
50	9.1	11	Lookup	Verifying the meaning of "unscrupulous"	49	Open test and select the correct answer	18:5	Test	Mixed	3.2	--	Y	Y	1									
51	10.1	12	Verification	Verifying the correctness of "Darwin dis/uncovered..."	50	Copy the example and paste it in Google	19:01	Google		3.3	Y			1	Student worked so hastily that they even copied the "star" signifying an obligatory task; only one link appeared: scientific articles								
52	10.1	12	Verification	Verifying the correctness of "Darwin dis/uncovered..."	51	Open the only result: scientific articles	19:15	Google Scholar		3.3	Y			1	No relevant results shown								
53	10.1	12	Verification	Verifying the correctness of "Darwin dis/uncovered..."	52	Open Google search box and type "Darwin discovered"	19:38	Google		3.3	Y			1	a lot of relevant results displayed as a list of suggested search terms								
54	10.1	12	Verification	Verifying the correctness of "Darwin dis/uncovered..."	53	start adding the letters "herb..." to see no results and delete it	19:48	Google		3.3	Y			1	No relevant results shown; student decides that while this particular sentence does not exist in the language, they are satisfied with the more general pattern								
55	10.1	12	Verification	Verifying the correctness of "Darwin dis/uncovered..."	54	open test and give the correct answer	19:55	Test	Non-dictionary	3.3	--	Y	Y	1									
56	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	55	open Google and type "cone over dictionary"	20:12	Google		3.4	Y			1									
57	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	56	Browse through the list of results (scroll down and back up)	20:16	Google		3.4	Y			1	only results for "come over" show – the result of Google predictions								
58	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	57	Go back to the test	20:19	Test		3.4	--			1	checking whether this is really "cone over"								
59	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	58	Go back to the list of results	20:21	Google		3.4	Y			1									
60	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	59	Change the phrase to "coned over dictionary"	20:25	Google		3.4	Y			1									
61	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	60	Click on "coned" at Dictionary.com to open in the background	20:32	Google		3.4	Y			1	the window opens in the background								
62	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	61	Click on "coned" at Oxford Dictionaries to open in the background	20:35	Google		3.4	Y			1	the window opens in the background								
63	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	62	Open "coned" in Dictionary.com	20:37	Dictionary.com		3.4	Y			1									
64	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	63	Open "coned" in Oxford Dictionaries; browse the results	20:38	Oxford English Dictionary		3.4	Y			1	Native speakers' dictionary!; opening "coned" only shows the adjective, not the verb!								
65	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	64	Open "coned" in Oxford Dictionaries and browse the entry	20:47	Dictionary.com		3.4	Y			1	Entry for "cone" = N is browsed								
66	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	65	Go back to the list of results; browse	20:54	Google		3.4	Y			1									
67	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	66	Open the definition from Oxford English Dictionary in the background	21:05	Google		3.4	Y			1	the student had "cone sth off" displayed in the list of results (CALD!!)	1							
68	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	67	Open "cone" in Oxford English Dictionary	21:1	Oxford English Dictionary		3.4	Y			1	the entry for the noun opens								
69	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	68	Open the test	21:19	Test		3.4	--			1	verify the word sought								
70	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	69	Go back to the list of results	21:24	Google		3.4	Y			1									
71	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	70	Go back to "cone" in Oxford English Dictionary	21:26	Oxford English Dictionary		3.4	Y			1									
72	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	71	Type "cone Cambridge Dictionary" in Google	21:35	Google		3.4	Y			1									
73	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	72	Open the first result (N)	21:41	CALD		3.4	Y			1	**the phrase "cone sth off" is shown on the screen again, but the student does not check it...**	1							
74	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	73	Go back to the list of results	21:51	Google		3.4	Y			1									
75	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	74	Click on "traffic cone" in CALD and browse the entry	21:52	CALD		3.4	Y			1	**still looking for a noun as opposed to verb**			1					
76	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	75	Go back to the list of results	22:16	Google		3.4	Y			1									

77	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	76	Re-open the first result	22:18	CALD		3.4	Y			1											
78	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	77	Switch to Dictionary.com tab	22:21	Dictionary.com		3.4	Y			1	switching										
79	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	78	Go back to the list of results	22:23	Google		3.4	Y			1	switching between the tabs as a method for finding the answer; it might alleviate stress, but definitely no information will be found in relatively short time span										
80	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	79	Go back to "cone" in CALD and browse the entry	22:25	CALD		3.4	Y			1	switching										
81	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	80	Locate "cone sth off" link and open it	22:33	CALD		3.4	Y			1	Finally, the student saw the correct phrase! Nearly 2 minutes and 16 actions later than possible!!!										
82	11.1	13	Verification	Verifying whether "cone over" is the incorrect answer	81	Open the test and give the correct answer	22:37	Test	Mixed	3.4	--	Y	Y	1	This also proves that if the student had noticed it earlier, she would have opened it immediately										
83	12.1	14	Verification	Verifying "render progress"	82	Open Google and type "render progress"	22:57	Google		3.5	Y			1	**results show as N + N (attributive)**										
84	12.1	14	Verification	Verifying "render progress"	83	Type "render cambridge Dictionary"	23:06	Google		3.5	Y			1											
85	12.1	14	Verification	Verifying "render progress"	84	Open the first result and browse the entry	23:11	CALD		3.5	Y			1	the results suggest that this is not the word										
86	12.1	14	Verification	Verifying "render progress"	85	Go back to the test	23:18	Test		3.5	--			1											
87	12.1	14	Verification	Verifying "render progress"	86	Go back to CALD and type "progress" in the search bar	23:2	CALD		3.5	N			1											
88	12.1	14	Verification	Verifying "render progress"	87	Browse the entry	23:24	CALD		3.5	N			1	the correct collocation is shown										
89	12.1	14	Verification	Verifying "render progress"	88	Open the test and give the correct answer	23:26	Test		3.5	--			1	The student GIVES the correct answer!!!										
90	12.1	14	Verification	Verifying "render progress"	89	Go back to the test	23:42	Test		3.5	--			1	Goes back to the test the first time										
91	12.1	14	Verification	Verifying "render progress"	90	Re-open the entry for "progress" in CALD	23:47	CALD		3.5	N			1											
92	12.1	14	Verification	Verifying "render progress"	91	Re-open the entry for "cone sth off" in CALD	23:48	CALD		3.5	Y			1											
93	12.1	14	Verification	Verifying "render progress"	92	Type "render progresds" in Google	23:5	Google		3.5	Y			1											
94	12.1	14	Verification	Verifying "render progress"	93	Click on the suggested revised spelling	23:54	Google		3.5	Y			1											
95	12.1	14	Verification	Verifying "render progress"	94	Browse through the list of results (scroll down and back up)	23:55	Google		3.5	Y			1	again, results show as N + N (attributive)										
96	12.1	14	Verification	Verifying "render progress"	95	Type "render progress dictionary" in Google	23:59	Google		3.5	Y			1											
97	12.1	14	Verification	Verifying "render progress"	96	Browse through the list of results (scroll down and back up)	24:03	Google		3.5	Y			1	No relevant results shown										
98	12.1	14	Verification	Verifying "render progress"	97	Open the test and accept the correct answer	24:07	Test		3.5	--	Y	Y	1											
99	12.1	14	Verification	Verifying "render progress"	98	Go back to the test and browse the answers	24:2	Test	Mixed	3.2	--	Y	Y	1	Goes back to the test the **second** time										
100	13.1	15	Verification	Verifying "fall victim (to)"	99	Re-open the entry for "progress" in CALD	25:03	CALD		3.2	N			1											
101	13.1	15	Verification	Verifying "fall victim (to)"	100	type "fall victim dictionary"	25:08	Google		3.2	Y			1											
102	13.1	15	Verification	Verifying "fall victim (to)"	101	Browse the list of results	25:1	Google		3.2	Y			1	The cursor is over "fall victim to something" CALD										
103	13.1	15	Verification	Verifying "fall victim (to)"	102	Go back to the test	25:12	Test		3.2	--			1											
104	13.1	15	Verification	Verifying "fall victim (to)"	103	Go back to the list of results	25:14	Google		3.2	Y			1											
105	13.1	15	Verification	Verifying "fall victim (to)"	104	Open CALD (1st result)	25:15	CALD		3.2	Y			1	Relevant info presented										
106	13.1	15	Verification	Verifying "fall victim (to)"	105	Re-open the entry for "cone" in Dictionary.com	25:19	Dictionary.com		3.2	Y			1											
107	13.1	15	Verification	Verifying "fall victim (to)"	106	Close the aforementioned entry and a neighboring tab; open test	25:21	Test	Mixed	3.2	--	Y	--	1	Confirmed their ideas about "fall victim to..."										
108	14.1	16	Verification	Verifying "drive forcibly"	107	Type "drive forcibly" in Google; browse the list of results	25:34	Google		3.1	Y			1	the results do not provide a clear-cut answer as to the correctness of the phrase (some misleadingly point to crossword puzzles)										
109	14.1	16	Verification	Verifying "drive forcibly"	108	Go back to the test; browse	25:41	Test		3.1	--			1											
110	14.1	16	Verification	Verifying "drive forcibly"	109	Accept the incorrect answer	25:51	Test	Non-dictionary	3.1	--	N		1	This time the source of mistake was correctly located, but incorrectly assessed as good English.										
								2016-04-07-1522-56.flv																	
112	1.2	1	Verification	Verifying "put in inconvenience"	1	Type "put in inconvenience" and browse the list of results	10:51	Google		1.2	Y			2	no matching results shown, but the Legal Dictionary (by the FreeDictionary) suggests a correct solution; sub-text in Macmillan also shows "put someone to trouble/inconvenience..." etc.										
113	1.2	1	Verification	Verifying "put in inconvenience"	2	Type "put to inconvenience" and browse the list of results	11:13	Google		1.2	Y			2	The student used Google list as a dictionary and now performs a verification task										

114	1.2	1	Verification	Verifying "put in inconvenience"	3	Open the MED definition and browse the entry	11:19	MED		1.2	Y			2	Third entry relevant										
115	1.2	1	Verification	Verifying "put in inconvenience"	4	Open the test and give the correct answer	11:41	Test	Mixed	1.2	--	Y	Y	2	**Quick and efficient** – NEW strategy: try to type in sth, Google suggests corrections, follow the suggestion										
116	2.2	2	Verification	Verifying "in no uncertain terms"	5	type "in no uncertain terms" and browse the list of results	12:41	Google		1.3	Y			2											
117	2.2	2	Verification	Verifying "in no uncertain terms"	6	Click on the MED definition and browse the entry	12:52	MED		1.3	Y			2											
118	2.2	2	Verification	Verifying "in no uncertain terms"	7	Open the test and give the correct answer	12:55	Test	Mixed	1.3	--	Y	Y	2											
119	3.2	3	Lookup	Looking for "(loath) to admit defeat)"	8	Open MED and type in "loath"	13:32	MED		1.4	N			2											
120	3.2	3	Lookup	Looking for "(loath) to admit defeat)"	9	Browse the entry	13:38	MED		1.4	N			2											
121	3.2	3	Lookup	Looking for "(loath) to admit defeat)"	10	Open the test	13:4	Test		1.4	--			2											
122	3.2	3	Lookup	Looking for "(loath) to admit defeat)"	11	Re-open the entry for "loath" in MED	13:44	MED		1.4	N			2											
123	3.2	3	Lookup	Looking for "(loath) to admit defeat)"	12	Open the test and type "to"	13:48	Test	Dictionary	1.4	--	Y	Y	2	Student realized that they need the 2nd part, i.e. admit defeat										
124	3.2	4	Verification	Verifying "loath to defeat"	13	Type "loath to defeat" and browse the list of results	14:06	Google	Google	1.4	Y	N	--	2	No relevant results shown										
125	3.2	5	Lookup	Looking for collocations of "defeat"	14	Open MED, type "defeat" and browse the list of results	14:19	MED		1.4	N			2	Relevant info presented										
126	3.2	5	Lookup	Looking for collocations of "defeat"	15	Open the test	14:34	Test	Dictionary	1.4	--	N	--	2	No action on the item										
127	4.2	6	Lookup	Looking for collocations of "store"	16	Open MED, type "store"	14:49	MED		1.5	N			2											
128	4.2	6	Lookup	Looking for collocations of "store"	17	Browse the entry	14:53	MED		1.5	N			2	No relevant results shown										
129	4.2	6	Lookup	Looking for collocations of "store"	18	Open the test & do nothing	14:57	Test		1.5	--			2											
130	4.2	6	Lookup	Looking for collocations of "store"	19	Open MED and browse the list of results for "store" again	15:01	MED		1.5	N			2	relevant results ("in store") shown as a collocation below (hyperlink)										
131	4.2	6	Lookup	Looking for collocations of "store"	20	Open the test	15:17	Test		1.5	--			2	switching										
132	4.2	6	Lookup	Looking for collocations of "store"	21	Open MED and browse the list of results for "store" again	15:28	MED		1.5	N			2	switching										
133	4.2	6	Lookup	Looking for collocations of "store"	22	Open the test	15:33	Test	Dictionary	1.5	--	N	--	2	the student keeps switching between the test and dictionary without any plan or purpose										
134	4.2	7	Lookup	Looking for the sentence in Google	23	Copy the example and paste it in Google	15:36	Google		1.5	Y			2	Cheaping?										
135	4.2	7	Lookup	Looking for the sentence in Google	24	Browse the list of results	15:43	Google		1.5	Y			2	Relevant info presented ("you never know what God has in store…")										
136	4.2	7	Lookup	Looking for the sentence in Google	25	Click on the Google textbox to see the list of suggestions	15:53	Google		1.5	Y			2	No relevant results shown										
137	4.2	7	Lookup	Looking for the sentence in Google	26	Continue browsing the list of results	15:55	Google		1.5	Y			2											
138	4.2	7	Lookup	Looking for the sentence in Google	27	Open the test move the cursor over available tabs	16	Test	Google	1.5	--	N	--	2											
139	3.2	8	Lookup	Looking for collocations of "loath"	28	Open OED and type in "loath"	16:1	OED		1.4	N			2	By re-starting the search, the student shows that they don't understand that they now need to find the collocation of "defeat", as they already know that sb can "loath do do sth."										
140	3.2	8	Lookup	Looking for collocations of "loath"	29	Browse the entry	16:17	OED		1.4	N			2	The correct collocation is shown, but it was already discovered by the student!										
141	3.2	8	Lookup	Looking for collocations of "loath"	30	Go back to the test	16:21	Test	Dictionary	1.4	--	Y	--	2	Successful, but unnecessary...										
142	3.2	9	Lookup	Looking for collocations of "defeat"	31	Open MED page for "defeat"	16:28	MED		1.4	N			2	the correct collocation is shown										
143	3.2	9	Lookup	Looking for collocations of "defeat"	32	Open the test	16:36	Test		1.4	--			2											
144	3.2	9	Lookup	Looking for collocations of "defeat"	33	Go back to MED	16:39	MED		1.4	N			2											
145	3.2	9	Lookup	Looking for collocations of "defeat"	34	Go back to the test	16:41	Test		1.4	--			2	Short attention span? The student keeps switching between the test and dictionary.										
146	3.2	9	Lookup	Looking for collocations of "defeat"	35	Write the correct response	16:44	Test	Dictionary	1.4	N	Y	Y	2	Too much hectic switching; the student only reused the knowledge found in the previous search…										
147	4.2	10	Lookup	Looking for collocations of "store"	36	Type "store" in OED	18	OED		1.5	N			2	One relevant entry: lie in store…										
148	4.2	10	Lookup	Looking for collocations of "store"	37	Browse the entry	18:02	OED		1.5	N			2											
149	4.2	10	Lookup	Looking for collocations of "store"	38	Go back to the test	18:16	Test		1.5	--			2	switching										
150	4.2	10	Lookup	Looking for collocations of "store"	39	Go back to OED & browse the entry	18:17	OED		1.5	N			2	switching										
151	4.2	10	Lookup	Looking for collocations of "store"	40	Go back to the test	18:3	Test		1.5	--			2											

152	4.2	10	Lookup	Looking for collocations of "store"	41	Type "what lays in store" in the test	18:43	Test		1.5	--			2	Typed in incorrect answer, but went back to checking										
153	4.2	10	Lookup	Looking for collocations of "store"	42	Go back to OED & browse the entry	18:46	OED		1.5	N			2	Still switching back and forth…										
154	4.2	10	Lookup	Looking for collocations of "store"	43	Go back to the test	18:51	Test	Dictionary	1.5	--	N	--	2	The structure is correct, but the student confused "lie" and "lay"										
155	3.2	11	Lookup	Looking for the original sentence in Google	44	Copy the sentence and paste it in Google	19:02	Google		1.4	Y			2	Cheaping!										
156	3.2	11	Lookup	Looking for the original sentence in Google	45	Find the Quizlet result and open it	19:1	Google		1.4	Y			2											
157	3.2	11	Lookup	Looking for the original sentence in Google	46	Browse the list of results in Quizlet	19:2	Quizlet		1.4	Y			2	A very much nondictionary source ;-)										
158	3.2	11	Lookup	Looking for the original sentence in Google	47	Open the test and compare the answer	19:43	Test	Non-dictionary	1.4	--	Y	Y	2											
159	4.2	12	Lookup	Looking for the sentence in Quizlet	48	Use Ctrl + F to find the keyword "store" in the quizlet collection	19:53	Quizlet		1.5	N			2	Cheaping again; silimar phrase is available										
160	4.2	12	Lookup	Looking for the sentence in Quizlet	49	Go back to the test	20:14	Test		1.5	--			2											
161	4.2	12	Lookup	Looking for the sentence in Quizlet	50	Go back to Quizlet	20:17	Quizlet	Non-dictionary	1.5	N	Y	--	2	Learner seems to have confirmed their answer										
162	2.2	13	Lookup	Looking for phrases with "put" in the Quizlet set	51	Use Ctrl + F to find the keyword "put" in the quizlet collection	20:2	Quizlet		1.2	N			2	No relevant results shown										
163	2.2	13	Lookup	Looking for phrases with "put" in the Quizlet set	52	Go back to the test	20:24	Test	Non-dictionary	1.2	--	N	Y	2	Cheaping; No relevant information found										
164	1.2	14	Lookup	Looking for phrases with "tool" in Quizlet	53	Browse activity 1.1. for keywords	20:34	Test		1.1	N			2											
165	1.2	14	Lookup	Looking for phrases with "tool" in Quizlet	54	Use Ctrl + F to find the keyword "tool" in the quizlet collection	20:36	Quizlet		1.1	N			2	Cheaping; No relevant information found										
166	1.2	14	Lookup	Looking for phrases with "tool" in Quizlet	55	Go back to the test	20:44	Test	Non-dictionary	1.1	--	N	Y	2	The activity was not successful, but the correct answer was not changed										
167	5.2	15	Lookup	Looking for the sentence in Google	56	Look for the sentence in Google	21:22	Google	Non-dictionary	2.1	Y	N	Y	2	Cheaping										
168	5.2	16	Lookup	Looking for collocations of "tow"	57	Type "tow" in Google	21:41	Google		2.1	Y			2											
169	5.2	16	Lookup	Looking for meaning of "tow"	58	Click on the bab.la dictionary for resulsts	21:44	Bab.la	Mixed	2.1	Y	Y	Y	2											
170	6.2	17	Lookup	Looking for the sentence in Google	59	Look for the sentence in Google	21:56	Google		2.2	Y			2	Cheaping; No relevant information found										
171	6.2	17	Lookup	Looking for the sentence in Google	60	Go back to the test	22:12	Test	Non-dictionary	2.2	--	N	--	2	No action										
172	7.2	18	Lookup	Looking for collocations of "sloppy"	61	Type "sloppy" in Google	22:27	Google		2.3	Y			2											
173	7.2	18	Lookup	Looking for collocations of "sloppy"	62	Open the word in bab.la	22:31	Bab.la		2.3	Y			2	Wasted 2 CHANCES! The picture which opened in Google showed food, but even before the phrase "sloppy joe" came up as a suggested answer	1									
174	7.2	18	Lookup	Looking for collocations of "sloppy"	63	Go back to the list of results	22:38	Google		2.3	Y			2	The picture is displayed once again!	1									
175	7.2	18	Lookup	Looking for collocations of "sloppy"	64	Hover over the pictures with the cursor & scroll the list for more pictures	22:48	Google		2.3	Y			2	Finally, some pictures get noticed										
176	7.2	18	Lookup	Looking for collocations of "sloppy"	65	Type "sloppy" in search box & type in "sloppy joe"	23:05	Google		2.3	Y			2	Despite all evidence (more pictures & recipies) the student still seems to disbelief that sloppy joe is a type of food OR maybe their curiosity pushes them towards further discovery OR maybe they are too careful					1					
177	7.2	18	Lookup	Looking for collocations of "sloppy"	66	Open the test and type the correct answer	23:1	Test	Mixed	2.3	--	Y	Y	2											
178	8.2	19	Lookup	Looking for the sentence in Google	67	Look for the sentence in Google	23:32	Google	Non-dictionary	2.4	Y	Y	--	2	Relevant info presented; student seems to have successfully located the information										
179	8.2	20	Verification	Verifying "break in"	68	Open OED and type in "break in"	23:52	OED		2.4	N			2	No relevant results shown; ironically, OALD would be much better in this case										
180	8.2	20	Verification	Verifying "break in"	69	Open Google and type "break in shoes"	24:17	Google		2.4	Y			2	No dictionary sources, but many relevant articles										
181	8.2	20	Verification	Verifying "break in"	70	open test and give the correct answer	24:33	Test	Mixed	2.4	--	Y	Y	2	Dictionary didn't help										
182	9.2	21	Lookup	Looking for the sentence in Google	71	Look for the sentence in Google	24:37	Google		2.5	Y			2	Cheaping										
183	9.2	21	Lookup	Looking for the sentence in Google	72	Go back to the test	24:57	Test	Non-dictionary	2.5	--	N	--	2											
184	10.2	22	Lookup/translation	Looking for translation of "[break down]"	73	Type "rozdzielać się ang"	26:11	Google		2.5	Y			2											
185	10.2	22	Lookup/translation	Looking for translation of "[break down]"	74	Open the first result: bab.la	26:14	bab.la		2.5	Y			2	Some relevant results shown in translations	1									
186	10.2	22	Lookup/translation	Looking for translation of "[break down]"	75	Browse the list of results	26:16	bab.la		2.5	Y			2											
187	10.2	22	Lookup/translation	Looking for translation of "[break down]"	76	Open the test	26:41	bab.la	Mixed	2.5	--	N	--	2	Nothing typed in										
188	11.2	23	Giving correct answer	Giving correct answer	77	Give the correct answer without using dictionary	26:5	Test	No consultation	2.2	--	Y	Y	2	No consultation required; answer correct										
189	12.2	24	Lookup/translation	Looking for translation of "strong"	78	Type "kwintesencyjny" in Google	27	Google		2.2	Y			2	**WRONG** Polish word		1								
190	12.2	24	Lookup/translation	Looking for translation of "strong"	79	Open the first result (translatica)	27:04	translatica.pl	Mixed	2.2	N	N	--	2	No relevant results shown										

