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Similarity Based Interference Management in Vocabulary Retrieval in a Young Learner's EFL Class

Diplomová práce

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Similarity Based Interference Management in Vocabulary Retrieval in a Young Learner's EFL Class

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Z á s a d y p r o v y p r a c o v á n í :

A. Cíle:

Cílem této práce je popsat okolnosti, za kterých k podobnostní interferenci při osvojování slovní zásoby anglického jazyka u žáků mladšího školního věku dochází (1), specifikovat jakými způsoby podobnostní interference ovlivňuje osvojování slovní zásoby (2), v praktické části blíže určit, jak významný je tento jev pro výuku (3), navrhnout strategie předcházení podobnostní interferenci v konkrétních bodech (4), potvrdit či vyvrátit účinnost těchto strategií empirickým výzkumem (5).

B. Struktura:

I. Teoretická část

1. Osvojení slovní zásoby u žáků mladšího školního věku
2. Podobnostní interference
3. Předcházení podobnostní interferenci

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Abstract

This thesis describes the concept of similarity as a source of interference in young learners' vocabulary retrieval. Based on different psychological theories and different guidelines for young learners' EFL classes, several types of similarity-based interference are introduced and explored. These types of interference are then matched with guidelines towards the management of similarity-based interference in a primary class. A major obstacle to the suggested management is organizing the vocabulary in semantic clusters. This strategy for the presentation, practice, production and even the testing phase is accepted by the general public. This paper challenges the concept of semantic clustering as well as the tendency to create lessons consisting of similar activities based on the broad concept of similarity-based interference.

Key words

Teaching English as a Foreign Language, young learners, vocabulary acquisition, similarity-based interference, semantic clustering, grouping strategy, similar activities, vocabulary presentation method

Anotace

Tato diplomová práce popisuje koncept podobnosti jako zdroj interference v oblasti získávání slovní zásoby u dětí mladšího školního věku. Dle různých psychologických teorií a různých doporučení pro výuku anglického jazyka u žáků mladšího školního věku je zde předloženo několik typů podobnostní interference, které jsou dále prozkoumávány a kterým jsou přiřazena doporučení pro zvládnutí potenciálních zdrojů interference při výuce na 1.stupni ZŠ. Hlavní překážkou při vyvarování se podobnostní interferenci je organizace slovní zásoby dle semantického významu. Tato strategie organizace slovní zásoby pro prezentaci, procvičování, aktivní produkci a dokonce i testovací fázi je široce rozšířená. Na základě principů podobnostní interference tato práce zpochybňuje koncept sémantického shlukování, stejně jako sklon k vytváření vyučovacích hodin sestávajících z podobných aktivit.

Klíčová slova

výuka angličtiny jako cizího jazyka, mladší školní věk, získávání slovní zásoby, podobnostní interference, skupiny na základě semantické podobnosti, strategie shlukování, podobné aktivity, metoda prezentace slovní zásoby

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List of abbreviations

EFL – English as a Foreign Language

HW – homework

H1 – hypothesis 1

H2 – hypothesis 2

H3A – hypothesis 3A

H3B – hypothesis 3B

KET – Key English Test

L1 – first language (maternal language)

L2 – second language (target language)

SBI – Similarity-based Interference

sh.t.test – short-term test

VAK – Visual, Auditory and Kinesthetic Learning Styles

voc. – vocabulary

Y/N – yes / no

Introduction

Vocabulary in young learners' EFL (English as a Foreign Language) classes in primary schools is pre-organized in groups displaying similar features. This similarity is generally considered to enhance the learning process and help the vocabulary retrieval, but the reality of the teaching / learning process often shows a lot of confusion on the young learners' part concerning vocabulary that is perceived as "similar". Several researchers have suggested that semantic grouping hinders the vocabulary retrieval.

There are multiple theories in the field of psychology concerning the role of similarity in the learning process, which contradict the grouping strategy. These theories describe similarity as a source of interference. In this paper, the term similarity-based interference (SBI) is used to explain the common aspect these theories share and to extend the argument that semantic grouping can hinder the retrieval to other types of grouping based on other vocabulary features. According to the potential triggers of SBI in vocabulary acquisition, management strategies are suggested.

The goals for the theoretical part are:

1. to describe the circumstances contributing to SBI
2. to describe in what ways SBI affects vocabulary retrieval
3. to suggest guidelines for SBI management

The goals for the practical part are:

4. to establish the significance of SBI in a primary class vocabulary lesson
5. to test the effectiveness of the guidelines for SBI management

The methods used are literature review, analysis and conclusion in the theoretical part and observation and experiment in the practical part.

The hypotheses tested in the practical part are:

1. Based on the character of primary classes curriculum, SBI is mostly observed as the confusion of words belonging to the same semantic cluster.
2. SBI is a significant contributor to error making in vocabulary retrieval in young learners' EFL class.
3. A. Clustering as a vocabulary presentation method contributes to SBI.
B. Limited repertoire of activities on the teacher's part contributes to SBI.

The ambition of this thesis is to add to the growing body of evidence in the area of EFL research stating that semantic clustering is not the most beneficial approach to vocabulary organization. Further, other aspects of the learning process, which display a certain level of similarity not typical for a natural learning setting, such as stereotypical activities implementation in the lesson planning, are challenged.

1. Vocabulary

This paper's main theme is vocabulary. To investigate the particular problem of similarity and its possible effects on vocabulary acquisition, the obvious first step is to define what it is that the teachers expect the learners to acquire. This chapter will focus on what different authors understand by the terms word, vocabulary, and vocabulary acquisition and what are some recommended guidelines for both English as a foreign language (EFL) teaching in primary classes as well as vocabulary teaching to children in specific.

1.1 Vocabulary definition

In the past, vocabulary was seen as a counterpart to grammar. The understanding of what vocabulary is has since shifted from a list of words to structures that refer to a phenomenon. Cameron (2001) suggests that because of the way vocabulary is learnt and stored; the concept of vocabulary is in fact close to the concept of grammar. According to Nation (2010), vocabulary refers to unit sequencing, grammar refers to finding regularities in these sequences. The impact of rather blurred boundaries between grammar and vocabulary in EFL teaching mirrors in complex tasks and situational curricula.

1.1.1 Vocabulary, word

In general English, vocabulary refers to all the words known and used by a particular person, while a word is a single unit of language that has meaning and can be spoken or written. In EFL teaching, according to Howard and Etienne (2007), the term vocabulary refers to the so-called lexical words: nouns, verbs, adjectives, and adverbs, provided they convey meaning independently. Yet another understanding broadens the definition of vocabulary for second language learners by adding set phrases, variable phrases, phrasal verbs, and idioms.

1.1.2 What it means to know a word

The difference between knowing and not knowing a word is not clear. The simple knowledge of a form or a meaning does not cover the whole idea of a new word acquisition.

Zimmerman (2008) lists five layers of word knowledge based on word characteristics: semantic, collocation, grammatical, word parts, registers. Nation (2001) describes a parallel structure in the form of three aspects of the knowledge of meaning (form and meaning, concept and meaning, associations), three aspects of form knowledge (spoken, written and word parts) and three aspects of the knowledge of use (grammatical functions, collocation, constraints on use). In many ways, Zimmerman's and Nation's findings describe the same phenomena and differ only in the organization of the aspects of word knowledge. Henriksen (Henriksen, 1999) takes a different point of view and divides lexical knowledge into three components: partial or precise, shallow or deep, receptive or productive. For the purpose of this paper, Zimmerman's definition is considered as the best suitable for the theoretical part, nevertheless, distinguishing between receptive and productive knowledge of the target vocabulary is crucial to the marking scheme in the practical part of this paper.

In EFL teaching, a broad definition of vocabulary and vocabulary knowledge means a rather complicated definition of vocabulary acquisition.

1.2 What it means to acquire vocabulary

First the concept of natural (first language) word acquisition is considered. According to Groot (2000), first language word acquisition has several, non-distinguishable layers. He says it is a process which develops with repeated exposure to the target vocabulary and which is characterized by a constant interaction between its layers. The first layer includes noticing the various forms of the word, the second layer refers to its storage in the pupil's internal lexicon and the third layer consists of the consolidation of this storage.

In other words, even in our mother tongue, new vocabulary is acquired over time and with practice and repeated exposure. Similarly, gaining vocabulary in a foreign language is a process in time. The time restrictions, caused by only several lessons per week, require the process of gaining foreign language vocabulary to be carefully planned, as opposed to natural vocabulary acquisition. A word acquisition in a foreign language also depends on the depth of the word comprehension, and according to Laufer and Paribakht (1998), there are three levels of word acquisition in the target language, which include passive knowledge, controlled active and free active knowledge.

Since vocabulary acquisition cannot be exposed to any direct measuring, it is the vocabulary retrieval that is subjected to pedagogical diagnosis and observation. Vocabulary retrieval can be both passive, such as reading or listening with recognition of the target vocabulary, or active, such as writing or speaking.

A proper understanding of all the aspects of vocabulary acquisition is crucial for an EFL teacher, mainly because a simple translation of a word from the target language to the pupil's mother tongue does not cover all characteristics of the given word. A successful vocabulary teaching and learning process in a primary school environment needs to respect specific rules.

1.3 Principles of EFL teaching in primary classes

One of the basic rules in children's EFL syllabus planning is moving from easy to difficult, another is moving from known to unknown. J. A. Komenský stated these rules as early as 1657 in his work *Didactics*. In modern didactics, this approach is called the sequential approach.

Ur (1996) recommends efficient ordering of the lesson's components by putting the hard tasks earlier in the lesson, having quieter activities precede lively ones, thinking ahead about smooth transitions, or pulling the class together at the beginning and the end of the lesson.

Classroom management is also of Halliwell's concern: she recommends distinguishing between settling and stirring activities as part of the English teaching lesson planning. The stirring activities can help stimulate the young learners; the settling activities can help calm the class. Good lesson planning takes the nature of the activities into consideration. Two or more stirring activities in a row might lead to an over stimulated class, and vice versa, two or more settling activities can cause a sense of boredom among learners. Halliwell further gives examples of stirring activities such as competitions, most oral work. On the other hand, rewriting a text or simple colouring can reduce the excitement considerably.

Teaching English in primary classes guidelines typically mention the role of the right hemisphere in the language usage. Typical right hemisphere activities include body movement, singing, chanting, modeling, colouring, and painting. Whether the activities chosen are stirring or settling, they should always be diverse.

Moreover, Petty (2004) finds the role of an active pupil crucial for a successful learning process. Active involvement of the pupils can be promoted by a variety of techniques such as guessing the meaning, playing games, using the pupils' imagination, pupil to pupil interaction (Halliwell, S., 1992), making up rhymes, group work, delegating responsibility, lots of movement (Scott and Ytreberg, 1995) and more.

The children's point of view is very egocentric. Things directly concerning the pupils are of higher interest. Therefore, personalizing the material the teacher is about to present to the class is an advantage.

Imagination as a motivational tool deserves more attention with primary school pupils; where adults would shake their heads, children are often intrigued and amused. Imaginative texts and simple stories playing on fantasy capture the children's attention. Johnston (2002) points out the need for the presentation of different images and possibilities in children's lives. Education should not suppress imagination. What is understood by the term imagination might influence the way it is incorporated in the teaching style. According to a standard dictionary definition, it is the ability to create mental images of what has never been experienced. Egan (1989) points out that the ability to create and mentally manipulate imaginary pictures is the first step towards creativity. Imagination is a strong intellectual tool that plays an important part even in the field of foreign language study.

There are age related specifics, which limit the teacher's options in the classroom. Cognitive skills such as concentration, memory, thinking, or learning strategies are some of them.

Metacognitive skills refer to the knowledge and regulation of one's own thinking processes in order to maximize learning and memory. It is a special type of ability that develops with personal experience and with schooling. According to Flavell (1979), it plays an important role in communication, language acquisition, reading comprehension, attention, self-control, self-instruction and more. Metacognitive skills research done by Everson and Tobias (2001) shows that these very skills make the learning processes more efficient. Paris and Winegrad (1990) point out that cognitive development both produces metacognition and is the product of metacognition. It is, therefore, still not developed in primary school pupils. It is also the main reason why primary school pupils either do not spend any time learning their school subjects at home, or the time spent trying to study is not efficient. The only learning time takes places at school, under the teacher's guidance. While an adult learning a foreign language might not be particularly dependent on the teacher's preferred teaching style, it is typically of essence to a child learner.

While most children welcome the changes placed on their lives with the new role of pupil when starting their schools, it is still difficult for them to pay attention to one input for a prolonged period of time. The ability to focus, to purposefully direct one's attention to a particular source, is a skill that has only recently started to develop in the young learner. While the teachers should not cater to diminished attention but rather help improve the attention span, overloading the learners with extensive input is also counterproductive.

The common understanding is that a child's ability to focus equals their age. Pupils in primary classes might therefore provide the teacher with only about 7 – 12 minutes

of concentrated effort on their part, with individual differences. What happens when the attention is not with the teacher or with the given task?

Problems such as inability to follow a storyline or staying with the activity might appear. Lack of attention is typical for the end of the lesson; therefore presentation phase is usually not directly affected by it. In the practice and production phases, lack of focus causes slips, limited understanding, listening and reading without registering a message, or easy confusion of two or more terms. Confusion among new vocabulary is of special interest to this paper.

1.4 Guidelines for EFL vocabulary teaching in primary classes

In 1979, Barbe (1979) introduced a model of learning styles consisting of three channels through which people prefer to receive information from their environment. This model has become popular under the acronym VAK. According to Barbe, learners' leading sense is visual, auditory, or tactile / kinesthetic. The leading style affects the learners' personality, social interactions, and information processing. It is advisory to bear in mind that matching or mismatching the learner's preferred style with the teacher's instructional style and technique affects the efficiency of the learning process.

In accordance with the theory of an individual learning style and an individual leading sense, it is highly recommended to present as well as practice new vocabulary in a multisensory way. Along with the requirement of bringing the teaching and learning process close to real life experience goes the rule of using real objects or visuals where possible.

The amount of five new words or structures, which the teacher expects the class to retain in their active vocabulary, is the standard per one lesson. There may be other words and structures used during the lesson. This vocabulary is likely to become the pupils' passive knowledge. Halliwell (1992) points out the children's ability to remember rather random information and recommends indirect learning, such as repeated guessing activities while focusing on a given task.

Real exchanges as opposed to pre-designed exercises from the book generally help internalize the target structure. Both mother tongue and foreign language instruction if used wisely is argued to be beneficial to the learner, with preference for the target language and no automatic translation directly following the foreign instruction.

Blachowicz and Fisher (2011) describe basic principles for L2 vocabulary acquisition, stressing the need to support the students' active understanding by helping them develop their own learning strategies, personalizing their word learning, bringing attention to words, or offering multiple sources of meaning to name some of them. Bacroft suggests five principles of effective vocabulary instruction (2004) with a focus on frequency and repetition, meaning-bearing input, limited forced output and semantic elaboration during initial stages and moving from less demanding to more demanding vocabulary-related activities.

Since the main interest of this paper lies in the similarity of newly presented vocabulary, one guideline for EFL vocabulary teaching, which has been generally accepted as both beneficial and reasonable, is of particular importance to us. The organization of new vocabulary to be presented is supposed to be based on the words' associations within a topic. Each vocabulary list represents a group of words with one common feature. In other words, some semantic aspects of the vocabulary presented together are always similar. This way of vocabulary presentation is sometimes called semantic clustering. Semantic clusters are one of the themes of the practical part of

this paper. Tinkham (1993, p. 372) defines semantic clusters as “words which share a common superordinate concept (such as clothes) in list forms”.

The first chapter outlined the main theme of the paper, vocabulary, pointing out that vocabulary acquisition is considered a multilevel task. Vocabulary knowledge can be characterized by its depth, breadth, and precision, and consists of the knowledge of its meaning, collocations, grammatical forms, word parts and register. The knowledge of vocabulary is tested through vocabulary retrieval. EFL teachers to young learners have to consider some age-related specifics, such as the lack of metacognitive strategies and short attention span. It has been shown that there is a general agreement on the basic guidelines for EFL vocabulary teaching with a stress on active teaching methods, repetition, real life aspects in the classroom, fantasy, word play and personalization of the target vocabulary. Words that share a similar semantic aspect are typically presented in groups.

2. Similarity Based Interference

The idea of teaching and learning similar items together is a part of the general understanding of how a foreign language vocabulary should be approached. Research suggesting that it is in fact not the most effective solution to vocabulary presentation already exists (Tinkham, 1997; Waring, 1997; Nation, 2000; Wang, 2015), but has been, so far, not taken into consideration by the majority of textbook authors. In this chapter, the phenomenon of similarity will be defined, a closer look will be taken at the psychological theories working with the idea of similarity in information acquisition, the results of existing research on the role of similarity in the learning process will be presented and the possible types of ways similarity can manifest in a group of words will be outlined.

2.1 Similarity

In general, similarity refers to an aspect or trait resembling another aspect. According to Obata et al. (2011), who focused on the role of similarity in short-term memory, similarity is defined by overlapping features. In other words, one word's aspect can also be found in another word and vice versa.

2.2 Similarity Based Interference

Semantic clusters operate on the assumption that semantically similar items should be taught together because they come together in real life situations, and the associations among them help their later retrieval from the long-term memory. However, since the time that this principle for vocabulary introduction in a class was introduced, several studies have been carried out proving that the very concept of similarity, that is

overlapping features, is actually interfering with the learner's ability to store and retrieve these items separately. The ways different authors understand the interference based on similarity will be explained first.

2.2.1 Approaches to Similarity Based Interference

Similarity Based Interference (SBI) can be understood in several ways. According to the type of memory storing the required data there is a distinction made between interference in short term memory and interference in long-term memory. Some authors focus on SBI happening over time (Proactive Inhibition and Retroactive Inhibition), where a previously learnt item interferes with a later introduced item based on some features they both share. Other authors carry out research focusing on items introduced at the same time (Distinctiveness Hypothesis) and yet another group of author's focuses on the influence of the environment and other aspects of the learning process (Ranschbourg Effect). Figure 1 demonstrates six major approaches to similarity in content. These approaches all suggest that similarity hinders the effectiveness of the learning process. Each of the theories will be explained in the next chapter.

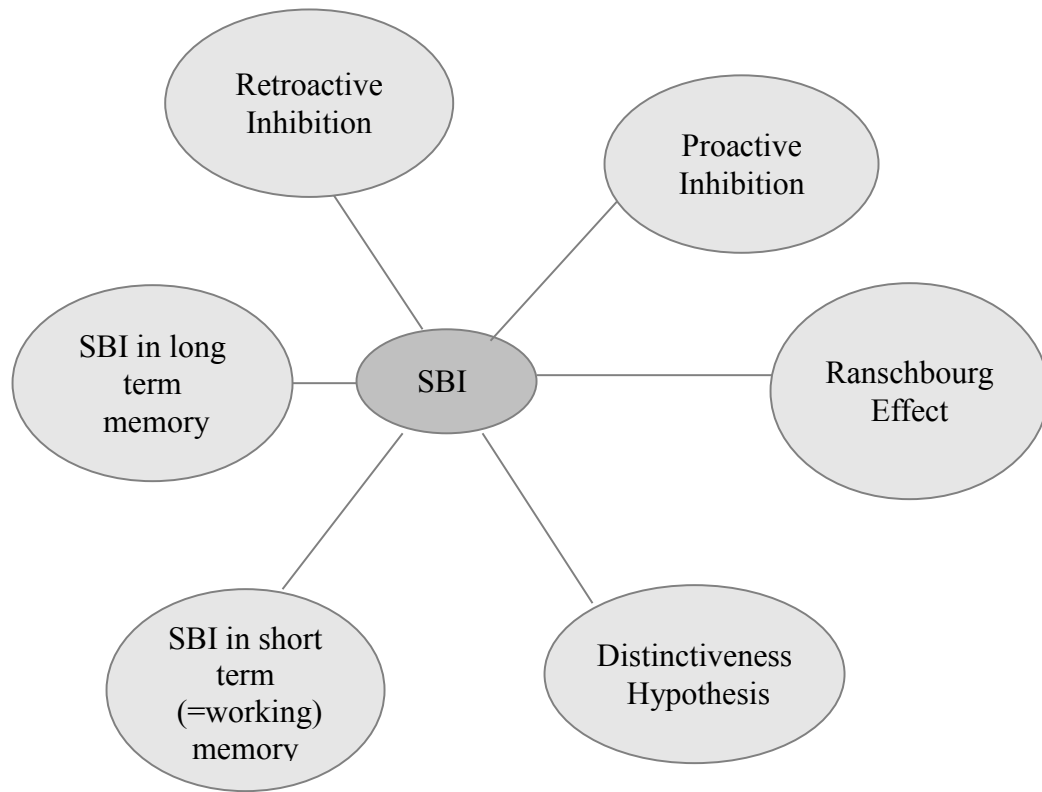


Figure 1. Approaches to Similarity Based Interference

2.2.2 The Development of Interference Theories

John A. Bergstrom, a German psychologist, conducted the first study on interference in 1892. The participants were sorting two decks of cards according to a rule. When the rule for sorting the second pile changed, the sorting became slower and Bergstrom described that change of pace as a consequence of a new rule interfering with an old one. Bergstrom then formulated the theory that later became known as the Proactive Inhibition. The Proactive Inhibition states that the item, which was introduced earlier, hinders the ability to memorize the item introduced later if these items resemble each other.