191	13.2	25	Verification	Verify whether "essence" matches the meaning	80	Open OED and type in "essence"	27:14	OED	Dictionary	2.2	N	N	--	2	No relevant results shown										
192	12.2	26	Lookup/translation	Looking for translation of "strong"	81	Go back to translatica	27:37	translatica.pl	Dictionary	2.2	N	N	--	2	Switching between sources and activities again										
193	10.2	27	Lookup/translation	Looking for translation of "[break down]"	82	Type "rozkładać się" in Google	28:05	Google		2.5	Y			2											
194	10.2	27	Lookup/translation	Looking for translation of "[break down]"	83	Open the first result (bab.la)	28:09	bab.la		2.5	Y			2											
195	10.2	27	Lookup/translation	Looking for translation of "[break down]"	84	Browse the list of translations	28:1	bab.la		2.5	Y			2	Cursor hovers over relevant results										
196	10.2	27	Lookup/translation	Looking for translation of "[break down]"	85	Use Ctrl +F to highlight phrases with "down"	28:36	bab.la	Mixed	2.5	Y	N	--	2	**despite the presence of relevant results**, incorrect phrase was identified (lay down)						1				
197	10.2	28	Verification	Verifying whether "lay down" is the correct answer	86	Open OED and type in "loay down"	28:53	OED		2.5	N			2	After										
198	10.2	28	Verification	Verifying whether "lay down" is the correct answer	87	Correct spelling to "lay down"	29	OED		2.5	N			2											
199	10.2	28	Verification	Verifying whether "lay down" is the correct answer	88	Browse the results (entry for "lay down the law")	29:01	OED		2.5	N			2											
200	10.2	28	Verification	Verifying whether "lay down" is the correct answer	89	Go back to test	29:11	Test		2.5	--			2											
201	10.2	28	Verification	Verifying whether "lay down" is the correct answer	90	Go back to OED	29:17	OED	Dictionary	2.5	N	N	--	2											
202	10.2	29	Lookup	Looking for collocations of "expenditure"	91	Type "expenditure" in OED	29:2	OED		2.5	N			2	No relevant results shown										
203	10.2	29	Lookup	Looking for collocations of "expenditure"	92	Type "expenditure" in MED	29:32	MED		2.5	N			2	No relevant results shown										
204	10.2	29	Lookup	Looking for collocations of "expenditure"	93	Go back to the test	29:52	Test	Dictionary	2.5	--	N	N	2											
205	14.2	30	Verification	Verifying whether "drive forcibly" is a correct collocation	94	Type "drive forcibly" in Google; browse the list of results	30:3	Google		3.1	Y			2											
206	14.2	30	Verification	Verifying whether "drive forcibly" is a correct collocation	95	Open the first result (wordgrabber.com = crossword solver)	30:51	Word-grabber		3.1	Y			2											
207	14.2	30	Verification	Verifying whether "drive forcibly" is a correct collocation	96	Go back to test	31:13	Test		3.1	--			2											
208	14.2	30	Verification	Verifying whether "drive forcibly" is a correct collocation	97	Go back to Google results	31:21	Google		3.1	Y			2											
209	14.2	30	Verification	Verifying whether "drive forcibly" is a correct collocation	98	Go back to test & give incorrect answer	31:26	Test	Mixed	3.1	--	N	N	2											
210	15.2	31	Verification	Verifying whether "unscrupulous practices" is a correct collocation	99	Type "unscrupulous practices" in Google	32:15	Google		3.2	Y			2											
211	15.2	31	Verification	Verifying whether "unscrupulous practices" is a correct collocation	100	Leave the cursor over the text about unscrupulous practices in TripAdvisor	32:19	Google		3.2	Y			2											
212	15.2	31	Verification	Verifying whether "unscrupulous practices" is a correct collocation	101	Open entry for "unscrupulous" in Bab.la	32:27	Bab.la		3.2	Y			2											
213	15.2	31	Verification	Verifying whether "unscrupulous practices" is a correct collocation	102	Go back to the test & give the correct answer	32:33	Test	Mixed	3.2	--	Y	Y	2	no relevant results shown; however "unsrupolous trade" might help find the pattern										
214	16.2	31	Verification	Verifying whether "fall victim to..." is a correct collocation	103	Open OED and type in "fall victim"	32:44	OED		3.2	N			2	Suggestion "fall victim to" appears										
215	16.2	31	Verification	Verifying whether "fall victim to..." is a correct collocation	104	Click on suggestion and open entry for "fall victim to"	32:46	OED		3.2	N			2											
216	16.2	31	Verification	Verifying whether "fall victim to..." is a correct collocation	105	Go back to test & leave the correct answer	32:49	Test	Dictionary	3.2	--	Y	--	2											
217	17.2	32	Verification	Verifying whether "uncover" is the incorrect collocation	106	Open the test and give the correct answer	33:01	Test		3.3	--			2											
218	17.2	32	Verification	Verifying whether "uncover" is the incorrect collocation	107	Open OED and type in "uncover"	33:09	OED		3.3	N			2											
219	17.2	32	Verification	Verifying whether "uncover" is the incorrect collocation	108	Open the test and give the correct answer	33:01	Test	Dictionary	3.3	--	N	Y	2	Student keeps on searching, so I assume that the evidence wasn't convincing						1				
220	18.2	33	Verification	Verifying whether sentence 3.3 is correct	109	Copy the sentence and paste it in Google	33:25	Google	Google	3.3	Y	N	--	2	Cheaping; No relevant information found										
221	19.2	34	Lookup	Finding collocations of "uncover"	110	Open MED & type in "uncover"	33:48	MED		3.3	N			2											
222	19.2	34	Lookup	Finding collocations of "uncover"	111	Open the "uncover" tab in OED	34:05	OED		3.3	N			2											
223	19.2	34	Lookup	Finding collocations of "uncover"	112	Open the test & give correct answer	34:12	Test	Dictionary	3.3	--	Y	Y	2											
224	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	113	Open Google and type "cone over"	34:25	Google		3.4	Y			2	results for "come over" shown with an option to switch to "cone over"										
225	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	114	Go back to the test	34:3	Test		3.4	--			2											
226	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	115	Open Google and type "con over"	34:39	Google		3.4	Y			2	No relevant results shown										
227	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	116	Type in "cone" in OED	34:49	OED		3.4	N			2	Relevant info presented										
228	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	117	Type "cone off" in Google	35:03	Google		3.4	Y			2	Verifying OAD in Google										
229	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	118	Type "cone off polski" in Google	35:1	Google		3.4	Y			2											
230	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	119	Click on "come off" in bab.la	35:14	Bab.la		3.4	Y			2	Wrong English word										
231	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	120	Re-open the entry for "cone" in OED	35:18	OED		3.4	N			2											

232	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	121	Re-open the entry for "come off" in bab.la	35:27	Bab.la		3.4	Y			2									
233	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	122	Type "cone" in Bab.la	35:33	Bab.la		3.4	Y			2	Realized that the previous word was incorrect								
234	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	123	Go back to the test	35:4	Test		3.4	--			2									
235	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	124	Re-open the entry for "cone" in OED	35:47	Bab.la		3.4	N			2									
236	20.2	35	Verification	Verifying whether "cone over" is the correct phrase	125	Go back to test & give correct answer	35:49	Test	Mixed	3.4	--	Y	Y	2									
237	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	126	Open the test and give incorrect answer	36:22	Test		3.2	--			2	Mark "victim" as incorrect and type "[rey"								
238	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	127	Open OED and type in "break in"	36:35	OED		3.2	N			2	Info only refers to the first meaning (be killed) – compare with CALD, MerriamWebster, LDOCE								
239	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	128	Open the test & leave the incorrect answer	36:54	Test		3.2	--			2									
240	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	129	Type "fall victim" in Google	37:39	Google		3.2	Y			2									
241	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	130	Click on the result in CALD	37:44	CALD		3.2	Y			2	Relevant info presented								
242	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	131	Go back to the test	37:46	Test		3.2	--			2									
243	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	132	Go back to CALD	37:49	CALD		3.2	Y			2									
244	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	133	Go back to the test	38:04	Test		3.2	--			2									
245	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	134	Go back to CALD	38:11	CALD		3.2	Y			2	Switching between sources and activities again								
246	16.2	36	Verification	Verifying whether "fall victim to..." is a correct collocation	135	Go back to the test & give the correct answer	38:29	Test	Dictionary	3.2	--	Y	Y	2									
247	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	136	Type "forcibly" in OED	38:47	OED		3.1	N			2									
248	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	137	Open MED and type in "forcibly"	39:01	MED		3.1	N			2									
249	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	138	Go back to test	39:12	Test		3.1	--			2									
250	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	139	Type "gwałtownie" in Google	39:17	Google		3.1	Y			2	No relevant results shown								
251	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	140	Type "gwałtownie ang" in Google	39:22	Google		3.1	Y			2	Added the word "ang"								
252	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	141	Open results in Bab.la	39:24	Bab.la		3.1	Y			2									
253	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	142	Type "drive fiercely" in Google	39:52	Google		3.1	Y			2									
254	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	143	Open the result in MED	40:02	MED		3.1	Y			2									
255	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	144	Go back to results for "drive fiercely" in Google	40:05	Google		3.1	Y			2	Switching between the sources again								
256	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	145	Go back to results for "gwałtownie" Bab.la	40:07	Bab.la		3.1	Y			2	Switching between the sources again								
257	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	146	Go back to results for "drive fiercely" in Google	40:13	Google		3.1	Y			2	Switching between the sources again								
258	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	147	Type "drive sharply" in Google	40:17	Google		3.1	Y			2	No relevant results shown								
259	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	148	Type "jechać gwałtownie ang" in Google	40:3	Google		3.1	Y			2									
260	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	149	Open "szybko, gwałtownie" in Diki	40:37	Diki		3.1	Y			2	No relevant results shown								
261	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	150	Go back to "forcibly" in OED	40:55	OED		3.1	Y			2	Switching between the sources again								
262	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	151	Go back to the test	40:57	Test		3.1	--			2									
263	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	152	Go back to "forcibly" in OED	41:29	OED		3.1	Y			2	Switching between the sources again								
264	14.2	37	Verification	Verifying whether "drive forcibly" is a correct collocation	153	Go back to the test	41:44	Test	Mixed	3.1	--	N	N	2	Switching between sources and activities again								
265	10.2	38	Lookup	Looking for collocation "break down"	154	Copy the second part of the phrase and paste it in Google	42:37	Google		2.5	Y			2	Cheaping; No relevant information shown								
266	10.2	38	Lookup	Looking for collocation "break down"	155	type "down as follows" in Google	43:08	Google		2.5	Y			2	Relevant suggestions shown in Google								
267	10.2	38	Lookup	Looking for collocation "break down"	156	type "breaks down as follows" in Google	43:16	Google		2.5	Y			2	student corrects the search term in accordance with suggestions; relevant results shown								
268	10.2	38	Lookup	Looking for collocation "break down"	157	Open results in Linguee	43:19	Linguee		2.5	Y			2	Relevant info presented								
269	10.2	38	Lookup	Looking for collocation "break down"	158	Open the test and give the correct answer	43:34	Google	Mixed	2.5	Y	Y	Y	2									
						2016-04-07-1526-35.flv																	
271	1.3	1	Verification	Verifying whether "put to inconvenience exists"	1	Type "put to inconvenience" in Google	8:47	Google		1.2	Y			3									

272	1.3	1	Verification	Verifying whether "put to inconvenience exists"	2	Open the result in The Free Dictionary	9:17	The Free Dictionary		1.2	Y			3										
273	1.3	1	Verification	Verifying whether "put to inconvenience exists"	3	Open the test and start typing the correct answer	9:2	Test		1.2	--			3										
274	1.3	1	Verification	Verifying whether "put to inconvenience exists"	4	Go back to the definition in The Free Dictionary	9:35	The Free Dictionary		1.2	Y			3										
275	1.3	1	Verification	Verifying whether "put to inconvenience exists"	5	Go back to the test and give the correct answer	9:39	Test	Mixed	1.2	--	Y	Y	3	despite giving the correct answer, the process is continued									
276	1.3	1	Verification	Verifying whether "put to inconvenience exists"	6	Go back to the list of results	9:57	Google		1.2	Y			3										
277	1.3	1	Verification	Verifying whether "put to inconvenience exists"	7	Open results for "put to" in MED	10	MED		1.2	Y			3	Relevant info presented									
278	1.3	1	Verification	Verifying whether "put to inconvenience exists"	8	Go back to the list of results	10:17	Google		1.2	Y			3										
279	1.3	1	Verification	Verifying whether "put to inconvenience exists"	9	Open "use inconvenience in a sentence" from Yourdictionary	10:19	YourDicitonary		1.2	Y			3										
280	1.3	1	Verification	Verifying whether "put to inconvenience exists"	10	Go back to the list of results	10:2	Google		1.2	Y			3										
281	1.3	1	Verification	Verifying whether "put to inconvenience exists"	11	Open "put to inconvenience" in Academic	10:21	Academic (enacademic.com)		1.2	Y			3	enacademic.com									
282	1.3	1	Verification	Verifying whether "put to inconvenience exists"	12	Type "cambridge dictionary" in Google	10:47	Google		1.2	Y			3										
283	1.3	1	Verification	Verifying whether "put to inconvenience exists"	13	Open Cambridge English-Polish & type in "inconvenience"	10:58	Cambridge English-Polish (bilingualized)		1.2	N			3	No relevant results shown									
284	1.3	1	Verification	Verifying whether "put to inconvenience exists"	14	type "put to inconvenience" in C E-P	11:18	Cambridge English-Polish (bilingualized)		1.2	N			3	No relevant results shown									
285	1.3	1	Verification	Verifying whether "put to inconvenience exists"	15	click on "inconvenience" on the list of results	11:24	Cambridge English-Polish (bilingualized)		1.2	N			3	Back to the same result									
286	1.3	1	Verification	Verifying whether "put to inconvenience exists"	16	Go back to the list of results	11:27	Cambridge English-Polish (bilingualized)		1.2	N			3										
287	1.3	1	Verification	Verifying whether "put to inconvenience exists"	17	open "put" in suggested results	11:28	Cambridge English-Polish (bilingualized)		1.2	N			3	No relevant results shown									
288	1.3	1	Verification	Verifying whether "put to inconvenience exists"	18	expaind the full list of results for "put"	11:34	Cambridge English-Polish (bilingualized)		1.2	N			3	No relevant results shown									
289	1.3	1	Verification	Verifying whether "put to inconvenience exists"	19	Go back to the test & leave the correct answer	11:43	Test	Mixed	1.2	--	Y	Y	3										
290	2.3	2	Lookup	Looking for collocations of "loath"	20	Open C E-P & look up "loath"	12:21	Cambridge English-Polish (bilingualized)	Dictionary	1.4	N	Y	--	3	Relevant info presented									
291	2.3	2	Lookup	Looking for collocations of "defeat"	21	Open C E-P & look up "defeat"	12:41	Cambridge English-Polish (bilingualized)		1.4	N			3	WRONG DICTIONARY! WRONG PART OF SPEECH Very little information on collocations. CALD might be much more helpful			1			1			
292	2.3	2	Lookup	Looking for collocations of "defeat"	22	Go back to the test	12:46	Test		1.4	--			3										
293	2.3	2	Lookup	Looking for collocations of "defeat"	23	Go back to C E-P	12:58	Cambridge English-Polish (bilingualized)		1.4	N			3										
294	2.3	2	Lookup	Looking for collocations of "defeat"	24	Go back to the test	13:02	Test	Dictionary	1.4	--	N	--	3	Switching between sources and activities									
295	2.4	3	Lookup	Looking for entire sentence	25	Copy the sentence and paste it in Google	13:06	Google		1.3	Y			3	No relevant results shown									
296	2.4	3	Lookup	Looking for entire sentence	26	Go back to the test	13:16	Test	Google	1.3	--	N	--	3										
297	2.3	4	Lookup	Looking for collocations of "defeat"	27	Re-open "defeat" in C E-P & scroll over suggested related forms	13:26	Cambridge English-Polish (bilingualized)		1.4	N			3	WRONG POS + LEARNER LOOKS FOR COLLOCATIONS IN THE LIST OF RELATED ENTRIES			1						
298	2.3	4	Lookup	Looking for collocations of "defeat"	28	Go back to the test	13:35	Test	Dictionary	1.4	--	N	--	3	WRONG DICTIONARY						1			
299	3.3	5	Lookup	Looking for collocations of "store"	29	Look up "store for" in C E-P	13:58	Cambridge English-Polish (bilingualized)		1.5	N			3	Info relevant (be in store). LOOKING IN A DICTIONARY AS IF IT WAS GOOGLE ("store for" = not likely to be an entry).							1		
300	3.3	5	Lookup	Looking for collocations of "store"	30	Go back to the test	14:05	Test		1.5	--			3										
301	3.3	5	Lookup	Looking for collocations of "store"	31	Go back to C E-P	14:08	Cambridge English-Polish (bilingualized)		1.5	N			3	Switching between the source and the activity									
302	3.3	5	Lookup	Looking for collocations of "store"	32	Go back to the test & give the correct answer	14:12	Test	Dictionary	1.5	--	Y	Y	3	After a lot of switching, correct answer is given									
303	4.3	6	Verification	Verifying "on term with"	33	Type "on term with" in C E-P	14:3	Cambridge English-Polish (bilingualized)		1.3	N			3	Incorrect phrase – it's better to test it in Google!									
304	4.3	6	Verification	Verifying "on term with"	34	Browse the list of suggestions	14:34	Cambridge English-Polish (bilingualized)		1.3	N			3	Of course, no entry opened							1		
305	4.3	6	Verification	Verifying "on term with"	35	Click on "in terms of"	14:39	Cambridge English-Polish (bilingualized)		1.3	N			3	Opens the entry for "terms". Relevant results shown									
306	4.3	6	Verification	Verifying "on term with"	36	Go back to test	14:44	Test		1.3	--			3	Switching between sources and activities									
307	4.3	6	Verification	Verifying "on term with"	37	Go back to C E-P	14:5	Cambridge English-Polish (bilingualized)		1.3	N			3	Switching between sources and activities									
308	4.3	6	Verification	Verifying "on term with"	38	Go back to test	14:52	Test		1.3	--			3	Switching between sources and activities									
309	4.3	6	Verification	Verifying "on term with"	39	Go back to C E-P	14:55	Cambridge English-Polish (bilingualized)		1.3	N			3	Switching between sources and activities									
310	4.3	6	Verification	Verifying "on term with"	40	Go back to test & start typing the answer	14:58	Test		1.3	--			3	Switching between sources and activities									

311	4.3	6	Verification	Verifying "on term with"	41	Go back to C E-P	15:09	Cambridge English-Polish (bilingualized)		1.3	N			3	Switching between sources and activities									
312	4.3	6	Verification	Verifying "on term with"	42	Go back to test & give the correct answer	15:14	Test	Dictionary	1.3	--	Y	Y	3	Switching between sources and activities									
313	2.3	7	Lookup	Looking for collocations of "defeat"	43	Open C E-P & look up "defeat"	15:49	Cambridge English-Polish (bilingualized)		1.4	N			3	Doing exactly the same thing as before…									
314	2.3	7	Lookup	Looking for collocations of "defeat"	44	Open test & type in the first part of the answer	15:56	Test		1.4	--			3										
315	2.3	7	Lookup	Looking for collocations of "defeat"	45	Go back to C E-P	16:16	Cambridge English-Polish (bilingualized)		1.4	N			3	STILL doesn't know the POS of the word sought			1						
316	2.3	7	Lookup	Looking for collocations of "defeat"	46	Open test, delete answer & type "?"	16:21	Test	Dictionary	1.4	--	N	N	3	Switching between sources and activities									
317	5.3	8	Lookup	Looking for meaning of "tow"	47	Open C E-P & look up "tow"	17:23	Cambridge English-Polish (bilingualized)		2.1	N			3										
318	5.3	8	Lookup	Looking for meaning of "tow"	48	Open the test	17:31	Test	Dictionary	2.1	--	Y	--	3										
319	6.3	9	Verification	Verifying whether "strong" is the correct answer	49	Open C E-P & look up "strong"	17:34	Cambridge English-Polish (bilingualized)		2.1	N			3										
320	6.3	9	Verification	Verifying whether "strong" is the correct answer	50	Open C E-P & look up "engine"'	17:46	Cambridge English-Polish (bilingualized)		2.1	N			3	No relevant collocations shown									
321	6.3	9	Verification	Verifying whether "strong" is the correct answer	51	Go back to test	18	Test		2.1	--			3	NO instinct to look in other sources; looking for PROBLEMS in one's UNDERSTANDING OF THE QUESTION									
322	6.3	9	Verification	Verifying whether "strong" is the correct answer	52	type "mocny ang" in Google	18:2	Google		2.1	Y			3										
323	6.3	9	Verification	Verifying whether "strong" is the correct answer	53	Open "mocny" in Bab.;a	18:22	Bab.la		2.1	Y			3										
324	6.3	9	Verification	Verifying whether "strong" is the correct answer	54	Go back to C E-P & lookup "strong"	18:25	Cambridge English-Polish (bilingualized)	Mixed	2.1	N	N	N	3	Student feels so UNCOMFORTABLE with other sources that they go back to C E-P in 3 seconds				1		1			
325	7.3	9	Verification	Verifying whether "strong tea" is the correct answer	55	Type "strong tea" in Google	18:34	Google		2.2	Y			3	**Switching** between tasks; Student starts another search before the results of the previous one even loads									
326	7.3	9	Verification	Verifying whether "strong tea" is the correct answer	56	Browse the list of results; mouse hovers over relevant information	18:35	Google		2.2	Y			3	Relevant info presented									
327	7.3	9	Verification	Verifying whether "strong tea" is the correct answer	57	Re-open "mocny" in bab.la	18:41	Bab.la		2.2	Y			3										
328	7.3	9	Verification	Verifying whether "strong tea" is the correct answer	58	Open the test and give the correct answer	18:46	Test	Mixed	2.2	--	Y	Y	3										
329	8.3	10	Lookup	Looking for collocations of "sloppy"	59	Open C E-P & look up "sloppy"	18:56	Cambridge English-Polish (bilingualized)		2.3	N			3	No relevant results shown									
330	8.3	10	Lookup	Looking for collocations of "sloppy"	60	Open bab.la & do nothing	19:03	Bab.la		2.3	N			3	Student seems to be opening new windows as if just looking for "inspiration"									
331	8.3	10	Lookup	Looking for collocations of "sloppy"	61	Open C E-P again	19:05	Cambridge English-Polish (bilingualized)		2.3	N			3	Switching between sources and activities									
332	8.3	10	Lookup	Looking for collocations of "sloppy"	62	Open test	19:06	Test		2.3	--			3										
333	8.3	10	Lookup	Looking for collocations of "sloppy"	63	Copy the sentence and paste it in Google	19:09	Google		2.3	Y			3	cheaping; relevant information shown									
334	8.3	10	Lookup	Looking for collocations of "sloppy"	64	Start typing "sloppy joe" & click on the suggestion "sloppy joe recipe"	19:27	Google		2.3	Y			3										
335	8.3	10	Lookup	Looking for collocations of "sloppy"	65	Open the test & give the correct answer	19:31	Test	Mixed	2.3	--	Y	Y	3										
336	9.3	11	Lookup	Looking for collocations of "break" ("break in")	66	Open Google and type "thesaurus"	19:54	Google		2.4	N			3	Not sure if googleaided, probably just wanted to open Thesaurus.com									
337	9.3	11	Lookup	Looking for collocations of "break" ("break in")	67	Open Thesaurus.com & type "check out"	20	Thesaurus.com		2.4	N			3										
338	9.3	11	Lookup	Looking for collocations of "break" ("break in")	68	Extensively browse the list of results	20:06	Thesaurus.com		2.4	N			3	WRONG CONCEPT (original meaning of the missing word)								1	
339	9.3	11	Lookup	Looking for collocations of "break" ("break in")	69	Type "try" in Thesaurus.com & browse the list	20:3	Thesaurus.com		2.4	N			3	No relevant information presented									
340	9.3	11	Lookup	Looking for collocations of "break" ("break in")	70	Open C E-P & look up "try"	20:44	Cambridge English-Polish (bilingualized)	Dictionary	2.4	N	N	--	3	WRONG CONCEPT again								1	
341	10.3	12	Verification	Checking whether "try in" is the correct phrase	71	Open C E-P & look up "try in"	20:58	Cambridge English-Polish (bilingualized)		2.4	N			3	WRONG SOURCE – this dictionary has no thesaurus built-in						1			
342	10.3	12	Verification	Checking whether "try in" is the correct phrase	72	Click on "trying" in C E-P	21:01	Cambridge English-Polish (bilingualized)		2.4	N			3										
343	10.3	12	Verification	Checking whether "try in" is the correct phrase	73	Go to test & do nothing	21:02	Cambridge English-Polish (bilingualized)		2.4	--	N	--	3	Student changes the source without giving it a chance to open the entry sought									
344	5.3	13	Lookup	Looking for meaning of "tow"	74	Open bab.la & look up "tow"	21:13	Cambridge English-Polish (bilingualized)		2.1	N			3										
345	5.3	13	Lookup	Looking for meaning of "tow"	75	Go back to the test	21:21	Test	Dictionary	2.1	--	Y	--	3	Relevant info presented									
346	6.3	14	Verification	Verifying whether "strong" is the correct answer	76	Open Google and type "strong engine"	21:33	Google		2.1	Y			3	INTERESTING:Student keeps changing the tabs as if they were unable to identify them by miniatures on top. In each and every case they need to click through each and every tab to get to the one they seek									
347	6.3	14	Verification	Verifying whether "strong" is the correct answer	77	Open results in Diki	21:51	Diki		2.1	Y			3										