Several years later, Georg Elias Muller, professor at the University of Gottingen in Germany, and his student Alfonse Pilzecker published *Experimental Contributions to the Science of Memory* in 1900. They proposed that learning does not induce instantaneous and permanent memories and remains vulnerable to disruption over time. In one particular case, a retrieval of list of items was tested. The authors found that if shortly after memorizing the list, another list of items was introduced, and the retrieval of the first list was hindered. Muller and Pilzecker called this effect The Retroactive Inhibition.

In 1931 McGeoch and McDonald published their research on similarity interfering with learning. They compared the recall of synonyms to the recall of non-similar words and found that synonyms scored poorer. They stated that memory traces often compete with each other. In 1942 McGeoch suggested that the decay theory about memories disappearing over time should be replaced with an interference theory. According to this author memories stay intact, but their retrieval is hindered by consequent input. McGeoch carried out research (1942) on a string of consonants. This research suggests that the same or similar items in a list of items to remember bring confusion and interference to the recall of those items compared to a list of

different items. This principle is the basis of Similarity Based Interference in long-term memory.

Ranschburg (1870-1945), a Hungarian psychologist, who founded a psychophysical laboratory at the Psychiatric clinic in Budapest, became famous for defining the Ranschburg effect, a theory dealing with the inhibition of similar patterns in a series. According to Ranschburg the phenomenon appears in verbal associations, motor learning, vision, hearing and even in motivation (Shiller, 1947). Ranschburg called this phenomenon The Law of Fusion. The principle of the fusion lies in omitting a similar item in a series of items to be remembered by the subjects. For example, in a series consisting of five non-similar items such as a house, a cloud, a teacher, a pen and a cat and two similar items such as an apple and a pear, either the apple or the pear might not be recalled in post-test, due to their similarity and the fusion of the memory trace.

Benton J. Underwood, an American psychologist and the chairman of the department of psychology at Northwestern University, carried out research on the acquisition and retention of verbal material from the 1940s to the 1980s. His study on interference included a test of a series of retrieval performances. He came to the conclusion that the very last memory test, which had the best results, did so, because it was not inhibited by any consequent memory test. Underwood ascribed this phenomenon to proactive inhibition among conceptually related items. Proactive inhibition was found more influential than retroactive inhibition (Nakonečný, 1997).

In 1980 Hunt and Elliott carried out experiments proving that a word which is in some ways different, for example written in a different colour than the rest of the words, was remembered better for its distinctiveness. The researchers published a theory called the Distinctiveness Hypothesis. It says that the more distinctive an item is compared to the other items, the better the chance to remember it.

Interference in short term (working) memory is the focus point of linguists concerned with reading comprehension. According to Gordon et al. (2002), performance in sentence comprehension is worse if the subjects are also given a word load to remember, consisting of words of matched types as opposed to a word load consisting of words of unmatched types. Gordon et al. (2001) also tested complex sentence comprehension containing similar nouns as opposed to easily distinct nouns / pronouns / names. The conclusion of this research is that similar nouns hinder the comprehension of complex sentences due to the extra effort revealed in the reader's attempt to distinguish the proper nouns. Similarity is reached by using words such as banker and lawyer, actor and director and Sam and Tom. This difficulty, caused by similar information simultaneously held in the working memory while reading, is due to SBI in short term memory.

Škoda and Doulík, Czech authors who published a manual for effective, meaningful teaching (2011), suggest not teaching / learning any similar things together. The starting point for their interference theory is the Ranschburg effect, the phenomenon of omitting similar items in a series. They stress varying the set up, the environment, the form, the looks, the props, the time and the place of the learning process. Škoda and Doulík's interference theory differs from other approaches to SBI in the way it takes aspects of the setting and the teaching process into consideration. Their understanding of interference is the most generally formulated interference theory. It focuses on SBI in long-term memory, which is typical for the teaching / learning process at school.

All of the above mentioned theories are based on the same principle. Whenever two or more items share common features, these items are more likely to hinder their memorizing. In other words, SBI is an increased difficulty in memory tasks dealing with similar items as opposed to non-similar items.

This chapter described the development of six major interference theories:

- Retroactive Inhibition (the new item overwrites the information about the older item)
- Proactive Inhibition (the information about the older item is stronger than the new item)
- Ranschburg Effect (similar items tend to fuse in memory)
- Distinctiveness Hypotheses (the more distinct an item is the more likely it is to be remembered)
- SBI in short term memory (similar items held simultaneously in the working memory hinder the performance)
- SBI in long-term memory (similar information taught / learnt at the same time hinders the memory task)

The term SBI will be used as a general term for all of these theories. SBI is particularly relevant to vocabulary acquisition and retrieval as similarity plays a large role in the way vocabulary is pre-organized for the learners in the school environment.

2.3 Existing Research on Clustering

Effective vocabulary teaching focuses on the presentation stage with special emphasis on understanding and memorization. The planned vocabulary is usually carefully chosen and pre-organized. There are two approaches to this organization of vocabulary with regards to the similarity within the group of words introduced at the same time. The traditional view supports the idea of clustering based on the Semantic field theory.

A semantic field is, according to Brinton (2000, 100), “related to the concept of hyponymy, but more loosely defined (...). A semantic field denotes a segment of reality symbolized by a set of related words. The words in semantic field share a

common semantic property.” Semantic fields help define synonyms, antonyms and hyponyms. Most authors of EFL teachers’ guides suggest organizing L2 vocabulary into ample lists in accordance with semantic fields. It is believed that vocabulary is already organized in this manner in the learners’ L1 mental lexicons. Aitchison (1996, in Ramezani, and Behrouzi, 2013) maintains that, as a rule, learners recall words in relation to the semantic fields where those words belong. This belief is in the center of attention of the authors of manuals for EFL teachers as it suggests organizing the vocabulary in semantic clusters.

2.3.1 Authors supporting clustering based on the Semantic field theory

Textbook authors as well as general public consider the given vocabulary coming in semantic clusters (or chunks) being the preferred or even the only option. Lessons in textbooks are titled by these semantic groups’ names and the typical EFL young learner’s course covers the vocabulary of one such group, tests that vocabulary, then starts the process of teaching / learning a new group.

Channell (1981) argues that the available research on mental lexicons supports semantic field-based presentation strategy. According to the conclusions, which Channel draws from studies on slips of the tongue, she states that there are two mental lexicons per one language learner, one for L1 and one for L2, both phonologically organized but accessible through a network based on meaning as well. Therefore Channel recommends an overall emphasis on semantic links.

Crow and Quigley (1985) provide research comparing semantic field approach to passive vocabulary acquisition to non-related passive vocabulary acquisition. The research results are in favor of the semantic field approach.

Scott and Ytreberg (1990) recommend using topic-based textbooks, because the topics typically copy semantic fields of the target vocabulary. Vocabulary from the same semantic field offers a united context for any given vocabulary list. Despite the

lack of relevant evidence supporting their point of view, Scott and Ytreberg state that learning language in context helps both understanding and memory. Among other reasons for choosing topic-based curriculum Scott and Ytreberg offer convenience in practice design and target structures.

Neuer (1992) states that semantically organized target vocabulary requires less learning on the learner's part.

Furthermore, Dunbar (1992) suggests that vocabulary coming from the same semantic field helps the learner understand how knowledge is organized.

Cameron (2001) suggests organizing vocabulary in networks to support strong memory connection. One example of such organizational network is thematic network; another relationship among the target vocabulary group is hierarchy or using antonyms.

Hashemi and Gowdasiaei (2005) report significant vocabulary gains due to semantic set clustering, with the conclusion that vocabulary is enhanced by providing some framework for a meaningful context. However, that statement is not equivalent with their research results, because, as Tinkham states (1997), meaningful context can also be provided by thematic sets, without choosing the target vocabulary from the same semantic field. Nevertheless, Hashemi and Gowdasiaei report results, which are in line with the dominant theory of presenting vocabulary in semantically related clusters.

Authors in support of vocabulary clusters based on semantic fields believe that target vocabulary should be pre-organized in groups that match the current view of L1 mental lexicon organization. These authors argue that semantic clustering supports understanding of the presented content and that strong association bonds help memorization. Some authors (Channell, 1981; Scott and Ytreberg, 1990; Neuer, 1992; Dunbar, 1992; Cameron, 2001) make their assumptions intuitively; other authors (Crow and Quigley, 1985; Hashemi and Goudasiaei, 2005) support their view by research.

2.3.2 Authors challenging semantic clustering

The mainstream strategy of organizing vocabulary in semantic clusters is challenged by authors who point out the interference threat clustering based on semantic fields poses. This chapter will introduce these authors, their research designs and strategies and the conclusions these authors drew from their studies.

Higa (1963) in his study on interference effects of intralist word relationships compared the recall of pairs of words in no relation to each other to the recall of pairs of words with seven types of relationships between them. Figure 2 shows the results, starting with the relationship that proved to be the most interfering, ending with the relationship that proved to be the most helpful to the experiments' participants.

<i>Effect of the set</i>	<i>Relationship</i>	<i>Example</i>
Most interfering	Near synonyms	Fast, rapid
	Free associates	Bed, sleep
	Opposites	Dark, light
Neutral	Unrelated	Bread, foot
	Related in meaning	See, vision
	With similar free associates	Dark, lamp
Most helpful	Words occurring under one headword	Apple, pear

Figure 2. Effects of the Different Meaning Relationships Between Word Pairs According to Higa's (1963) Research

While Higa finds near synonyms to be the most interfering with the process of learning new vocabulary, his research also seems to indicate that words that occur under one headword help retrieval. The design of the research might play an important role in these findings, as is going to be explained further.

Higa's results about words occurring under one headword (words that belong to the same semantic field) do not agree with the research of Tinkham (1997) and Waring (1997), who also compared the recall of a list of related words to a list of unrelated words. Nation (2000), who compares Tinkham's (1997) and Waring's (1997) studies with that of Higa's, explains this discrepancy. While these authors used six items from the same lexical set (*apple, pear, nectarine, peach, apricot, plum*), Higa tested the recall of six pairs of words from six different sets (*hour, minute; hammer, saw etc.*). Such group is therefore not as homogenous as a group consisting purely of words from the same set; in other words, the condition of similarity within a group of tested words is not met.

Nation (2000) does not raise that objection to other types of relationships between words tested by Higa (1963). While the pairing of the words in the design of the experiment has no impact on the group marked as *unrelated*, as the individual words are still unrelated to each other within the whole group of six pairs, and comparing this clearly non-similar group to other groups seems valid, ranking other groups, consisting of items paired and only showing a particular relationship within these pairs

but not within the whole group, might be considered a threat to the validity of the experiment.

Tinkham (1993) found that learning lists of words, which are semantically related, interferes with the learning process. He carries out two experiments to compare the speed of learning pairs of words, half of the words sharing a common superordinate concept, half coming from different lexical set each. The pairs of words, which are semantically related, take the subjects significantly longer to be learned. Both Tinkham (1993) and Waring (1997) use artificial words in place of L2 equivalents of the chosen L1 words. Tinkham uses English as L1 and Waring uses Japanese. Waring's (1997) research is a close replication of Tinkham's research. Waring (1997) explains in his study that he replicates Tinkham's (1993) research because Tinkham is the first to challenge the generally accepted view that introducing words in semantic sets benefits the learner. Both studies display some limitations. The subjects were provided with a nonsense task of retaining a list of pairs of artificial words. Such research design does not copy a natural EFL learning environment, where pairs of words consist of one L1 word and its L2 equivalent. There were only 6 pairs of words tested each time. The laboratory experiment did not allow for natural learning process, because the testing part directly followed the learning time. The results came in the form of rounds each subject needed in order to successfully recall all missing artificial words. The answers were oral; therefore only active knowledge of the phonological form of the missing half of each pair was tested. Despite these limitations, Waring comes with data suggesting semantic clustering is counterproductive to vocabulary learning.

Tinkham's (1997) research suggests that texts, meaningful situations and natural language use facilitate learning, when he comes to the conclusion that thematically related vocabulary is even easier to recall than unrelated vocabulary, at the same time confirming that lexical sets hinder the performance. Tinkham used artificial words that he created according to specific rules. These artificial words had to have two syllables and there were more rules within the sets of words belonging to a group:

one word always had to begin with a vowel, another word always had to finish with a vowel, one had to contain a cluster of consonants etc. Some of the artificial words created by Tinkham were: *heejeh, dusahn, bemouf, ayket*.

Tinkham compared the recall and recognition of artificial words paired with English words, divided according to the relationships among the English words into four groups.

Semantically related English words:

apple pear nectarine peach apricot plum

Unrelated English words:

paint funeral recipe market uncle ice

Thematically related sets of English words:

frog pond green slimy hop croak

Unassociated sets of English words:

cloud office risky social lose erase

Semantic clusters are based upon semantic and syntactic similarities among the words. Thematic clusters are based upon psychological associations among clustered words. According to Tinkham (1993), thematic clustering is a type of cognitively based clustering, while semantic clustering is a linguistically based clustering. Tinkham then went on to explain that cognitively-based clustering can be based on a common thematic concept, as the words *frog, pond, hop, slimy, green* and *slippery* are based around the concept of *frog*. By unassociated sets of English words Tinkham means semantically and thematically unrelated words in different word forms. Tinkham carried out four studies: oral recognition, oral recall, written recognition, and written recall. The scores were measured on trials-to-criterion tests, that is, subjects repeated the testing till they produced all forms correctly and the number of

trials becomes the data for results. The testing took place in two sessions, one was a recognition testing, the other a recall testing, two weeks apart from each other. The limitation of this design is the short-term aspect of the learning phase with an immediate testing, which does not copy the real life situation. The experiment is also based on rote-based learning, as opposed to context-based learning taking place at schools and courses. Tinkham (1997) explains the conditions of the research as an attempt to exclude extraneous variables and maintain a very controlled environment. This aspect might mean a limited generalizability to other contexts such as the primary school environment, an aspect crucial to the interests of this paper.

Tinkham's (1997) findings present an indication that vocabulary items arranged in semantic clusters are harder to learn than vocabulary items arranged in a cluster of unrelated words, while vocabulary items arranged in thematic clusters are easier to learn than vocabulary items arranged in unassociated sets. Tinkham analyses individual performances as well as total results, both in favor of thematically related sets. According to the feedback Tinkham (1997, 160) elicited immediately after each testing "a sizable number, however, felt that the semantic cluster was difficult because the words were 'too similar' or 'all related'. A few subjects claimed that the artificial words were difficult to remember because the English words were 'all the same'."

Tinkham (1997) explains why semantic clustering is the norm. Firstly, the clusters' semantic features provide a convenient framework in the curriculum; secondly, semantic clusters serve the commonly used methodologies in EFL. In structure-centered programmes, semantic clusters fit perfectly in both oral and written controlled activities. But even learner-centered programmes, concerned with communicative needs of the students, pre-arrange the planned vocabulary in semantic clusters.

Another author challenging clustering based on semantic fields is Waring (1997, 262), who explains the principle of interference hindering the learning process: “(...) words such as *jacket*, *shirt* and *sweater* should not be presented to learners as a group because the learning load is increased. The learner not only has to learn the new words, but as the words are so similar (they share the same superordinate concept) the learner will often confuse them and additionally will have to learn to keep the words apart, thus increasing the learning effort required.”

In other words, the similar features shared by a lexical set do not facilitate the learning by providing the student with a ready made network of associations to be stored in the mental lexicon as most textbook authors assume. These associations, which are thought to be the very material of the pupils' mental lexicon, are more likely a personalized construct the student creates on their own. On the contrary, the lexical set adds the burden of distinguishing similar items at the very first stage of vocabulary acquisition, at which point the student needs to fully concentrate on the new form, meaning and use.

Nation (2000) in his study on lexical sets refers to lexical interference as a type of error that occurs when foreign language learners are introduced to related vocabulary. Among related vocabulary Nation lists opposites, free associates and lexical sets. Lexical sets are “specific groups of items, sharing certain formal or semantic features” (Crystal 1997, 221, in Nation 2000, 10).

Wang's (2015) research tests whether there are significant differences between presenting vocabulary to high school students in semantically related groups and semantically unrelated groups. Wang uses short term testing and long term testing. The pairs of words tested consist of one Chinese word (L1) and one English word (L2). The learning phase in Wang's research consists of four twenty-minute lessons, each two or three days after the previous one. Short term testing follows each lesson and is only oral, long term testing follows two weeks after the last lesson in a form of a written test. The total of words presented to the subjects in a pilot research is 105.

Words familiar to the subjects are left out, leaving 54 words as the final amount of words used in the testing. These words belong to five groups based on the relationships inside these groups: synonyms, hyponyms, homonyms, antonyms and meronyms. Below are examples of the words used in the testing:

Synonyms:

wary prudent discreet circumspect

Hyponyms:

tempest avalanche

Homonyms:

discreet discrete

Antonyms:

dwindle accrue

Meronyms:

pollen sap stalk kernel

The results of Wang's (2015) research show no significant difference between the two groups of subjects in the short term testing, but the group studying the unrelated words performed significantly better in the long term testing. Limitation of this research lies in the English – Chinese translation for the short-term testing. Wang (2015, 114) explains that “there are some cases when words in the same semantic sets share a similar meaning with a nuance of difference, and students are not required to write the difference down, so the Chinese translations are the same for several words”. An example of this phenomenon are the English words *wary*, *prudent*, *discreet* and *circumspect*, which all translate to Chinese as 谨慎的. This fact seems

to be a considerable threat to the validity of the short term testing. The long term testing, on the other hand, was not affected by this “same translation phenomenon” due to the longer, written form of responses. Wang’s findings stemming from the long-term testing support the idea of presenting new vocabulary in semantically unrelated sets.

Another study compares semantically related to semantically unrelated vocabulary acquisition and retention in Greek adult beginners. Papathanasiou (2009) argues that the practice of using lexical sets when teaching vocabulary is based mainly on theory, not evidence. By this theory Papathanasiou means the *Semantic field theory*, which suggests a systematic description of the vocabulary of a language. Papathanasiou (2009, 323) proposes a study that generates “results that might apply to natural L2 learners. On the contrary, previous research was tightly controlled to benefit the researcher, not the learner (...).” The experiment is a research model loosely replicating previous kinds of similar research on the topic of similarity in vocabulary sets adding the aspect of real life classroom lessons.

The subjects in Papathanasiou’s research belong to two already existing adult classes. Class A studies 60 English (L2) words (semantically related) associated with their Greek (L1) equivalents over the course of 6 lessons taking place over 3 weeks. Class B studies 60 semantically unrelated words in the same manner. A short-term testing directly follows. Two weeks later, a long-term testing takes place. After that, class A and class B switch the loads of vocabulary. The lessons consist of a ten-minute introduction phase, when students read and rewrite the ten English words onto cards with their Greek translation on the back page, a fifteen-minute retrieval phase, when students practice the words’ recognition with the help of the cards and a twenty-minute production phase, when students practice the new words in two activities.

Papathanasiou (2007) further divides the semantically related vocabulary into four different groups. Below are these groups with some examples of the words taught to the subjects:

Topic related vocabulary:

smuggling terrorism forgery mugging trial
proof jury verdict witness bribery

Homonyms:

pane pain steak stake toe
tow colonel kernel council counsel

Synonyms:

torment torture jab punch spat quarrel
gleam twinkle boredom tedium

Antonyms:

ebb flow gloom glee certitude doubt
loyalty treason poverty prosperity

Other authors, Marashi and Azarmi (2012), carry out research with four groups of subjects over fifteen session treatments combining semantic sets and incidental learning mode, semantic sets and intentional learning mode, unrelated sets and incidental learning mode and unrelated sets and intentional learning mode. This study reports the group of subjects who are presented with unrelated sets of words combined with an intentional learning mode as the most successful group in the testing.

Ramezani and Behrouzi (2013) carried out a study on the recall of semantic clusters of words versus unrelated words with subjects within the range of 12 to 15 years of age. Subjects are studying English at elementary level. Each of the two groups consists of 15 subjects. An initial test was assigned to prove the homogeneity of the groups, then the subjects took a KET test to confirm this homogeneity statistically.

Both classes were taught by the same teacher. The design of the study was a quasi-experiment with the independent variable being the presentation of new words in semantically related and unrelated sets and the dependent variable being the vocabulary retention of the learners. Both the experimental and the control group were taught six lists of semantically related (experimental group) and semantically unrelated vocabulary (control group), each list including ten words in detached sentences and their equivalents in Farsi (L1). The unrelated groups of vocabulary (for the control group) consisted of five pairs of related words. Each lesson was followed by a short quiz as an immediate recall post test in a form of a multiple-choice or a matching test. One month after the last lesson a delayed recall post test was administered. The format of the delayed recall test was a multiple-choice L2 (English) to L1 (Farsi) translation. There were no significant differences between the two groups' short-term test results, but the control group (sets of unrelated vocabulary) scored significantly higher in the long-term testing.

Limitations in this study might be seen in the design of the testing, since a multiple-choice test suggests answers to the learner. The character of the suggested answers might provide a threat to the reliability of the research, especially when the purpose of the testing is to establish a level of confusion among certain words in the target vocabulary. Unfortunately, Ramezani and Behrouzi do not describe the character of the choices provided to the subjects in the testing phase.

In spite of these limitations, Ramezani and Behrouzi's research suggests that SBI affects long term vocabulary retrieval in Farsi students in a negative way.

The research of Pelegrina et al. (2012) describes SBI in working memory as a factor hindering performance while representations are held simultaneously in working memory. It could be argued that when SBI in working memory hinders the ability to recognize these words individually, the information traveling to the long term memory is necessarily affected as well, therefore hindering the learning process in the long term.

According to Birnbaum's and Bousfield's findings (in Nation, 2000), most research providing evidence that semantically related sets facilitate learning is based on research involving lists of L1 words. In such experiments, words perceived as related do score higher in the recall phase. The problem with such evidence is that remembering lists of L1 words simply does not mimic the principles of learning L2 vocabulary. The recall of familiar words does not involve learning a new form (written or aural) or connecting a new form to a familiar meaning. Having listed more aspects of word knowledge earlier in this paper, it could be pointed out, that new collocations, connotations and style are also exclusive to foreign vocabulary learning as opposed to learning lists of L1 words.

In conclusion, the research described in this chapter shows significantly better results in retrieval of semantically unrelated sets of words in comparison to words coming from the same semantic field. Tinkham's (1993, 1997) research results agree with these findings. Furthermore, Tinkham's results suggest that there are even better results in vocabulary retrieval for vocabulary taught in thematically related sets.

2.4 Types of Similarity Based Interference

In this paper, SBI in vocabulary acquisition is understood in a broader sense - as an interference connected to any similarity in any aspect characterizing the whole learning process. Lesson aspects characterizing the learning process can be divided into two groups:

1. aspects of the target vocabulary
2. aspects of the teaching/learning process

The definition of similarity in vocabulary in chapter 2.1 depends on the features of the target items. Vocabulary features represent vocabulary characteristics mentioned in chapter 1.1.2 of this paper: meaning, collocations, grammar, word parts (form), register. Therefore some sort of interference can be expected to possibly occur in each of these fields. In other words, these features are all possible triggers of some sort of interference to the process of successful vocabulary acquisition and retrieval. The focus of this paper is on primary school EFL lessons, therefore the vocabulary and the aspects of the vocabulary taken into consideration bring restrictions to the phenomena we explore. With each possible SBI trigger an example will be given.

2.4.1 Similarity in Meaning

Similarity in meaning is a criterion according to which vocabulary is chosen in courses' syllabuses. That means that most vocabulary taught in primary classes is actually part of a group of words. There are two types of these groups:

1. open groups – groups which contain an indefinite number of words in no specific order, such as fruit, animals or clothing
2. closed groups – groups which contain a definite number of words in a specific order, such as one-digit numbers, days of the week, months.

While individual words from the first group are often taken out of that group into a more meaningful context, vocabulary from closed groups is typically taught in rows. These rows pose a threat to a proper vocabulary acquisition in particular, since the meaningless drilling of a whole group of words leads to either omitting a member or a wrong prescription of a L1 equivalent in the production phase.

Similarity in meaning is also one of the two SBI triggering features chosen for the practical part because it is a constant aspect of vocabulary teaching in primary classes.

While the concept of similarity in meaning has been clarified (homonyms, synonyms, antonyms, vocabulary from the same semantic field), there is one more aspect in semantically similar vocabulary that deserves special attention. Vocabulary typically taught in rows – and already similar in meaning – can also contain two or more words which share one more feature, such as visual or phonological similarity.

Examples of vocabulary cumulating overlapping features:

1. *twelve*
twenty

Twelve and *twenty* come from the same semantic field (numbers) and share a similar visual/phonological form (the first three letters/sounds are identical).

2. *Tuesday*

Thursday

Tuesday and *Thursday* are both semantically similar (days of the week) and phonologically similar (with *t* at the beginning and the second syllable identical)

3. *June*

July

June and *July* are semantically similar and share a similar visual form (the first two letters are identical)

2.4.2 Similarity in Collocations

Collocations are not always part of a typical EFL class in primary schools. Vocabulary is, sometimes, due to time restrictions as well as target pupils' age specifics, taken out of context to suit the type of a lesson. Nevertheless, collocations are part of structures taught in lessons focusing on greeting, introducing oneself, shopping, making an appointment and more. Typical errors, made by elementary learners which could be argued to belong in the category of SBI based on similarity in collocations, are, for example, confusing "*How old are you?*" with "*How are you?*", or confusing phrasal verbs. Even though easily confused phrasal verbs such as *take on* and *take after* are not typically taught in primary classes, a few similar phrasal verbs do occur at elementary level such as *wake up* and *get up*.

2.4.3 Similarity in Grammar

Grammar is nowadays mostly introduced to young learners in a non-explicit way, by structures being taught as a chunk, not as a construct carefully put together according to grammatical rules. Pupils are generally introduced to pre-fabricated phrases, which are used as a whole for a while, then they are broken down and re-used with other words (Cameron, 2001). A few examples of lessons focusing on grammatical issues, where vocabulary is simply a carrier for the target phenomenon which is being explained, could be found though. The best example of vocabulary confusion stemming from SBI triggered by grammatical aspects, is the case of prepositions. Pupils often confuse *in* and *on*, *among* and *between*, *like* and *as*, *from* and *for* and more. Similarly, adverbs and words of frequency are prone to SBI within their group: *rarely*, *seldom*, *sometimes*, *often*, *always*.

2.4.4 Similarity in Form (Spelling)

The form of the target vocabulary represents the visual aspect of the written form. For pupils, whose leading sense is visual (as opposed to auditory or kinesthetic), the spelling of a new word is easier to remember. Pupils with auditory and kinesthetic leading senses naturally pay more attention to other aspects of new vocabulary during the presentation stage. They are prone to confusion in spelling, possibly when words with similar spelling are presented together in particular.

The similarity of form is either haphazard or caused by grammatical changes. Randomly similar words are for example: “*whether*” and “*weather*”, “*then*” and “*than*”, “*soup*” and “*soap*”. Within the second group, common error is observed with past participle forms of irregular verbs: “*run*” versus “*ran*”, “*choose*” versus “*chose*”, “*win*” versus “*won*”. Adding the same prefixes and suffixes makes non-similar words look similar as well, even though these words are not expected to be taught in

elementary classes. These groups include words such as “*discount*”, “*disorder*”, “*disable*”, “*disagree*”, “*discard*”, “*discourage*” or “*memorable*”, “*negotiable*”, “*unbearable*”, “*enable*”, “*usable*”.

2.4.5 Similarity in Register

Since it has been assumed that any similarity matters, similarity in register is also a feature that can overlap and therefore it should matter. Looking closer at the categories of register, which comprise static, formal, consultative, casual, and intimate, it can be argued that these categories are too broad to be perceived as a significant distinction aspect of target vocabulary. Therefore it can be stated that register is not a potential trigger for SBI in vocabulary acquisition.

2.4.6 Phonological Similarity

Obata, Lewis, Epstein, Bartek & Boland (2011) carried out research attempting to locate the features most likely to trigger similarity-based interference in short-term memory. They came to the conclusion that phonological similarity is one of the strongest triggers.

Phonological similarity is also the field of research of short-term memory. For example, Baddeley (1966) compared a list of phonologically similar words (*mad, man, mat, cad, can, cat, cap*) with a list of non-similar words (*cow, day, bar, few, hot, pen, sup, pit*). His study suggests that phonological similarity increases the difficulty of recall.

A typical error is the inability to distinguish between *then* and *than*, arguably fortified by the teacher presenting both at once. Obviously, there is a clear connection between the way a word is written and the way a word is pronounced. Therefore, phonological

SBI and SBI triggered by the form sometimes overlap. A strictly phonological SBI (not orthographical) is rare or it assumes more exposure to the spoken form than to the written form, which is not very typical of the primary school environment.

2.4.7 Subjective Similarity

In psychology, similarity was first defined by the Gestalt psychologists. It is believed to refer to psychological nearness. This nearness is represented by an actual physical proximity of two mental representations according to Schacter, Gilbert and Wegner (2011). In spite of the lack of knowledge about the nature and form of mental representations in human memory, it can be safely assumed that these representations are subjective.

An example of a subjective similarity is confusing two terms representing items of similar value to the pupil, such as *mayor* and *clerk*, *camera* and *phone*, *letter* and *word*, whose representations might be stored in a certain proximity.

The definition of mental representation is not yet agreed on among the scientists, but it can be safely assumed that mental representations are subjective and personalized, therefore the individual interference based on representations with overlapping features is always an option. As a result, this kind of interference is unpredictable and possibly unpreventable.

2.4.8 Similarity in Activities

The theory of Ranschburg effect (Shiller, 1947) states that the similarity in time, place and circumstance contributes to errors in retrieval. If the particular activities which are used to bring vocabulary from short term memory to long term memory follow the same pattern, the memory of these activities in the pupils' mind indeed consists of a considerable amount of overlapping features. It is a well known fact that

most teachers find certain types of tasks more effective and appealing than other types of tasks. Over time, the majority of teachers collect a mental list of activities they are most comfortable with. That way, pupils are often practicing completely different groups of words by completing the same tasks, as long as they are assigned by the same teacher.

An example of similarity in activities can be a series of lessons during which the teacher always chooses pantomime and a memory game to practice new vocabulary.

All the above arguments suggest that favoring a narrow list of activities is counterproductive to the teaching/learning process. The hypothesis that similar activities are also a potential SBI trigger shall be tested in the practical part of this paper. The idea that similarity stemming from the teacher's choice of activities is a factor triggering interference is original and has not been researched on yet.

Another example of similarity as an aspect of the teaching / learning process, which might play a negative role in vocabulary acquisition, is visual. Visual aids and props such as flashcards are a common tool for every language teacher. It is estimated that the majority of school children prefer visual information source to auditory and kinesthetic. These pupils in particular rely on their memory of the visual props for future recognition. This memory, according to SBI theory, can fail them, if the props do not differ enough.

Similar visual teaching props, for example similar flashcards, can contain overlapping features, such as size, shape, colour etc. In flashcards, or any other drawn pictures such as textbook illustrations, the most striking feature is the authentic handwriting of their author. Each artist favors certain art procedures, shapes, colours. Although a collection of flashcards by the same author might be considered more stylish by teachers, the similarity of pictures used as visual aids can be considered another potential SBI trigger.

To sum up, the aspects of vocabulary defined by Zimmermann (2008) serve in this paper as the basic features that SBI might potentially affect. Out of the five aspects of vocabulary knowledge (meaning, collocations, grammar, form, register), register was not found likely to cause any interference in the learning process. Meaning and visual form, as the most obvious features of vocabulary, considering the target learner to be a young learner, are expected to be subjected to SBI by the largest portion. Personalized mental representations are considered to play a major part in possible interference to a successful memory retrieval. It has been concluded that subjective similarity is unpredictable. By application of the Ranschbourg effect, similarity in activities is also expected to be prone to SBI.

In the second chapter similarity was defined as overlapping features. The role of similarity in different authors' theories in their attempt to either support or challenge semantic clustering in teaching practice was explained. Authors supporting clustering typically argue that clustering copies the way vocabulary is stored in the mental lexicon and therefore enhances the learning process, while authors challenging clustering mostly oppose that research proves semantic clusters hinder the performance. As announced in the preface, this paper is looking closely at the possible types of SBI which can negatively affect the learning process. The EFL lesson aspects which seem particularly prone to causing SBI in vocabulary retrieval in young learners can be divided into two groups:

1. vocabulary aspects: any purposeful clustering, causing vocabulary items similar in meaning, visual or auditory form always appearing together,
2. teaching aspects: similar sources of information (such as flashcards) and a small range of activities offered by the teacher, leading to repeated schemes of similarly introduced or similarly practiced vocabulary.

3. Similarity Based Interference Management

This chapter lists the circumstances potentially causing interference in the young learner's vocabulary retrieval. Based on these problematic aspects of the teaching process with regards to SBI as defined in the previous chapter, guidelines for lesson planning, conscious of the effects of interference, will be suggested.

3.1 Circumstances Contributing to SBI

3.1.1 Syllabuses

Most research on interference in learning vocabulary is centered around the curriculum design (Higa, 1963; Tinkham, 1993; Tinkham, 1997; Waring, 1997) and guidelines proposed by researchers mostly suggest that textbook authors, teachers and students separate the presentation of vocabulary prone to interference. West (1955) points out two main reasons for separating similar vocabulary items. The first reason is connected to word frequency counts. The table below shows word frequency counts for colours from Francis and Kučera (1982, in Nation, 2000).

<i>member</i>	<i>frequency</i>
white	334
red	169
black	165
blue	126
green	85
yellow	52
pink	47
orange	8

Figure 3. Word frequency counts for colours (Francis and Kučera, 1982, in Nation, 2000)

Similar wide differences in counts can be found for other lexical sets. The need to teach or learn one item from a lexical set can be much stronger than the need to introduce the others at the same time. The second reason why linking related words is counterproductive according to West (1955) is the unnatural character of situations used to introduce these words. West wrote his study more than 60 years ago and yet the unnatural aspect of introducing a whole lexical set at once still remains. With the communicative approach being the desired method in language teaching today, realistic situations are key to realistic activities and meaningful exchanges. West's requirement to separate the presentation of related words in time has not been seen as desirable by textbooks designers. Textbooks preferably present a language as a sequence of theme or topic-based units.

Nation (2000, 8) sees the seemingly practical curriculum structure as a major burden to the ease of learning process particularly when interference is taken into account when he mentions that "it is difficult for course designers, as well as teachers and learners, to appreciate that items in sets such as months, days of the week, and numbers are best learned, initially, when not learned together. (...) However, because all the useful items cannot be learned at the same time, we need to sequence their introduction."

A typical example is the topic of the days of the week. Despite the obvious difficulties (confusing *Tuesday* and *Thursday*, *Saturday* and *Sunday*) pupils experience when learning the days of the week, the whole set is still introduced at the same time. Unnatural songs and rhymes (consisting purely of the target nouns) are taught and drilled with the best outcome being the ability to name a day of the week with the help of finger counting. More often though, *Tuesday* and *Thursday* are still commonly confused even after many years of EFL study. In the particular example of these two days of the week, SBI in meaning (a school day) meets SBI in form (both written and aural, both days start with a T). Nation sums the discussion up as follows: "The criteria of usefulness (frequency or need) and avoidance of interference

(ease of learning) are more important than aiming for early completeness of lexical sets” [ibid].

Circumstances contributing to SBI stemming from the syllabus

A. Organizing vocabulary in lexical sets – lexical sets are in the center of a young pupil’s teacher’s attention in a foreign language class. Some teachers introduce, practise and test a lexical set within a very short period of time, then put the flashcards back in their drawers and implement the same procedure with other sets, such as numbers, days of the week, or months of the year. That way for example the numbers *eight* and *nine* were never properly distinguished in the pupils’ minds and the class already moved on to a different topic.

B. Vocabulary choice that includes opposites – the problem with opposites is that they share the same context and the same collocations. If both opposites are unfamiliar to the learner, the sentence *The tea is hot* and the sentence *The tea is cold* make no difference to the learner.

C. Vocabulary choice that includes free associates – free associates are often introduced by the same picture and practiced in the same context, sometimes even in the same sentence. *Blanket* and *bed*, *bed* and *sleep*, *play* and *game* are typically confused in the early stages simply because some material encourages their inseparability.

D. Choosing words similar in their written form – the visual form, and especially the first letter plays a large role in the SBI. Common confusions in primary school EFL classes involve words like *Tuesday* and *Thursday*, *Saturday* and *Sunday* and even *bread* and *butter*, as they often come together.

E. Choosing words similar in their spoken form – most words similar in their spoken form are also similar in their written form. For example, *beet* and *beat*, *hurt* and *heart*, *attach* and *attack*. A very interesting example of SBI stemming from the spoken form is a case of an audio anagram, as in *kitchen* and *chicken*.

3.1.2 Circumstances contributing to SBI connected to lesson planning

Even though the textbooks are already designed for cumulating similar vocabulary, careful lesson planning can avoid the most obvious cases of SBI. An experienced teacher will probably not introduce the words *chicken* and *kitchen* together, as they represent a very common source of confusion based on the interference of their spoken forms. There are more aspects to lesson planning though, which can contribute to interference and might not have anything to do with reorganizing the curriculum provided by the textbook.

F. Similarity in props, namely pictures – especially for pupils with a preferred visual channel, pictures are crucial for the object – name connection. Sometimes a specific aspect of a picture is of particular interest to a pupil, mostly if the artist tends to exaggerate a feature or emphasize a colour. This feature can facilitate learning if used once in that it helps raise attention of the pupils. Using a whole deck of flashcards which all share such feature, on the other hand, means contributing to similarity. For example, a cartoon flashcard of a tall skinny woman with an exaggerated long nose driving a bicycle might be very well recalled by the pupils, but twelve flashcards of the same woman displaying other activities will not be recalled individually, because the striking features overlap.

G. Similarity in activities - Most teachers do not search for new activities prior to every lesson, but rather refresh the ones they have used in the past. They soon realize

the particular activities which suit their personal teaching style and meet the needs of their class for each lesson phase. Lessons might even resemble one another. Certain situations and games, which were very well recalled the first time a teacher used that particular activity, were overwritten in the pupil's mind by very similar recall, when the teacher used the same activity with different content. For example, a place-switching game where one pupil stands in the middle of a circle of chairs and calls two classmates by their game names from a chosen topic, leaves all pupils with memories of a fun game and the particular words both themselves and their friends were called, which, in the case of a pencil case topic, might have been a pencil sharpener, ruler and scissors. Such memory would not fade easily unless it was repeated over and over with each new unit from the book. Based on the SBI theory, using the same activities, despite their quality, is an aspect hindering the learning process.

Circumstances contributing to interference in the learning process of vocabulary are not only connected to the lesson (aspects of the syllabuses and the lesson planning), but some circumstances are to be found on the pupil's side.

3.1.3 Circumstances on the pupil's side contributing to interference

Nation (2000) proposes two guidelines for learners; they should be informed and aware of interference and they should recognize interference when it occurs and find a mnemonic trick that would help them distinguish the items at hand. These guidelines apply to mature language learners, while this paper is focused on primary school pupils. Pupils of age seven to twelve are not yet familiar with deliberate vocabulary study, word building and dictionary use strategies. Their metacognitive skills are not developed yet. Their newly acquired foreign language skills fully rely on the teacher's leadership. It is not quite clear whether Nation suggests that the teachers point out the possible interference of one item with another, when one of the

pair is being introduced in the class. Based on his statement (2000, 8-9) that “if two or more items share some strongly related common features and they are learned together at the same time, the similar features make them become strongly associated with each other, and the differences interfere with each other”, it is more likely that his suggestion only applies to the general awareness rising from interference among similar items, not to a specific case. Nevertheless, it is a common practice among L2 teachers to point out the typical confusion the current vocabulary item involves, such as introducing *then* as soon as comparatives with *than* are being taught, pointing out the existence of *son* when introducing *sun* etc.

Taking into account that the teacher chooses the material, introduces the content, plans for the applied strategies and settles the background for activities, there is not much a young learner affects in the learning process. Moreover, motivation in language learning is also mostly external at this stage. One aspect on the pupil’s part is crucial though. It is the ability and willingness to concentrate, which decides whether the lesson develops the pupil’s language skills or not.

H. Lack of focus – if a pupil is not paying attention, they can easily confuse even non-similar terms. Details such as spelling differences are simply not registered at all, items familiar in meaning are registered vaguely, such as “something to do with food” can stand for a fork, a knife, a spoon, lunch, dinner and more, especially if the vocabulary is introduced with the help of a textbook picture that happens to include all of the above.

I. Shallow object / name connection – lack of focus is also responsible for a shallow object / name connection, mostly at the stage of practicing new vocabulary. There is a recollection of the object being introduced in the lesson, often with the mental representation of all the other objects and a vague recollection of the spoken or written form, but these two do not make a pair yet. For example, the pupil knows that

food items were introduced in the past lesson and they might be able to distinguish between those that were already taught in the class, and those that were not, when shown in a picture. Hearing *plums*, *eggs*, or *pork*, though, is not connected to any specific representation in the pupil's mind.

J. Lack of personalization – when the idea of the target vocabulary is so strictly tied to the object first introduced as a representation of that vocabulary, the attempts at transition towards actual use in real life situations causes confusion. For example, a picture of a smiling cartoon baby elephant from the textbook has a strong connection to the word *elephant* in a pupil's mind, but an actual elephant might not elicit the correct name in that particular pupil in a real life situation.

K. Subjective similarity – subjectively similar mental representations based on individual constructs and experience. Mental representations are so individualized that science has not been able to decide even on their nature yet. Especially in fields that the young pupils are not particularly familiar with, certain items share too many common features to be properly distinguished from one another. Pupils then consider *a bank*, *a post office* and *a city hall* to be somewhat similar. An example of an even more subjective similarity would be a case of a pupil, whose friend has both a hamster and a guinea-pig and who talks about them in the class. That pupil might not have a first hand experience with these pets and always consider them to be very much alike.

This chapter laid out all the different aspects of SBI and the ways SBI can affect the learning process. In the next chapter, guidelines for interference management will be suggested.

3.2 Suggested Guidelines for SBI Management

3.2.1 Management of SBI stemming from the curriculum

A. Organizing vocabulary in lexical sets – even though textbooks and workbooks are pre-arranging the syllabuses for the learners, the teacher can chose to present the vocabulary coming from the same semantic field separately. This strategy requires a certain level of devotion and creativity. It is also time-consuming. On the other hand, selecting unrelated vocabulary can create interesting motives for creative lesson planning.

B. Vocabulary choice that includes opposites – Nation (2000) suggests using widely different context to introduce and first practise each word, for example using the collocates *tea, summer, day* for the newly introduced word *hot*, and the collocates *night, winter, drink* for the newly introduced word *cold*.

A good knowledge of the syllabus and a careful planning are necessary to avoid opposites being introduced at the same time. One word from each pair of opposites has to be presented ahead of the other.