348	6.3	14	Verification	Verifying whether "strong" is the correct answer	78	Go to the test and give the correct answer	22:11	Test	Mixed	2.1	Y	Y	Y	3	INTERESTING: Diki suggests that this might not be the best solution ("siła kolokacji: Bardzo luźna"; tłumaczenie: "silny silnik"), but it also provides some examples									
349	11.3	15	Verification	Verify whether "go down" is the correct answer	79	Open C E-P & look up "go down"	22:3	Cambridge English-Polish (bilingualized)		2.5	N			3	Is it negative evidence or something that student has just found? I don't know...								
350	11.3	15	Verification	Verify whether "go down" is the correct answer	80	Go back to the test	22:41	Cambridge English-Polish (bilingualized)	Dictionary	2.5	N	N	--	3	No relevant collocations shown								
351	12.3	16	Lookup	Looking for a phrase where meaning="wypróbować" & one element="in"	81	Open bab.la & look up "wypróbować"	22:54	bab.la		2.4	N			3	Switching between the activities again								
352	12.3	16	Lookup	Looking for a phrase where meaning="wypróbować" & one element="in"	82	Open C E-P & look up "trial"	23:03	Cambridge English-Polish (bilingualized)		2.4	N			3	"trial" was one of answers suggested in bab.la								
353	12.3	16	Lookup	Looking for a phrase where meaning="wypróbować" & one element="in"	83	Go back to test & read the sentence carefully	23:1	Test		2.4	--			3									
354	12.3	16	Lookup	Looking for a phrase where meaning="wypróbować" & one element="in"	84	Open Bab.la & look up "sprawdzić"	23:39	Bab.la		2.4	N			3	Still WRONG CONCEPT								
355	12.3	16	Lookup	Looking for a phrase where meaning="wypróbować" & one element="in"	85	Open C E-P & look up "examine"	23:47	Cambridge English-Polish (bilingualized)		2.4	N			3	"examine" was one of suggestions from Bab.la								
356	12.3	16	Lookup	Looking for a phrase where meaning="wypróbować" & one element="in"	86	Go back to bab.la	23:58	Bab.la		2.4	N			3									
357	12.3	16	Lookup	Looking for a phrase where meaning="wypróbować" & one element="in"	87	Go back to test	24:14	Test	Dictionary	2.4	--	N	--	3	Wrong concept								
358	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	88	Open Bab.la & look up "rozejść"	24:23	Bab.la		2.4	N			3	WRONG WORD IN POLISH!!!		1						
359	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	89	Type "rozbić" in Bab.la	24:36	Bab.la		2.4	N			3	Another WRONG WORD IN POLISH!!!		1						
360	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	90	Go to C E-P & look up "pitch"	25:07	Cambridge English-Polish (bilingualized)		2.4	N			3	WRONG LOOKUP: word appeared in bab.la, but it was clearly stated that the meaning is related to TENT (both examples & semantic labels)							1	
361	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	91	Go back to bab.la	25:11	Bab.la		2.4	N			3									
362	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	92	Go back to C E-P & look up "split"	25:15	Cambridge English-Polish (bilingualized)		2.4	N			3	WRONG WORD in POLISH leads to methodically looking up incorrect counterparts in Cambridge; if the student ANALYZED correct entries in								
363	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	93	Go back to bab.la	25:25	Bab.la		2.4	N			3	Student MECHANICALLY checks each and every translation from bab.la								
364	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	94	Go back to C E-P & look up "spring"	25:31	Cambridge English-Polish (bilingualized)		2.4	N			3	Student MECHANICALLY checks each and every translation from bab.la								
365	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	95	Open "spring" V in C E-P	25:38	Cambridge English-Polish (bilingualized)		2.4	N			3	Student MECHANICALLY checks each and every translation from bab.la								
366	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	96	Go back to bab.la	25:47	Bab.la		2.4	N			3	Student MECHANICALLY checks each and every translation from bab.la								
367	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	97	Go back to C E-P	25:51	Cambridge English-Polish (bilingualized)		2.4	N			3	Student MECHANICALLY checks each and every translation from bab.la								
368	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	98	Go back to bab.la	25:53	Bab.la		2.4	N			3	Switching between the sources again								
369	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	99	Click on synonyms of "rozbić" in Polish in Bab.la	26:01	Bab.la		2.4	N			3	BAB.LA HAS POLISH SYNONYMS MIGHT SAVE THE STUDENT (potential negative feedback might show them that they use the wrong word)								
370	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	100	Go back to C E-P & look up "burst"	26:12	Cambridge English-Polish (bilingualized)		2.4	N			3	Student MECHANICALLY checks each and every translation from bab.la								
371	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	101	Go back to bab.la	26:18	Bab.la		2.4	N			3	Student MECHANICALLY checks each and every translation from bab.la								
372	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	102	Open Google and type "roejść* buty ang	26:36	Google		2.4	Y			3	**EVEN IF YOU DO NOT KNOW THE WORD (rozchodzić), KNOWING THE PHRASE MIGHT MAKE GOOGLE DIRECT YOU TO THE CORRECT POLISH WORD**								
373	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	103	Click on suggested correction: rozejść	26:41	Google		2.4	Y			3	relevant phrase: rozchodzić buty is visible, but not used by the student	1							

374	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	104	Open "rozchodzić buty" in Pons Dictionary	26:45	Pons		2.4	Y			3	**LOOK how EXTREMELY EFFICIENT GOOGLE IS IN COMPARISON TO REGULAR DICTIONARIES**									
375	13.3	17	Lookup	Looking for English counterparts of "rozchodzić buty"	105	Go back to the test & give the correct answer	26:52	Pons	Mixed	2.4	Y	Y	Y	3										
376	14.3	18	Verification	Verify whether "look down" is the right collocation	106	Open C E-P & look up "look down"	27:15	Cambridge English-Polish (bilingualized)	Dictionary	2.5	N	Y	--	3	The learner successfully found that this was not the right collocation									
377	15.3	18	Lookup	Looking for "(…) down"	107	Open thesaurus.com & type "present"	27:31	Thesaurus.com		2.5	N			3	WRONG CONCEPT AGAIN??? (the student probably meant "prezentuje się" in Polish, but they do not understand the concept of reflexive nouns)									1
378	15.3	18	Lookup	Looking for "(…) down"	108	Go back to the test	28:05	Test	Dictionary	2.5	--	N	--	3										
379	16.3	19	Lookup	Looking for collocations of "expenditure"	109	Open C E-P & look up "expenditure"	28:2	Cambridge English-Polish (bilingualized)		2.5	N			3	This search is unlikely to be completed without understanding the meaning of the phrase; No relevant collocations shown									
380	16.3	19	Lookup	Looking for collocations of "expenditure"	110	Go back to test	28:31	Test	Dictionary	2.5	--	N	--	3	Student noticed collocation "expenditure on" & they try to see if this is the right answer…									
381	17.3	20	Verification	Verify whether "come down" is the correct answer	111	Open C E-P & look up "come down"	28:37	Cambridge English-Polish (bilingualized)	Dictionary	2.5	N	Y	--	3	Student correctly noticed that "come down" is not the right option									
382	18.3	21	Verification	Verify whether "present" is the correct answer	112	Open C E-P & look up "present"	29:01	Cambridge English-Polish (bilingualized)		2.5	N			3										
383	18.3	21	Verification	Verify whether "present" is the correct answer	113	Open "present" V in C E-P	29:06	Cambridge English-Polish (bilingualized)	Dictionary	2.5	N	Y	--	3	Student correctly noticed that "come down" is not the right option									
384	19.3	22	Lookup	Looking for synonyms of "show" which might be the answer to the test question	114	Open Thesaurus.com & type "show"	29:16	Thesaurus.com		2.5	N			3	WRONG CONCEPT – most likely, it would require passive voice which is not used in the sentence									
385	19.3	22	Lookup	Looking for synonyms of "show" which might be the answer to the test question	115	Close Thesaurus.com	29:21	Thesaurus.com	Dictionary	2.5	N	N	N	3	Student closes Thesaurus.com without properly analyzing the results									
386	20.3	23	Verification	Verifying whether "forcibly" is a correct word	116	Open C E-P & look up "forcibly"	30:28	Cambridge English-Polish (bilingualized)		3.1	N			3										
387	20.3	23	Verification	Verifying whether "forcibly" is a correct word	117	Go back to the test	30:33	Test	Dictionary	3.1	--	N	--	3	Information presented might be relatively useful									
388	21.3	23	Verification	Verifying whether "suspension" is a correct word	118	Open C E-P & look up "suspension"	30:41	Cambridge English-Polish (bilingualized)		3.1	N			3										
389	21.3	23	Verification	Verifying whether "suspension" is a correct word	119	Open test	30:44	Test	Dictionary	3.1	--	Y	--	3	Successful									
390	22.3	24	Verification	Verifying whether "need changing" is a correct phrase	120	Open C E-P & look up "need"	30:55	Cambridge English-Polish (bilingualized)		3.1	N			3	Relevant info presented									
391	22.3	24	Verification	Verifying whether "need changing" is a correct phrase	121	Open test and give the wrong answer	31:02	Test	Dictionary	3.1	--	Y	N	3	PROBLEM: the learner looked up "need" and failed to notice that need + Gerund is a correct collocation, even though it was presented on the screen. They only focused on need to. Thus, they write "suspension needs change""	1								
392	23.3	25	Verification	Verifying whether "fell victim" is the correct collocation	122	Open C E-P & look up "fell victim"	31:21	Cambridge English-Polish (bilingualized)		3.2	N			3	**WRONG BASE FORM** of the verb									
393	23.3	25	Verification	Verifying whether "fell victim" is the correct collocation	123	Open Google and type "fall victim"	31:29	Google		3.2	Y			3	Relevant info presented									
394	23.3	25	Verification	Verifying whether "fell victim" is the correct collocation	124	Go to test	31:38	Test	Dictionary	3.2	--	Y	--	3	ANALYZING only Google results: Learner only analyzed shortened versions of entries presented in Google									
395	24.3	26	Verification	Verify whether "unscrupulous" is the correct word	125	Open C E-P & start typing "unscrupulous"	31:45	Cambridge English-Polish (bilingualized)		3.2				3	Relevant suggestions shown									
396	24.3	26	Verification	Verify whether "unscrupulous" is the correct word	126	Go back to test & select the correct answer	31:49	Test	Dictionary	3.2	--	Y	--	3	STUDENT only verified the existence of the word (drop-down list of suggestions) & assumed that this is the correct word									
397	23.3	27	Verification	Verifying whether "fell" is the 2nd form of "fall"	127	Open C E-P & look up "fall"	31:46	Cambridge English-Polish (bilingualized)		3.2	Y			3	CHECKING IRREGULAR FORMS for the first time									
398	23.3	27	Verification	Verifying whether "fell" is the 2nd form of "fall"	128	Go back to test	32:03	Test	Dictionary	3.2	--	Y	N	3										
399	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	129	Open C E-P & look up "con"	32:24	Cambridge English-Polish (bilingualized)		3.4	N			3	WRONG BASE FORM; **INFO CAN BE FOUND IN EXAMPLES** ("conned" instead of "coned!)									
400	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	130	Go back to test	32:31	Test		3.4	--			3										
401	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	131	Go back to C E-P	32:36	Cambridge English-Polish (bilingualized)		3.4	N			3	Switching between sources									
402	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	132	Go to Google and look up "conned over"	32:39	Google		3.4	Y			3	STILL WRONG SPELLING, despite negative evidence from C E-P									

403	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	133	Open "con" in thefreedicionary	32:44	The Free Dictionary		3.4	Y			3	No relevant information presented – wrong word										
404	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	134	Go back to the test	33	Test		3.4	--			3											
405	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	135	Go back to "con" in thefreedictionary	33:04	The Free Dictionary		3.4	Y			3											
406	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	136	Go back to Google & change "conned over" to "coned over"	33:06	Google		3.4	Y			3											
407	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	137	Open "coned over" in UrbanDictionary	33:11	Urban Dictionary		3.4	Y			3	Relevant info presented: this phrase has a different meaning										
408	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	138	Go back to C E-P & analyze entries	33:18	Cambridge English-Polish (bilingualized)		3.4	N			3	Switching between sources										
409	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	139	Go back to Urban Dictionary	33:22	Urban Dictionary		3.4	Y			3	Switching between sources										
410	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	140	Go back to test	33:23	Test		3.4	--			3	COMPARING SPELLINGS?										
411	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	141	Go back to C E-P & analyze entries	33:26	Cambridge English-Polish (bilingualized)		3.4	N			3	Switching between sources										
412	25.3	28	Verification	Verifying whether "coned over" is the correct collocation	142	Go back to test & give the incorrect answer	33:29	Test	Mixed	3.4	--	N	N	3	STUDENT USED "cone out" from C E-P, even though it has a **COMPLETELY** different meaning; STUDENT is so distracted that they select "this sentence is correct" & suggest revisions AT THE SAME TIME								1		
413	26.3	29	Verification	Verifying whether "render" is the correct word	143	Open C E-P & look up "rebnder"	33:52	Cambridge English-Polish (bilingualized)		3.5	N			3											
414	26.3	29	Verification	Verifying whether "render" is the correct word	144	Click on the suggested spelling ("render")	33:57	Cambridge English-Polish (bilingualized)		3.5	N			3	fairly relevant info presented										
415	26.3	29	Verification	Verifying whether "render" is the correct word	145	Go back to the test	34:11	Test		3.5	--			3											
416	26.3	29	Verification	Verifying whether "render" is the correct word	146	Go back to C E-P & read the entry again	34:22	Cambridge English-Polish (bilingualized)		3.5	N			3	Switching between sources and activities										
417	26.3	29	Verification	Verifying whether "render" is the correct word	147	Go back to the test & give the correct answer	34:28	Test	Dictionary	3.5	--	Y	Y	3											
						2016-04-07-1529-02.flv																			
419	1.4	1	Lookup	Looking for collocations of "inconvenience"	1	Open OED	10:22	OED		1.2	N			4											
420	1.4	1	Lookup	Looking for collocations of "inconvenience"	2	Go back to the test	10:23	Test		1.2	--			4	Switching between sources										
421	1.4	1	Lookup	Looking for collocations of "inconvenience"	3	Go back to OED	10:54	OED		1.2	N			4	Switching between sources										
422	1.4	1	Lookup	Looking for collocations of "inconvenience"	4	Go back to the test	10:58	Test		1.2	--			4	Switching between sources										
423	1.4	1	Lookup	Looking for collocations of "inconvenience"	5	Go back to OED	10:59	OED		1.2	N			4	Switching between sources										
424	1.4	1	Lookup	Looking for collocations of "inconvenience"	6	Go back to the test	11	Test		1.2	--			4	Switching between sources										
425	1.4	1	Lookup	Looking for collocations of "inconvenience"	7	Go back to OED & look up "inconvenience"	11:06	OED		1.2	N			4	WRONG SOURCE – almost no collocations						1				
426	1.4	1	Lookup	Looking for collocations of "inconvenience"	8	Open Google and type "be put inconvenience"	11:25	Google		1.2	Y			4	Relevant info presented										
427	1.4	1	Lookup	Looking for collocations of "inconvenience"	9	Go back to OED	11:42	OED		1.2	N			4											
428	1.4	1	Lookup	Looking for collocations of "inconvenience"	10	Go back to Google results	11:45	Google		1.2	Y			4											
429	1.4	1	Lookup	Looking for collocations of "inconvenience"	11	Click on suggested correction: "be put to inconvenience"	11:56	Google		1.2	Y			4											
430	1.4	1	Lookup	Looking for collocations of "inconvenience"	12	Go back to OED	12:1	OED		1.2	N			4											
431	1.4	1	Lookup	Looking for collocations of "inconvenience"	13	Go back to the test & give no answer	12:11	Test		1.2	--			4											
432	1.4	1	Lookup	Looking for collocations of "inconvenience"	14	Go back to OED & browse the entry	12:36	OED		1.2	N			4	Switching between sources										
433	1.4	1	Lookup	Looking for collocations of "inconvenience"	15	Go back to Google results	12:46	Google		1.2	Y			4	Switching between sources										
434	1.4	1	Lookup	Looking for collocations of "inconvenience"	16	Go back to OED & browse the entry	12:53	OED		1.2	N			4	Switching between sources										
435	1.4	1	Lookup	Looking for collocations of "inconvenience"	17	Go back to the test & type "put to inconvenience with"	12:54	Test		1.2	--			4	Switching between sources										
436	1.4	1	Lookup	Looking for collocations of "inconvenience"	18	Go back to Google results	13:1	Google		1.2	Y			4	Switching between sources										
437	1.4	1	Lookup	Looking for collocations of "inconvenience"	19	Go back to the test & leave "put to inconvenience with"	12:26	Test	Mixed	1.2	--	Y	N	4	Even though the answer contains a mistake, it is not a result of the lookup; the lookup itself was successful										
438	2.4	2	Lookup	Looking for collocations of "term"	20	Open OED & look up "terms"	13:39	OED		1.3	N			4	One semirelevant example (in the strongest possible terms)										
439	2.4	2	Lookup	Looking for collocations of "term"	21	Open OALD & look up "terms"	14:1	OALD		1.3	N			4	Semi-relevant examples; CONSCIOUS CHOICE OF SOURCES										
440	2.4	2	Lookup	Looking for collocations of "term"	22	Go back to the test	14:17	Test		1.3	--			4											
441	2.4	2	Lookup	Looking for collocations of "term"	23	Go back to OALD	14:21	OALD		1.3	N			4											
442	2.4	2	Lookup	Looking for collocations of "term"	24	Go back to the test	14:3	Test		1.3	--			4											
443	2.4	2	Lookup	Looking for collocations of "term"	25	Go back to OALD	14:35	OALD		1.3	N			4	relevant info presented!!!										

444	2.4	2	Lookup	Looking for collocations of "term"	26	Go back to the test	14:55	Test		1.3	--			4										
445	2.4	2	Lookup	Looking for collocations of "term"	27	Go back to OALD	15	OALD		1.3	N			4										
446	2.4	2	Lookup	Looking for collocations of "term"	28	Go back to the test & start typingthe correct answer	15:04	Test		1.3	--			4										
447	2.4	2	Lookup	Looking for collocations of "term"	29	Go back to OALD	15:15	OALD		1.3	N			4										
448	2.4	2	Lookup	Looking for collocations of "term"	30	Go back to the test & type the correct answer	15:19	Test	Dictionary	1.3	--	Y	Y	4										
449	1.4	3	Lookup	Looking for collocations of "inconvenience"	31	Open OALD & look up "inconvenience"	15:44	OALD		1.2				4	Relevant info presented									
450	1.4	3	Lookup	Looking for collocations of "inconvenience"	32	Go back to the test	12:54	Test		1.2	--			4										
451	1.4	3	Lookup	Looking for collocations of "inconvenience"	33	Go back to OALD	16:01	OALD		1.2				4										
452	1.4	3	Lookup	Looking for collocations of "inconvenience"	34	Go back to the test	16:14	Test	Dictionary	1.2	--	Y	--	4										
453	3.4	4	Lookup	Looking for collocations of "loath"	35	Open OALD & look up "loath"	16:36	OALD		1.4	Y			4	Relevant info presented									
454	3.4	4	Lookup	Looking for collocations of "loath"	36	Go back to the test	16:51	Test	Dictionary	1.4	--	Y	--	4										
455	4.4	5	Lookup	Looking for collocations of "defeat'	37	Type "to defeat"	17:01	Test		1.4	--			4										
456	4.4	5	Lookup	Looking for collocations of "defeat'	38	Open OALD	17:08	OALD		1.4	N			4										
457	4.4	5	Lookup	Looking for collocations of "defeat'	39	Go back to the test	17:12	Test		1.4	--			4										
458	4.4	5	Lookup	Looking for collocations of "defeat'	40	Go back to OALD & look up "defeat"	17:21	OALD		1.4	N			4										
459	4.4	5	Lookup	Looking for collocations of "defeat'	41	Go back to the test	17:47	Test		1.4	--			4										
460	4.4	5	Lookup	Looking for collocations of "defeat'	42	Go back to OALD & open "defeat" (N)	17:52	OALD		1.4	N			4	**GOOD!** The learner studied the example and realized that they need a NOUN									
461	4.4	5	Lookup	Looking for collocations of "defeat'	43	Go back to the test	17:55	Test		1.4	--			4										
462	4.4	5	Lookup	Looking for collocations of "defeat'	44	Go back to OLAD	17:56	OALD		1.4	N			4	Relevant info presented									
463	4.4	5	Lookup	Looking for collocations of "defeat'	45	Go back to the test	18:07	Test		1.4	--			4										
464	4.4	5	Lookup	Looking for collocations of "defeat'	46	Go back to OLAD	18:16	OALD		1.4	N			4										
465	4.4	5	Lookup	Looking for collocations of "defeat'	47	Click on "back" to go to "defeat" V	18:22	OALD		1.4	N			4										
466	4.4	5	Lookup	Looking for collocations of "defeat'	48	Go back to the test	18:28	Test	Dictionary	1.4	--	N	N	4	FAILURE! SEEING ALL THE RELEVANT INFO, THE STUDENT WAS NOT ABLE TO USE IT CORRECTLY									
467	5.4	6	Lookup	Looking for collocations of "store"	49	Open OALD & look up "store"	18:35	OALD		1.5	N			4	store (N) opend									
468	5.4	6	Lookup	Looking for collocations of "store"	50	Go back to the test	18:41	Test		1.5	--			4										
469	5.4	6	Lookup	Looking for collocations of "store"	51	Go back to OALD	18:44	OALD		1.5	N			4										
470	5.4	6	Lookup	Looking for collocations of "store"	52	Switch to "store" V	18:47	OALD		1.5	N			4	**WRONG POS**				1					
471	5.4	6	Lookup	Looking for collocations of "store"	53	Open "store sth up" in OALD	18:55	OALD		1.5	N			4	**WRONG POS**				1					
472	5.4	6	Lookup	Looking for collocations of "store"	54	Go back to the test	19:07	Test		1.5	--			4										
473	5.4	6	Lookup	Looking for collocations of "store"	55	Go back to "store up" in OALD	19:11	OALD		1.5	N			4										
474	5.4	6	Lookup	Looking for collocations of "store"	56	Go back to the test	19:12	Test	Dictionary	1.5	--	N	N	4										
475	4.4	7	Lookup	Looking for collocations of "defeat'	57	Go back to the test and type "defeat the idea of"	19:24	Test	--	1.4	--	--	--	4	Switching between the tasks									
476	5.4	8	Lookup	Looking for collocations of "store"	58	Go back to OLAD	19:41	OALD		1.5	N			4	Switching between sources and activities									
477	5.4	8	Lookup	Looking for collocations of "store"	59	Go back to the test	19:5	Test		1.5	--			4	Switching between sources and activities									
478	5.4	8	Lookup	Looking for collocations of "store"	60	Go back to OLAD	19:54	OALD		1.5	N			4	Switching between sources and activities									
479	5.4	8	Lookup	Looking for collocations of "store"	61	Go back to the test	19:59	Test		1.5	--			4	Switching between sources and activities									
480	5.4	8	Lookup	Looking for collocations of "store"	62	Go back to OLAD	20:04	OALD		1.5	N			4	Switching between sources and activities									
481	5.4	8	Lookup	Looking for collocations of "store"	63	Go back to "store" V in OALD	20:06	OALD		1.5	N			4	STILL WRONG POS				1					
482	5.4	8	Lookup	Looking for collocations of "store"	64	Go back to the test	20:18	Test		1.5	--			4	Switching between sources and activities									
483	5.4	8	Lookup	Looking for collocations of "store"	65	Go back to "store" V in OALD	20:22	OALD		1.5	N			4	Switching between sources and activities									
484	5.4	8	Lookup	Looking for collocations of "store"	66	Go back to the test	20:31	Test		1.5	--			4	Switching between sources and activities									
485	5.4	8	Lookup	Looking for collocations of "store"	67	Type "can never store what is happening"	20:34	Test		1.5	--			4	**EPIC FAILURE DESPITE NEGATIVE EVIDENCE IN THE DICTIONARY**	1								
486	5.4	8	Lookup	Looking for collocations of "store"	68	Go back to OALD and switch to "store" N	20:59	OALD		1.5	N			4	**SCROLL DOWN! RELEVANT INFO IS THERE!! SCROLL DOWN! SCROLL DOWN!**	1								
487	5.4	8	Lookup	Looking for collocations of "store"	69	Go back to the test	21:18	Test	Dictionary	1.5	--	N	N	4	IF THE LEARNER SCROLLED DOWN, THEY WOULD FIND RELEVANT INFO; WRONG ASSUMPTION REGARDING THE PoS	1								