C. Vocabulary choice that includes free associates – free associates can also be considered to be thematically related vocabulary. Thematically related vocabulary is highly recommended by Tinkham (1997), as it provides meaningful context for both presentation and practice and scores high in his research on vocabulary retrieval. To prevent free associates from triggering SBI, the teacher needs to plan their material carefully not to present all words together in a stereotypical manner and needs to avoid repetition of the same phrases to allow for the pupils to make meaningful utterances with individual words. For example, instead of asking the stereotypical question *What can you see?* or *What colour is the cup?*, the teacher can ask term specific questions, such as *What do you drink tea from?* or *What do you drink from a cup?*

D. Choosing words similar in their written form – since confusing pairs of words such as *bread* and *butter* can be truly surprising to the teacher, using backwash as a means of improving the teacher's approach to the syllabus is sometimes the only option. For example, when pupils in a particular course show confusion between two unlikely terms, the teacher should detect the source of confusion in the past lessons and spend some time properly distinguishing the terms at hand. In other cases, such as *twelve* and *twenty*, the teacher might benefit from checking each group of presented vocabulary for words starting with the same set of letters.

E. Choosing words similar in their spoken form – pairs of words such as *Tuesday* and *Thursday* resist the potential SBI better if the second is introduced only after the first one has been properly acquired. The cautionary note at the very introduction of the pair which is highly popular among teachers, or even an unnecessary introduction of the second word from the pair while only the first word is part of the syllabus, might be counterproductive.

It is impossible to omit a vocabulary item just because its form is similar to the form of another item. The safe time line needs to be individualized. Nation (2000, 9) describes this phase as follows: “Interference largely occurs when items presented together are both unfamiliar, or when one is unfamiliar and the other poorly established. Once items have been reasonably well established, there is good value in deliberately bringing the items together to see how they differ from each other and where the boundaries lie.” There is no definition of a well established item of vocabulary; time and effort spent in the teaching / learning process are not necessarily the only telling factors in young learners’ EFL study. A proper diagnostic testing is in place.

3.2.2 Management of SBI connected to lesson planning

F. Similarity in props, namely pictures – there are props and other hand made material which strike teachers as very space efficient and practical. One idea might work with numerous lessons changing as little as a picture or setting. On the other hand, making use of such props does not offer a great variety of visual stimuli to the pupils. Over time, using the same objects with little variation gets tedious or even boring. Based on the premises of the Ranschbourg effect, the recall of lessons consisting of a work with similar objects and props offers less detail than the recall of the same amount of lessons with new items and material used each time.

G. Similarity in activities – to avoid the stereotypical use of a limited number of games and activities, the teacher can either keep a game diary and make sure to use the games repeatedly only when they are assigned a new class, or they can chose to make up a special activity for each lesson, to practically tailor the activities to each class’ needs.

3.2.3 Management of SBI on the pupil's side

H. Lack of focus – problems with attention are often connected to conditions and environment. Apart from parents deciding for an early bedtime for their children and the teacher ensuring fresh air and a reasonable temperature in the classroom, the teacher also needs to be flexible enough to adapt to the pupils' attention span and change activities, their pace or offer short breaks, for example in a form of a physical stretch.

I. A shallow object / name connection – a deeper connection between a term and an object is reached when each object is introduced and practised individually, in its own particular context. This context should always differ from the context used for other terms from the same semantic field. Presentation strategies have to use all options (illustrations, mime, story, definition, use, translation, object display etc.) and all senses. For example, bringing a toy to the classroom may work, as many pupils prefer to touch real objects at this stage.

J. Lack of personalization – to avoid a strong bond between a term and only one of its representations, the teacher should offer more inputs for every new word. A good way of creating a personalized representation in the pupil's mind is to allow for a creative arts and crafts activity, materializing the concept the pupil holds about the word.

K. Subjective similarity – subjective similarity as a trigger for interference can never be completely avoided, because it often correlates with concepts and precepts. Understanding what the pupils understand is a matter of posing the right questions. No good teacher should simply assume the existence of any background knowledge.

In summary, this chapter listed circumstances contributing to interference in the young learner's vocabulary retrieval and divided these circumstances in three groups:

1. Circumstances contributing to SBI stemming from the syllabus (organizing vocabulary in lexical sets, vocabulary choice that includes opposites, vocabulary choice that includes free associates, choosing words similar in their written form, choosing words similar in their spoken form)
2. Circumstances connected to lesson planning (similarity in props, similarity in activities)
3. Circumstances on the pupil's side (lack of focus, shallow object-name connection, lack of personalization, subjective similarity)

These possible contributors to SBI are used as a basis for guidelines formulated in an attempt to manage SBI in a primary class. The dominant rule is to avoid presenting pairs or groups of words potentially contributing to interference at once and to avoid stereotypical lesson planning.

4. Practical Part

This study is, with regards to the nature of the data available for collection, taking the quantitative approach to its research. Quantitative research is used to quantify the relationships between variables, that means independent variables are going to be manipulated in a controlled environment and the way the dependent variables change is going to be transformed into numbers. This quantification will then lead to statistical results, which are going to be interpreted in generalizable findings.

In principle, quantitative research uses

1. positivist claims
2. cause and effect
3. variables
4. hypothesis

According to Creswell (2003) strategies associated with quantitative research throughout the 20th century took the post-positivist perspectives, which means they were mostly experiments, quasi-experiments, correlational studies and single-subject experiments. Creswell also explains that the latest experiments are more complex, with many variables and multiple treatments.

The method of quasi-experiment is chosen in the present paper to establish the possible correlation between independent variables and dependent variables. The environment is only semi-controlled, therefore the method used is not a true experiment.

A series of didactic tests will be used as a tool for measuring the correlations. These tests are not standardized, their purpose is to compare results between the

experimental and the control group. Proper attention is paid to their reliability and validity.

The hypotheses tested in the practical part are:

1. Based on the character of primary classes curriculum, SBI is mostly observed as the confusion of words belonging to the same semantic cluster. This hypothesis is tested in the pilot study.

2. SBI is a significant contributor to error making in vocabulary retrieval in young learners' EFL class (significant being 5% or more). This hypothesis is tested in the pilot study.

3. A. Clustering as a vocabulary presentation method contributes to SBI.

B. Limited repertoire of activities on the teacher's part contributes to SBI.

These hypotheses are tested in the experiment.

4.1 Pilot study

A pilot study is, according to Everitt (2006), an investigation designed to probe the feasibility of the later large-scale experiment or a search for possible effects which the later experiment might follow.

4.1.1 The purpose of the pilot study

The purpose of the present pilot study is to establish the context for the experiment and establish an approximate significance of the effect SBI has in primary classes. This significance is not going to be generalized due to the size of the sample.

The pilot study is meant to serve to

1. establish how significant the phenomenon of similarity in the learning process is for a particular setting (hypothesis 2),
2. estimate whether all types of similarity based interference as suggested in chapter 2 are relevant in the teaching/learning process in a particular setting (hypothesis 1),
3. study conditions for future research.

4.1.2 Methodology

According to Pelikán (2011), a pilot study is either research designed similarly to the planned feasible research, but on a smaller scale, or it can serve as a testing field for a research tool before the full-blown research. Kalous (1983) sees pilot research also as a tool for planning the future design, and points out its use in gathering the field information about the target phenomenon needed prior to the research. Pilot research, as Kalous describes it, does not explore relationships between variables and its outcome is simply a general description. Its advantage is research of a larger field in search of details or narrower points of view. Among disadvantages Kalous lists its surface value and the inability to generalize its outcomes in any way. The pilot study at hand is in line with his idea of a pilot study leading to the creation of the future experiment design.

Since the planned experiment is rather complicated and stretched in time, it was decided to do a pilot research to ensure that the researcher is familiar with all aspects of the problem. Apart from that, the pilot study is carried out to help to choose the type of SBI to design the experiment around. The type of SBI that the

experimental part will be testing will also indicate the primary school grade the sample will be chosen from.

The pilot research is carried out in order to estimate the probable frequency with which the subjects performed in a particular way, and to show graphic representation of the performances to indicate the dispersion of the measured scores. The character of the observed classes and the sample size do not allow for generalization of the significance of errors caused by confusion based on similarity based interference. The goal of the pilot study is merely to establish the most probable type of SBI as a plausible independent variable in the design of the experiment.

To establish the type of SBI most significant in an English lesson in a primary school, the pilot study's design will be an observation. The researcher will take notes of the frequency with which each type of SBI occurs. The researcher will also register all the other errors the pupils make to be able to establish the percentage of SBI occurrence.

The shortcoming of this design lies in relying on the ability of the researcher to correctly register and label all the errors. The strategy chosen to avoid this matter is to prepare an observational sheet, note down about all the teacher's questions and tasks and all the answers given by the students.

4.1.3 Sample

To be able to potentially register all types of SBI, it was chosen to carry out the observations in a 4th grade. The observations took place with the same class and the same teacher once a week over the course of 4 weeks as Figure 4 shows. The observer was not involved in the specifics of the lesson planning or in the teaching process in any way other than arranging for the observed classes to be vocabulary oriented.

Week	Date	Number of pupils present
1	5 th January (2016)	24
2	12 th January	21
3	19 th January	23
4	26 th January	24

Figure 4. Dates of observations for the pilot study.

The school chosen for the pilot study is a typical small town primary school in Semily, with about 460 pupils in total. The pupils observed have all been studying English since their first grade. There are 26 pupils in that particular class. In total, the observation covered 180 minutes of English lessons.

4.1.4 The study

One of the goals was to identify confusion of vocabulary within a given set in pupils' responses in order to estimate the possible significance of similarity in the particular setting. This was meant to decide which of the SBI types ascribed in the theoretical part are actually present and observable, and how often they appear. The level of significance was set at 5% for the amount of SBI occurrences in all the responses.

While the idea of interference based on similarity in any feature of the vocabulary is a theoretical construct and cannot be directly observed, there are also errors which directly suggest confusion based on a common or similar feature, which are observable and most teachers are familiar with these confusions (such as *Saturday* and *Sunday*). While the hindrance suggested by Tinkham (1997), Waring (1997) and Nation (2000) is only measured in testing scores being compared among controlled and experimental groups, and might or might not manifest itself in the errors stemming from similarity, all errors linked to the confusion among similar items

necessarily contribute to the hindrance. It is therefore considered a joint issue, and the practical part of this paper will explore both. While the phenomenon of SBI as observed by past research will continue to be called SBI in the practical part, the errors mentioned in this paragraph will be referred to as errors linked to SBI. Noticing these errors linked to SBI is also an important sign for a teacher, who might want to reconsider the organization of the content at hand, especially if such errors appear frequently with certain specific vocabulary.

Before the actual observation took place, it was necessary to consider the chances that the study can be affected by the act of observation. After some consideration, it was decided that the character of the observed phenomena was not going to be revealed to the pupils not to cause any nervousness.

The following table shows the pre-designed observation sheet.

DATE and TIME	QUESTION / INSTRUCTION	EXPECTED ANSWER	GIVEN ANSWER	SBI Y/N	TYPE of SBI mistake

Figure 5. Observational form used in the pilot study.

4.1.5 Results

Over the 4 lesson, 112 errors were registered in the observation sheet (see the filled-in observation sheets in Appendix 1. Out of these 112 incorrect responses, 36 were labeled as errors linked to SBI as Figure 6 shows.

Errors linked to SBI

Type of SBI	occurrences
Similarity in meaning	34
Similarity in collocation	2
Phonological similarity	0
Similarity in form	0
Subjective similarity	0
Similarity in activities	0

Figure 6. Errors linked to SBI as observed in the pilot study.

Note: Similarity in register is not accounted for, since it was concluded, that it does not create any interference in the vocabulary retrieval. Similarity in activities and subjective similarity were not observable.

As shown in the table above, the range of errors linked to SBI is not large. 34 of all of the errors linked to SBI were semantically related interferences, only 2 were labeled as based on collocation similarity.

Graph of errors linked to SBI

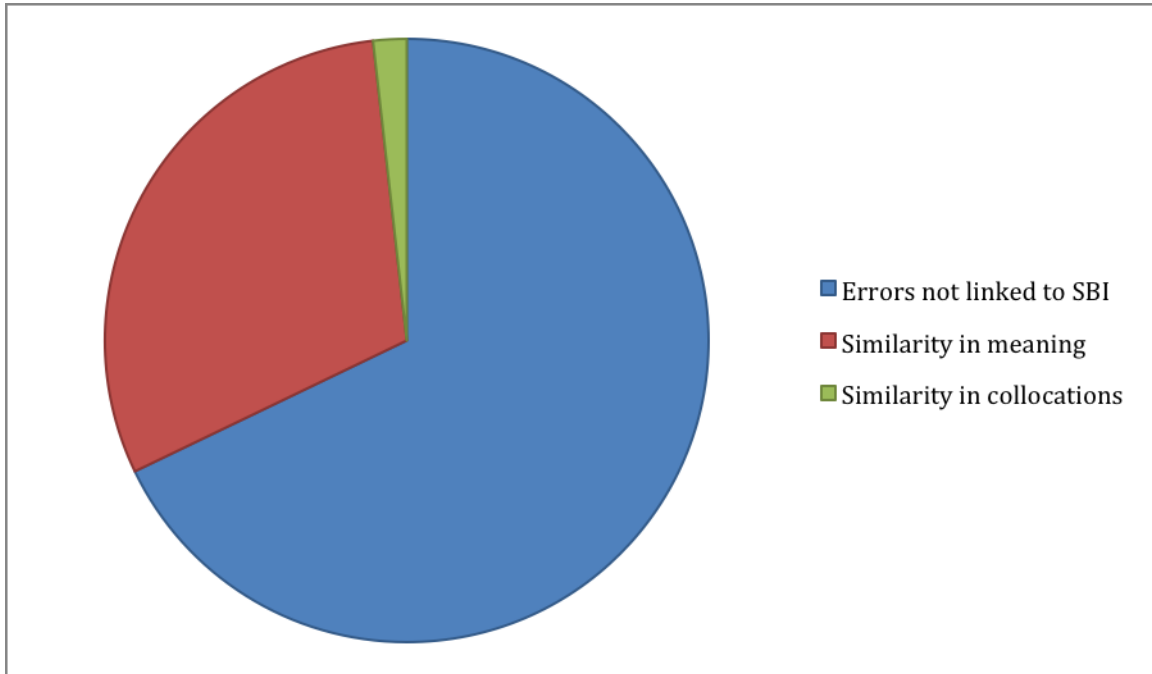


Figure 7. Errors linked to SBI

4.1.6 Findings

1. As foreseen in the hypothesis number 1, SBI within the semantic clusters was the one most commonly directly observed source of confusion during the observation.

Discussion: The findings cannot be generalized to the whole population, its significance is within the setting.

2. In this particular setting, errors linked to SBI were observed in 30.36 % of all wrong answers.

Discussion: The findings cannot be generalized to the whole population, its significance is within the setting. The percentage of errors linked to SBI seems very high, therefore further research is suggested.

3. Notes for the experiment:

a. The observation form data do not show pupils' responses individually. It is anonymous. There has been an interesting finding, one that did not show in the observation form. It was noticed that errors linked to SBI occurred in certain individual pupils significantly more often than in other individual pupils. That implies that in the experiment, each student should also be assigned a number of errors directly linked to SBI and these numbers should be compared within the sample.

b. Due to the errors linked to SBI coming primarily from semantic clustering, the target group should have little or no experience with English to avoid previous knowledge of the target vocabulary.

Shortcomings of the process noticed during the observation:

Similarity introduced to the process by the teacher's actions (such as repeated activities or similar material as shown in the second chapter) is hard to measure. It requires a controlled environment. Therefore, similarity in activities only appears in the experiment, not in the pilot study.

4.1.7 Summary

The purpose of the pilot study was to establish the context for the experiment and to establish an approximate significance of SBI in a common primary class. The pilot study was supposed to test two hypotheses.

Hypothesis 1 says that SBI is mostly observed as the confusion of words belonging to the same semantic cluster. The data gathered from the observation sheet support this hypothesis with SBI stemming from semantic clustering being responsible for 34 out of 36 errors linked to SBI.

Hypothesis 2 says that SBI is a significant contributor to error making in vocabulary retrieval in young learners' EFL class. The observation sheet data support this hypothesis with 36 errors out of the total 112 being linked to SBI.

The important notes for the experiment include:

- a. ascribing each individual pupil a number of errors linked to SBI so that the data show any possible individual propensity to error making based on similarity
- b. choosing the sample from a first grade where no previous knowledge of the target vocabulary is expected.

4.2 Experiment

This chapter of the practical part of the paper attempts to confirm the hypotheses numbers 3A (a) and 3B (b) and to answer one more question stemming from the pilot study (c).

(a) Clustering as a vocabulary presentation method contributes to SBI.

(b) Limited repertoire of activities on the teacher's part contributes to SBI.

(c) Some young learners are more prone to err due to SBI than others.

4.2.1 Sample

The experiment was carried out in Liberec, with 67 school children, randomly divided into 4 groups of approximately the same size, specifically 17,17,17 and 16 pupils per group. The participants were asked to be present for a 45 minute lesson once a week over the course of 6 weeks. The scores of the participants who were not present throughout the whole process were not accounted for. The final number of participants was 53 (see Figure 8).

Group 1	Group 2	Group 3	Group 4
11	14	16	12

Figure 8. The number of participants in each group.

The participants were drafted from 3 different schools (ZŠ 5.května, ZŠ Barvířská, ZŠ Doctrina). They were all first graders studying English at school for under a year. Their ages ranged from 6 to 8 at the time of the experiment.

Previous knowledge of English language was not desirable except for the very basics, typical for the first few months of having taken English in their primary schools. All participants were tested for the pre-existing knowledge of the target vocabulary with the help of pictures. No pre-existing knowledge of the target words was determined.

4.2.2 Methodology

The method used in the actual research of the present study is an experiment. It is an empirical procedure that arbitrates between competing hypotheses.

Experiments in different fields vary depending on the field's professional norms. In pedagogy a true experiment is a method of social research with two variables. The independent variable is manipulated and the dependent variable is measured. A doubled experiment operates with 4 groups and 2 independent variables and offers two sets of data for each of these variables.

The present experiment was carried out in an artificial setting in a controlled manner, trying to simulate primary school conditions to reach plausible reliability of its findings.

4.2.3 Procedure

The design of the present experiment is a doubled two-tailed classical experiment with 4 groups and 2 independent variables. These two controlled variables are semantic clustering and similarity of activities. The theory explaining the probability of both of these aspects hindering the learning process is explained in the chapter 2.1 of this paper.

The design of the experiment

Testing the hypothesis 3A: Clustering as a vocabulary presentation method contributes to SBI.

Group 1 serves as the experimental group, group 3 serves as the control group, while both groups' lesson plans consist of non-similar activities. Group 2 serves as the experimental group, group 4 serves as the control group, while both groups' lesson plans consist of similar activities every lesson.

Testing the hypothesis 3B: A limited repertoire of activities on the teacher's part contributes to SBI.

Group 1 serves as the experimental group, group 2 serves as the control group, while both groups' vocabulary is not organized in semantic sets. Group 3 serves as the experimental group, group 4 serves as the control group, while both groups' vocabulary is organized in semantic sets. The independent variables were manipulated by way of lesson planning as figure 9 shows.

Group 1	Group 2	Group 3	Group 4
no semantic clusters	no semantic clusters	semantic clusters	semantic clusters
no similar activities	similar activities	no similar activities	similar activities

Figure 9. Independent variables ascribed to each group.

The time line of the experiment

<u>lesson 1</u>	<u>lesson 2</u>	<u>lesson 3</u>	<u>lesson 4</u>	<u>voc. review</u>	<u>long t.testing</u>
week 1	week 2	week 3	week 4	week 5	week 6
sh. t. test	sh. t. test	sh. t. test	sh. t. test		

At the end of every lesson, each group's participants were individually tested for the knowledge of the vocabulary just presented. This short-term testing was carried out with the help of pictures.

Bellow is the total list of vocabulary presented to all groups:

a knife a fork a spoon

a circle a triangle a square a rectangle

cloudy sunny windy

breakfast snack lunch dinner

In groups 3 and 4, which were assigned vocabulary grouped in semantic clusters, the vocabulary was presented, practiced and produced in the following clusters:

1. *a knife a fork a spoon*

2. *a circle a triangle a square a rectangle*

3. *cloudy sunny windy*

4. *breakfast snack lunch dinner*

In groups 1 and 2, which were assigned no semantic clusters, the vocabulary was presented, practiced and produced in the following groups:

1. *breakfast* *a triangle* *windy*
2. *a fork* *snack* *a square* *cloudy*
3. *a knife* *lunch* *a rectangle* *sunny*
4. *a spoon* *dinner* *a circle*

In groups 2 and 4, which were assigned similar activities, all four lessons were planned to consist of similar activities:

1. the beginning: homework (HW) checking with author's comments as a way of recycling last week's vocabulary

2. introducing new vocabulary using:

real objects

a story

real objects missing game

3. practice:

a game: slapping the called flashcard with a flyswatter – in groups

asking a classmate for the thing in the picture

song / chant

making a sculpture from play dough of the pupil's own choice (given the vocabulary of the day)

a display with commentary

4. listening: matching the sentence that the pupils hear with a picture

5. homework: drawing a picture – theme: today's new vocabulary

In groups 1 and 3, which were assigned non-similar activities, each of four lessons consisted of different activities.

Examples of lesson plans are included in Appendix 2.