488	6.4	9	Lookup	Looking for (meaning? Collocations?) of "tow"	70	Open OALD & look up "tow"	21:51	OALD		2.1	N			4											
489	6.4	9	Lookup	Looking for (meaning? Collocations?) of "tow"	71	Open Diki & look up "tow"	22:1	Diki.pl	Dictionary	2.1	Y	Y	--	4	Relevant info presented										
490	7.4	10	Lookup	Looking for collocations of "engine"	72	Type "collocation of engine" in Google	22:2	Google		2.1	Y			4	**WOW! CONSCIOUS USE OF COLLOCATIONS DICTIONARY!**										
491	7.4	10	Lookup	Looking for collocations of "engine"	73	Open online Oxford Collocation Dictionary	22:29	Online OXFORD Collocation Dictionary		2.1	Y			4	Relevant info presented										
492	7.4	10	Lookup	Looking for collocations of "engine"	74	Go back to OALD	22:32	OALD		2.1	N			4	**NO TIME TO READ THE ENTRY!**										
493	7.4	10	Lookup	Looking for collocations of "engine"	75	Go back to the test	22:34	Test		2.1	--			4											
494	7.4	10	Lookup	Looking for collocations of "engine"	76	Go back to online Oxford Collocation Dictionary	22:36	Online OXFORD Collocation Dictionary		2.1	Y			4											
495	7.4	10	Lookup	Looking for collocations of "engine"	77	Go back to the test & give the correct answer	22:55	Test	Mixed	2.1	--	Y	Y	4											
496	8.4	11	Lookup	Looking for collocations of "tea"	78	Open Online Oxford Collocation Dictionary & look up "tea"	23:08	Online OXFORD Collocation Dictionary		2.2	N			4	Relevant info presented										
497	8.4	11	Lookup	Looking for collocations of "tea"	79	Go back to the test	23:13	Test	Dictionary	2.2	--	N	--	4	**DESPITE RELEVANT INFO, NO ACTION TAKEN**										
498	9.4	12	Lookup	Looking for adjective that goes with tea (concept = strong)	80	Open Diki & look up "gesty"	23:19	Diki.pl		2.2	N			4	**WRONG CONCEPT; relevant negative evidence presented**									1	
499	9.4	12	Lookup	Looking for adjective that goes with tea (concept = strong)	81	type "mocna" in Diki	23:28	Diki.pl		2.2	N			4	**WRONG FORM: only "niska, mocna piłka w baseballu" is shown**		1								
500	9.4	12	Lookup	Looking for adjective that goes with tea (concept = strong)	82	Go back to collocations dictionary	23:31	Online OXFORD Collocation Dictionary		2.2	N			4	Found the word "stewed" with definition										
501	9.4	12	Lookup	Looking for adjective that goes with tea (concept = strong)	83	type "stewed" in Diki	23:37	Diki.pl		2.2	N			4	**DICTIONARY-INDUCED PROBLEM WITH VERIFICATION – dictionary does not show relevant information**										
502	9.4	12	Lookup	Looking for adjective that goes with tea (concept = strong)	84	Go back to collocations dictionary	23:49	Online OXFORD Collocation Dictionary		2.2	N			4											
503	9.4	12	Lookup	Looking for adjective that goes with tea (concept = strong)	85	Go back to the test and give the correct answer	23:52	Test	Dictionary	2.2	--	Y	Y	4											
504	10.4	13	Lookup	Looking for collocations of "sloppy"	86	Type "sloppy" in Diki.pl	24:04	Diki.pl		2.3	N			4	relevant info presented in the sidebar	1									
505	10.4	13	Lookup	Looking for collocations of "sloppy"	87	Open Online Oxford Collocation Dictionary & type "sloppy"	24:16	Online OXFORD Collocation Dictionary		2.3	N			4	no collocations for sloppy **whatsoever**										
506	10.4	13	Lookup	Looking for collocations of "sloppy"	88	Go to OALD & type in "sloppy"	24:25	OALD		2.3	N			4	results shown in the **"nearby words"** box	1									
507	10.4	13	Lookup	Looking for collocations of "sloppy"	89	Go back to Diki	24:46	Diki		2.3	N			4	relevant info presented in the sidebar	1									
508	10.4	13	Lookup	Looking for collocations of "sloppy"	90	Go back to OALD	24:48	OALD		2.3	N			4	Switching between sources										
509	10.4	13	Lookup	Looking for collocations of "sloppy"	91	Go back to test	24:49	Test		2.3	--			4											
510	10.4	13	Lookup	Looking for collocations of "sloppy"	92	Go back to Diki	24:56	Diki		2.3	N			4											
511	10.4	13	Lookup	Looking for collocations of "sloppy"	93	Go back to OALD	25	OALD		2.3	N			4	**Both** dictionaries show the correct answer!	1									
512	10.4	13	Lookup	Looking for collocations of "sloppy"	94	Go back to Online Oxford Collocation Dictionary & type "sloppy"	25:14	Online OXFORD Collocation Dictionary		2.3	N	N	--	4	2 out of 3 sources showed the right answer, but the student didn't see it										
513	11.4	14	Verification	Verify whether "galareta" is the right answer	95	Open Diki & look up "galareta"	25:17	Diki.pl		2.3	N			4	**wrong idea in Polish**; "sloppy" is negative and if used non-compositionally, cannot be "delicious"										
514	11.4	14	Lookup	Verify whether "galareta" is the right answer	96	Go back to OALD & do nothing	25:26	OALD		2.3	N			4											
515	11.4	14	Lookup	Verify whether "galareta" is the right answer	97	GO back to the test and type "jelly"	25:27	Test	Dictionary	2.3	--	N	N	4	**!!! dictionary entry "niewystarczają co stały (o substancji, np. galareta = sloppy)"** wrong idea: "sloppy Jelly"									1	
516	12.4	15	Lookup	Looking for translation of "wyciągnąć"	98	Open Diki	25:54	Diki		2.4	N			4											
517	12.4	15	Lookup	Looking for translation of "wyciągnąć"	99	Go back to test	25:56	Test		2.4	--			4											
518	12.4	15	Lookup	Looking for translation of "wyciągnąć"	100	Go back to Diki & type "wyciągnąć"	26	Diki	Dictionary	2.4	N	N	--	4	**Impatience; Importance of idiomatic Polish!**: wrong Polish word ("wyciągnąć buty"??); student didn't wait for results		1								
519	13.4	16	Lookup	Looking for collocations of "shoe"	101	Open online Oxford Collocation Dictionary & type "shoe"	26:09	Online OXFORD Collocation Dictionary	Dictionary	2.4	N	N	--	4	Relevant info presented; **no action!**	1									
520	12.4	17	Lookup	Looking for translation of "wyciągnąć"	102	Go back to Diki	26:24	Diki		2.4	N			4	No relevant collocations shown										
521	12.4	17	Lookup	Looking for translation of "wyciągnąć"	103	Go back to test	26:25	Test		2.4	--		--	4											

522	13.4	18	Lookup	Looking for collocations of "in before"	104	Go back to Diki & type "in before"	26:31	Diki		2.4	N			4	**WHAAT?** Student typed in a random part of the phrase "in before" – **looking up lexical bundles like they are looking in a corpus;** little time devoted to analyzing the entry									
523	13.4	18	Lookup	Looking for collocations of "in before"	105	Open OALD and type "in before"	26:37	OALD		2.4	N			4	Student spent little time exploring previous page (**no chance to find results** if									
524	13.4	18	Lookup	Looking for collocations of "in before"	106	Open online Oxford Collocation Dictionary & type nothing	26:47	Online OXFORD Collocation Dictionary		2.4	N			4										
525	13.4	18	Lookup	Looking for collocations of "in before"	107	Go back to test	26:5	Test		2.4	--			4	Switching									
526	13.4	18	Lookup	Looking for collocations of "in before"	108	Go back to Diki	26:54	Diki		2.4	N			4	Switching									
527	13.4	18	Lookup	Looking for collocations of "in before"	109	Go back to online Oxford Collocation Dictionary	26:56	Online OXFORD Collocation Dictionary	Dictionary	2.4	N	N	--	4	wrong collocation identified (lace up)									
528	14.4	19	Verification	Verify whether "lace up" is the correct answer	110	Go to Diki & type "lace up"	27:12	Diki	Dictionary	2.4	N	Y	--	4	verification of incorrect collocation									
529	15.4	20	Switching	Switching between sources	111	Go back to online Oxford Collocation Dictionary	27:2	Online OXFORD Collocation Dictionary		2.4	N			4	is mindless switching similar to doodling?									
530	15.4	20	Switching	Switching between sources	112	Open OALD	27:26	OALD		2.4	N			4	is mindless switching similar to doodling?									
531	15.4	20	Switching	Switching between sources	113	Go back to the test & type "wear"	27:3	Test	Dictionary?	2.4	--	Y	Y	4	Correct response, word probably retrieved from memory; **maybe switching is like doodling???**									
532	16.4	21	Lookup	Looking for collocations of "expenditure"	114	Open Diki & type "expenditure"	27:34	Diki		2.5	N			4	No relevant collocations shown									
533	16.4	21	Lookup	Looking for collocations of "expenditure"	115	Open online Oxford Collocation Dictionary & do nothning	27:41	Online OXFORD Collocation Dictionary		2.5	N			4	Switching									
534	16.4	21	Lookup	Looking for collocations of "expenditure"	116	Open test	27:42	Test		2.5	--			4	Carefully studies the example									
535	16.4	21	Lookup	Looking for collocations of "expenditure"	117	Open online Oxford Collocation Dictionary & type "expenditure"	27:49	Online OXFORD Collocation Dictionary	Dictionary	2.5	N	N	--	4	No relevant collocations shown									
536	17.4	22	Lookup	Looking for translation of "[break down]"	118	Open Diki & type "rozkląc się"	28:05	Diki	Dictionary	2.5	N	N	--	4	Wrong Polish spelling; correct concept									
537	16.4	23	Lookup	Looking for collocations of "expenditure"	119	Go back to online Oxford Collocation Dictionary & study examples	28:22	Online OXFORD Collocation Dictionary		2.5	N			4	Student analyzes "expenditure + verb" instead of "verb + expenditure"									
538	16.4	23	Lookup	Looking for collocations of "expenditure"	120	Go back to test	28:4	Test		2.5	--			4										
539	16.4	23	Lookup	Looking for collocations of "expenditure"	121	Go back to online Oxford Collocation Dictionary & study examples	28:47	Online OXFORD Collocation Dictionary		2.5	N			4										
540	16.4	23	Lookup	Looking for collocations of "expenditure"	122	Open OALD & type "expenditure"	29	OALD		2.5	N			4										
541	16.4	23	Lookup	Looking for collocations of "expenditure"	123	Go back to online Oxford Collocation Dictionary & study examples	29:16	Online OXFORD Collocation Dictionary		2.5	N			4										
542	16.4	23	Lookup	Looking for collocations of "expenditure"	124	Go back to test	29:17	Test		2.5	--			4	Switching									
543	16.4	23	Lookup	Looking for collocations of "expenditure"	125	Go back to online Oxford Collocation Dictionary	29:22	Online OXFORD Collocation Dictionary		2.5	N			4	Switching									
544	16.4	23	Lookup	Looking for collocations of "expenditure"	126	Go back to OALD	29:24	OALD		2.5	N			4	Switching									
545	16.4	23	Lookup	Looking for collocations of "expenditure"	127	Go back to online Oxford Collocation Dictionary	29:26	Online OXFORD Collocation Dictionary	Dictionary	2.5	N	N	--	4	Switching									
546	17.4	24	Lookup	Looking for translation of "[break down]"	128	Go back to Diki & study results for "rozkladać się"	29:39	Diki		2.5	N			4										
547	17.4	24	Lookup	Looking for translation of "[break down]"	129	Look up "wydatki rozkładają się tłmaczenie" in Google	29:49	Google		2.5	Y			4	the same spelling error									
548	17.4	24	Lookup	Looking for translation of "[break down]"	130	Open results for "rozkladać się" from Bab.la in a new tab	30:02	Bab.la		2.5	Y			4										
549	17.4	24	Lookup	Looking for translation of "[break down]"	131	Open results for "wydatki" from Bab.la in a new tab	30:05	Bab.la		2.5	Y			4										
550	17.4	24	Lookup	Looking for translation of "[break down]"	132	Open results for "rozkladać się" in Bab.la	30:06	Bab.la		2.5	Y			4	Switching									
551	17.4	24	Lookup	Looking for translation of "[break down]"	133	Go back to test	30:07	test		2.5	--			4										
552	17.4	24	Lookup	Looking for translation of "[break down]"	134	go back to results for "rozkladać się" in Bab.la	30:08	Bab.la		2.5	Y			4										
553	17.4	24	Lookup	Looking for translation of "[break down]"	135	Open results for "wydatki" in Bab.la	30:11	Bab.la		2.5	Y			4										
554	17.4	24	Lookup	Looking for translation of "[break down]"	136	Open results for "rozkladać się" in Bab.la	30:33	Bab.la		2.5	Y			4										
555	17.4	24	Lookup	Looking for translation of "[break down]"	137	Go back to the test and type "goes"	30:34	Test	Mixed	2.5	--	N	N	4	Incorrect guess									
556	18.4	25	Lookup	Looking for collocations of drive	138	Open online Oxford Collocation Dictionary and type "drive"	31:5			3.1	N			4										
557	18.4	25	Lookup	Looking for collocations of drive	139	Go back to test	31:58	Test		3.1	--			4										
558	18.4	25	Lookup	Looking for collocations of drive	140	Go back to online Oxford Collocation Dictionary	32:13	Online OXFORD Collocation Dictionary	Dictionary	3.1	N	N	--	4	Student did not scroll down, so they **do not see** "drive" as a verb + adv; they only see "drive" as a noun				1					

559	19.4	26	Lookup	Looking for meaning and collocations of "forcibly"	141	Open Diki & type "forcibly"	32:14	Diki		3.1	N			4	Relevant info presented (word probably not appropriate in the context)											
560	19.4	26	Lookup	Looking for meaning and collocations of "forcibly"	142	Open online Oxford Collocation Dictionary & do nothing	32:23	Online OXFORD Collocation Dictionary		3.1	N			4	Switching											
561	19.4	26	Lookup	Looking for meaning and collocations of "forcibly"	143	Go back to the test	32:24	Test		3.1	--			4												
562	19.4	26	Lookup	Looking for meaning and collocations of "forcibly"	144	Go back to online Oxford Collocation Dictionary & do notning	32:26	Online OXFORD Collocation Dictionary		3.1	N			4												
563	19.4	26	Lookup	Looking for meaning and collocations of "forcibly"	145	Type "forcibly"	32:43	Online OXFORD Collocation Dictionary		3.1	N			4	No results for this word											
564	19.4	26	Lookup	Looking for meaning and collocations of "forcibly"	146	Go back to test	32:5	Test	Dictionary	3.1	--	N	--	4	No answer given											
565	20.4	27	Lookup	Looking for meaning and collocations of "unscrupulous"	147	Open online Oxford Collocation Dictionary & type "unscrupulous"	33:06	Online OXFORD Collocation Dictionary		3.2	N			4	No relevant collocations shown											
566	20.4	27	Lookup	Looking for meaning and collocations of "unscrupulous"	148	Open Diki	33:15	Diki		3.2	N			4												
567	20.4	27	Lookup	Looking for meaning and collocations of "unscrupulous"	149	Open OALD & type "unscrupulous"	33:16	OALD		3.2	N			4	Long time taken to analyze the entry											
568	20.4	27	Lookup	Looking for meaning and collocations of "unscrupulous"	150	Go back to test	33:35	Test		3.2	N			4												
569	20.4	27	Lookup	Looking for meaning and collocations of "unscrupulous"	151	Go back to "scrupulous" in OALD	33:41	OALD	Dictionary	3.2	N	Y	--	4	The learner most likely identified "unscrupulous" as a correct word											
570	21.4	28	Lookup	Looking for collocations of "victim"	152	Open online Oxford Collocation Dictionary & type "victim"	33:46	Online OXFORD Collocation Dictionary		3.2	N			4	Relevant info presented											
571	21.4	28	Lookup	Looking for collocations of "victim"	153	Go back to test & mark the sentence as incorrect	34:07	Test		3.2	--			4												
572	21.4	28	Lookup	Looking for collocations of "victim"	154	Go back to online Oxford Collocation Dictionary	34:12	Online OXFORD Collocation Dictionary		3.2	N			4												
573	21.4	28	Lookup	Looking for collocations of "victim"	155	Go back to test & mark the sentence as incorrect; suggest that "practices" should be changed to "landlord"	34:15	Test	Dictionary	3.2	--	N	N	4	**Bad influence of similar examples**: the student did not respect the openchoice principle and they decided to swap one correct lexeme for another correct one…											
574	21.4	29	Lookup	Looking for collocations of "suspension"	156	Go to test & mark sentence as incorrect	34:32	Test		3.1	--			4												
575	21.4	29	Lookup	Looking for collocations of "suspension"	157	Open online Oxford Collocation Dictionary & type "suspension"	34:37	Online OXFORD Collocation Dictionary	--	3.1	N	N	--	4	The student did not follow up on their search											
576	22.4	30	Lookup	Looking for the sentence in Google	158	Go back to test & copy the sentence	34:41	Test		3.1	--			4												
577	22.4	30	Lookup	Looking for the sentence in Google	159	Paste the sentence in Google	34:47	Google	Google	3.1	Y	N	N	4	No relevant information presented											
578	23.4	31	Lookup	Looking for meaning of "uncover"	160	Open Diki & look up "uncover"	35:36	Diki		3.3	N			4												
579	23.4	31	Lookup	Looking for meaning of "uncover"	161	Go back to test & give the correct answer	35:46	Test	Dictionary	3.3	--	Y	Y	4												
580	24.4	32	Lookup	Looking for meaning and collocations of "cone"	162	Open Diki & look up "cone"	36:06	Diki		3.4	N			4	No verbs shown											
581	24.4	32	Lookup	Looking for meaning and collocations of "cone"	163	Open diki & look up "cond"	36:18	Diki		3.4	N			4	looking for the past tense form											
582	24.4	32	Lookup	Looking for meaning and collocations of "cone"	164	Go back to test	36:25	Test		3.4	--			4	No relevant info shown											
583	24.4	32	Lookup	Looking for meaning and collocations of "cone"	165	Open OALD	36:31	OALD		3.4	N			4												
584	24.4	32	Lookup	Looking for meaning and collocations of "cone"	166	Go back to Diki	36:33	Diki		3.4	N			4												
585	24.4	32	Lookup	Looking for meaning and collocations of "cone"	167	Go back to OALD	36:4	OALD		3.4	N			4												
586	24.4	32	Lookup	Looking for meaning and collocations of "cone"	168	Go back to test	36:41	Test		3.4	--			4												
587	24.4	32	Lookup	Looking for meaning and collocations of "cone"	169	Go back to Diki	36:51	Diki		3.4	N			4												
588	24.4	32	Lookup	Looking for meaning and collocations of "cone"	170	Go back to OALD & type "con over"	36:59	OALD		3.4	N			4	**wrong** verb (cone/con); no info displayed; at **least** the student understood that they are looking for a verb verb form											
589	24.4	32	Lookup	Looking for meaning and collocations of "cone"	171	Open online Oxford Collocation Dictionary	37:08	Online OXFORD Collocation Dictionary		3.4	N			4												
590	24.4	32	Lookup	Looking for meaning and collocations of "cone"	172	Go back to test	37:09	Test		3.4	--			4												
591	24.4	32	Lookup	Looking for meaning and collocations of "cone"	173	Go back to online Oxford Collocation Dictionary & type "road"	37:11	OALD		3.4	N			4	little chance of finding such a distant collocation; no relevant collocations shown											
592	24.4	32	Lookup	Looking for meaning and collocations of "cone"	174	Go back to test & do nothing	37:35	Test	Dictionary	3.4	--	N	--	4												
593	25.4	33	Giving answer	Giving answer to test question	175	Open test & select correct part of the answer	38:1	OALD	--	3.5	--	--	Y	4												

594	24.4	34	Lookup	Looking for meaning and collocations of "cone"	176	Go back to Diki	38:35	Diki		3.4	N			4	
595	24.4	34	Lookup	Looking for meaning and collocations of "cone"	177	Go back to test	38:39	Test		3.4	--			4	Switching
596	24.4	34	Lookup	Looking for meaning and collocations of "cone"	178	Go back to Diki	39:08	Diki		3.4	N			4	Switching
597	24.4	34	Lookup	Looking for meaning and collocations of "cone"	179	Go back to the test	39:1	Test		3.4	--			4	Switching
598	24.4	34	Lookup	Looking for meaning and collocations of "cone"	180	Go back to Diki	39:15	Diki		3.4	N			4	Switching
599	24.4	34	Lookup	Looking for meaning and collocations of "cone"	181	Go back to OALD	39:4	OALD		3.4	N			4	Switching