4.2.4 Testing

Productive skills are not easy to assess, especially at early stages of language learning. The type of testing used to estimate vocabulary retrieval in first graders is crucial for the validity of the experiment. Much thought was given to the best possible testing strategy. Both active and passive knowledge needed to be assessed. The subjects are not expected to be familiar with reading or writing. It was not considered desirable to test the connection between the mother tongue term and its L2 equivalent, mostly because the translation method is not part of the school curriculum but rather a communicative approach is preferred. The lesson plans used during the teaching / learning stage of the experiment were all designed around activities focused on using L2 only. The passive knowledge (second chance) testing uses the "Responding by doing" method, since in the early stages of learning articulation comes after the ability to understand. It was therefore decided to assess the ability to

understand by ascribing 1 point to those who can point at the right picture as a second chance, while the first round of questions was pure active knowledge testing with correct answers being worth 2 points.

Scoring does not directly show any interference, therefore actual answers were registered as well and are also presented in Appendix 3.

Examples of forms used by the researcher to record scores:

a. The first short-term test for groups 1 and 2

vocabulary	answer	passive knowledge	score
breakfast			
triangle			
windy			

Figure 10. The first short-term test for groups 1 and 2

b. the first short-term test for groups 3 and 4

vocabulary	answer	passive knowledge	score
fork			
knife			
spoon			

Figure 11. The first short-term test for groups 3 and 4

c. The long-term test register form shared the same design of the table as the ones for short-term testing, but included all 14 words.

Finally, it was decided that the researcher would use the same simple script every time, to ensure the same conditions for each participant and to rule out the chance that the researcher would somehow effect the results in favor of the hypotheses. Each participant was first asked to name the pictures in L1 to make sure the potential

incorrect answers were not due to incorrect recognition of the objects in the pictures. Then the researcher asked the same question every time: “What is this?” and pointed at one picture. The answer was registered in a form. After asking about all the pictures, the researcher then tested the passive knowledge of vocabulary that was not correctly recognized in the first round asking “Where is XX?”. Correct answers during the first, productive round scored 2 points, correct answers during the second, passive round scored 1 point.

4.2.5 Results

1. Group 1:

Group 1							
Short term test 1	Short term test 2	Short term test 3	Short term test 4	Long term test	Long term test SBI*	participant	
6	7	7	6	28	0		1
2	6	5	4	16	4		2
6	6	7	6	28	0		3
4	7	8	5	21	2		4
6	7	6	5	27	0		5
6	6	7	6	26	1		6
5	7	6	4	25	1		7
4	8	7	2	22	2		8
3	6	6	2	19	1		9
5	7	5	3	25	1		10
6	7	4	3	26	0		11
average							
4.8181818182	6.7272727273	6.1818181818	4.1818181818	23.909090909	1.0909090909		

Figure 12. Short-term and long-term test results of Group 1.

*Long term test SBI = number of occurrences of errors linked to SBI in long-term testing

The maximum scores for short-term testing are either 6 (for weeks 1 and 4) or 8 (for weeks 2 and 3). The maximum score for long-term testing is 28.

The scores of the “Short-term test 1” of Group 1, administered after the first lesson, range from 2 to 6 points with the average of 4.818. The scores of the “Short-term test 2” of Group 1, administered after the second lesson, range from 6 to 8 points with the average of 6.727. The scores of the “Short-term test 3” of Group 1, administered after the third lesson, range from 4 to 7 points with the average of 6.182. The scores of the “Short-term test 4” of Group 1, administered after the fourth lesson, range from 2 to 6 points with the average of 4.182. The scores of the “Long-term test” of Group 1, administered one week after the fourth lesson, range from 16 to 28 points with the average of 23.909. The amount of errors linked to SBI in long-term testing of Group 1 ranges from 0 to 4 errors with the average of 1.091. Group 1 consisted of 11 participants.

2. Group 2:

Group 2							
Short term test 1	Short term test 2	Short term test 3	Short term test 4	Long term test	Long term test	SBI*	participant
4	6	4	3	24	2	1	
5	8	8	5	26	1	2	
6	4	6	4	25	1	3	
4	4	5	3	21	2	4	
3	5	4	3	16	1	5	
4	6	5	4	23	0	6	
6	8	8	5	24	2	7	
6	7	7	6	28	0	8	
5	4	5	4	24	0	9	
4	6	7	3	24	1	10	
5	6	6	6	25	1	11	
2	4	5	5	21	0	12	
5	6	8	5	24	0	13	
6	7	6	4	26	0	14	
average							
4.6428571429	5.7857142857	6	4.2857142857	23.642857143	0.7857142857		

Figure 13. Short-term and long-term test results of Group 2.

The scores of the “Short-term test 1” of Group 2 range from 2 to 6 points with the average of 4.643.

The scores of the “Short-term test 2” of Group 2 range from 4 to 8 points with the average of 5.786.

The scores of the “Short-term test 3” of Group 2 range from 4 to 8 points with the average of 6 points.

The scores of the “Short-term test 4” of Group 2 range from 3 to 6 points with the average of 4.286.

The scores of the “Long-term test” of Group 2 range from 16 to 28 points with the average of 23.643.

The amount of errors linked to SBI in long-term testing of Group 2 ranges from 0 to 2 errors with the average of 0.786. Group 2 consisted of 14 participants.

3. Group 3

Group 3							
Short term test 1	Short term test 2	Short term test 3	Short term test 4	Long term test	Long term test	SBI*	participant
5	7	6	4	24	0	1	
4	5	7	4	24	2	2	
3	5	6	2	18	4	3	
6	7	6	5	16	2	4	
5	4	2	2	14	6	5	
3	5	4	3	10	2	6	
5	4	4	3	10	4	7	
4	5	4	2	11	2	8	
3	4	5	3	9	8	9	
4	6	6	5	23	0	10	
3	5	7	4	20	1	11	
4	5	6	2	16	3	12	
3	5	4	4	22	1	13	
4	6	6	3	24	0	14	
4	6	2	2	17	5	15	
4	7	5	3	15	4	16	
average	4	5.375	5	3.1875	17.0625	2.75	

Figure 14. Short-term and long-term test results of Group 3.

The scores of the “Short-term test 1” of Group 3 range from 3 to 6 points with the average of 4 points.

The scores of the “Short-term test 2” of Group 3 range from 4 to 7 points with the average of 5.375.

The scores of the “Short-term test 3” of Group 3 range from 2 to 7 points with the average of 5 points.

The scores of the “Short-term test 4” of Group 3 range from 2 to 5 points with the average of 3.188.

The scores of the “Long-term test” of Group 3 range from 9 to 24 points with the average of 17.063.

The amount of errors linked to SBI in long-term testing of Group 3 ranges from 0 to 6 errors with the average of 2.75. Group 3 consisted of 16 participants.

4. Group 4

Group 4							
Short term test 1	Short term test 2	Short term test 3	Short term test 4	Long term test	Long term test SBI*	participant	
4	6	7	5	21	0	1	
4	7	5	2	16	0	2	
1	4	5	1	9	6	3	
5	8	7	3	25	0	4	
3	4	4	3	15	6	5	
5	4	5	5	21	2	6	
4	5	7	4	24	1	7	
1	6	4	2	13	6	8	
3	2	2	1	9	6	9	
3	7	6	5	24	2	10	
2	4	3	2	19	4	11	
4	6	4	2	22	3	12	
average	3.25	5.25	4.916666667	2.916666667	18.16666667	3	

Figure 15. Short-term and long-term test results of Group 4.

The scores of the “Short-term test 1” of Group 4 range from 1 to 5 points with the average of 3.25.

The scores of the “Short-term test 2” of Group 4 range from 2 to 8 points with the average of 5.25.

The scores of the “Short-term test 3” of Group 4 range from 2 to 7 points with the average of 4.917.

The scores of the “Short-term test 4” of Group 4 range from 1 to 5 points with the average of 2.917.

The scores of the “Long-term test” of Group 4 range from 9 to 25 points with the average of 18.167.

The amount of errors linked to SBI in long-term testing of Group 4 ranges from 0 to 6 errors with the average of 3 errors. Group 4 consisted of 12 participants.

4.2.6 Analysis.

Comparison of average scores

Comparing the average scores in long-term tests of groups 1 and 3:

Group 1 no semantic clusters	Group 3 semantic clusters
23.909	17.063

Figure 16. Comparing the average scores in long-term tests of groups 1 and 3.

The group with no semantic clustering scored higher on the average in the long-term test. That suggests that clustering contributes to SBI.

Comparing the average scores in long term tests of groups 2 and 4:

Group 2 no semantic clusters	Group 4 semantic clusters
23.643	18.167

Figure 17. Comparing the average scores in long term tests of groups 2 and 4.

The group with no semantic clustering scored higher on the average in the long-term test. That suggests that clustering contributes to SBI.

Comparing the average scores in long term tests of groups 1 and 2:

Group 1 non-similar activities	Group 2 similar activities
23.909	23.643

Figure 18. Comparing the average scores in long term tests of groups 1 and 2.

There was little difference between the average scores in the long term test. That does not suggest that similar activities contribute to SBI.

Comparing the average scores in long term tests of groups 3 and 4:

Group 3 non-similar activities	Group 4 similar activities
17.063	18.167

Figure 19. Comparing the average scores in long-term tests of groups 3 and 4.

There was little difference between the average scores in the long-term test. That does not suggest that similar activities contribute to SBI.

In summary, comparing the average scores in long-term tests suggests that semantic clustering contributes to SBI, while similar activities do not contribute to SBI in the given sample.

Comparison of errors linked to SBI

Comparing the average of occurrences of errors linked to SBI in groups 1 and 3:

Group 1 no semantic clusters	Group 3 semantic clusters
1.091	2.75

Figure 20. Comparing the average of occurrences of errors linked to SBI in groups 1 and 3.

Group 3 had a higher amount of occurrences of errors linked to SBI. That suggests that clustering contributes to SBI.

Comparing the average of occurrences of errors linked to SBI in groups 2 and 4:

Group 2 no semantic clusters	Group 4 semantic clusters
0.786	3

Figure 21. Comparing the average of occurrences of errors linked to SBI in groups 2 and 4.

Group 4 had a higher amount of occurrences of errors linked to SBI. That suggests that clustering contributes to SBI.

Comparing the average of occurrences of errors linked to SBI in groups 1 and 2:

Group 1 non-similar activities	Group 2 similar activities
1.091	0.786

Figure 22. Comparing the average of occurrences of errors linked to SBI in groups 1 and 2.

There was little difference in the amounts of occurrences of errors linked to SBI. That does not suggest that similar activities contribute to SBI.

Comparing the average of occurrences of errors linked to SBI in groups 3 and 4:

Group 3 non-similar activities	Group 4 similar activities
2.75	3

Figure 23. Comparing the average of occurrences of errors linked to SBI in groups 3 and 4.

There was little difference in the amounts of occurrences of errors linked to SBI. That does not suggest that similar activities contribute to SBI.

In summary, comparing the amount of errors linked to SBI in long term tests suggests that semantic clustering contributes to SBI, while similar activities do not contribute to SBI in the given sample.

The errors linked to SBI individual participants made

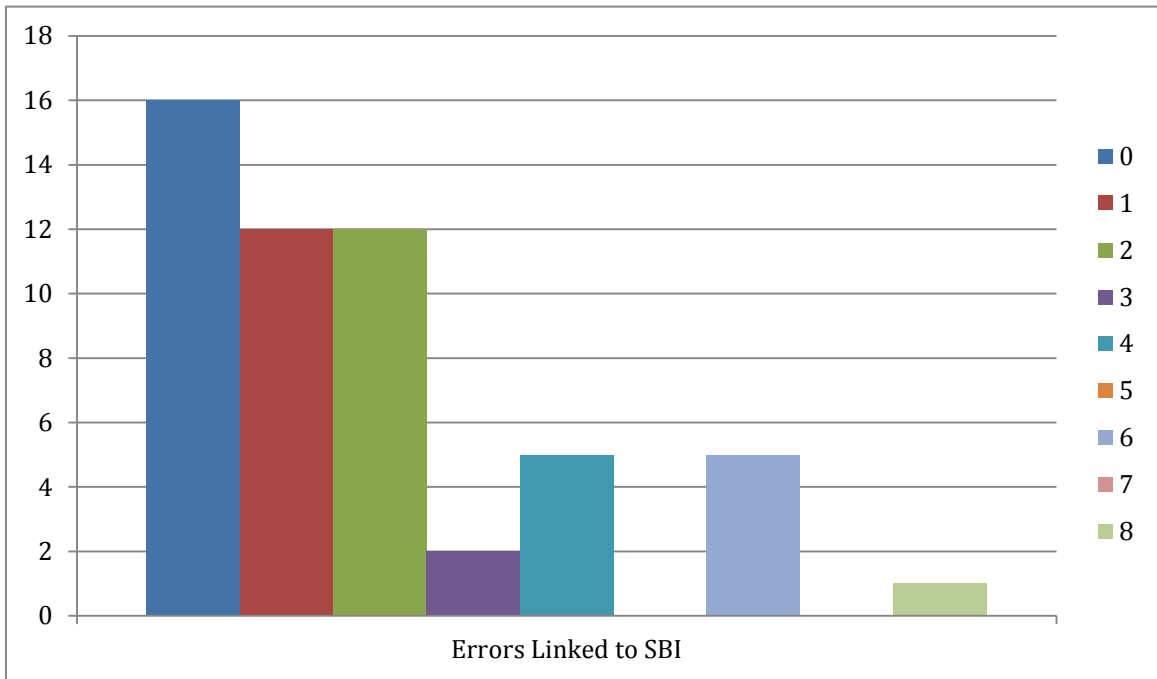


Figure 24. The graph of errors linked to SBI (on the horizontal line) made by individual participants (on the vertical line).

The amount of errors linked to SBI	The amount of participants
0	16
1	12
2	12
3	2
4	5
5	0
6	5
7	0
8	1

Figure 25. The table of errors linked to SBI made by individual participants.

The average amount of errors linked to SBI in the long-term test is 1.981. Participants who made 6 or 8 errors (3 times and 4 times more than the average) linked to SBI (their incorrect answer was from the same semantic set as the expected answer), seem to be particularly prone to confusion caused by interference based on similarity in meaning. These 6 participants represent 11.32 % of the sample.

T-test of short-term test score results:

(for any statistical data in this paper, the level of significance was set at $\alpha = 0.05$)

Short-term TESTS	
clustering	T test unequal variances two-tailed
Gr 1 – Gr 3	0.209206388
Gr 2 – Gr 4	0.1844756649
activities	
Gr 1 – Gr 2	0.6959162332
Gr 3 – Gr 4	0.7027740717

Null hypothesis: Group 1 = Group 3

The value of t-test (0.209) shows that the null hypothesis was accepted and the alternative hypothesis rejected. The results of short-term testing of groups 1 and 3 do not support the hypothesis that semantic clustering hinders the performance.

Null hypothesis: Group 2 = Group 4

The value of t-test (0.209) shows that the null hypothesis was accepted and the alternative hypothesis rejected. The results of short-term testing of groups 2 and 4 do not support the hypothesis that semantic clustering hinders the performance.

Null hypothesis: Group 1 = Group 2

The value of t-test (0.696) shows that the null hypothesis was accepted and the alternative hypothesis rejected. The results of short-term testing of groups 1 and 2 do not support the hypothesis that similarity in activities hinders the performance.

Null hypothesis: Group 3 = Group 4

The value of t-test (0.703) shows that the null hypothesis was accepted and the alternative hypothesis rejected. The results of short-term testing of groups 3 and 4 do not support the hypothesis that similarity in activities hinders the performance.

T-test of long-term test score results:

long-term TESTS	
clustering	T test unequal variances two-tailed
Gr 1 – Gr 3	0.0007596463
Gr 2 – Gr 4	0.0082335326
activities	
Gr 1 – Gr 2	0.8520416519
Gr 3 – Gr 4	0.6072781162

Null hypothesis: Group 1 = Group 3

The value of t-test (0.001) shows that the null hypothesis was rejected and the alternative hypotheses accepted. That means the results are said to be significant. The

results of long-term testing of groups 1 and 3 support the hypothesis that semantic clustering hinders the performance.

Null hypothesis: Group 2 = Group 4

The value of t-test (0.008) shows that the null hypothesis was rejected and the alternative hypotheses accepted. That means the results are said to be significant. The results of long-term testing of groups 2 and 4 support the hypothesis that semantic clustering hinders the performance.

Null hypothesis: Group 1 = Group 2

The value of t-test (0.852) shows that the null hypothesis was rejected and the alternative hypotheses accepted. That means the results are said to be significant. The results of long-term testing of groups 1 and 2 do not support the hypothesis that similarity in activities hinders the performance.

Null hypothesis: Group 3 = Group 4

The value of t-test (0.607) shows that the null hypothesis was rejected and the alternative hypotheses accepted. That means the results are said to be significant. The results of long-term testing of groups 3 and 4 do not support the hypothesis that similarity in activities hinders the performance.

T-test of long-term test errors linked to SBI

SBI in long-term tests		
clustering	T test unequal variances two-tailed	
Gr 1 – Gr 3		0.0228154973
Gr 2 – Gr 4		0.0120872889
activities	T test unequal variances two-tailed	
Gr 1 – Gr 2		0.4837440238
Gr 3 – Gr 4		0.7898725657

Null hypothesis: Group 1 = Group 3

The value of t-test (0.023) shows that the null hypothesis was rejected and the alternative hypotheses accepted. The amount of errors linked to SBI in the long-term testing of groups 1 and 3 is significantly higher for the group with vocabulary organized in semantic clusters as opposed to the group with unrelated vocabulary.

Null hypothesis: Group 2 = Group 4

The value of t-test (0.012) shows that the null hypothesis was rejected and the alternative hypotheses accepted. The amount of errors linked to SBI in the long-term testing of groups 2 and 4 is significantly higher for the group with vocabulary organized in semantic clusters as opposed to the group with unrelated vocabulary.

Null hypothesis: Group 1 = Group 2

The value of t-test (0.484) shows that the null hypothesis was accepted and the alternative hypothesis rejected. The amount of errors linked to SBI in the long-term testing of groups 2 and 4 is not significantly different.

Null hypothesis: Group 3 = Group 4

The value of t-test (0.79) shows that the null hypothesis was accepted and the alternative hypothesis rejected. The amount of errors linked to SBI in the long-term testing of groups 2 and 4 is not significantly different.

4.2.7 Interpretation

A. The results of the short-term testing do not support the hypothesis that vocabulary clustering hinders the performance nor the hypothesis that similarity of activities hinders the vocabulary retrieval.

B. The results of the long-term testing support the hypothesis that semantic clustering hinders the vocabulary retrieval and do not support the hypothesis that similarity in activities hinders the vocabulary retrieval.

C. Significantly more errors linked to SBI occurred in the groups with vocabulary organized in semantic sets. There was no significant difference between the groups with similar activities and the groups with different activities in the amount of errors linked to SBI.

D. Six participants (11.32 %) displayed a particularly high amount of errors linked to SBI.

4.2.8 Characteristics of the testing tools

Internal validity

Validity of the testing part of the study was threatened by a rather unfortunate choice of vocabulary versus test design. When testing first graders and their ability to retrieve vocabulary, it was assumed important not to test the pupils' ability to read or write, but rather their active and passive knowledge of the vocabulary regardless of the written form of the vocabulary. Therefore, pictures were used as cues to elicit responses. In the particular case of "breakfast" versus "snack" and "lunch" versus "dinner", this proved to be a rather bad choice, since a photograph of lunch can easily be confused for a photograph of dinner etc. Similarly, a picture of a windy day

usually also involves a sunny or a cloudy sky, which provides a considerable risk to the validity of the test question. This problem was discovered during the teaching stage of the study and addressed prior to each examination. As soon as being seated at the desk, each student was given 10 seconds to study the testing sheet (included in the appendix), then asked about the location of the pictures of breakfast, lunch, cloudy, and windy in their mother tongue to rule out the chance of confusing these visual cues during the test. This interchange also served as a reassuring moment after which many pupils appeared calmer.

Reliability

Reliability of the testing tool was not estimated statistically. Nevertheless, the testing was designed according to the desired criteria stated in common methodology literature (Brown, 1988; Creswell, 2003): instruction was clear and simple, the system of testing was prepared with special regards to the age and skills of participants, the participants were given enough time to respond, the same procedure was kept for all participants.

Practicality

The testing phase was designed to fit the conditions of the research, mostly the age and abilities of the subjects.

External validity

The size of the sample is too small to provide results generalizable to the whole population.

According to Kalous (1983), the so called Hawthorne effect is a major threat to the reliability of the experiment. The principle of Hawthorne effect lies in the subjects acting differently when aware of being observed. This behavior might have

potentially affected the pilot study rather than the experimental part. Considering the character of responses the observer was interested in, the potential shyness of the observed subjects could have affected the amount of total responses. The amount of errors linked to SBI is not likely to have been affected.

The design of the experiment is based on assumptions on correlation. According to Brown (1988), a correlational study is typically linked to three major problems: restriction of range, skewedness, and causality.

Restriction of range is connected to the range of talent in the sample. A narrow range of talent present in the study disrupts the reliability and validity of the research. In the experiment at hand, the sample consists of regular school pupils. Three different classes of first graders were asked to take part in the study provided the time and place of the experiment were convenient for them and their parents. A total of 67 pupils enrolled out of 97 pupils asked. Out of these 67 pupils, 53 were present throughout the entire study. It is believed that the range of talent in the sample was not manipulated in any way during the process.

Skewedness, according to Brown, refers to a skewed distribution in one or both of the variables. An ideal test is said to have a mean slightly above half of its maximum score (at 55 percent) and a standard deviation of 12 to 15 percent of its maximum score. Mean and median in a normal distribution are similar. In the long-term test in this study, the mean is at 73.7 %, the standard deviation is at 4.486 % and the mean and median are similar (22 and 20.637).