600	24.4	34	Lookup	Looking for meaning and collocations of "cone"	182	Go back to Diki	39:43	Diki		3.4	N			4	Switching
601	24.4	34	Lookup	Looking for meaning and collocations of "cone"	183	Go back to OALD	39:54	OALD		3.4	N			4	Switching
602	24.4	34	Lookup	Looking for meaning and collocations of "cone"	184	Go back to test	39:55	Test		3.4	--			4	Switching
603	24.4	34	Lookup	Looking for meaning and collocations of "cone"	185	Go back to Diki	40:05	Diki		3.4	N			4	Switching
604	24.4	34	Lookup	Looking for meaning and collocations of "cone"	186	Go back to test	40:07	Test		3.4	--			4	Switching
605	24.4	34	Lookup	Looking for meaning and collocations of "cone"	187	Go back to online Oxford Collocation Dictionary	40:09	Online OXFORD Collocation Dictionary		3.4	N			4	Switching
606	24.4	34	Lookup	Looking for meaning and collocations of "cone"	188	Go back to OALD & type "con"	40:13	OALD		3.4	N			4	Switching
607	24.4	34	Lookup	Looking for meaning and collocations of "cone"	189	Go back to online Oxford Collocation Dictionary	40:31	Online OXFORD Collocation Dictionary		3.4	N			4	Switching; wrong verb again; **word forms presented in the dictionary show that this is another verb**
608	24.4	34	Lookup	Looking for meaning and collocations of "cone"	190	Open Google and type "the road has been over"	40:55	Google		3.4	Y			4	This would work as **slop** factor in corpus, but **not in google**
609	24.4	34	Lookup	Looking for meaning and collocations of "cone"	191	Go back to online Oxford Collocation Dictionary	41:1	Online OXFORD Collocation Dictionary		3.4	N			4	Switching
610	24.4	34	Lookup	Looking for meaning and collocations of "cone"	192	Go back to test	41:26	Test		3.4	--			4	Switching
611	24.4	34	Lookup	Looking for meaning and collocations of "cone"	193	Go back to Diki	41:34	Diki		3.4	N			4	Switching
612	24.4	34	Lookup	Looking for meaning and collocations of "cone"	194	Go back to online Oxford Collocation Dictionary	41:36	Online OXFORD Collocation Dictionary		3.4	N			4	Switching
613	24.4	34	Lookup	Looking for meaning and collocations of "cone"	195	Go back to OALD	41:37	OALD		3.4	N			4	Switching
614	24.4	34	Lookup	Looking for meaning and collocations of "cone"	196	Go back to test & give incorrect answer	41:38	Test	mixed	3.4	--	N	N	4	
615	25.4	35	Lookup	Looking for meaning and collocations of "render"	197	Open online Oxford Collocation Dictionary & type "render"	41:59	Online OXFORD Collocation Dictionary		3.5	N			4	No collocations shown
616	25.4	35	Lookup	Looking for meaning and collocations of "render"	198	Type in "render"again	42:08	Online OXFORD Collocation Dictionary		3.5	N			4	Types in the same word again
617	25.4	35	Lookup	Looking for meaning and collocations of "render"	199	Open OALD and type "render"	42:1	OALD		3.5	N			4	
618	25.4	35	Lookup	Looking for meaning and collocations of "render"	200	Go back to test	42:18	Test		3.5	--			4	
619	25.4	35	Lookup	Looking for meaning and collocations of "render"	201	Give the correct answer	44:02	Test	Dictionary	3.5	--	Y	Y	4	
	2016-04-07-1604-31.flv														
621	1.5	1	Giving answer	Give the correct answer	1	Give the correct answer	4:04	Test		1.1	--	--	Y	5	
622	2.5	2	Lookup	Looking for meaning of "put upon"	2	Open Google and type "be put inconvenience"	4:59	Google		1.2	Y			5	
623	2.5	2	Lookup	Looking for meaning of "put upon"	3	Open results in bab.la	5:17	Bab.la		1.2	Y			5	No relevant info shown
624	2.5	2	Lookup	Looking for meaning of "put upon"	4	Go back to Google results	5:2	Google		1.2	Y			5	
625	2.5	2	Lookup	Looking for meaning of "put upon"	5	Go back to test	5:21	Test		1.2	--			5	
626	2.5	2	Lookup	Looking for meaning of "put upon"	6	Go back to Google results	5:29	Google	Mixed	1.2	Y	N	N	5	Switching
627	3.5	3	Verification	Verify whether "loath to admit" is a good answer	7	Open Google and type "loath to admin"	7:25	Google		1.4	Y			5	
628	3.5	3	Verification	Verify whether "loath to admit" is a good answer	8	Go back to test	7:35	Test		1.4	--			5	**Did** not find the right collocation even though they were looking for them
629	3.5	3	Verification	Verify whether "loath to admit" is a good answer	9	Go back to Google results	8:21	Google		1.4	Y			5	Browsing the list of results, **some cues** available
630	3.5	3	Verification	Verify whether "loath to admit" is a good answer	10	Go back to test	8:38	Test		1.4	--			5	
631	3.5	3	Verification	Verify whether "loath to admit" is a good answer	11	Go back to Google results	8:48	Google		1.4	Y			5	
632	3.5	3	Verification	Verify whether "loath to admit" is a good answer	12	Go back to test & give a correct answer	8:52	Test	Google	1.4	N	N	Y	5	Student didn't find any evidence that her **good** idea is correct, but she gave a correct alternative answer
633	4.5	4	Verification	Verify whether "honest terms" is a good answer	13	Open Google and type "honest terms"	11:18	Google		1.3	Y			5	No relevant info shown

634	4.5	4	Verification	Verify whether "honest terms" is a good answer	14	Go back to test	11:31	Test		1.3	--			5										
635	4.5	4	Verification	Verify whether "honest terms" is a good answer	15	Go back to Google results	11:37	Google		1.3	Y			5										
636	4.5	4	Verification	Verify whether "honest terms" is a good answer	16	Go back to test	11:46	Test	Google	1.3	--	Y	N	5	Switching; student verified that "honest terms" doesn't work in this case									
637	5.5	5	Verification	Verify whether "clear terms" is a good answer	17	Open Google and type "clear terms"	12:37	Google		1.3	Y			5	No relevant info shown									
638	5.5	5	Verification	Verify whether "clear terms" is a good answer	18	Go back to the test	12:58	Test		1.3	--			5										
639	5.5	5	Verification	Verify whether "clear terms" is a good answer	19	Go back to Google	13:06	Google		1.3	Y			5										
640	5.5	5	Verification	Verify whether "clear terms" is a good answer	20	Go back to the test	13:11	Test		1.3	--			5	Switching									
641	5.5	5	Verification	Verify whether "clear terms" is a good answer	21	Go back to Google & do nothing	13:2	Google		1.3	Y			5	Switching									

642	5.5	5	Verification	Verify whether "clear terms" is a good answer	22	Go back to the test	13:39	Test		1.3	--	Y	N	5	Switching; student did not give any answer, but she successfully eliminated one more incorrect possibility									
643	6.5	6	Verification	Verify whether "powerful" is the correct answer	23	Open the test and give the correct answer	15:11	Test		2.1	--			5										
644	6.5	6	Verification	Verify whether "powerful" is the correct answer	24	Open Google and type "powerful"	15:19	Google		2.1	Y			5										
645	6.5	6	Verification	Verify whether "powerful" is the correct answer	25	Go back to the test	15:24	Test	Google	2.1	--	Y	--	5	Not sure if student really found something useful by just briefly browsing the list of results									
646	7.5	7	Verification	Verify whether "break" is the correct answer	26	Open Google and type "break sth in"	16:15	Google		2.4	Y			5	Student gave the correct answer right away									
647	7.5	7	Verification	Verify whether "break" is the correct answer	27	Open results for "break sth in" in CALD	16:23	CALD		2.4	Y			5										
648	7.5	7	Verification	Verify whether "break" is the correct answer	28	Go back to the list of results	16:29	Google		2.4	Y			5										
649	7.5	7	Verification	Verify whether "break" is the correct answer	29	Go back to the test	16:3	Test	Mixed	2.4	--	N	Y	5	Student **didn't** find any evidence that her good idea is correct, but she gave a correct answer									
650	8.5	8	Verification	Verify whether "strong" is the correct answer	30	Open Google and type "strong tea"	16:35	Google		2.2	Y			5	Student gave the correct answer right away									
651	8.5	8	Verification	Verify whether "strong" is the correct answer	31	Go back to the test & give the correct answer	16:47	Test	Google	2.2	--	Y	Y	5										
652	9.5	9	Lookup	Looking for "(…) down"	32	Open Google and type "it… down as"	17:11	Google		2.5	Y			5										
653	9.5	9	Lookup	Looking for "(…) down"	33	delete the entry without running the query	17:2	Google		2.5	Y			5	ineffective entry; student deleted it herself									
654	9.5	9	Lookup	Looking for "(…) down"	34	type "down as follows"	17:25	Google		2.5	Y			5	relevant info presented in suggestions									
655	9.5	9	Lookup	Looking for "(…) down"	35	Open entry for "breaks down as follows" in Linguee	17:38	Linguee		2.5	Y			5										
656	9.5	9	Lookup	Looking for "(…) down"	36	Go back to the test and give the correct answer	17:42	Test		2.5	--			5										
657	9.5	9	Lookup	Looking for "(…) down"	37	Go back to Linguee	17:52	Linguee		2.5	Y			5										
658	9.5	9	Lookup	Looking for "(…) down"	38	Go back to the test	17:58	test		2.5	--			5										
659	9.5	9	Lookup	Looking for "(…) down"	39	Go back to Linguee	18:09	Linguee		2.5	Y			5	Switching									
660	9.5	9	Lookup	Looking for "(…) down"	40	Go back to Google list of results	18:2	Google		2.5	Y			5	Switching									
661	9.5	9	Lookup	Looking for "(…) down"	41	Go back to the test	18:22	test		2.5	--			5	Switching									
662	9.5	9	Lookup	Looking for "(…) down"	42	Go back to Google	18:28	Google		2.5	Y			5	Switching									
663	9.5	9	Lookup	Looking for "(…) down"	43	Re-open results in Linguee	18:3	Linguee		2.5	Y			5	Switching									
664	9.5	9	Lookup	Looking for "(…) down"	44	Go back to test	18:43	Test		2.5	--			5	Switching									
665	9.5	9	Lookup	Looking for "(…) down"	45	Go back to Linguee	18:5	Linguee		2.5	Y			5	Switching									
666	9.5	9	Lookup	Looking for "(…) down"	46	Go back to test	18:52	Test		2.5	--			5	Switching									
667	9.5	9	Lookup	Looking for "(…) down"	47	Go back to Linguee	18:56	Linguee	Mixed	2.5	Y	Y	Y	5	Switching									
668	6.5	10	Lookup	Verify whether "powerful" is the correct answer	48	Open Google and type "powerful engine"	19:02	Google		2.1	Y			5	Relevant info presented									
669	6.5	10	Lookup	Verify whether "powerful" is the correct answer	49	Go back to the test	19:1	Test	Google	2.1	--	Y	--	5										
670	10.5	11	Verification	Verify whether "drive forcibly" is the incorrect answer	50	Open Linguee & type "drive forc"	19:48	Linguee		3.1	N			5										
671	10.5	11	Verification	Verify whether "drive forcibly" is the incorrect answer	51	delete the entry without running the query	20:01	Linguee	Dictionary	3.1	N	N	--	5	Query not run									
672	11.5	12	Verification	Verify whether "drive forcefully" is the correct answer	52	Open Google and type "drive forcefully"	20:04	Google		3.1	Y			5	No relevant info shown									
673	11.5	12	Verification	Verify whether "drive forcefully" is the correct answer	53	Go back to the test	20:22	Test	Google	3.1	--	Y	N	5	No relevant info shown, this gives students correct information									
674	12.5	13	Verification	Verify whether "unscrupulous" is the correct answer	54	Open Google & type "unscrupulous"	20:44	Google		3.2	Y			5										
675	12.5	13	Verification	Verify whether "unscrupulous" is the correct answer	55	Open "unscrupulous" in Bab.la	20:53	Bab.la		3.2	Y			5										
676	12.5	13	Verification	Verify whether "unscrupulous" is the correct answer	56	Go back to test & give a correct answer	21:01	Test	Mixed	3.4	--	Y	Y	5										
677	13.5	14	Verification	Verify whether "cone" is the correct answer	57	Open bab.la & type "cone ove" & not to formulate the query	21:25	Bab.la		3.2	N			5	student didn't run the query									

678	13.5	14	Verification	Verify whether "cone" is the correct answer	58	Type "cone over" in Google	21:43	Google		3.4	Y			5	**unlike** other students, she knows that the basic form is "cone"										
679	13.5	14	Verification	Verify whether "cone" is the correct answer	59	Go back to the test	21:49	Test		3.4	--			5											
680	13.5	14	Verification	Verify whether "cone" is the correct answer	60	Go back to Google results & browse the results	21:54	Google		3.4	Y			5											
681	13.5	14	Verification	Verify whether "cone" is the correct answer	61	Type "to cone" in Google	22:59	Google		3.4	Y			5											
682	13.5	14	Verification	Verify whether "cone" is the correct answer	62	Open "cone" in CALD	22:08	CALD		3.4	Y			5											
683	13.5	14	Verification	Verify whether "cone" is the correct answer	63	Go back to the test	22:21	test		3.4	--			5											
684	13.5	14	Verification	Verify whether "cone" is the correct answer	64	Open Google & type "cone", but not run the query	22:31	Google		3.4	Y			5	Query not run										
685	13.5	14	Verification	Verify whether "cone" is the correct answer	65	Go back to the test without looking at the results	22:37	Test		3.4	--			5	Switching										
686	13.5	14	Verification	Verify whether "cone" is the correct answer	66	Go back to Google & type "cone around"	22:41	Google		3.4	Y			5											
687	13.5	14	Verification	Verify whether "cone" is the correct answer	67	Delete "cone around"	22:49	Google		3.4	Y			5											
688	13.5	14	Verification	Verify whether "cone" is the correct answer	68	Type "the road was coned" in Google	22:5	Google		3.4	Y			5											

689	13.5	14	Verification	Verify whether "cone" is the correct answer	69	Delete the query	23:02	Google		3.4	Y			5	Query not run										
690	13.5	14	Verification	Verify whether "cone" is the correct answer	70	Test	23:05	Test	Mixed	3.4	--	N	--	5											
691	14.5	15	Verification	Verify whether "render" is the correct answer	71	Go to Google & type "render"	23:18	Google		3.5	Y			5	No relevant info shown										
692	14.5	15	Verification	Verify whether "render" is the correct answer	72	Open results in bab.la	23:27	Bab.la		3.5	Y			5											
693	14.5	15	Verification	Verify whether "render" is the correct answer	73	Go back to test	23:42	test		3.5	--			5											
694	14.5	15	Verification	Verify whether "render" is the correct answer	74	Go back to bab.la	24:19	Bab.la		3.5	Y			5											
695	14.5	15	Verification	Verify whether "render" is the correct answer	75	Open Diki & look up "rendet"	24:24	Diki		3.5	N			5	wrong spelling										
696	14.5	15	Verification	Verify whether "render" is the correct answer	76	Correct the spelling to "render"	24:36	Diki		3.5	N			5											
697	14.5	15	Verification	Verify whether "render" is the correct answer	77	Type "czynić" in Diki	24:48	Diki		3.5	N			5											
698	14.5	15	Verification	Verify whether "render" is the correct answer	78	Go back to results for "render" in Diki	25:05	Diki		3.5	N			5											
699	14.5	15	Verification	Verify whether "render" is the correct answer	79	Go back to test	23:07	Test	Mixed	3.5	--	Y	--	5											
700	15.5	16	Verification	Verify whether "make progress" is the correct answer	80	Go to Diki & type "make progress"	25:12	Diki		3.5	N			5	Relevant info presented										
701	15.5	16	Verification	Verify whether "render" is the correct answer	81	Go back to test & give the correct answer	25:24	Test	Dictionary	3.5	--	Y	Y	5											
702	10.5	17	Verification	Verify whether "drive forcibly" is the incorrect answer	82	Open Diki & type "forcible"	26:2	Diki	Dictionary	3.1	N	Y	--	5	Relevant info presented										
703	11.5	18	Verification	Verify whether "drive forcefully" is the correct answer	83	Open Diki & type "forcefull"	26:33	Diki		3.1	N			5	Wrong spelling, some suggestions shown										
704	11.5	18	Verification	Verify whether "drive forcefully" is the correct answer	84	Click on the suggested correct spelling	26:38	Diki		3.1	N			5	Relevant info presented										
705	11.5	18	Verification	Verify whether "drive forcefully" is the correct answer	85	Go back to the results for "forcefull"	26:45	Diki		3.1	N			5											
706	11.5	18	Verification	Verify whether "drive forcefully" is the correct answer	86	Go back to the results for "forcible"	26:46	Diki		3.1	N			5											
707	11.5	18	Verification	Verify whether "drive forcefully" is the correct answer	87	Go back to the test	26:5	Test	Dictionary	3.1	--	Y	N	5	Student noticed collocation "expenditure on" & they try to see if this is the right answer…										
708	13.5	19	Verification	Verify whether "cone" is the correct answer	88	Open Linguee & type "cone over"	27:3	Linguee		3.4	N			5	No collocations shown										
709	13.5	19	Verification	Verify whether "cone" is the correct answer	89	Type "cone a" in Linguee	27:57	Linguee		3.4	N			5	Waiting for the list of suggested collocations to appear										
710	13.5	19	Verification	Verify whether "cone" is the correct answer	90	Choose "cone along" from the list	28:07	Linguee		3.4	N			5	No relevant collocations shown										
711	13.5	19	Verification	Verify whether "cone" is the correct answer	91	Go back to the list of results for "cone over"	28:12	Linguee		3.4	N			5											
712	13.5	19	Verification	Verify whether "cone" is the correct answer	92	Go back to the test	28:17	Test	Dictionary	3.4	--	Y	N	5	Once again, the student verified that "cone over" is not the correct answer										
713	12.5	20	Verification	Verify whether "unscrupulous" is the correct answer	93	Open Diki & type "unscrupulous"	28:4	Diki		3.2	N			5	**Misleading** info presented; "unscrupulous" only in the context of the person										
714	12.5	20	Verification	Verify whether "unscrupulous" is the correct answer	94	Expand the list of additional examples	28:55	Diki		3.2	N			5											
715	12.5	20	Verification	Verify whether "unscrupulous" is the correct answer	95	Go back to the test	29:02	Test	Dictionary	3.2	--	N	Y	5	Student didn't find any evidence that her good idea is correct, but she left the correct answer in the test										

716	10.5	21	Verification	Verify whether "drive forcibly" is the incorrect answer	96	Open Linguee & type "drive forcibly"	30:29	Linguee		3.1	N			5	**General remark:** Student is not able to take the second step. After finding that a collocation is incorrect, she should start proposing some hypotheses and verify them. For instance, she could imagine the concept in Polish and try to translate it or she could try to browse the collocations of "drive"
717	10.5	21	Verification	Verify whether "drive forcibly" is the incorrect answer	97	Correct the spelling mistake to "drive forcibly"	30:46	Linguee		3.1	N			5	
718	10.5	21	Verification	Verify whether "drive forcibly" is the incorrect answer	98	Go back to "drive forcibly"	30:58	Linguee		3.1	N			5	
719	10.5	21	Verification	Verify whether "drive forcibly" is the incorrect answer	99	Go back to test	31:06	Test	Dictionary	3.1	--	Y	N	5	The student found confirmation of her hypothesis, but did not find
720	16.5	22	Verification	Verify whether "uncover" is the incorrect answer	100	Open Diki (results for "unscrupulous") and add the word "uncover" – result "uncoverunscrupulous"	31:51	Diki		3.3	N			5	
721	16.5	22	Verification	Verify whether "uncover" is the incorrect answer	101	Fix spelling ("uncover")	31:58	Diki		3.3	N			5	Relevant info presented
722	16.5	22	Verification	Verify whether "uncover" is the incorrect answer	102	Type "discover" in Diki	32:14	Diki		3.3	N			5	Relevant info presented
723	16.5	22	Verification	Verify whether "uncover" is the incorrect answer	103	Go back to the test & give the incorrect answer	32:33	Test	Dictionary	3.3	--	N	N	5	**Failed** to understand the entries
724	10.5	23	Verification	Verify whether "drive forcibly" is the incorrect answer	104	Open Google and type "drive forcibly"	33:14	Google		3.1	Y			5	

725	10.5	23	Verification	Verify whether "drive forcibly" is the incorrect answer	105	Open results from Crosswordsonline	33:34	crosswordsonline		3.1	Y			5	The crossword service had only one word to offer, i.e. "RAM". This might be a correct answer if we were really talking about **ramming** sth. With your car, but this is clearly not the case in the sentence
726	10.5	23	Verification	Verify whether "drive forcibly" is the incorrect answer	106	Go back to the list of results	33:39	Google		3.1	Y			5	
727	10.5	23	Verification	Verify whether "drive forcibly" is the incorrect answer	107	Open results from WordGrabber	33:42	Word-grabber.com		3.1	Y			5	
728	10.5	23	Verification	Verify whether "drive forcibly" is the incorrect answer	108	Go back to the list of results	33:49	Google		3.1	Y			5	
729	10.5	23	Verification	Verify whether "drive forcibly" is the incorrect answer	109	Go back to the test & give the incorrect answer	33:51	Test	Mixed	3.1	--	N	N	5	Too much trust in non-dictionary sources
730	14.5	24	Verification	Verify whether "render" is the correct answer	110	Open Google & type "render progress"	34:06	Google		3.5	Y			5	
731	14.5	24	Verification	Verify whether "render" is the correct answer	111	Type "he rendered progress" in Google	34:22	Google		3.5	Y			5	
732	14.5	24	Verification	Verify whether "render" is the correct answer	112	Go back to the test & give the incorrect answer	34:45	Test	Google	3.5	--	N	N	5	**OVER-Verification; no** relevant results, but the learner still changed the answer to incorrect
733	17.5	25	Lookup	Looking for correct collocation of "terms"	113	Open Google & type "put sth in s"	36:34	Google		1.3	Y			5	Look at the list of suggestions from Google
734	17.5	25	Lookup	Looking for correct collocation of "terms"	114	Type "in straight terms" in Google & browse the list of suggestions	36:45	Google		1.3	Y			5	Student analyzes lists of suggestions without running the query
735	17.5	25	Lookup	Looking for correct collocation of "terms"	115	Type "in" in Google	36:59	Google		1.3	Y			5	Student gave up on the search?
736	17.5	25	Lookup	Looking for correct collocation of "terms"	116	Go back to the test	37:16	Test	Google	1.3	--	N	N	5	

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738	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	1	Open Google & type "the engine is"	12:3	Google		2.1	Y			6	No relevant collocations shown
739	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	2	Go back to Google website	12:46	Google		2.1	Y			6	
740	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	3	Go back to the test	12:5	Test		2.1	--			6	
741	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	4	Go back to Google	12:54	Google		2.1	Y			6	
742	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	5	Type "low engine" in Google	13	Google		2.1	Y			6	**Why** "low engine"?; no relevant information is presented
743	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	6	Type "engine" & wait for suggestions	13:11	Google		2.1	Y			6	Waiting for suggestions
744	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	7	Type "engine can be..."	13:23	Google		2.1	Y			6	**Natural language** in Google queries no relevant results
745	1.6	1	Lookup	Looking for collocations for the phrase "the engine is..."	8	Go back to the test & give the correct answer	13:33	Test	Google	2.1	--	N	Y	6	
746	2.6	2	Verification	Verify whether "strong tea" is the correct answer	9	Open Google & type "strong tea"	13:44	Google		2.2	Y			6	
747	2.6	2	Verification	Verify whether "strong tea" is the correct answer	10	Go back to the test & give the correct answer	13:54	Test	Google	2.2	Y	Y	Y	6	

748	3.6	3	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	11	Open Google & type "what to do when shoes are"	14:14	Google		2.4	Y			6	**Creative query**										
749	3.6	3	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	12	Go back to the test	14:23	Test		2.4	--			6											
750	3.6	3	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	13	Go back to Google list of results	14:3	Google		2.4	Y			6											
751	3.6	3	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	14	Add words "not comfortable" to the query	14:33	Google		2.4	Y			6	**Creative query**; pages with lifehacks shown										
752	3.6	3	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	15	Go back to the test	14:46	Test	Google	2.4	--	N	N	6											
753	4.6	4	Lookup	Looking for collocations of "sloppy"	16	Open browser addres bar & type "oald.com"	14:58	Browser		2.3	N			6											
754	4.6	4	Lookup	Looking for collocations of "sloppy"	17	Type "Google" in address bar	15:07	Browser		2.3	N			6	Looking for Google in Google										
755	4.6	4	Lookup	Looking for collocations of "sloppy"	18	Type "OALD" in Google	15:11	Google		2.3	N			6	**Not** Googleaided, as Google is only used to look for a dictionary										
756	4.6	4	Lookup	Looking for collocations of "sloppy"	19	Open OALD website	15:13	OALD		2.3	N			6											
757	4.6	4	Lookup	Looking for collocations of "sloppy"	20	Type "sloppy" in OALD	15:16	OALD		2.3	N			6	Relevant suggestions shown										
758	4.6	4	Lookup	Looking for collocations of "sloppy"	21	Go back to the test	15:25	Test		2.3	--			6											
759	4.6	4	Lookup	Looking for collocations of "sloppy"	22	Go back to OALD	15:28	OALD		2.3	N			6											
760	4.6	4	Lookup	Looking for collocations of "sloppy"	23	Go back to the test	15:45	Test		2.3	--			6											
761	4.6	4	Lookup	Looking for collocations of "sloppy"	24	Go back to OALD	15:51	OALD		2.3	N			6	Switching										
762	4.6	4	Lookup	Looking for collocations of "sloppy"	25	Type "joe" in OALD	15:56	OALD		2.3	N			6	No relevant results, but relevant suggestions										
763	4.6	4	Lookup	Looking for collocations of "sloppy"	26	Go back to the test & give the correct answer	16:02	Test	Dictionary	2.3	--	N	Y	6	Never opened relevant suggestions, but gave the correct answer										
764	3.6	5	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	27	Open Google & type "if shoeas a re too tight you have to"	16:22	Google		2.4	Y			6	Lot of typos										
765	3.6	5	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	28	Click on the suggested correct spelling	16:3	Google		2.4	Y			6	Results related to the concept "stretch new shoes"										
766	3.6	5	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	29	Go back to the test	16:36	Test	Google	2.4	--	N	N	6											
767	5.6	6	Lookup	Looking for "(…) down"	30	Type the incorrect answer in the test	16:55	Test		2.5	--			6											
768	5.6	6	Lookup	Looking for "(…) down"	31	Copy "Expenditure on the project … down"	17:02	Test		2.5	--			6											
769	5.6	6	Lookup	Looking for "(…) down"	32	Paste the sentence in Google	17:05	Google		2.5	Y			6	Cheaping										
770	5.6	6	Lookup	Looking for "(…) down"	33	Reduce the phrase to "Expenditure on the project"	17:21	Google		2.5	Y			6											
771	5.6	6	Lookup	Looking for "(…) down"	34	Delete the phrase without running the query	17:26	Google		2.5	Y			6											
772	5.6	6	Lookup	Looking for "(…) down"	35	Go back to the test	17:28	Test	Google	2.5	--	N	N	6											
773	3.6	7	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	36	Type "to make shoes looser by wearing them"	17:4	Google		2.4	Y			6	Results related to stretching shown again										
774	3.6	7	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	37	Open "how to stretch new shoes" from WikiHow	17:54	WikiHow		2.4	Y			6											
775	3.6	7	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	38	Go back to Google results	18:27	Google		2.4	Y			6											
776	3.6	7	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	39	Type "roznosci"	18:29	Google		2.4	Y			6	Typo: **wrong Polish word**		1								
777	3.6	7	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	40	Type "roznosic"	18:33	Google		2.4	Y			6	**Wrong Polish word**		1								
778	3.6	7	Lookup	Looking for the correct word to explain the concept of shoes being too uncomfortable	41	Reduce the word to "roz"	18:39	Google	Google	2.4	Y	N	N	6											
779	6.6	8	Verification	Verify whether "break" is the correct answer	42	Type "break shoes" in Google	18:45	Google		2.4	Y			6											
780	6.6	8	Verification	Verify whether "break" is the correct answer	43	Reduce the phrase to "break"	18:56	Google		2.4	Y			6											
781	6.6	8	Verification	Verify whether "break" is the correct answer	44	Go back to the test & give the correct answer	19:03	Test		2.4	--			6	Student came up with the answer herself without the help of										

782	6.6	8	Verification	Verify whether "break" is the correct answer	45	Type "break shoes" in Google again	19:09	Google		2.4	Y			6	**Student doesn't** understand that they need to use the phrasal verb **"break in"**
783	6.6	8	Verification	Verify whether "break" is the correct answer	46	Type "to break shoes"	19:28	Google		2.4	Y			6	Nice trick; relevant info presented
784	6.6	8	Verification	Verify whether "break" is the correct answer	47	Open "7 Ways to break in new shoes without hurting your feet"	19:35	Bustle.com		2.4	Y			6	Relevant info presented
785	6.6	8	Verification	Verify whether "break" is the correct answer	48	Go back to the test & leave the correct answer	19:44	Test	Mixed	2.4	--	Y	Y	6	
786	7.6	9	Verification	Verify whether "forcibly" is the incorrect answer	49	Open browser & type "hoo" & delete it	20:55	Browser		3.1	N			6	
787	7.6	9	Verification	Verify whether "forcibly" is the incorrect answer	50	Type "google.com" in browser	20:57	Browser		3.1	N			6	Looking for Google in Google
788	7.6	9	Verification	Verify whether "forcibly" is the incorrect answer	51	Type "OALD" in Google	21:01	Google		3.1	N			6	
789	7.6	9	Verification	Verify whether "forcibly" is the incorrect answer	52	Type "forcibly" in OALD	21:09	OALD		3.1	N			6	
790	7.6	9	Verification	Verify whether "forcibly" is the incorrect answer	53	Go back to the test	21:15	Test	Dictionary	3.1	--	N		6	Student seems to think that "forcibly" is the correct answer
791	8.6	10	Verification	Verify whether "suspension" is the incorrect answer	54	Go back to OALD & type "suspension"	21:17	OALD		3.1	N			6	
792	8.6	10	Verification	Verify whether "suspension" is the incorrect answer	55	Go back to the test	21:2	Test		3.1	--			6	
793	8.6	10	Verification	Verify whether "suspension" is the incorrect answer	56	Go back to OALD	21:23	OALD		3.1	N			6	
794	8.6	10	Verification	Verify whether "suspension" is the incorrect answer	57	Go back to the test	21:33	Test	Dictionary	3.1	--	Y	--	6	
795	7.6	11	Verification	Verify whether "forcibly" is the incorrect answer	58	Type "to drive forcibly" in Google & browse the list of results	21:52	Google	Google	3.1	Y	Y	--	6	No relevant collocations shown
796	9.6	12	Verification	Verify whether "fastly" is the correct answer	59	Open Google & type "to drive fastly"	22:24	Google		3.1	Y			6	Suggestions on how to use "fast" instead of "fastly"
797	9.6	12	Verification	Verify whether "fastly" is the correct answer	60	Correct the spelling mistake to "fast"	22:34	Google		3.1	Y	N	--	6	Student directs her attention to "suspension", which means she rejected the word "fast"
798	8.6	13	Verification	Verify whether "suspension" is the incorrect answer	61	Open Google & type "suspension"	22:43	Google		3.1	Y			6	
799	8.6	13	Verification	Verify whether "suspension" is the incorrect answer	62	Open the result in bab.la	22:45	Bab.la		3.1	Y			6	"car suspension" appears only in the list of examples
800	8.6	13	Verification	Verify whether "suspension" is the incorrect answer	63	Go back to test	23:11	Test		3.1	--			6	
801	8.6	13	Verification	Verify whether "suspension" is the incorrect answer	64	Go back to "suspension" in OALD	24:19	OALD		3.1	N			6	
802	8.6	13	Verification	Verify whether "suspension" is the incorrect answer	65	Go back to the test & give the correct answer	24:32	Test	Mixed	3.1	--	Y	Y	6	
803	10.6	14	Verification	Verify whether "herbivorous mammals" is the correct answer	66	Open Google & type "herbivorous mammals\"	25:42	Google		3.3	Y			6	
804	10.6	14	Verification	Verify whether "herbivorous mammals" is the correct answer	67	Go back to test	25:5	Test		3.3	--			6	
805	10.6	14	Verification	Verify whether "herbivorous mammals" is the correct answer	68	Go back to OALD	25:54	OALD	Google	3.3	--	Y	--	6	
806	11.6	15	Verification	Verify whether "uncover" is the incorrect answer	69	Go back to Google & type "to uncover new species"	25:56	Google		3.3	Y			6	Results only show collocations for "discover"
807	11.6	15	Verification	Verify whether "uncover" is the incorrect answer	70	Go back to test & give the correct answer	26:07	Test	Google	3.3	--	Y	Y	6	
808	12.6	16	Verification	Verify whether "coned over" is the incorrect answer	71	Open Google & type "the road coned over"	26:28	Google		3.4	Y			6	
809	13.6	16	Verification	Verify whether "coned over" is the incorrect answer	72	Click on suggestion "the road condover"	26:33	Google		3.4	Y			6	Irrelevant suggestion
810	14.6	16	Verification	Verify whether "coned over" is the incorrect answer	73	Go back to the test	26:36	Test		3.4	--			6	
811	15.6	16	Verification	Verify whether "coned over" is the incorrect answer	74	Go back to Google & change "condover" to "coned over"	26:4	Google		3.4	Y			6	Relevant suggestion shown ("coned off" from CALD
812	16.6	16	Verification	Verify whether "coned over" is the incorrect answer	75	Go back to the test	26:53	Test		3.4	--			6	
813	17.6	16	Verification	Verify whether "coned over" is the incorrect answer	76	Go back to Google &	27:01	Google		3.4	Y			6	
814	18.6	16	Verification	Verify whether "coned over" is the incorrect answer	77	Click on the suggestion from CALD	27:11	CALD		3.4	Y			6	Relevant info presented
815	12.6	16	Verification	Verify whether "coned over" is the incorrect answer	78	Go back to the test & give the correct answer	27:22	Test	Mixed	3.4	--	Y	Y	6	
816	13.6	17	Verification	Verify whether "fall victim" is the correct answer	79	Open Google & type "to fall to"	28:06	Google		3.2	Y			6	
817	13.6	17	Verification	Verify whether "fall victim" is the correct answer	80	Delete previous versions & type "to fall somebody to"	28:14	Google		3.2	Y			6	Strange query
818	13.6	17	Verification	Verify whether "fall victim" is the correct answer	81	Revise the query by adding "to fall somebody to something"	28:19	Google		3.2	Y			6	Results related to "fall to someone to do something"
819	13.6	17	Verification	Verify whether "fall victim" is the correct answer	82	Open "fall to" in The Free Dictionary	28:23	The Free Dictionary		3.2	Y			6	
820	13.6	17	Verification	Verify whether "fall victim" is the correct answer	83	Go back to the test & give the correct answer	28:37	Test	Mixed	3.2	Y	Y	Y	6	
						2016-04-07-1609-34.flv										
822	1.7	1	Lookup	Looking for "was (…) this decision"	1	Open Google & type "the decision was"	5:41	Google		1.2	Y			7	Student did not run the query

823	1.7	1	Lookup	Looking for "was (…) this decision"	2	Go back to the test	5:45	Test		1.2	--			7											
824	1.7	1	Lookup	Looking for "was (…) this decision"	3	Change the entry to "the decision was very inconvenient for me"	6:01	Google		1.2	Y			7	**why** look for the original phrase instead of the target construction? Is she looking for synonyms?										
825	1.7	1	Lookup	Looking for "was (…) this decision"	4	Go back to test	6:11	Test		1.2	--			7											
826	1.7	1	Lookup	Looking for "was (…) this decision"	5	Go back to Google results	6:12	Google		1.2	Y			7											
827	1.7	1	Lookup	Looking for "was (…) this decision"	6	revise the query to "the decision was very inconvenient for me. I was… this decision"	6:15	Google		1.2	Y			7	Cheaping										
828	1.7	1	Lookup	Looking for "was (…) this decision"	7	Go back to the test	6:24	Test	Google	1.2	--	N	N	7											
829	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	8	Open Google & type "put in inconenient"	6:4	Google		1.2	Y			7	Typo; some relevant information shown in results										
830	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	9	Click on suggestion "put in inconvenient"	6:45	Google		1.2	Y			7	Misleading spelling suggestion										
831	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	10	Go back to test	6:49	Test		1.2	--			7	**relevant** info shown, but no time to read the list of results	1									
832	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	11	Go back to Google results	6:53	Google		1.2	Y			7	Relevant info presented	1									
833	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	12	Change the entry to "pt in inconvenience"	6:57	Google		1.2	Y			7	Query not run										
834	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	13	click on suggestion "put you in inconvenience"	6:59	Google		1.2	Y			7	Relevant suggestions from yourdictionary.com	1									
835	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	14	Open results from yourdictionary.com in a new tab in background	7:05	Google		1.2	Y			7											
836	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	15	Go back to the test	7:11	Test		1.2	--			7											
837	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	16	Open results from YourDictionary	7:18	YourDictionary		1.2	Y			7	No relevant results shown										
838	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	17	Go back to the test	7:29	Test		1.2	--			7											
839	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	18	Go back to Google	7:33	Google		1.2	Y			7											
840	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	19	Go back to the test	7:37	Test		1.2	--			7											
841	2.7	2	Verification	Verify whether "put in inconvenience" is the correct answer	20	Go back to Google	7:4	Google	Mixed	1.2	Y	N	N	7											
842	3.7	3	Verification	Verify whether "you never know what is going to happen" is the correct answer	21	Open Google & type "you never know what's going to happen"	7:43	Google		1.5	Y			7											
843	3.7	3	Verification	Verify whether "you never know what is going to happen" is the correct answer	22	Go back to the test	7:51	Test		1.5	--			7											
844	3.7	3	Verification	Verify whether "you never know what is going to happen" is the correct answer	23	Go back to Google & type "you never know what is going to happen (store)"	7:54	Google		1.5	Y			7	No relevant collocations shown										
845	3.7	3	Verification	Verify whether "you never know what is going to happen" is the correct answer	24	Go back to the test	8:07	Test	Google	1.5	--	N	N	7											
846	4.7	4	Lookup	Looking for collocations of "terms"	25	Open Google & type "terms phrases"	8:48	Google		1.3	Y			7	No relevant collocations shown										
847	4.7	4	Lookup	Looking for collocations of "terms"	26	Go back to the test	9:1	Test		1.3	--			7											
848	4.7	4	Lookup	Looking for collocations of "terms"	27	Go back to Google	9:13	Google		1.3	Y			7											
849	4.7	4	Lookup	Looking for collocations of "terms"	28	Change the query to "in terms phrases"	9:18	Google		1.3	Y			7											
850	4.7	4	Lookup	Looking for collocations of "terms"	29	Delete the query without running it	9:24	Google		1.3	Y			7	Read the comment										
851	4.7	4	Lookup	Looking for collocations of "terms"	30	Go back to the test	9:25	Test	Google	1.3	--	N		7											
852	5.7	5	Lookup	Looking for collocations of "loath"	31	Go back to Google & type "babla"	9:48	Google		1.4	N			7	Not Googleaided, as Google is only used to look for a dictionary										
853	5.7	5	Lookup	Looking for collocations of "loath"	32	Open Bab.la & type "loath"	9:51	Bab.la		1.4	N			7	Relevant info presented in examples										
854	5.7	5	Lookup	Looking for collocations of "loath"	33	Go back to test	9:57	Test		1.4	--			7											
855	5.7	5	Lookup	Looking for collocations of "loath"	34	Go back to results	10	Bab.la		1.4	N			7	Only on the second visit does the student start to read examples										
856	5.7	5	Lookup	Looking for collocations of "loath"	35	Go back to test & give incorrect answer	10:03	Test		1.4	--			7	Answer incorrect because of "loath to defeat"										
857	5.7	5	Lookup	Looking for collocations of "loath"	36	Change the answer to "to accept defeat" & give the rest of the correcet answer	10:36		Dictionary	1.4	--	Y	Y	7											
858	4.7	6	Lookup	Looking for collocations of "terms"	37	Open Bab.la & type "terms"	11:24	Bab.la		1.3	N			7	No relevant collocations shown										

859	4.7	6	Lookup	Looking for collocations of "terms"	38	Go back to test	11:45	Test		1.3	--			7										
860	4.7	6	Lookup	Looking for collocations of "terms"	39	Go back to bab.la	12:08	Bab.la		1.3	N			7										
861	4.7	6	Lookup	Looking for collocations of "terms"	40	Go back to the test	12:16	Test		1.3	--			7										
862	4.7	6	Lookup	Looking for collocations of "terms"	41	Go back to bab.la	13:18	Bab.la		1.3	N			7										
863	4.7	6	Lookup	Looking for collocations of "terms"	42	Go back to test	13:2	Test		1.3	--			7	Switching									
864	4.7	6	Lookup	Looking for collocations of "terms"	43	Go back to bab.la	13:29	Bab.la		1.3	N			7	Switching									
865	4.7	6	Lookup	Looking for collocations of "terms"	44	Open Google & type "what I fell in terms of"	13:35	Google		1.3	Y			7	Typo!!!; no relevant results shown									
866	4.7	6	Lookup	Looking for collocations of "terms"	45	Correct the spelling mistake to "felt"	13:49	Google		1.3	Y			7	No relevant collocations shown									
867	4.7	6	Lookup	Looking for collocations of "terms"	46	Delete a part of the query & look up "in terms of"	13:57	Google		1.3	Y			7										
868	4.7	6	Lookup	Looking for collocations of "terms"	47	Go back to "bab.la"	13:59	Bab.la		1.3	N			7										
869	4.7	6	Lookup	Looking for collocations of "terms"	48	Go back to test	14:01	Test		1.3	--			7	Switching									
870	4.7	6	Lookup	Looking for collocations of "terms"	49	Go back to "bab.la"	14:08	Bab.la		1.3	N			7										
871	4.7	6	Lookup	Looking for collocations of "terms"	50	Go back to Google	14:12	Google		1.3	Y			7										
872	4.7	6	Lookup	Looking for collocations of "terms"	51	Go back to test	14:13	Test		1.3	--			7	Switching									
873	4.7	6	Lookup	Looking for collocations of "terms"	52	Go back to "bab.la"	14:14	Bab.la		1.3	N			7										
874	4.7	6	Lookup	Looking for collocations of "terms"	53	Go back to test	14:2	Test	Mixed	1.3	--	N	N	7										
875	6.7	7	Lookup	Looking for the word in "strong"	54	Open Bab.la & type "słodki"	14:55	Bab.la		2.2	N			7	Student **didn't read** the sentence, and they don't understand the context									
876	6.7	7	Lookup	Looking for the word in "strong"	55	Go back to test	15:04	Test		2.2	--			7										
877	6.7	7	Lookup	Looking for the word in "strong"	56	Go back to "bab.la" & type "gorzki"	15:21	Bab.la		2.2	N			7	Student **didn't read** the sentence, and they don't understand the context									
878	6.7	7	Lookup	Looking for the word in "strong"	57	Go back to test	15:31	Test	Dictionary	2.2	--	N	--	7	Student didn't give any answer, but she probably realized that "bitter" is wrong									
879	7.7	8	Lookup	Looking for the translation of "rozchodzić"	58	Open bab.la & type "rozchodzić"	15:46	Bab.la		2.4	N			7	No relevant collocations shown									
880	7.7	8	Lookup	Looking for the translation of "rozchodzić"	59	Type "rozciągnąć" in bab.la	16:04	Bab.la		2.4	N			7	Incorrect Polish phrase; but **justified** – good phrase did not yield the results									
881	7.7	8	Lookup	Looking for the translation of "rozchodzić"	60	Go back to test	16:07	Test		2.4	--	N	--	7										
882	6.7	9	Lookup	Looking for the word in "strong"	61	Open bab.la & type "mocny"	16:34	Bab.la		2.2	N			7										
883	6.7	9	Lookup	Looking for the word in "strong"	62	Go back to test	16:46	Test		2.2	--			7										
884	6.7	9	Lookup	Looking for the word in "strong"	63	Go back to "bab.la"	17:08	Bab.la		2.2	N			7										
885	6.7	9	Lookup	Looking for the word in "strong"	64	Go back to test	17:09	Test		2.2	--			7	Switching									
886	6.7	9	Lookup	Looking for the word in "strong"	65	Go back to "bab.la"	17:1	Bab.la		2.2	N			7	Switching									
887	6.7	9	Lookup	Looking for the word in "strong"	66	Go back to test	17:21	Test		2.2	--			7	Switching									
888	6.7	9	Lookup	Looking for the word in "strong"	67	Go back to "bab.la" & type "stewed"	17:26	Bab.la		2.2	N			7										
889	6.7	9	Lookup	Looking for the word in "strong"	68	Go back to the test & give the correct answer	17:34	Test	Dictionary	2.2	N	Y	Y	7	**Negative evidence** (absence of evidence) is also very useful									
890	7.7	10	Lookup	Looking for the translation of "rozchodzić"	69	Open Google & type "synonim do rozchodzić"	18:01	Google		2.4	Y			7	Most results refer to "rozchodzić się"									
891	7.7	10	Lookup	Looking for the translation of "rozchodzić"	70	Go back to the test	18:21	Test		2.4	--			7										
892	7.7	10	Lookup	Looking for the translation of "rozchodzić"	71	Give the correct answer	18:29	Test	Google	2.4	--	N	Y	7	(learner did not find any information online; this might have been their knowledge)									
893	8.7	11	Lookup	Looking for the meaning of "tow"	72	Open Bab.la & type "tow"	18:52	Bab.la	Dictionary	2.1	N	N	--	7	Relevant info presented									
894	9.7	12	Lookup	Looking for collocations of "engine"	73	Open Google & type "jaki może być silny"	19	Google		2.1	Y			7	**wrong** spelling in Polish; no relevant info									
895	9.7	12	Lookup	Looking for collocations of "engine"	74	Go back to the test	19:1	Test		2.1	--			7										
896	9.7	12	Lookup	Looking for collocations of "engine"	75	Go back to Google & change "silny" to "silnik"	19:19	Google		2.1	Y			7	Query unlikely to yield positive results									
897	9.7	12	Lookup	Looking for collocations of "engine"	76	Open "jak duży może być silnik Diesla" in Gadżetomania	19:59	gadżetomania.pl		2.1	Y			7	Surprisingly, **relevant results** show "lubisz **duże**, mocne silniki?"	1								
898	9.7	12	Lookup	Looking for collocations of "engine"	77	Go back to "bab.la"	20:08	Bab.la		2.1	N			7										
899	9.7	12	Lookup	Looking for collocations of "engine"	78	Go back to the test	20:1	Test		2.1	--			7										
900	9.7	12	Lookup	Looking for collocations of "engine"	79	Go back to "bab.la" & type "engine"	20:11	Bab.la		2.1	N			7										
901	9.7	12	Lookup	Looking for collocations of "engine"	80	Go back to the test	20:39	Test		2.1	--			7										
902	9.7	12	Lookup	Looking for collocations of "engine"	81	Go back to "bab.la"	20:45	Bab.la		2.1	N			7										
903	9.7	12	Lookup	Looking for collocations of "engine"	82	Go back to the test	20:49	Test		2.1	--			7										