Brown (1988) also warns against viewing a high correlation between a criterion and predictor variable as directly indicating a relationship of causality. Logic and a good consideration of conditions are at place. Therefore special attention was paid to keeping all extraneous variables consistent.

4.2.9 Discussion

A. Discussion on the content

Both the pilot study and the experimental study were designed to test the 4 hypotheses stated in the introduction of this paper:

1. Based on the character of primary classes curriculum, SBI is mostly observed as the confusion of words belonging to the same semantic cluster.
2. SBI is a significant contributor to error making in vocabulary retrieval in young learners' EFL class (significant being 5% or more)
3. A. Clustering as a vocabulary presentation method contributes to SBI.
B. Limited repertoire of activities on the teacher's part contributes to SBI.

Hypothesis 1 was supported by the observation in the pilot research. The reason for the errors linked to similarity in meaning constituting 94.44 % of all errors linked to SBI observed, might be connected to the character of the lesson, as most of the teaching/ learning time was dedicated to vocabulary acquisition.

Hypothesis 2 was supported by the pilot research, the errors linked to SBI constituted 30.36 % of all errors.

Both the hypothesis 1 and the hypothesis 2 were original and the findings stemming from the paper at hand cannot be compared to any similar research results.

Hypothesis 3A was supported by the results of the long-term testing, but it was not supported by the results of the short-term testing. These results are in line with Wang's research (2015) and Ramezani and Behrouzi's research (2013), who both report the results of short-term testing and long-term testing. The study at hand did not confirm Tinkham's and Waring's research (1997), who reported SBI in

immediate recall. The research at hand contradicts the research of Hashemi and Gowdasiaei (2005), which reports long-term significant vocabulary gains for groups with vocabulary organized in semantic clusters. In conclusion, the matter of whether or not clustering in fact hinders the performance in short and in long term is still an open issue and there is a strong need for further and prolonged research.

Hypothesis 3B was not supported by neither the results of the long-term testing nor the results of the short-term testing. This hypothesis was original to this paper and there is no related body of research supporting or disproving this theory. It is an area worthy of further research.

Limitation

The reliability and validity of the testing were discussed in the previous chapter. The testing instrument was not standardized. The size of the sample does not allow for the findings to be considered representative for the whole population. The recommendations for potential replication of the research are to:

1. test the testing instrument (both the procedure and the picture sheet) in a pilot study
2. enlarge the sample
3. carry out a longitudinal study

Significance

The results of the study are in line with the theory challenging vocabulary clustering in foreign language teaching. While it did not prove any interference in a short-term memory, the results of the long-term testing certainly supported the opinion that words coming from the same semantic field can cause interference in retrieval when presented and practiced together. The results implicate a new approach to vocabulary organization in young learner 's EFL studies.

The research also suggests there might be a certain individual propensity to term confusion based on similarity in meaning. Further investigation of its existence and its potential ties to other individual characteristics is necessary.

The research at hand differs from other research on the same topic in these aspects:

1. The participants are young learners. With the ages of the subjects ranging from 6 to 8 years, this is research carried out on the youngest sample of population in this area of research. Most other research was carried out with adult participants (Nation, 2000; Waring, 1997; Tinkham, 1993, 1997 and others). Only Ramezani and Behrouzi's (2013) research participants are younger (12-15 years of age), but a similarity interference research has not been carried out with primary school learners before.

2. The same ultimate vocabulary list was used for all groups, to ensure that differences do not stem from the target vocabulary assigned to each group. A similar strategy was adopted by Wang (2015), Papathanasiou (2009) or Marashi and Azarmi (2012), while Tinkham (1993, 1997), Waring (1997) or Higa (1963) used different vocabulary lists for related and unrelated vocabulary and therefore they used different target vocabulary for different groups of participants.

3. This research did not use two languages (English and Czech) during the presentation, practice, production or testing phase, in other words, no L1 was used. Ramezani and Behrouzi (2013) used Farsi as L1, Papathanasiou (2009) used Greek, Wang (2015) used Chinese. The research carried out by Tinkham (1993, 1997) and replicated by Waring (1997) used English as the L1 and an artificial language as the target language. Instead of translation as a typical aspect of other research designs, the present study used objects and pictures representing the target vocabulary. The intentions were to create conditions similar to a regular language lesson and to

prevent the objects from attaching their concepts of the acquired vocabulary tightly to its equivalents in their mother tongue.

4. The experiment also dealt with similarity in activities (similarity interference has so far been considered only as an aspect of meaning-related groups). The hypothesis that similar activities cause SBI in vocabulary retrieval, which is in line with the Ranschbourg effect, is a possible area of future research.

B. Discussion on methodology

Using 4 groups doubled the experiment and as a consequence, each hypothesis was tested twice, for example hypothesis 3A (semantic clustering hinders the retrieval) was tested by stating the null hypothesis as Group 1 results = Group 3 results and also stating the null hypothesis as Group 2 results = Group 4 results. Short-term testing provided even more data in the same manner. While in the short-term testing the hypothesis that semantic clustering hinders the performance was not supported by the research twice (the same result for both the Group 1 vs. Group 3 t-test and group 2 vs. Group 4 t-test), in long-term testing the hypothesis was supported twice. Similarly, the 3B hypothesis was tested 4 times. The experimental design was therefore found productive.

C. Application

The findings show there is a good reason to reconsider the way vocabulary is presented and practiced in the teaching / learning process in primary schools. The goal of the EFL classes is for the learners to learn and retain the vocabulary in the long-term and the long-term vocabulary retention seems particularly prone to SBI. While semantic clustering is popular for the ease of the vocabulary organization, pupils might benefit from mixed vocabulary lists containing words not coming from the same semantic fields.

Teachers are recommended to pay attention to particular differences in young learners' vocabulary retrieval in order to spot any significantly frequent individual confusions based on interference of words belonging to the same semantic field and help these learners acquire new vocabulary by pre-organizing and practicing it separately.

The hypothesis that similar activities cause interference was not supported, therefore, even though a large repertoire of activities brings variety to the lessons and helps keeping the learning process exciting, there is no suggestion stemming from the research at hand that it might also help prevent the vocabulary retrieval from interference.

5. Conclusion

5.1 Summary

This thesis described the role of similarity in young learners' vocabulary retrieval. Vocabulary acquisition can be affected by similarity-based interference in a number of ways based on the features of the target words. Several types of similarity-based interference (SBI) were therefore introduced and explained, including the history of the development of the theories on interference. These types of interference were then ascribed specific guidelines. The management of similarity-based interference in a primary class is partly contradicted by the popular strategy of organizing the vocabulary in semantic clusters. This strategy for the presentation, practice, production and even the testing phase is accepted by the general public. This paper challenges the concept of semantic clustering as well as the tendency to create lessons consisting of similar activities based on the broad concept of similarity-based interference in its practical part.

5.2 Restating the aims

The goals set for this paper were:

1. to describe the circumstances contributing to SBI
2. to describe in what ways SBI affects vocabulary retrieval
3. to establish the significance of SBI in a primary class vocabulary lesson
4. to suggest guidelines for SBI management
5. to test the effectiveness of these guidelines

Circumstances contributing to SBI were found both as an aspect of the vocabulary (similarity in form, similarity in meaning etc.) and in the conditions (similarity in activities, similarity in material etc.). It was established that SBI affects the vocabulary retrieval in two ways: directly in the form of errors linked to SBI, and indirectly in the form of a hindered performance. The presence of errors linked to SBI in a primary class vocabulary lesson was established as significant in the pilot study in the practical part. The guidelines for SBI management were formed and divided into three groups: management of the circumstances on the pupil's side, management of the circumstances connected to lesson planning and management of the circumstances stemming from the syllabus. To test the effectiveness of these guidelines, two management strategies were chosen, which also represented two types of SBI – similarity in activities and similarity in meaning.

The hypotheses set for the practical part :

H1. Based on the character of primary classes curriculum, SBI is mostly observed as the confusion of words belonging to the same semantic cluster.

H2. SBI is a significant contributor to error making in vocabulary retrieval in young learners' EFL class (significant being 5% or more)

H3. A. Clustering as a vocabulary presentation method contributes to SBI.

B. Limited repertoire of activities on the teacher's part contributes to SBI.

H1 and H2 were set to be tested in the pilot study by way of observation.

H3A and H3B were set to be tested in the experimental research by manipulating the independent variables.

5.3 Methods

In the theoretical part, literature review establishes the current state of knowledge in the field.

The term “similarity-based interference” is used as a general term for all interference stemming from similarity (proactive interference, retroactive interference etc.) including the Ranschbourg effect.

In the practical part the methods used to test the hypotheses are an observation and an experiment. The experiment was carried out with 4 groups, manipulating 2 independent variables and measuring short-term and long-term scores in an oral test. The amount of occurrences of errors linked directly to SBI was also registered. Both the H3A and the H3B were tested twice for short-term retrieval and twice for long-term retrieval.

5.4 Results

The results of the short-term testing do not support the hypothesis that vocabulary clustering hinders the performance (twice) nor the hypothesis that similarity of activities hinders the vocabulary retrieval (twice).

The results of the long-term testing support the hypothesis that semantic clustering hinders the vocabulary retrieval (twice) and do not support the hypothesis that similarity in activities hinders the vocabulary retrieval (twice). Six participants (11.32 %) displayed a particularly high amount of errors linked to SBI.

5.5 Limitations

The testing instrument was not standardized. The size of the sample does not allow for the findings to be considered representative for the whole population. Validity of the testing part of the study was threatened by a rather unfortunate choice of vocabulary versus test design. Pictures were used as cues to elicit responses and in the particular case of “*breakfast*” versus “*snack*” and “*lunch*” versus “*dinner*”, the differences were not obvious to the participants. This problem was discovered during the teaching stage of the study and addressed prior to each examination. Each student was asked about the location of the pictures in their L1. For potential replication of the design of the testing, less confusing vocabulary needs to be used for this particular age group.

5.6 Significance

The theoretical part of the paper sums up the relevant interference theories with respect to TEFL in an unparalleled manner. Possible causes of SBI connected to vocabulary retrieval are matched with suggestions for its management not only in connection to semantic similarity interference as is the case with Higa’s (1963), Tinkham’s (1993, 1997), Waring’s (1997), Ramezani and Behrouzi’s (2013) or Wang’s (2015) research, but similarly to Baddeley’s (1966) research or the research of Obata-et-al (2011), the approach is wider and involves phonological, auditory, visual and psychological aspects. The outcome of the theoretical part, the list of management suggestions, is a unique summarization of advice for teachers concerned with SBI affecting their pupils’ performance.

The research in the practical part at hand contradicts the research of Hashemi and Gowdasiaei (2005), who report significant vocabulary gains for groups with vocabulary organized in semantic clusters. At the same time, the results of the paper

at hand are in line with Wang's research (2015) and Ramezani and Behrouzi's research (2013) who both report no significant differences between related and unrelated vocabulary in short-term testing and significant gain of unrelated vocabulary in long-term testing. The present study did not confirm Tinkham's and Waring's research (1997), who reported SBI in immediate recall.

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Appendix:

1. a filled-in observation sheet
2. examples of lesson plans
3. answer sheets for both short-term and long-term testing
4. examples of flashcards
5. plasticine models of breakfast, lunch, and dinner made by participants

Appendix 1

pilot research – observation sheets

DATE and TIME	QUESTION / INSTRUCTION	EXPECTED ANSWER	GIVEN ANSWER	SBI Y/N	TYPE of SBI mistake
8:04 on 5 th Jan	What does she like?	She likes computers.	She like computers.	N	
8:06 on 5 th Jan	What is he doing?	He is running.	He running.	N	
8:07 on 5 th Jan	What do you do?	I play volleyball.	I play basketball.	Y	SBI in meaning
8:08 on 5 th Jan	<i>Instruction to ask the partner.</i>	What is she doing?	What she doing?	N	
8:08 on 5 th Jan	<i>Instruction to ask the partner.</i>	What are they doing?	What are doing?	N	
8:10 on 5 th Jan	What's next to it?	A café.	Cofee.	N	
8:12 on 5 th Jan	Where are you?	At the grocer's.	In the grocer.	N	
8:23 on 5 th Jan	Where are you?	At the baker's.	At the butcher's.	Y	SBI in meaning
8:23 on 5 th Jan	Where are you?	At the butcher's.	mispronunciation	N	
8:24 on 5 th Jan	<i>Instruction to ask the partner.</i>	Where are you?	Where you?	N	
8:25 on 5 th Jan	<i>Instruction to ask the partner.</i>	Where are you?	mispronunciation	N	
8:26 on 5 th Jan	Where are you?	In the hospital.	(no answer)	N	
8:29 on 5 th Jan	Where is she?	In the garden.	On garden.	N	
8:29 on 5 th Jan	Where is she?	At school.	In school.	N	
8:30 on 5 th Jan	Where is he?	At the bus stop.	On bus stop.	N	

8:32 on 5 th Jan	Where is he?	On the bus.	In bus.	N	
8:40 on 5 th Jan	Where is he?	In the supermarket.	(no answer)	N	
8:40 on 5 th Jan	Where are they?	At the train station.	On the train station.	N	
8:41 on 5 th Jan	Where are they?	In the post office.	In the bank.	Y	SBI in meaning
8:43 on 5 th Jan	<i>Ask your partner.</i>	Where are they?	Where they?	N	
8:04 on 12 th Jan	What time is it?	It is 9 o'clock.	It is 8 o'clock.	Y	SBI in meaning
8:05 on 12 th Jan	What time is it?	It is 6 o'clock.	It is 7 o'clock.	Y	SBI in meaning
8:07 on 12 th Jan	<i>Fill out the gaps (days of the week).</i>	Saturday	Sunday	Y..3x	SBI in meaning
8:07 on 12 th Jan	<i>Fill out the gaps (days of the week).</i>	Thursday	Tuesday	Y..2x	SBI in meaning
8:08 on 12 th Jan	What's this?	A square.	School.	Y	SBI in meaning
8:09 on 12 th Jan	What's this?	A bank.	A post office.	Y	SBI in meaning
8:10 on 12 th Jan	What's this?	A train station.	mispronunciation	Y	SBI in meaning
8:10 on 12 th Jan	What's this?	The grocer's.	mispronunciation	Y	SBI in meaning
8:12 on 12 th Jan	Where is the post office?	Next to the butcher's.	Next butcher.	N	
8:14 on 12 th Jan	Where is the hospital?	Next to the supermarket.	Next to supermarket.	N	
8:15 on 12 th Jan	<i>Pick up the card.</i>	bank	post office	Y	SBI in meaning
8:16 on 12 th Jan	<i>Pick up the card.</i>	bus stop	Train station	N	
8:17 on 12 th Jan	<i>Pick up the card.</i>	hospital	school	N	
8:18 on 12 th Jan	<i>Pick up the card.</i>	butcher's	grocer's	Y	SBI in meaning

8:18 on 12 th Jan	<i>Pick up the card.</i>	grocer's	butcher's	Y	SBI in meaning
8:19 on 12 th Jan	Who is at the grocer's?	M. (name)	T. (name)	N	
8:19 on 12 th Jan	Who is at the chemist's?	A. (name)	(no answer)	N	
8:19 on 12 th Jan	Who is at the grocer's?	T. (name)	H. (name)	N	
8:20 on 12 th Jan	Who is at the train station?	L. (name)	(no answer)	N	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	At the post office.	Post.	N	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	At the hospital.	<i>wrong spelling</i>	N	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	At school.	(no answer)	N	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	At the chemist's.	<i>wrong spelling</i>	N	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	In the supermarket.	<i>wrong spelling</i>	N	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	At the butcher's.	<i>wrong spelling</i>	N..6x	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	At the train station.	<i>wrong spelling</i>	N..2x	
8:30 on 12 th Jan	<i>Written instruction:</i> Where is	At the bus stop.	<i>wrong spelling</i>	N	

	Tom?				
8:30 on 12 th Jan	<i>Written instruction:</i> Where is Tom?	At the chemist's.	(no answer)	N	
8:40 on 12 th Jan	<i>Written instruction:</i> <i>fill in the preposition.</i>	At school.	In school.	N	
8:40 on 12 th Jan	<i>Written instruction:</i> <i>fill in the preposition.</i>	At the post office.	On the post.	N..2x	
8:41 on 12 th Jan	<i>Written instruction:</i> <i>fill in the preposition.</i>	At the bus stop.	On the bus stop.	N..5x	
8:42 on 12 th Jan	<i>Written instruction:</i> <i>fill in the preposition.</i>	At the train station.	In the train station.	N..3x	
8:44 on 19 th Jan	<i>Written instruction:</i> <i>fill in the preposition.</i>	In the garden.	On the garden.	N..4x	
8:10 on 26 th Jan	<i>Flashcards recognition</i>	cake	(no answer)	N	
8:10 on 26 th Jan	<i>Flashcards recognition</i>	bread	(no answer)	N	
8:10 on 26 th Jan	<i>Flashcards recognition</i>	cheese	(no answer)	N	
8:10 on 26 th Jan	<i>Flashcards recognition</i>	butter	bread	N	
8:10 on 26 th Jan	<i>Flashcards recognition</i>	cucumber	mispronunciation	N	
8:10 on 26 th Jan	<i>Flashcards recognition</i>	cucumber	(no answer)	N	
8:10 on 26 th Jan	<i>Flashcards recognition</i>	orange	apple	Y	SBI in meaning
8:10 on 26 th Jan	<i>Flashcards recognition</i>	apricot	mispronunciation	N	

8:10 on 26 th Jan	<i>Flashcards recognition</i>	cauliflower	(no answer)	N	
8:15 on 26 th Jan	Bring me a ... <i>(passive knowledge)</i>	cheese	(no answer)	N	
8:16 on 19 th Jan	Bring me a ... <i>(passive knowledge)</i>	bread	butter	Y	SBI in meaning
8:16 on 19 th Jan	Bring me a ... <i>(passive knowledge)</i>	apricot	cheese	N	
8:16 on 19 th Jan	Bring me a ... <i>(passive knowledge)</i>	apple	orange	Y	SBI in meaning
8:17 on 19 th Jan	Bring me a ... <i>(passive knowledge)</i>	tomatoes	potatoes	Y	SBI in meaning
8:17 on 19 th Jan	Bring me a ... <i>(passive knowledge)</i>	candy	cake	Y	SBI in meaning
8:23 on 19 th Jan	Hello, can I have some ...?	potatoes	mispronunciation	N	
8:23 on 19 th Jan	Hello, can I have some ...?	tomatoes	potatoes	Y	SBI in meaning
8:23 on 19 th Jan	Hello, can I have some ...?	candy	cake	Y	SBI in meaning
8:24 on 19 th Jan	Hello, can I have some ...?	pasta	(no answer)	N	
8:24 on 19 th Jan	Hello, can I have some ...?	cucumber	mispronunciation	N	
8:24 on 19 th Jan	Hello, can I have some ...?	juice	(no answer)	N	
8:10 on 26 th Jan	<i>Ask your partner.</i>	How old are you?	How are you?	Y	SBI in collocation
8:10 on 26 th Jan	<i>Ask your partner.</i>	How much is it?	How much are you?	Y	SBI in collocation
8:10 on 26 th Jan	<i>Ask your partner.</i>	Where do you live?	(no answer)	N	
8:10 on 26 th Jan	<i>Ask your partner.</i>	How are you?	Are you?	N	

8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	rice	pasta	Y	SBI in meaning
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	potatoes	tomatoes	Y..2x	SBI in meaning
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	cauliflower	(no answer)	N..4x	
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	cauliflower	flower	N	
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	butter	bread	Y..2x	SBI of meaning
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	apricot	orange	Y	SBI of meaning
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	cherries	(no answer)	N	
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	potatoes	mispronunciation	N..2x	
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	chicken	mispronunciation	N..4x	
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	bread	mispronunciation	N..2x	
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	apple	mispronunciation	N	
8:24 on 26 th Jan	<i>Flashcard recognition, written answer.</i>	cucumber	carrot	Y	SBI of meaning
8:31 on 26 th Jan	<i>role-play</i>	Can I have some apples?	Can I apples?	N	
8:31 on 26 th Jan	<i>role-play</i>	Can I have some potatoes?	(no answer)	N	
8:35 on 26 th Jan	<i>role-play</i>	Can I have some bread?	Can bread have?	N	
8:37 on 26 th Jan	<i>role-play</i>	Here you are.	Give.	N	

8:38 on 26 th Jan	<i>role-play</i>	Here you are.	(no answer)	N	
8:04 on 26 th Jan	<i>role-play</i>	Here you are.	You.	N	

Appendix 2

Examples of lesson plans

Group 1

non-clustering

non-similar activities

lesson 4 : *Spoon, dinner, circle*

Aims: Learning the words *spoon, dinner, circle*, practicing the new vocabulary, reviewing older vocabulary.

Objectives: Pupils will be able to name *spoon, dinner, circle* and recognize the new vocabulary in confrontation with the older vocabulary.

Material: paper puppets for storytelling, flashcards with the new vocabulary, hula hoop, worksheets for colouring, other flashcards of past vocabulary, dominoes (three sets)

Description: The pupils encounter new vocabulary in a story, the teacher points out the target vocabulary by flashcards, the pupils learn to recognize and pronounce the new words, then they practice recognizing the new vocabulary in context and using the new words in a game.

Whiteboard: empty at the beginning of the lesson

Stage 1: recycling last lesson's vocabulary - 5 min

Aim: pupils review last lesson's vocabulary (a *knife, lunch, a rectangle, sunny*)

Task: Guess what the teacher draws on the whiteboard! The teacher starts drawing a rectangle on the whiteboard, regularly turns around and asks: „What is it?“ Whoever knows the answer can guess. The teacher provides feedback. The same procedure follows with the rest of the vocabulary from the last lesson.