904	9.7	12	Lookup	Looking for collocations of "engine"	83	Open Google & type "th engine is so"	20:58	Google		2.1	Y			7	typo, **Google as corpus**, much better if the student had known Boolean queries (parentheses)											
905	9.7	12	Lookup	Looking for collocations of "engine"	84	Click on correct spelling ("the")	21:06	Google		2.1	Y			7												
906	9.7	12	Lookup	Looking for collocations of "engine"	85	Add words that it could easily tow a bus	21:15	Google		2.1	Y			7	cheaping; no relevant information presented											
907	9.7	12	Lookup	Looking for collocations of "engine"	86	Go back to test	21:41	Test	Mixed	2.1	--	N	N	7												
908	10.7	13	Lookup	Looking for the meaning "forcibly"	87	Open bab.la & type "forcibly"	22:55	Bab.la		3.1	N			7												
909	10.7	13	Lookup	Looking for the meaning "forcibly"	88	Open Google & do nothing	23:01	Google		3.1	N			7												
910	10.7	13	Lookup	Looking for the meaning "forcibly"	89	Go back to the test	23:02	Test	Mixed	3.1	--	Y	--	7												
911	11.7	14	Lookup	Looking for the meaning "suspension"	90	Open bab.la	23:08	Bab.la		3.1	N			7	Only one suggestion ("car suspension") is shown											
912	11.7	14	Lookup	Looking for the meaning "suspension"	91	Go back to test	23:14	Test	Dictionary	3.1	--	Y	--	7												
913	12.7	15	Lookup	Looking for the translation of "niewaznie/nieroz ważnie… itp."	92	Open bab.la & type "niuewaznie"	23:25	Bab.la		3.1	N			7	Typo											
914	12.7	15	Lookup	Looking for the translation of "niewaznie/nieroz ważnie… itp."	93	Correct the spelling mistake to "nieuważnie"	23:33	Bab.la		3.1	N			7												
915	12.7	15	Lookup	Looking for the translation of "niewaznie/nieroz ważnie… itp."	94	Go back to the test & type "inattentively"	23:41	Test		3.1	--			7												
916	12.7	15	Lookup	Looking for the translation of "niewaznie/nieroz ważnie… itp."	95	Go back to bab.la & type "nierozważnie"	23:49	Bab.la		3.1	N			7	no results for "nierozważnie", **instead** results for "rozważny"											
917	12.7	15	Lookup	Looking for the translation of "niewaznie/nieroz ważnie… itp."	96	Change the query to "nierozważny"	24:11	Bab.la		3.1	N			7												
918	12.7	15	Lookup	Looking for the translation of "niewaznie/nieroz ważnie… itp."	97	Go back to the test	24:2	Test	Dictionary	3.1	--	Y	--	7												
919	10.7	16	Lookup	Looking for the meaning "forcibly"	98	Open bab.la & type "forcibly"	24:45	Bab.la	Dictionary	3.1	N	N		7	The same action has already been carried out, unsuccessfully											
920	13.7	17	Lookup	Looking for the meaning of "zamaszysty"	99	Open Bab.la & type "zamaszyście"	24:5	Bab.la		3.1	N			7												
921	13.7	17	Lookup	Looking for the meaning of "zamaszysty"	100	Click on the suggested form "zamaszysty"	24:54	Bab.la		3.1	N			7												

922	13.7	17	Lookup	Looking for the meaning of "zamaszysty"	101	Go back to the test & add new answer "inattentively/boldly"	24:59	Test	Dictionary	3.1	--	Y	N	7												
923	14.7	18	Lookup	Looking for the meaning of "fall victim"	102	Open Bab.la & type "fall victim"	25:11	Bab.la		3.1	N			7	No translations, but some examples shown											
924	14.7	18	Lookup	Looking for the meaning of "fall victim"	103	Open Google & type "fall victim"	25:18	Google		3.1	Y			7	Relevant info presented											
925	14.7	18	Lookup	Looking for the meaning of "fall victim"	104	Go back to "bab.la"	25:25	Bab.la		3.1	N			7												
926	14.7	18	Lookup	Looking for the meaning of "fall victim"	105	Go back to the test	25:26	Test		3.1	--			7												
927	14.7	18	Lookup	Looking for the meaning of "fall victim"	106	Go back to Google & open the result for "fall victim" from CALD	25:29	CALD		3.1	Y			7	Relevant info presented											
928	14.7	18	Lookup	Looking for the meaning of "fall victim"	107	Go back to Google & change "condover" to "coned over"	25:35	Google		3.1	Y			7												
929	14.7	18	Lookup	Looking for the meaning of "fall victim"	108	Go back to "bab.la"	25:36	Bab.la		3.1	N			7												
930	14.7	18	Lookup	Looking for the meaning of "fall victim"	109	Go back to test	25:37	Test	Mixed	3.1	--	Y	--	7												
931	15.7	19	Lookup	Looking for the meaning of "unscrupulous"	110	Open bab.la & type "unscrupuloud"	24:45	Bab.la		3.2	N			7	Typo											
932	15.7	19	Lookup	Looking for the meaning of "unscrupulous"	111	Correct the spelling mistake	25:56	Bab.la		3.2	N			7	Relevant info presented											
933	15.7	19	Lookup	Looking for the meaning of "unscrupulous"	112	Go back to the test & give the correct answer	26	Test	Dictionary	3.2	--	Y	Y	7												
934	16.7	20	Verification	Verify whether "uncover" is the incorrect answer	113	Open bab.la & type "uncover"	26:44	Bab.la		3.3	N			7	Relevant info presented											
935	16.7	20	Verification	Verify whether "uncover" is the incorrect answer	114	Go back to the test	26:53	Test	Dictionary	3.3	--	Y	--	7												
936	17.7	21	Lookup	Looking for the meaning of "herbivorous"	115	Go back to "bab.la" & type "herbivorous"	27	Bab.la		3.3	N			7												
937	17.7	21	Lookup	Looking for the meaning of "herbivorous"	116	Go back to test	27:07	Test	Dictionary	3.3	--	Y	--	7												
938	18.7	22	Lookup	Looking for the meaning of "mammals"	117	Go back to "bab.la" & type "mammals"	27:1	Bab.la		3.3	N			7												
939	18.7	22	Lookup	Looking for the meaning of "mammals"	118	Go back to the test	27:31	Test		3.3	--			7												
940	18.7	22	Lookup	Looking for the meaning of "mammals"	119	Go back to "bab.la"	27:37	Bab.la	Dictionary	3.3	N	Y	--	7												
941	16.7	23	Verification	Verify whether "uncover" is the incorrect answer	120	Go back to the entry for "uncover" in bab.la	27:43	Bab.la		3.3	N			7												
942	16.7	23	Verification	Verify whether "uncover" is the incorrect answer	121	Click on the Polish equivalent "wykryć"	27:42	Bab.la		3.3	N			7												
943	16.7	23	Verification	Verify whether "uncover" is the incorrect answer	122	Go back to the entry for "uncover" in bab.la	27:49	Bab.la		3.3	N			7												
944	16.7	23	Verification	Verify whether "uncover" is the incorrect answer	123	Go back to the test & give the correct answer	27:51	Test	Dictionary	3.3	--	Y	Y	7												
945	19.7	24	Verification	Verify whether "render" is the incorrect answer	124	Open bab.la & type "render"	28:27	Bab.la		3.5	N			7	Data inconclusive											
946	19.7	24	Verification	Verify whether "render" is the incorrect answer	125	Go back to the test	28:36	Test		3.5	--			7												
947	19.7	24	Verification	Verify whether "render" is the incorrect answer	126	Open Google & type "render progress"	28:46	Google		3.5	Y			7												
948	19.7	24	Verification	Verify whether "render" is the incorrect answer	127	Put the query in parentheses	29:01	Google		3.5	Y			7	**WOW!** Sb knows Boolean syntax for Google!											

949	19.7	24	Verification	Verify whether "render" is the incorrect answer	128	Open the entry with stats in textranch.com	29:09	textranch.com		3.5	Y			7	Stats say that "render progress" is more common in the Web (do they use Google) than "render the progress"										
950	19.7	24	Verification	Verify whether "render" is the incorrect answer	129	Go back to the test & give the incorrect answer	26:19	Test	Mixed	3.5	--	N	N	7											
951	20.7	25	Verification	Verify whether "cone" is the incorrect answer	130	Open bab.la & type "cone"	29:24	Bab.la		3.4	N			7	**only the N** shown (no V)										
952	20.7	25	Verification	Verify whether "cone" is the incorrect answer	131	Open Google & type "cone over"	29:37	Google		3.4	Y			7	Showing results for "**co**me over"										
953	20.7	25	Verification	Verify whether "cone" is the incorrect answer	132	Go back to the test	29:54	Test	Mixed	3.4	--	N	--	7											
954	19.7	26	Verification	Verify whether "render" is the incorrect answer	133	Open Google & type "verbs with progress"	30:18	Google		3.5	Y			7	looking for collocations in Google instead of collocation dictionary										
955	19.7	26	Verification	Verify whether "render" is the incorrect answer	134	Open entry for "progress" in Merriam-Webster	30:23	Merriam-Webster		3.5	Y			7	Relevant info presented in examples & related phrases										
956	19.7	26	Verification	Verify whether "render" is the incorrect answer	135	Scroll over suggested phrase "make progress"	31:02	Merriam-Webster		3.5	Y			7	**Good student – reads attentively**										
957	19.7	26	Verification	Verify whether "render" is the incorrect answer	136	Go back to the test	31:09	Test		3.5	--			7											
958	19.7	26	Verification	Verify whether "render" is the incorrect answer	137	Go back to Google & look up render progres	31:12	Google		3.5	Y			7											
959	19.7	26	Verification	Verify whether "render" is the incorrect answer	138	Type "render progress" in parentheses	31:26	Google		3.5	Y			7	Looking for the results which are still open in another tab										
960	19.7	26	Verification	Verify whether "render" is the incorrect answer	139	Open the entry with stats in textranch.com	31:3	textranch.com		3.5	Y			7	**Re-evaluation of the source**										
961	19.7	26	Verification	Verify whether "render" is the incorrect answer	140	Open examples for "render progress"	31:39	textranch.com		3.5	Y			7	**Bad source: examples for different POS**										
962	19.7	26	Verification	Verify whether "render" is the incorrect answer	141	Type "rnmake" in "get your English checked" box	31:55	textranch.com		3.5	Y			7	**banner** pops up; it requires login										
963	19.7	26	Verification	Verify whether "render" is the incorrect answer	142	Close the banner requiring sign-up	31:57	textranch.com		3.5	Y			7	The banner appears again										
964	19.7	26	Verification	Verify whether "render" is the incorrect answer	143	Go back to Google	32	Google		3.5	Y			7											
965	19.7	26	Verification	Verify whether "render" is the incorrect answer	144	Go back to the test & give a partly correct answer	32:09	Test	Mixed	3.5	--	N	--	7	The learner is not sure, and keeps on looking for other possibilities										
966	21.7	27	Verification	Verify whether "during the last two weeks" is the incorrect answer	145	Open Google & type "dring the last two weeks"	32:44	Google		3.5	Y			7	Relevant information presented (e.g. Englishforums)										
967	21.7	27	Verification	Verify whether "during the last two weeks" is the incorrect answer	146	Add "what tense" to the query	32:58	Google		3.5	Y			7	No relevant info shown										
968	21.7	27	Verification	Verify whether "during the last two weeks" is the incorrect answer	147	Go back to the test	33:26	Test	Google	3.5	--	N	--	7	Student still isn't sure, no change										
969	20.7	28	Verification	Verify whether "cone" is the incorrect answer	148	Open Google & type "copned over"	33:46	Google		3.4	Y			7	Typo										
970	20.7	28	Verification	Verify whether "cone" is the incorrect answer	149	Correct the spelling mistake	33:52	Google		3.4	Y			7	Relevant negative evidence presented ("coned over" related to drugs in Urban Dictionary)										
971	20.7	28	Verification	Verify whether "cone" is the incorrect answer	150	Open "coned over" in Urban Dictionary	33:55	Urban Dictionary		3.4	Y			7											
972	20.7	28	Verification	Verify whether "cone" is the incorrect answer	151	Go back to Google	34:08	Google		3.4	Y			7											
973	20.7	28	Verification	Verify whether "cone" is the incorrect answer	152	Add "meaning" to the "coned over" query	34:17	Google		3.4	Y			7	Still, relevant negative evidence										
974	20.7	28	Verification	Verify whether "cone" is the incorrect answer	153	Open "coned" in Urban Dictionary	34:21	Urban Dictionary		3.4	Y			7											
975	20.7	28	Verification	Verify whether "cone" is the incorrect answer	154	Go back to Google results	34:35	Google		3.4	Y			7											
976	20.7	28	Verification	Verify whether "cone" is the incorrect answer	155	Open "cone" (N) in Urban Dictionary	34:37	Urban Dictionary		3.4	Y			7	Info related to the tool for smoking marijuana										
977	20.7	28	Verification	Verify whether "cone" is the incorrect answer	156	Go back to Google	34:55	Google		3.4	Y			7											
978	20.7	28	Verification	Verify whether "cone" is the incorrect answer	157	Go back to the test	34:59	Test	Mixed	3.4	--	N	--	7											
979	22.7	29	Lookup	Looking for translation of "skorkowany/korek"	158	Go to bab.la & type "skorkowany"	35:08	Bab.la		3.4	N			7	**Wrong Polish word – "skorkowany"**		1								
980	22.7	29	Lookup	Looking for translation of "skorkowany/korek"	159	Go back to the test	35:23	Test		3.4	--			7											
981	22.7	29	Lookup	Looking for translation of "skorkowany/korek"	160	Go back to "bab.la" & type "korek"	35:25	Bab.la	Dictionary	3.4	N	N	--	7											
982	23.7	30	Verification	Verify whether "cone off" is the correct answer	161	Open CALD & type "cone sth off"	35:37	CALD		3.4	N			7	Bingo!										
983	23.7	30	Verification	Verify whether "cone off" is the correct answer	162	Go back to the test & give the incomplete correct answer	35:5	Test		3.4	--	Y	Y	7	Probably the partly-correct answer stems from the fact that the										
						2016-04-07-1611-16.flv																			
985	1.8	1	Lookup	Looking the for correct collocation of "put"	1	Open Google & type "put longman"	5:3	Google		1.2	N			8	Not Googleaided, as Google is only used to look for a dictionary										
986	1.8	1	Lookup	Looking the for correct collocation of "put"	2	Open result for "put" in LODCE	5:39	LDOCE		1.2	N			8											
987	1.8	1	Lookup	Looking the for correct collocation of "put"	3	Go back to the test	5:44	Test		1.2	--			8											
988	1.8	1	Lookup	Looking the for correct collocation of "put"	4	Go back to LDOCE	5:48	LDOCE		1.2	N			8	Student **didn't see** the relevant answer (slow, attentive scrolling, but skipped the relevant information)	1									

989	1.8	1	Lookup	Looking the for correct collocation of "put"	5	Go back to the test	6:24	Test		1.2	--			8											
990	1.8	1	Lookup	Looking the for correct collocation of "put"	6	Go back to LDOCE	6:27	LDOCE		1.2	N			8											
991	1.8	1	Lookup	Looking the for correct collocation of "put"	7	Go back to the test	7:08	Test		1.2	--			8	Switching, but at a slow pace										
992	1.8	1	Lookup	Looking the for correct collocation of "put"	8	Go back to LDOCE	7:13	LDOCE		1.2	N			8	Switching, but at a slow pace										
993	1.8	1	Lookup	Looking the for correct collocation of "put"	9	Go back to the test	7:32	Test		1.2	--			8											
994	1.8	1	Lookup	Looking the for correct collocation of "put"	10	Go back to LDOCE	7:33	LDOCE		1.2	N			8											
995	1.8	1	Lookup	Looking the for correct collocation of "put"	11	Press Ctrl+F & type "convi"	7:34	LDOCE + Ctrl F		1.2	N			8	**Excellent strategy!; typo, though**										
996	1.8	1	Lookup	Looking the for correct collocation of "put"	12	Remove the letter to obtain "conv"	7:35	LDOCE		1.2	N			8	Relevant info presented										
997	1.8	1	Lookup	Looking the for correct collocation of "put"	13	Go back to test & start typing "put into"	7:5	Test		1.2	--			8											
998	1.8	1	Lookup	Looking the for correct collocation of "put"	14	Go back to LDOCE	7:54	LDOCE		1.2	N			8											
999	1.8	1	Lookup	Looking the for correct collocation of "put"	15	Go back to the test & type "put to inconvenience" by	8	Test	Dictionary	1.2	--	Y	Y	8											
1000	2.8	2	Verification	Verify whether "put to inconvenience" is the correct answer	16	Go back to "put to incinvenience" in LDOCE	8:15	LDOCE		1.2	N			8											
1001	2.8	2	Verification	Verify whether "put to inconvenience" is the correct answer	17	Open Google & type "put to inconvenience"	8:17	Google		1.2	Y			8	**No trust in LDOCE, further verification**					1					
1002	2.8	2	Verification	Verify whether "put to inconvenience" is the correct answer	18	Open results in Academic Dictionaries and Encyclopedias	8:29	enacademic.ru		1.2	Y			8	Student omitted the **MED**, but opened an academic source					1					
1003	2.8	2	Verification	Verify whether "put to inconvenience" is the correct answer	19	Fight with the site which keeps reloading and disables the "back" button	8:31	enacademic.ru		1.2	Y			8	**unreliable**, adbased site										
1004	2.8	2	Verification	Verify whether "put to inconvenience" is the correct answer	20	Go back to LDOCE	8:42	LDOCE		1.2	N			8											
1005	2.8	2	Verification	Verify whether "put to inconvenience" is the correct answer	21	Go back to the test	8:45	Test	Mixed	1.2	--	Y	--	8											
1006	3.8	3	Lookup	Looking for collocations of "terms"	22	Open LDOCE & type "terms"	9:02	LDOCE		1.3	N			8											
1007	3.8	3	Lookup	Looking for collocations of "terms"	23	Open entry for "term" (N)	9:09	LDOCE		1.3	N			8											
1008	3.8	3	Lookup	Looking for collocations of "terms"	24	Go back to the test	9:18	Test		1.3	--			8											
1009	3.8	3	Lookup	Looking for collocations of "terms"	25	Go back to LDOCE	9:21	LDOCE		1.3	N			8	Relevant info presented, but **again** skipped by the student										
1010	3.8	3	Lookup	Looking for collocations of "terms"	26	Go back to the test	9:45	Test		1.3	--			8											
1011	3.8	3	Lookup	Looking for collocations of "terms"	27	Go back to LDOCE	9:46	LDOCE		1.3	N			8											
1012	3.8	3	Lookup	Looking for collocations of "terms"	28	Go back to the test	10	Test		1.3	--			8											
1013	3.8	3	Lookup	Looking for collocations of "terms"	29	Go back to LDOCE	10:02	LDOCE		1.3	N			8	Switching, but at a slow pace										
1014	3.8	3	Lookup	Looking for collocations of "terms"	30	Use search function to write "clear"	10:06	LDOCE + Ctrl F		1.3	N			8	**Excellent strategy; student used the synonym which she found in the first sentence**										
1015	3.8	3	Lookup	Looking for collocations of "terms"	31	Go back to the test	10:19	Test		1.3	--			8											
1016	3.8	3	Lookup	Looking for collocations of "terms"	32	Go back to LDOCE	10:23	LDOCE		1.3	N			8											
1017	3.8	3	Lookup	Looking for collocations of "terms"	33	Paste "in no uncertain terms from LDOCE to Test	10:41	Test		1.3	--			8											
1018	3.8	3	Lookup	Looking for collocations of "terms"	34	Give the correct answer	10:51	Test	Dictionary	1.3	--	Y	Y	8											
1019	4.8	4	Lookup	Looking for collocations of "store"	35	Open LODCE & type "store"	11:47	LDOCE		1.5	N			8											
1020	4.8	4	Lookup	Looking for collocations of "store"	36	Click on "store" in LDOCE	11:51	LDOCE		1.5	N			8	Relevant info presented										
1021	4.8	4	Lookup	Looking for collocations of "store"	37	Go back to the test	12:06	Test		1.5	--			8											
1022	4.8	4	Lookup	Looking for collocations of "store"	38	Go back to LDOCE	12:1	LDOCE		1.5	N			8											
1023	4.8	4	Lookup	Looking for collocations of "store"	39	Go back to the test & give the (partly) correct answer	12:14	Test	Dictionary	1.5	--	Y	Y	8	Minor problem with articles in the final answer										
1024	5.8	5	Lookup	Looking for collocations of "engine"	40	Open LDOCE & look up "engine"	13:15	LDOCE		2.1	N			8											
1025	5.8	5	Lookup	Looking for collocations of "engine"	41	Open the entry for "engine" in LDOCE	13:22	LDOCE		2.1	N			8	No relevant collocations shown										
1026	5.8	5	Lookup	Looking for collocations of "engine"	42	Click on the link to "fire engine"	13:37	LDOCE		2.1	N			8											
1027	5.8	5	Lookup	Looking for collocations of "engine"	43	Open Google & type "engine collocations"	13:45	Google		2.1	Y			8	**Smart move; student knows what she's looking for**										
1028	5.8	5	Lookup	Looking for collocations of "engine"	44	Open the entry for "engine" in Oxford Collocation Dictionary	13:53	Online OXFORD Collocation Dictionary		2.1	Y			8	Relevant info presented										
1029	5.8	5	Lookup	Looking for collocations of "engine"	45	Go back to the test & give the correct answer	14:07	Test	Mixed	2.1	--	Y	Y	8											

1030	6.8	6	Lookup	Looking for collocations of “tea”	46	Go to Oxford Collocation Dictionary & type “tea”	14:21	Online OXFORD Collocation Dictionary		2.2	N			8										
1031	6.8	6	Lookup	Looking for collocations of “tea”	47	Open LDOCE (by accident?)	14:31	LDOCE		2.2	N			8										
1032	6.8	6	Lookup	Looking for collocations of “tea”	48	Go back to the test	14:32	Test	Dictionary	2.2	--	Y	--	8										
1033	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	49	Go back to LDOCE & type “stewed”	14:34	LDOCE		2.2	N			8										
1034	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	50	Open the entry for “stewed” (AJ)	14:38	LDOCE		2.2	N			8	Relevant info presented									
1035	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	51	Go back to Oxford Collocation Dictionary	14:47	Online OXFORD Collocation Dictionary		2.2	N			8	“stewed” isn’t the perfect answer, because it is an absolute adjective, but I accept it anyways									
1036	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	52	Open Google & type “too stewed tea”	14:52	Google		2.2	Y			8	**Good!** Verify whether the absolute adjective might be the correct answer									
1037	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	53	Go back to the test & give the correct answer	15:17	Test		2.2	--			8	😀 **Great!** Wonderful use of negative evidence to arrive at the correct answer									
1038	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	54	Go back to Google results for “too stewed tea”	15:21	Google		2.2	Y			8										
1039	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	55	Go back to the results for “tea” in Oxford Collocation	15:22	Online OXFORD Collocation Dictionary		2.2	N			8										
1040	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	56	Go back to LDOCE & type “tea”	15:26	LDOCE		2.2	N			8										
1041	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	57	Click on “tea” (N)	15:3	LDOCE		2.2	N			8										
1042	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	58	Press Ctrl+F & try to type “stewed”	15:43	LDOCE		2.2	N			8	sound indicating the failure to find the word									
1043	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	59	Go back to Google results for “too stewed tea”	15:54	Google		2.2	Y			8										
1044	7.8	7	Verification	Verify whether “stewed tea” is the correct collocation	60	Go back to the test & leave the correct answer	16:04	Test	Mixed	2.2	--	Y	Y	8										
1045	8.8	8	Lookup	Looking for collocations of “sloppy”	61	Open OALD & type “sloppy”	16:14	LDOCE		2.3	N			8	relevant suggestion shown (“sloppy joe”)									

1046	8.8	8	Lookup	Looking for collocations of “sloppy”	62	Click on the entry for “sloppy joe”	16:17	LDOCE		2.3	N			8										
1047	8.8	8	Lookup	Looking for collocations of “sloppy”	63	Go back to the test & give the correct answer	16:2	Test	Dictionary	2.3	--	Y	Y	8										
1048	9.8	9	Lookup	Looking for collocations of “shoe”	64	Open LDOCE & do nothing	16:36	LDOCE		2.4	N			8										
1049	9.8	9	Lookup	Looking for collocations of “shoe”	65	Go back to the test	16:44	Test		2.4	--			8										
1050	9.8	9	Lookup	Looking for collocations of “shoe”	66	Go back to the collocation dictionary & type “shoe”	16:51	Online OXFORD Collocation Dictionary		2.4	N			8	**very good use** of collocations dictionary									
1051	9.8	9	Lookup	Looking for collocations of “shoe”	67	Open Google	17:05	Google		2.4	N			8	student didn’t do anything, so N									
1052	9.8	9	Lookup	Looking for collocations of “shoe”	68	Go back to LDOCE & type “resole”	17:06	LDOCE		2.4	N			8	**wrong hypothesis** (there is no phrasal verb such as “sole in”)									
1053	9.8	9	Lookup	Looking for collocations of “shoe”	69	Click on “resale”	17:11	LDOCE		2.4	N			8	clicked on incorrect spelling									
1054	9.8	9	Lookup	Looking for collocations of “shoe”	70	Go back to the list of results & click on “re sole”	17:14	LDOCE		2.4	N			8	**false positive** – LDOCE suggests word that doesn’t exist									
1055	9.8	9	Lookup	Looking for collocations of “shoe”	71	Go back to Google	17:19	Google		2.4	N			8	student didn’t do anything, so N									
1056	9.8	9	Lookup	Looking for collocations of “shoe”	72	Go back to Oxford Collocation Dictionary & do nothing	17:2	Online OXFORD Collocation Dictionary		2.4	N			8	Switching									
1057	9.8	9	Lookup	Looking for collocations of “shoe”	73	Go back to the test	17:34	Test		2.4	--			8	Switching									
1058	9.8	9	Lookup	Looking for collocations of “shoe”	74	Go back to LDOCE	17:37	LDOCE	Dictionary	2.4	N	N	--	8	Student didn’t find any evidence for the answer									
1059	10.8	10	Verification	Verify whether “resole” is the correct answer	75	Go back to Google & type “resole dictionary”	17:38	Google		2.4	Y			8	**student uses Google to find dictionary**, not to find info about the word									
1060	10.8	10	Verification	Verify whether “resole” is the correct answer	76	Open “resole” in Dictionary.com	17:45	Dictionary.com		2.4	Y			8										
1061	10.8	10	Verification	Verify whether “resole” is the correct answer	77	Click on the link to “sole” in the entry	17:53	Dictionary.com		2.4	Y			8	Relevant info presented									
1062	10.8	10	Verification	Verify whether “resole” is the correct answer	78	Go back to the test	18:04	Test		2.4	--			8										
1063	10.8	10	Verification	Verify whether “resole” is the correct answer	79	Go back to Oxford Collocation Dictionary	18:06	Online OXFORD Collocation Dictionary		2.4	N			8										
1064	10.8	10	Verification	Verify whether “resole” is the correct answer	80	Go back to Dictionary.com	18:07	Dictionary.com	Mixed	2.4	Y	Y	--	8	Switching; Student didn’t find any evidence for the answer									
1065	10.8	10	Verification	Verify whether “resole” is the correct answer	81	Go back to Oxford Collocation Dictionary (and identify the word “scuff”)	18:08	Online OXFORD Collocation Dictionary	Mixed	2.4	N			8	**wrong!** Student sees good answer, **and** should be able to identify it easily, because this is the only phrasal verb with the particle “**IN**”. Somehow, she doesn’t see it – didn’t read the question correctly.									
1066	10.8	10	Verification	Verify whether “scuff” is the correct answer	82	Go back to Dictionary.com & type “scuff”	18:19	Dictionary.com		2.4	N			8										
1067	10.8	10	Verification	Verify whether “resole” is the correct answer	83	Go back to Oxford Collocation Dictionary	18:29	Online OXFORD Collocation Dictionary	Dictionary	2.4	N	Y	--	8	negative evidence helped avoid giving the wrong answer									

1068	10.8	10	Lookup	Looking for translation of "rozchodzić buty"	84	Open Google & type "rozchodzić buty słownik angielski"	18:31	Google		2.4	Y			8	**wrong Google translation: "disperse shoes"**									
1069	10.8	10	Lookup	Looking for translation of "rozchodzić buty"	85	Click on "rozchodzić nowe buty" in Diki	18:4	Diki		2.4	Y			8	good answer shown									
1070	10.8	10	Lookup	Looking for translation of "rozchodzić buty"	86	Go back to the test & give the correct answer	18:43	Test	Mixed	2.4	--	Y	Y	8										
1071	11.8	11	Verification	Verify whether "break" is the correct answer	87	Go back to Diki results	18:53	Diki		2.4	N			8										
1072	11.8	11	Verification	Verify whether "break" is the correct answer	88	Go back to Google results	18:56	Google		2.4	Y			8										
1073	11.8	11	Verification	Verify whether "break" is the correct answer	89	Open the entry for "rozchodzić" in PWN online	18:59	PWN online (translatica.pl)		2.4	Y			8	No relevant info shown									
1074	11.8	11	Verification	Verify whether "break" is the correct answer	90	Go back to Google results	19:06	Google		2.4	Y			8										
1075	11.8	11	Verification	Verify whether "break" is the correct answer	91	Open (in the background) new tab with entry for "break in" in Słownik naukowotechniczny angielsko-polski	19:14	słownik naukowotechniczny angielskopolski (1a.biz/tlumaczenie)		2.4	Y			8										
1076	11.8	11	Verification	Verify whether "break" is the correct answer	92	Open the entry for "muszę rozchodzić te buty" in webdicio	19:16	Webdicio		2.4	Y			8	more supporting evidence									
1077	11.8	11	Verification	Verify whether "break" is the correct answer	93	Go to tab with "break in" in słownik naukowotechniczny…	19:25	słownik naukowotechniczny angielskopolski (1a.biz/tlumaczenie)		2.4	Y			8	even more supporting evidence									
1078	11.8	11	Verification	Verify whether "break" is the correct answer	94	Go back to Dictionary.com	19:26	Dictionary.com		2.4	N			8										
1079	11.8	11	Verification	Verify whether "break" is the correct answer	95	Go back to the test & leave the correct answer	19:28	Test	Mixed	2.4	--	Y	Y	8										
1080	12.8	12	Verification	Verify whether "go down as follows" is the correct answer	96	Open Oxford collocation dictionary & type "go down"	20:04	Online OXFORD Collocation Dictionary		2.5	N			8	**Wrong tool:** no phrasal verbs in a collocation dictionary							1		
1081	12.8	12	Verification	Verify whether "go down" is the correct answer	97	Go to Dictionary.com & type "go down"	20:08	Dictionary.com		2.5	N			8	information for "go" shown									
1082	12.8	12	Verification	Verify whether "go down" is the correct answer	98	Open Google & type "macmillan"	20:29	Google		2.5	N			8										
1083	12.8	12	Verification	Verify whether "go down" is the correct answer	99	Click on Macmillan website and open Macmillan Education	20:39	[irrelevant] Macmillan education		2.5	N			8										
1084	12.8	12	Verification	Verify whether "go down" is the correct answer	100	Go back to Google list of results & add the word "dictionary"	20:42	Google		2.5	N			8										

1085	12.8	12	Verification	Verify whether "go down" is the correct answer	101	Open MED	20:45	MED		2.5	N			8										
1086	12.8	12	Verification	Verify whether "go down" is the correct answer	102	Type "go down" in MED	20:55	MED		2.5	N			8	**cursor hovers over** the list of meanings									
1087	12.8	12	Verification	Verify whether "go down" is the correct answer	103	Go back to Oxford Collocation Dictionary	21:11	Online OXFORD Collocation Dictionary		2.5	N			8										
1088	12.8	12	Verification	Verify whether "go down" is the correct answer	104	Go back to LDOCE	21:13	LDOCE		2.5	N			8										
1089	12.8	12	Verification	Verify whether "go down" is the correct answer	105	Go back to Dictionary.com	21:14	Dictionary.com		2.5	N			8										
1090	12.8	12	Verification	Verify whether "go down" is the correct answer	106	Open Google & type "go down as follows"	21:18	Google		2.5	Y			8	no relevant info presented									
1091	12.8	12	Verification	Verify whether "go down" is the correct answer	107	change the query to "go as follows"	21:4	Google		2.5	Y			8	still exploring the incorrect idea ☹									
1092	12.8	12	Verification	Verify whether "go down" is the correct answer	108	Open "as follows" in The Free Dictionary in the background	21:49	The Free Dictionary		2.5	Y			8										
1093	12.8	12	Verification	Verify whether "go down" is the correct answer	109	Open the entry for "as follows" in The Free Dictionary	21:56	The Free Dictionary		2.5	Y			8										
1094	12.8	12	Verification	Verify whether "go down" is the correct answer	110	Use Ctrl F to look for instances of "go"	21:59	The Free Dictionary + Ctrl F		2.5	Y			8	good strategy, but it won't work here…									
1095	12.8	12	Verification	Verify whether "go down" is the correct answer	111	Go back to MED & look up "as follows"	22:2	MED		2.5	N			8										
1096	12.8	12	Verification	Verify whether "go down" is the correct answer	112	Click on the link to "follow" in MED	22:32	MED		2.5	N			8										
1097	12.8	12	Verification	Verify whether "go down" is the correct answer	113	Use Ctrl F to look for instances of "follows"	22:43	MED + Ctrl F		2.5	N			8										
1098	12.8	12	Verification	Verify whether "go down" is the correct answer	114	Click once again on the "as follows" link in MED	22:58	MED		2.5	N			8										
1099	12.8	12	Verification	Verify whether "go down" is the correct answer	115	Go back to The Free Dictionary	23:02	The Free Dictionary		2.5	Y			8										
1100	12.8	12	Verification	Verify whether "go down" is the correct answer	116	Go back to Google & type "go down as follows"	23:03	Google		2.5	Y			8										
1101	12.8	12	Verification	Verify whether "go down" is the correct answer	117	Go back to test	23:15	Test		2.5	--			8										
1102	12.8	12	Verification	Verify whether "go down" is the correct answer	118	Go to The Free Dictionary	23:17	The Free Dictionary	Mixed	2.5	Y	N	--	8	**It would be** much easier, had the student used the Polish equivalent; here the decision to use no-translation approach backfired on the student									
1103	13.8	13	Lookup	Look for collocations of "down as follows"	119	Go back to Google & type "down as follows"	23:18	Google		2.5	Y			8	Relevant info presented									
1104	13.8	13	Lookup	Look for collocations of "down as follows"	120	Open "breaks down as follows" in Linguee in the background	23:31	Linguee		2.5	Y			8										
1105	13.8	13	Lookup	Look for collocations of "down as follows"	121	Go to the Linguee results for "breaks down as follows"	23:37	Linguee		2.5	Y			8										
1106	13.8	13	Lookup	Look for collocations of "down as follows"	122	Go back to the test & give the correct answer	23:44	Test	Mixed	2.5	--			8										
1107	14.8	14	Lookup	Looking for the meaning of "suspension"	123	Open LDOCE & type "suspension"	24:4	LDOCE		3.1	N			8										
1108	15.8	15	Lookup	Looking for the meaning of "suspension"	124	Click on the entry for "suspension" (N)	24:46	LDOCE	Dictionary	3.1	N	Y	--	8										

1109	16.8	16	Verification	Verify whether "forcibly" is the incorrect answer	125	Open LDOCE & type "forcibly"	24:55	LDOCE		3.1	N			8	
1110	16.8	16	Verification	Verify whether "forcibly" is the incorrect answer	126	Open Linguee & do nothing	25:03	Linguee		3.1	N			8	
1111	16.8	16	Verification	Verify whether "forcibly" is the incorrect answer	127	Open the entry for "as follows" in The Free Dictionary	25:05	The Free Dictionary		3.1	N			8	
1112	16.8	16	Verification	Verify whether "forcibly" is the incorrect answer	128	Type "drive forcibly" in Google	25:08	Google		3.1	Y			8	Only suggestions from crosswordpuzzle solvers
1113	16.8	16	Verification	Verify whether "forcibly" is the incorrect answer	129	Go back to the test & give the incorrect answer	25:17	Test	Mixed	3.1	--	N	N	8	
1114	17.8	17	Lookup	Looking for collocations of "victim"	130	Open Oxford Collocation Dictionary & type "victim"	26:4	Online OXFORD Collocation Dictionary		3.2	N			8	**very relevant info presented** (fall victim to unscrupulous landlord)
1115	17.8	17	Lookup	Looking for collocations of "victim"	131	Open LDOCE (by accident?)	26:52	LDOCE		3.2	N			8	
1116	17.8	17	Lookup	Looking for collocations of "victim"	132	Go back to the test	26:53	Test	Dictionary	3.2	--			8	It seems that the student found evidence that "fall victim" is a correct collocation
1117	18.8	18	Verification	Verify whether "unscrupulous" is the incorrect answer	133	Open LDOCE & look up "unscrupulous"	27:02	LDOCE		3.2	N			8	
1118	18.8	18	Verification	Verify whether "unscrupulous" is the incorrect answer	134	Go back to the test	27:12	Test		3.2	--			8	
1119	18.8	18	Verification	Verify whether "unscrupulous" is the incorrect answer	135	Go back to Google	27:14	Google		3.2	N			8	
1120	18.8	18	Verification	Verify whether "unscrupulous" is the incorrect answer	136	Open Oxford collocation dictionary & type "unscrupulous"	27:15	Online OXFORD Collocation Dictionary	Dictionary	3.2	N	N	--	8	No relevant collocations shown
1121	19.8	19	Lookup	Looking for collocations of "practice(s)"	137	Open Oxford collocation dictionary & type "pracrice"	27:26	Online OXFORD Collocation Dictionary		3.2	N			8	Typo
1122	19.8	19	Lookup	Looking for collocations of "practice(s)"	138	Fix the typo in Oxford Online Collocation Dictionary	27:36	Online OXFORD Collocation Dictionary		3.2	N			8	No relevant collocations shown
1123	19.8	19	Lookup	Looking for collocations of "practice(s)"	139	Use Ctrl F to look for instances of "unscrupulous"	27:53	Online OXFORD Collocation Dictionary + Ctrl F		3.2	N			8	No relevant collocations shown
1124	19.8	19	Lookup	Looking for collocations of "practice(s)"	140	Type "unscrupulous practice" in Google	28	Google		3.2	Y			8	Some relevant info visible
1125	19.8	19	Lookup	Looking for collocations of "practice(s)"	141	Go back to the test & give the correct answer	28:22	Test	Mixed	3.2	--	Y	Y	8	

1126	20.8	20	Verification	verify whether "herbivorous" is the incorrect word	142	Open LDOCE & type "herbivorous"	28:43	LDOCE		3.3	N			8	
1127	20.8	20	Verification	verify whether "herbivorous" is the incorrect word	143	Go back to the test	28:53	Test	Dictionary	3.3	--	Y	--	8	
1128	21.8	21	Verification	verify whether "Darwin" is the correct word	144	Open Oxford collocation dictionary	28:57	Online OXFORD Collocation Dictionary		3.3	N			8	This move is irrelvant
1129	21.8	21	Verification	verify whether "Darwin" is the correct word	145	Go to Google & type "Darvin"	29	Google		3.3	Y			8	**Weird** to verify the name… **Maybe** she thought it should be **Darvin?**
1130	21.8	21	Verification	verify whether "Darwin" is the correct word	146	Click on Google suggested result for "Darwin"	29:13	Google		3.3	Y			8	Google changed the query to "Karol Darwin"
1131	21.8	21	Verification	verify whether "Darwin" is the correct word	147	Change the qery to "Charles Darwin"	29:2	Google		3.3	Y			8	
1132	21.8	21	Verification	verify whether "Darwin" is the correct word	148	Go back to the test	29:38	Test	Google	3.3	--	Y	--	8	Learner did not notice the problem with "uncover"
1133	22.8	22	Lookup	Looking for collocations of "cone"	149	Open LDOCE & type "cone"	29:51	LDOCE		3.4	N			8	
1134	22.8	22	Lookup	Looking for collocations of "cone"	150	Open the entry for "cone" (V) in LDOCE	29:56	LDOCE		3.4	N			8	Relevant info presented
1135	22.8	22	Lookup	Looking for collocations of "cone"	151	Go back to the test	29:59	Test		3.4	--			8	
1136	22.8	22	Lookup	Looking for collocations of "cone"	152	Go back to LDOCE	30:11	LDOCE	Dictionary	3.4	N	Y	--	8	
1137	23.8	23	Verification	Verify whether "cone over" is the incorrect answer	153	Open MED & type "cone over"	30:12	MED		3.4	N			8	no results shown
1138	23.8	23	Verification	Verify whether "cone over" is the incorrect answer	154	Type "cone" in MED	29:59	MED		3.4	N			8	relevant info in related entries
1139	23.8	23	Verification	Verify whether "cone over" is the incorrect answer	155	Click on the link to "cone off"	30:25	MED		3.4	N			8	
1140	23.8	23	Verification	Verify whether "cone over" is the incorrect answer	156	Go back to the test	30:32	Test		3.4	--			8	
1141	23.8	23	Verification	Verify whether "cone over" is the incorrect answer	157	Open Oxford collocation dictionary	30:37	Online OXFORD Collocation Dictionary		3.4	N			8	
1142	23.8	23	Verification	Verify whether "cone over" is the incorrect answer	158	Open MED	30:39	MED		3.4	N			8	
1143	23.8	23	Verification	Verify whether "cone over" is the incorrect answer	159	Go back to the test & give the correct answer	30:46	Test	Dictionary	3.4	N	Y	Y	8	
1144	24.8	24	Verification	Verify whether "render" is the incorrect answer	160	Open Oxford collocation dictionary & type "render"	31:02	Online OXFORD Collocation Dictionary		3.5	N			8	no results for "render" in collocation dictionary
1145	24.8	24	Verification	Verify whether "render" is the incorrect answer	161	Open MED & type "render"	31:08	MED		3.5	N			8	
1146	24.8	24	Verification	Verify whether "render" is the incorrect answer	162	Open Google	31:22	Google	Dictionary	3.5	N	N	--	8	no positive or negative info found
1147	25.8	25	Lookup	Looking for collocations of "progress"	163	Open Oxford collocation dictionary	31:24	Online OXFORD Collocation Dictionary		3.5	N			8	**Good idea – don't focus on the suspected word, focus on the words it collocates with!**
1148	25.8	25	Lookup	Looking for collocations of "progress"	164	Open Google & type "rendered progress'	31:36	Google		3.5	Y			8	
1149	25.8	25	Lookup	Looking for collocations of "progress"	165	Click on Google suggestion "render progress"	31:51	Google		3.5	Y			8	relevant negative evidence
1150	25.8	25	Lookup	Looking for collocations of "progress"	166	Go back to the test	32:02	Test	Mixed	3.5	--	N	--	8	
1151	26.8	26	Verification	Verify whether "uncover" is the incorrect answer	167	Open LDOCE & type "uncover"	32:35	LDOCE		3.3				8	
1152	26.8	26	Verification	Verify whether "uncover" is the incorrect answer	168	Go back to the test	32:48	Test	Dictionary	3.3		N	--	8	relevant info wasn't found

Appendix 3: Questionnaire and lexicogrammatical task

Kwestionariusz

Proszę o wypełnienie poniższego kwestionariusza. Zawarte w nim dane będą wykorzystane wyłącznie w celach naukowych. Eksperyment NIE przewiduje zbierania, przechowywania, czy też przetwarzania danych osobowych.

*Required

1. Pseudonim *

   Proszę wybrać dowolny pseudonim

   _____

2. Wiek: *

   _____

3. Płeć: *

   Mark only one oval.

   - ◯ K
   - ◯ M

4. Rok studiów: *

   Pytanie dotyczy studiów anglistycznych na Wydziale Filologicznym UŁ

   Mark only one oval.

   - ◯ 1 (lic)
   - ◯ 2 (lic)
   - ◯ 3 (lic)
   - ◯ 1 (mgr)
   - ◯ 2 (mgr)

5. Semestr PNJA *

Proszę podać liczbę, np. 2 (= drugi semestr PNJA)

_____

Keyword transformations

Complete the second sentence so that it has a similar meaning to the first sentence, using the word given. You must use 3-9 words, including the word given.

6. Twitter is surprisingly effective when it comes to fundraising. (TOOL)

Twitter is ... fundraising.

_____

7. This decision was very inconvenient for me. (PUT)

I was ... this decision .

_____

8. I told her what I thought of her very clearly, and then I left. (TERMS)

I told her what ..., and then I left.

_____

9. I didn't want to give up while some hope of success remained. (DEFEAT)

I was loath ... some hope of success.

_____

10. You never know what is going to happen. (STORE)

You ... for you.

1 The engine in this tractor is so ... that it could easily tow a bus.

Missing word

Read the sentences below and think of the word which best fits each space. Use only ONE word in each space.

12. This tea is too ... . Could you add some water to it? Otherwise, I won't stand its bitter taste!

13. Can I get some more of this sloppy ... ? It's so yummy!

14. These shoes are brand new. I have to wear them from time to time to ... them in before the trip.

15. Expenditure on the project ... down as follows: wages $10M, plant $5M, raw materials $4.5M.

Comprehension

Some of the sentences below contain one word which was used incorrectly. Identify these sentences and type in ONE correct alternative. There might be more than one correct answer.

Example: "It was so great that I couldn't entail." --> "entail" is incorrect. You could use other words, e.g. "stop".

1 .

16. 1. He drives so forcibly that our suspension needs changing after only three months! *

Is this sentence correct?

Mark only one oval.

- This sentence is correct
- This sentence is NOT correct

17. If the sentence is not correct, which word should be changed?

Mark only one oval.

- he
- drives
- so
- forcibly
- that
- our
- suspension
- needs
- changing
- after
- only
- three
- months

18. If you found the incorrect word, suggest one alternative.

Write one word

_____

13. c should be changed?

19. 2. He fell victim to unscrupulous practices. *

Is this sentence correct?

Mark only one oval.

- This sentence is correct
- This sentence is NOT correct

20. If this sentence is not correct, which word should be changed?

Mark only one oval.

- he
- fell
- victim
- to
- unscrupulous
- practices

21. If you found the incorrect word, suggest one alternative.

Write one word

_____

22. 3. Darwin uncovered new species of herbivorous mammals. *

Is this sentence correct?

Mark only one oval.

- This sentence is correct
- This sentence is NOT correct

2 . If this sentence is not correct, which word

Mark only one oval.

- Darwin
- uncovered
- new
- species
- of
- herbivorous
- mammals

24. If you found the incorrect word, suggest one alternative.

Write one word

_____

25. 4. The road has been coned over due to the accident. *

Is this sentence correct?

Mark only one oval.

- This sentence is correct
- This sentence is NOT correct

19. c

the

- [ ] road
- [ ] has
- [ ] been
- [ ] coned
- [ ] over
- [ ] due
- [ ] to
- [ ] the
- [ ] accident

27. If you found the incorrect word, suggest one alternative.

Write one word

_____

28. 5. He rendered considerable progress during the last two weeks.

Is this sentence correct?

Mark only one oval.

- [ ] This sentence is correct
- [ ] This sentence is NOT correct

2 . If this sentence is not correct, which word

Mark only one oval.

- [ ]
- [ ] he
- [ ] rendered
- [ ] considerable
- [ ] progress
- [ ] during
- [ ] the
- [ ] last
- [ ] two
- [ ] weeks

30. If you found the incorrect word, suggest one alternative.

Write one word

_____

31. Które z wymienionych źródeł są NAJCZĘŚCIEJ używane przez Panią/Pana w celu uzyskania informacji o słowach i strukturach w języku angielskim? *

Mark only one oval.

- [ ] Źródła elektroniczne (słowniki, fora, wyszukiwanie w przeglądarce, dokumenty pdf, aplikacje mobilne itp.)
- [ ] Źródła drukowane (słowniki, gramatyki, samouczki itp.)
- [ ] Other: _____

1 . c
32. Proszę zaznaczyć, jak często wykorzystuje Pani/Pan podane typy źródeł do nauki języka angielskiego i/lub tworzenia/zrozumienia treści w języku angielskim? *

Mark only one oval per row.

	Zawsze	Czasami	Prawie nigdy	Nigdy
Słowniki i/lub inne źródła dostępne w sieci (online)				
Słowniki i/lub inne źródła cyfrowe dostępne bez połączenia z internetem (offline)				
Słowniki i/lub inne źródła drukowane				
Inne				