Stage 2: Introduction of the new vocabulary - 15 min

Aim: Children encounter new vocabulary

The teacher tells a story using paper puppets: „Let's sit in a circle. It's dark, the moon is a white circle in the night sky. Masha walks in the woods (paper puppets), finds a house, there are three dinners and 3 spoons, she eats from the small one. Noise, she hides. Three bears come in. The small one: Where is my dinner? Where is my spoon?“

Then the teacher displays the new vocabulary by laying down the flashcards of *spoon, dinner* and *circle*. The teacher asks the pupils to practice pronouncing the words by repeating after the teacher.

Then the teacher repeats the story and pauses for the pupils to fill in the gaps where the words *spoon, dinner, circle* belong.

Stage 3: Learning the new vocabulary - 5 min

Aim: Children memorize the words *spoon, dinner, circle*

Hula hoop: each pupil gets one flashcard – either a spoon or dinner – and one by

one puts the flashcard in the hula hoop while pronouncing the word. The teacher instructs: „Please put the picture in the circle,“ and points to the hula hoop. Then asks: „What is it?“, trying to elicit the answer: „dinner“ or „spoon“.

Stage 4: Distinguishing the meaning of the word *dinner* from other meal – related vocabulary - 10 min

Aim: Children realize the difference between *breakfast, snack, lunch* and *dinner*

Children in groups of 3 race to the back of the class and back, chose flashcards with *dinner* at the back of the class, only correct flashcards count. The teacher instructs each pupil : „dinner“ during the first round. During the second round, the teacher choses *dinner, lunch, snack* or *breakfast* as an instruction for each pupil.

Stage 5: Distinguishing the new vocabulary from past one – 5 min

Aim: Children recognize the new vocabulary in context of other words

Colouring worksheets: the teacher instructs the pupils to colour only certain pictures: spoon out of fork, spoon and knife, circle out of triangle, circle, triangle and square, dinner out of breakfast, snack, lunch and dinner.

Stage 6: Domino with all vocabulary - 10 min

Aim: Children actively produce the new words in context with past vocabulary

Pupils say what they see on their domino when they add their piece (always two words): including all past vocabulary. The teacher gives out pieces of dominoes (one to each child), places the first piece on the floor, monitors the situation (to prevent more pupils answering at the same time), asks „What is it?“ when a pupil places a piece on the floor, the teacher also gives feedback.

Stage 7: New vocabulary production - 5 min

Aim: Children can use the new vocabulary in a game

Children work in pairs, each pair has a set of flashcards, one keeps the cards, the other one guesses which one of the three new words is on top of the deck, the child with the cards says: „yes“ or „no“, shows the proof, then they switch.

Stage 8: Homework instruction - 5 min

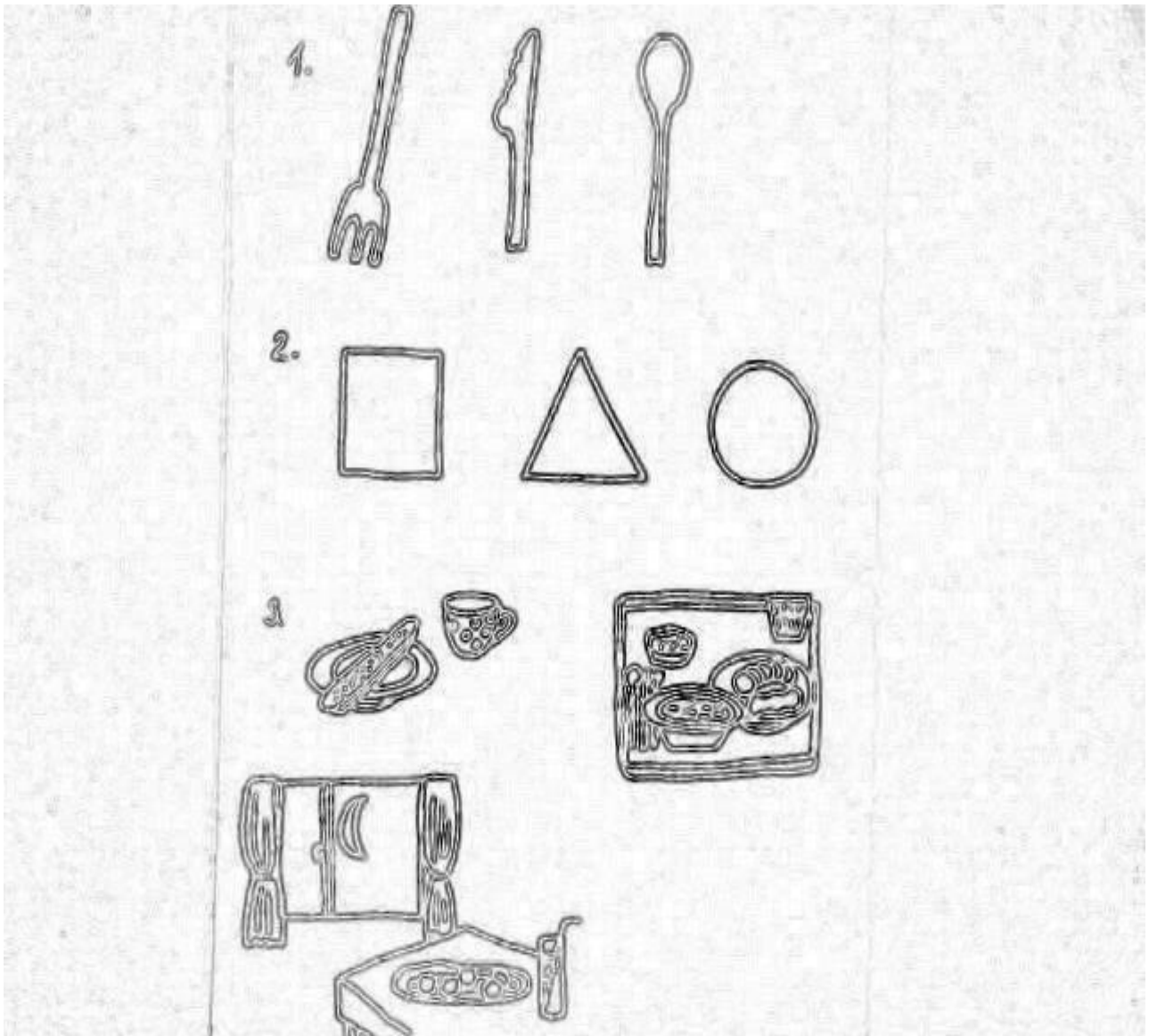
Aim: Children are reminded of the meaning of „dinner“

The teacher explains HW : draw dinner on the plate: pre-designed worksheets with a plate, a moon behind the window (to show it is evening).

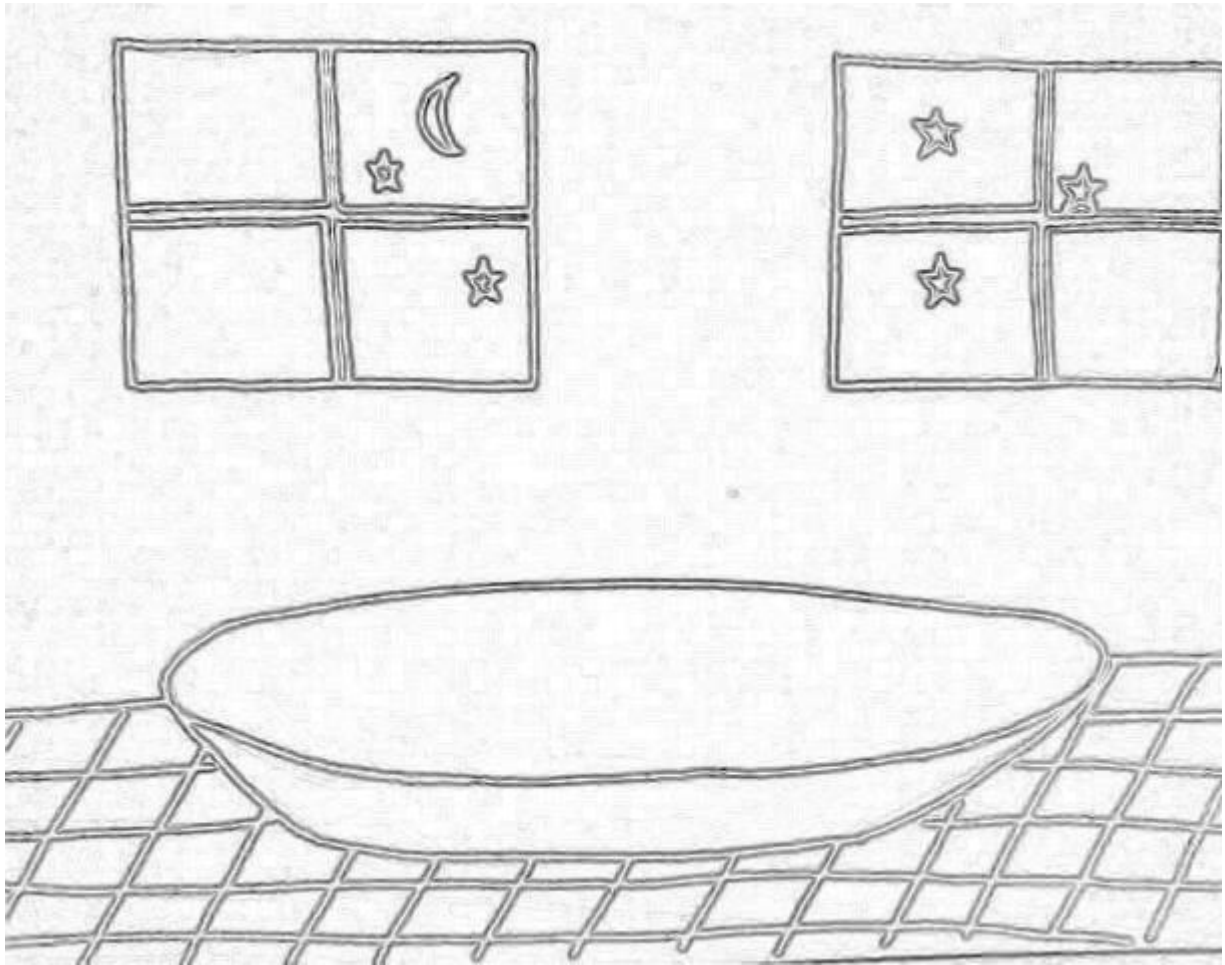
Reflection: Revision of the last lesson’s vocabulary in a form of a guessing game helped the pupils activate their knowledge of the past vocabulary. The story with a puppet attracted the pupils’ attention, thus they could concentrate on the meaning of the new words. The fact that they could repeat the words after the teacher and at the same time could see the words on the flashcards contributed to the smooth continuation of working with the story. The children then easily suggested the new words when the teacher paused in telling the story a second time. In order to

process new information in a different way, the pupils were instructed to name the new items themselves as they placed them in a hula hoop. The pupils liked the running game the best. It seemed that taking extra time to outline the meaning of dinner and distinguishing it from other types of meals, especially lunch, was very important. The activity with picking appropriate „dinner flashcards“ showed a certain level of confusion at the beginning, but the notion of dinner seemed to improve towards the end of the activity, because the pupils were exposed to pictures of other types of meals and therefore they could imprint the meaning of the new word *dinner* properly. There was not much confusion with the other new items when the pupils were instructed to colour in the worksheets in stage 4. In this activity it was clear whether the notion of the new vocabulary was already established with particular pupils. Finally, the pupils had an opportunity to consolidate the subject matter in a domino game. It was clear that by the end of the lesson the pupils were able to use the new vocabulary in a game, that is, recognize a picture of a target word, pronounce the new term and understand their classmates when they pronounced the target words. This ability was achieved through activities focusing on recognition and recognition in context, such as Stage 4.

Group 1
lesson 4
worksheet 1



Group 1
lesson 4
worksheet 2



Group 2

non-clustering

similar activities

lesson 4 : Spoon, dinner, circle

Aims: Learning the words spoon, dinner, circle, practicing the new vocabulary, reviewing older vocabulary.

Objectives: Pupils will be able to name spoon, dinner, circle and recognize the new vocabulary in confrontation with the old vocabulary.

Material: paper puppets for storytelling, flashcards with the new vocabulary, other flashcards of past vocabulary, flyswatter (3 sets), 2 sheets with different sets of pictures.

Description: The pupils encounter new vocabulary by display of real objects and in a story, the teacher points out the target vocabulary by flashcards, the pupils learn to recognize and pronounce the new words, then they practice active production of the target vocabulary and learn other pupils' view of the meaning (broadening the idea of the content).

Whiteboard: the pictures of a spoon, dinner and a circle

Stage 1: recycling last lesson's vocabulary - 5 min

Aim: pupils review last lesson's vocabulary (*a knife, lunch, a rectangle, sunny*)
HW checking with author's comments as a way of recycling last week's vocabulary)

The pupils form a circle around 2 tables with their pictures in front of them face down, 1 pupil shows their picture, the others guess what is in it.

Stage 2: Introduction of the new vocabulary - 5 min

Aim: Children encounter new vocabulary

The teacher introduces new vocabulary by bringing real objects, names the objects and instructs the pupils to pronounce the new words.

Stage 3: Introduction of the new vocabulary in context - 10 min

Aim: Children encounter the new vocabulary in context of a story

The teacher tells a story using paper puppets: „Let's sit in a circle. It's dark, the moon is a white circle in the night sky. Masha walks in the woods (paper puppets), finds a house, there are three dinners and 3 spoons, she eats from the small one. Noise, she hides. 3 bears come in. The small one: Where is my dinner? Where is my spoon?“

The teacher displays the new vocabulary by laying down the flashcards of spoon, dinner, circle, encourages the pronunciation of the words.

Stage 4: Learning the new vocabulary - 5 min

Aim: Children memorize the words spoon, dinner, circle

Real objects missing game: the teacher covers one object with a scarf, asks the name of the object, then moves on to cover a different one etc., finally, all are covered and the pupils name all the objects.

Stage 5: Practicing the new words recognition - 5 min

Aim: Children recognize the called word and point at the correct flashcard

A game: the pupils slap the called flashcard with a flyswatter – competition in groups.

Stage 6: Active new vocabulary production - 5 min

Aim: Children can actively produce the vocabulary they need

Task: ask your partner for the thing (a flashcard) in your picture. Pupils work in groups of two, one pupil starts, asks for the first flashcard, then the other pupil takes turn etc.

Stage 7: Memorizing a song or a chant - 10 min

Aim: Children learn a short chant including all the new vocabulary to support the memorization of the target vocabulary

Task: learn the chant: What's that circle?

It's the Moon!

Time for dinner!

Where's my spoon?

The teacher demonstrates the meaning with puppets at first: A child puppet draws a circle, a mother puppet asks: „What's that circle?“ The child puppet answers: „It's the Moon!“ The mother puppet says: „Time for dinner!“ The child puppet sits at the table and says: „Where's my spoon?“

Then the whole group practices movements which accompany the chant (circle, moon, putting dinner on the table, looking for spoon)

Stage 8: Creating a personalized connection to the new vocabulary - 10 min

Aim: Children learn the meaning of the new vocabulary by encountering other pupils' personalized view of the vocabulary

Task: make a sculpture from play dough of your own choice (given the vocabulary of the day)

- a display with commentary.

Stage 9: Homework instruction - 5 min

Aim: Children are reminded of the meaning of today's vocabulary

Homework: draw a picture – theme: today's new vocabulary

Reflection: Revision of the last lesson's vocabulary in a form of a guessing game helped the pupils activate the knowledge of the words *knife*, *lunch*, *rectangle*, *sunny*. In Stage 2, real objects attracted the pupils' attention and so they were able to focus on the pronunciation of the new words as instructed. The story of Masha introduced a relevant context for the new vocabulary and helped distinguish the meaning of the new words, especially *dinner* and *spoon*, from past vocabulary, just recently activated (*lunch*, *knife* in particular). The real object missing game helped quick memorization of the new words, as the pupils could see the real objects disappearing and reappearing, hear the others pronounce the words and get

a feedback on the pronunciation repeatedly. During the new words recognition stage (Stage 5), it was clear that the ability to recognize a new word had already been gained for the most part and the quick recognition of the vocabulary improved. During the active production stage (Stage 6), it was clear that the pupils were able to actively produce the target words. When working in pairs, the pupils could handle new words by using them in a basic dialogue. The new words' pronunciation was improved during the chant learning, meanwhile the pupils also had an opportunity to consolidate the new vocabulary in an engaging activity. The pupils found the chant challenging at first, but their pronunciation of the target words (and not only target words) improved by the chant learning activity considerably. The sculpture making activity showed very little confusion at the end of the lesson (*dinner* vs. *plate* in one case), therefore the lesson was considered successful.

Group 3

clustering

non-similar activities

Lesson 2: fork, knife, spoon

Aims: Learning the words fork, knife, spoon, practicing the new vocabulary, reviewing older vocabulary.

Objectives: Pupils will be able to name fork, knife, spoon and recognize the new vocabulary in confrontation with the older vocabulary.

Material: flashcards with the new vocabulary, other flashcards of past vocabulary, paper, pencil, 8 sets of mini memory game, plastic cutlery (several sets), worksheets for homework.

Description: The pupils encounter new vocabulary, learn to recognize the differences among the new vocabulary, then they practice pronouncing the new vocabulary and distinguishing among the new words in active production.

Whiteboard: the pictures of a fork, a knife and a spoon

Stage 1: recycling last lesson's vocabulary - 5 min

Aim: pupils review last lesson's vocabulary (breakfast, lunch, dinner, snack)

HW group checking as a way of recycling last week's vocabulary)

Stage 2: Introducing the new vocabulary - 5 min

Aim: Children encounter the new vocabulary

The teacher introduces new vocabulary by displaying the real objects, the pupils repeat the names of the objects after the teacher.

Stage 3: Distinguishing the new vocabulary - 10 min

Aim: The pupils learn to quickly distinguish among the new vocabulary

Picture dictation: the teacher dictates the new vocabulary several times in different order, pupils quickly draw the called objects. To be able to get the best results, the teacher provides error-correction after the first round and the pupils have the chance to do well in this activity.

Stage 4: Active production of the target vocabulary - 10 min

Aim: Children recognize and actively name the target vocabulary

Mini memory game: Children play the memory game in pairs, the cards consists only of the target vocabulary (6 cards in total), pupils say the words out loud. The pupils play two rounds of the game.

Stage 5: Distinguishing the new vocabulary from the older vocabulary - 15 min

Aim: Children can recognize and name the new vocabulary when confronted with the older vocabulary

Race: The pupils are divided into two groups, the first pupil in each group runs to the end of the aisle, says the name of the object in the picture on top of the deck of flashcards out loud, if correct, the pupil picks it up, the next pupil starts running when the first one returns. When everybody takes their turn twice, the teacher

checks the number of picked up flashcards, if it is the same, the group that finished first wins.

Stage 6: Distinguishing and naming the new vocabulary - 10 min

Aim: Children can distinguish among the objects newly introduced and actively produce the names of the objects

Task: name the real objects behind your back (sitting in a circle, teacher gives a pupil an object), organization: groups of 5 in front of the whiteboard, others watching.

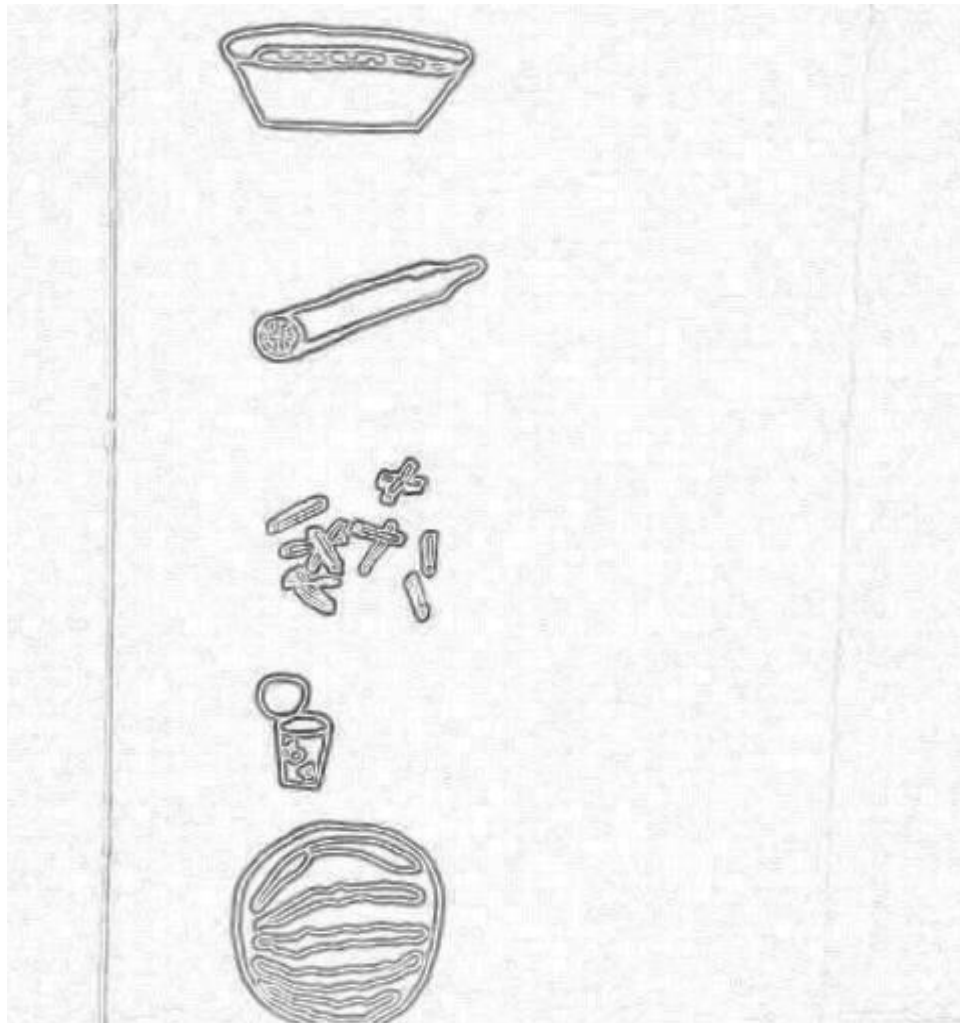
Stage 7: Homework instruction - 5 min

Aim: The pupils are reminded of the target vocabulary.

HW: sheet: draw the correct cutlery next to the meal: soup, cucumber, french fries, yoghurt, watermelon.

Reflection: Previous lesson's vocabulary review (*breakfast, snack, lunch, dinner*) activated the pupils' knowledge of past vocabulary and reinforced the notion of distinguishing different terms for meals. Encountering the new vocabulary in the form of real objects with the possibility of touching the items and thus reinforcing the newly coming information helped the pupils to concentrate on that day's lesson content. In Stage 3 the pupils were instructed to distinguish among the three pieces of cutlery when drawing each of them on demand. This activity improved the understanding of the differences in the new terms. The mini memory game proved to be an engaging activity that helped the children get over the concerns about pronouncing the new words independently. In order to process the new information in context of the old vocabulary, the pupils were instructed to name all the items they saw displayed in flashcards in Stage 5. The activity where objects were recognized behind the pupil's back showed significant improvement in distinguishing among the new terms towards the end of the lesson, it was also highly popular with the group, as the rest of the pupils could see the given object and check the pupil's response.

Group 3
lesson 2
worksheet 1



Group 4

clustering

similar activities

Lesson 2: fork, knife, spoon

Aims: Learning the words fork, knife, spoon, practicing the new vocabulary, reviewing older vocabulary.

Objectives: Pupils will be able to name fork, knife, spoon and recognize the new vocabulary in confrontation with the older vocabulary.

Material: paper puppets for storytelling, flashcards with the new vocabulary, other flashcards of past vocabulary, flyswatter (3 sets), 2 sheets with different sets of pictures. Plastic cutlery hidden in the classroom before the lesson begins.

Description: The pupils encounter new vocabulary by display of real objects and in a story, the teacher points out the target vocabulary by flashcards, the pupils learn to recognize and pronounce the new words, then they practice active production of the target vocabulary and learn other pupils' view of the meaning (broadening the idea of the content).

Whiteboard: the pictures of a fork, a knife and a spoon

Stage 1: recycling last lesson's vocabulary - 5 min

Aim: pupils review last lesson's vocabulary (*breakfast, lunch, dinner, snack*)

HW checking with author's comments as a way of recycling last week's vocabulary)

The pupils form a circle around 2 tables with their pictures in front of them face down, 1 pupil shows their picture, the others guess what is in it.

Stage 2: Introduction of the new vocabulary - 5 min

Aim: Children encounter new vocabulary

The teacher introduces new vocabulary by bringing real objects, names the objects and instructs the pupils to pronounce the new words.

Stage 3: Introduction of the new vocabulary in context - 10 min

Aim: Children encounter the new vocabulary in context of a story

The teacher tells a story using paper puppets: „Let's sit in a circle. Here is a boy. His name is Clive. Clive has lunch, but he can't eat it. Why? He doesn't have a spoon. He doesn't have a fork. He doesn't have a knife. Where are they? He looks for the spoon. Spoon, where are you? (the teacher or the children find the hidden spoon). Fork, where are you? (the teacher or the children find the hidden fork) Knife, where are you? (the teacher or the children find the hidden knife). Now Clive is happy. He chants: I am a boy, my name is Clive. I have a spoon, a fork and a knife.“

The teacher displays the new vocabulary by laying down the flashcards of *a spoon, a fork and a knife* and encourages the pronunciation of the words.

Stage 4: Learning the new vocabulary - 5 min

Aim: Children memorize the words spoon, fork, knife

Real objects missing game: the teacher covers one object with a scarf, asks the name of the object, then moves on to cover a different one etc., finally, all are covered and the pupils name all the objects.

Stage 5: Practicing the new words recognition - 5 min

Aim: Children recognize the called word

A game: the pupils slap the called flashcard with a flyswatter – competition in groups.

Stage 6: Active new vocabulary production - 5 min

Aim: Children can actively produce the vocabulary they need

Task: ask your partner for the thing (a flashcard) in your picture. Pupils work in groups of two, one pupil starts, asks for the first flashcard, then the other pupil takes turn etc.

Stage 7: Memorizing a song or a chant - 10 min

Aim: Children learn a short chant including all the new vocabulary to support the memorization of the target vocabulary

Task: learn the chant: I am a boy, my name is Clive.

I have a spoon, a fork and a knife.

The teacher demonstrates the meaning with a paper puppet at first. The puppet points at real objects to the words *spoon, fork, knife*.

Stage 8: Creating a personalized connection to the new vocabulary - 10 min

Aim: Children learn the meaning of the new vocabulary by encountering other pupils' personalized view of the vocabulary

Task: make a sculpture from play dough of your own choice (given the vocabulary of the day)

- a display with commentary.

Stage 9: Homework instruction - 5 min

Aim: Children are reminded of the meaning of today's vocabulary

Homework: draw a picture – theme: today's new vocabulary

Reflection: Previous lesson's vocabulary revision (*breakfast, snack, lunch, dinner*) in a form of a guessing game helped activate the pupils' knowledge of the names of the meals. The new vocabulary introduction in a form of seeing and touching real objects helped the pupils to concentrate on the items and contributed to smooth pronunciation practice. The puppet Clive story with real action (looking for real

objects hidden in the classroom) attracted the pupils' curiosity and thus helped with their willingness to pronounce the words and learn the differences among the target terms. Several rounds of the real objects missing game helped quick item-term connection due to the speedy and engaging character of the activity. This item-term connection was consequently tested in Stage 5 and most of the pupils proved a good recognition at this point of the lesson. The activity with active production showed that the production of the target words improved considerably towards the end of the lesson. Memorizing the rhythmical chant helped the pupils reach an optimal pronunciation of the target vocabulary. Finally, the pupils had an opportunity to consolidate the subject matter in a personalized activity, which showed very little confusion of the meaning of the words (*fork* vs. *spoon*, *knife* vs. *fork*). While the pupils seemed to enjoy the activities, especially looking for the hidden objects and slapping the flashcards with the flyswatter, there was some confusion within the vocabulary, especially during the recognition phase at the beginning, because some pupils continued to confuse the words *knife* and *fork*. Special attention to the ability to distinguish the vocabulary was paid during the pair work and good results were observed at the end of the lesson (sculpture making). It was clear that by the end of the lesson (Stage 8) most pupils could recognize and name the target items.

Appendix 3

answer sheets for short-term testing

Group 1 pupil 1

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	/	2
7 th March } 6			
vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	/	✓	1
cloudy	cloudy	/	2
14 th March } 7			
vocabulary	answer	with help	score
knife	/	✓	1
lunch	lunch	/	2
rectangle	rectangle	/	2
sunny	sunny	/	2
21 st March } 7			
vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	dinner	/	2
circle	circle	/	2
28 th March } 6			

Group 1 pupil 2

vocabulary	answer	with help	score
breakfast	/	✓	1
triangle	/	✓	1
windy	/	✗	0
} 2			
vocabulary	answer	with help	score
fork	fork	/	2
snack	/	✓	1
square	/	✓	1
cloudy	cloudy	/	2
} 6			
vocabulary	answer	with help	score
knife	/	✓	1
lunch	lunch	/	2
rectangle	/	✗	0
sunny	sunny	/	2
} 5			
vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	✗	0
circle	circle	/	2
} 4			

Group 1 Pupil 3

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	/	2

vocabulary	answer	with help	score
fork	fork	/	2
snack	/	✓	1
square	/	✓	1
cloudy	cloudy	/	2

vocabulary	answer	with help	score
knife	/	✓	1
lunch	lunch	/	2
rectangle	rectangle	/	2
sunny	sunny	/	2

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	dinner	/	2
circle	circle	/	2

Group 1 Pupil 4

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	/	✓	1
windy	/	✓	1

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	square	/	2
cloudy	/	✓	1

vocabulary	answer	with help	score
knife	knife	/	2
lunch	lunch	/	2
rectangle	rectangle	/	2
sunny	sunny	/	2

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	dinner	/	2
circle	/	✓	1

Group 1 pupil 5

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	/	2

} 6

vocabulary	answer	with help	score
fork	fork	-	2
snack	snack	-	2
square	/	✓	1
cloudy	cloudy	-	2

} 7

vocabulary	answer	with help	score
knife	knife	/	2
lunch	/	✓	1
rectangle	rectangle	/	2
sunny	/	✓	1

} 6

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	✓	1
circle	circle	/	2

} 5

Group 1 pupil 6

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	/	2

} 6

vocabulary	answer	with help	score
fork	/	✓	1
snack	snack	-	2
square	/	✓	1
cloudy	cloudy	-	2

} 6

vocabulary	answer	with help	score
knife	/	✓	1
lunch	lunch	/	2
rectangle	rectangle	/	2
sunny	sunny	/	2

} 7

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	dinner	/	2
circle	circle	/	2

} 6

Group 1 pupil 7

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	/	✓	1
} 5			
vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	square	/	2
cloudy	/	✓	1
} 7			
vocabulary	answer	with help	score
knife	knife	/	2
lunch	/	✓	1
rectangle	/	✓	1
sunny	sunny	/	2
} 6			
vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	✓	1
circle	/	✓	1
} 4			

Group 1 pupil 8

vocabulary	answer	with help	score
breakfast	/	✓	1
triangle	triangle	/	2
windy	/	✓	1
} 4			
vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	square	/	2
cloudy	cloudy	/	2
} 8			
vocabulary	answer	with help	score
knife	knife	/	2
lunch	/	✓	1
rectangle	rectangle	/	2
sunny	sunny	/	2
} 7			
vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	o	0
circle	triangle	o	0
} 2			

Group 1 pupil 9

vocabulary	answer	with help	score
breakfast	/	✓	0
triangle	/	✓	1
windy	windy	/	2

} 3

vocabulary	answer	with help	score
fork	/	✓	1
snack	/	✓	1
square	square	/	2
cloudy	cloudy	/	2

} 6

vocabulary	answer	with help	score
knife	knife	/	2
lunch	lunch	/	2
rectangle	/	✓	1
sunny	/	✓	1

} 6

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	✓	0
circle	/	✓	0

} 2

Group 1 pupil 10

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	/	✓	1
windy	windy	/	2

} 5

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	/	✓	1
cloudy	cloudy	/	2

} 7

vocabulary	answer	with help	score
knife	/	✓	1
lunch	lunch	/	2
rectangle	/	✓	1
sunny	/	✓	1

} 5

vocabulary	answer	with help	score
spoon	/	✓	1
dinner	/	✓	1
circle	/	✓	1

} 3

Group 1 pupil 11

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	/	2

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	/	✓	1
cloudy	cloudy	/	2

vocabulary	answer	with help	score
knife	/	✓	1
lunch	/	✓	1
rectangle	/	✓	1
sunny	/	✓	1

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	✓	1
circle	/	✗	0

Group 2 pupil 1

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	/	✓	1
windy	/	✓	1

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	/	✓	1
cloudy	/	✓	1

vocabulary	answer	with help	score
knife	/	✓	1
lunch	/	✓	1
rectangle	/	✓	1
sunny	/	✓	1

vocabulary	answer	with help	score
spoon	-	✓	1
dinner	-	✓	1
circle	-	✓	1

Group 2 pupil 2

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	✓	1

} 5

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	square	/	2
cloudy	cloudy	/	2

} 8

vocabulary	answer	with help	score
knife	knife	/	2
lunch	lunch	/	2
rectangle	rectangle	/	2
sunny	sunny	/	2

} 8

vocabulary	answer	with help	score
spoon	/	✓	1
dinner	dinner	/	2
circle	circle	/	2

} 5

Group 2 pupil 3

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	/	2

} 6

vocabulary	answer	with help	score
fork	/	✓	1
snack	/	✓	1
square	/	✓	1
cloudy	/	✓	1

} 4

vocabulary	answer	with help	score
knife	knife	/	2
lunch	/	✓	1
rectangle	/	✓	1
sunny	sunny	/	2

} 6

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	✓	1
circle	/	✓	1

Group 2 pupil 4

vocabulary	answer	with help	score
breakfast	/	✓	1
triangle	triangle	✓	2
windy	/	✓	1

} 4

vocabulary	answer	with help	score
fork	fork	✓	2
snack	/	✓	1
square	triangle	✓	1
cloudy	/	✓	0

} 4

vocabulary	answer	with help	score
knife	/	✓	1
lunch	lunch	✓	2
rectangle	/	✓	1
sunny	/	✓	1

} 5

vocabulary	answer	with help	score
spoon	fork	✓	1
dinner	/	✓	1
circle	/	✓	1

} 3

Group 2 pupil 5

vocabulary	answer	with help	score
breakfast	/	✓	1
triangle	/	0	0
windy	windy	✓	2

} 3

vocabulary	answer	with help	score
fork	fork	✓	2
snack	/	✓	1
square	/	✓	1
cloudy	/	✓	1

} 5

vocabulary	answer	with help	score
knife	/	✓	1
lunch	/	✓	1
rectangle	/	0	0
sunny	sunny	✓	2

} 4

vocabulary	answer	with help	score
spoon	/	✓	1
dinner	/	✓	1
circle	/	✓	1

} 3

Group 2 pupil 6

vocabulary	answer	with help	score
breakfast	/	✓	1
triangle	triangle	✓	2
windy	/	✓	1

} 4

vocabulary	answer	with help	score
fork	/	✓	1
snack	snack	✓	2
square	/	✓	1
cloudy	cloudy	✓	2

} 6

vocabulary	answer	with help	score
knife	knife	✓	2
lunch	/	✓	1
rectangle	/	✓	1
sunny	/	✓	1

} 5

vocabulary	answer	with help	score
spoon	spoon	✓	2
dinner	/	✓	1
circle	/	✓	1

} 4

Group 2 pupil 7

vocabulary	answer	with help	score
breakfast	breakfast	✓	2
triangle	triangle	✓	2
windy	windy	✓	2

} 6

vocabulary	answer	with help	score
fork	fork	✓	2
snack	snack	✓	2
square	square	✓	2
cloudy	cloudy	✓	2

} 8

vocabulary	answer	with help	score
knife	knife	✓	2
lunch	lunch	✓	2
rectangle	rectangle	✓	2
sunny	sunny	✓	2

} 8

vocabulary	answer	with help	score
spoon	spoon	✓	2
dinner	/	✓	1
circle	circle	✓	2

} 5

Group 2 pupil 8

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	windy	/	2

} 6

vocabulary	answer	with help	score
fork	fork	/	2
snack	/	✓	1
square	square	/	2
cloudy	cloudy	/	2

} 7

vocabulary	answer	with help	score
knife	knife	/	2
lunch	lunch	/	2
rectangle	/	✓	1
sunny	sunny	/	2

} 7

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	dinner	/	2
circle	circle	/	2

} 6

Group 2 pupil 9

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	triangle	/	2
windy	/	✓	1

} 5

vocabulary	answer	with help	score
fork	/	✓	1
snack	/	✓	1
square	/	✓	1
cloudy	/	✓	1

} 4

vocabulary	answer	with help	score
knife	/	0	0
lunch	lunch	/	2
rectangle	/	✓	1
sunny	sunny	/	2

} 5

vocabulary	answer	with help	score
spoon	spoon	/	2
dinner	/	✓	1
circle	/	✓	1

} 4

Group 2 pupil 10

vocabulary	answer	with help	score
breakfast	/	✓	1
triangle	/	✓	1
windy	windy	/	2

} 4

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	/	0	0
cloudy	cloudy	/	2

} 6

vocabulary	answer	with help	score
knife	knife	/	2
lunch	lunch	/	2
rectangle	/	✓	1
sunny	Sunny	/	2

} 7

vocabulary	answer	with help	score
spoon	/	✓	1
dinner	/	✓	1
circle	/	✓	1

} 3

Group 2 pupil 11

vocabulary	answer	with help	score
breakfast	-	✓	1
triangle	triangle	-	2
windy	windy	0	2

} 2.5

vocabulary	answer	with help	score
fork	-	✓	1
snack	-	✓	1
square	square	0	2
cloudy	cloudy	0	2

} 4.6

vocabulary	answer	with help	score
knife	-	✓	1
lunch	lunch	-	2
rectangle	-	✓	1
sunny	sunny	0	2

} 6

vocabulary	answer	with help	score
spoon	spoon	-	2
dinner	dinner	0	2
moon	circle	0	2

} 6

Group 2 pupil 12

vocabulary	answer	with help	score
breakfast	/	✓	0
triangle	triangle	/	2
windy	/	✓	0

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	circle	✓	0
cloudy	sunny	✓	0

vocabulary	answer	with help	score
knife	/	✓	1
lunch	/	✓	1
rectangle	/	✓	1
sunny	Sunny	/	2

vocabulary	answer	with help	score
spoon	Spoon	/	2
dinner	dinner	/	2
circle	/	✓	1

Group 2 pupil 13

vocabulary	answer	with help	score
breakfast	breakfast	/	2
triangle	/	✓	1
windy	windy	/	2

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	/	✓	1
cloudy	/	✓	1

vocabulary	answer	with help	score
knife	knife	/	2
lunch	lunch	/	2
rectangle	rectangle	/	2
sunny	sunny	/	2

vocabulary	answer	with help	score
spoon	Spoon	/	2
dinner	dinner	/	2
circle	/	✓	1

Group 2 pupil 14

vocabulary	answer	with help	score
breakfast	breakfast	✓	2
triangle	triangle	✓	2
windy	windy	✓	2

} 6

vocabulary	answer	with help	score
fork	fork	✓	2
snack	snack	✓	2
square	✓	✓	1
cloudy	cloudy	✓	2

} 7

vocabulary	answer	with help	score
knife	knife	✓	2
lunch	lunch	✓	2
rectangle	✓	✓	1
sunny	✓	✓	1

} 6

vocabulary	answer	with help	score
spoon	spoon	✓	2
dinner	✓	✓	1
circle	✓	✓	1

} 4

Group 3 Pupil 1

vocabulary	answer	with help	score
fork	-	✓	1
knife	knife	-	2
spoon	spoon	-	2

} 5

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

} 7

vocabulary	answer	with help	score
circle	circle	-	2
square	-	✓	1
rectangle	-	✓	1
triangle	triangle	-	2

} 6

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	-	✓	1

} 4

Group 3 Pupil 2

vocabulary	answer	with help	score
fork	-	✓	1
knife	knife	-	2
spoon	-	✓	1

} 4

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	-	✓	1
lunch	-	✓	1
dinner	-	✓	1

} 5

vocabulary	answer	with help	score
circle	circle	-	2
square	square	-	2
rectangle	-	✓	1
triangle	triangle	-	2

} 7

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	-	✓	1

} 4

Group 3 Pupil 3

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

} 3

vocabulary	answer	with help	score
breakfast	-	✗	0
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

} 5

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	rectangle	-	2
triangle	triangle	-	2

} 6

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	-	✓	1

} 2

Group 3 Pupil 4

vocabulary	answer	with help	score
fork	fork	-	2
knife	knife	-	2
spoon	spoon	-	2

}6

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

}7

vocabulary	answer	with help	score
circle	circle	-	2
square	-	✓	1
rectangle	-	✓	1
triangle	triangle	-	2

}6

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	cloudy	-	2

}5

Group 3 Pupil 5

vocabulary	answer	with help	score
fork	fork	-	2
knife	knife	-	2
spoon	-	✓	1

}5

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	-	✓	1
lunch	-	✓	1
dinner	-	✓	1

}4

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	-	⊗	0
triangle	square	⊗	0

}2

vocabulary	answer	with help	score
windy	cloudy	⊗	0
sunny	sunny	-	2
cloudy	-	⊗	0

}2

Group 3 Pupil 6

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

} 3

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	-	✓	1
lunch	lunch	-	2
dinner	-	✓	1

} 5

vocabulary	answer	with help	score
circle	-	✓	1
square	circle	-	2
rectangle	-	✓	1
triangle	-	0	0

} 4

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	✓	1
cloudy	-	✓	1

} 3

Group 3 Pupil 7

vocabulary	answer	with help	score
fork	fork	-	2
knife	-	✓	1
spoon	spoon	-	2

} 5

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	-	✓	1
lunch	-	✓	1
dinner	-	✓	1

} 4

vocabulary	answer	with help	score
circle	-	✓	1
square	triangle	✓	1
rectangle	-	✓	1
triangle	-	✓	1

} 4

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	✓	1
cloudy	-	✓	1

} 3

Group 3 Pupil 8

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	spoon	-	2

}4

vocabulary	answer	with help	score
breakfast	-	✗	0
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

}5

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	-	✓	1
triangle	-	✓	1

}4

vocabulary	answer	with help	score
windy	cloudy	✗	0
sunny	sunny	-	2
cloudy	-	✗	0

}2

Group 3 Pupil 9

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

}3

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	-	✓	1
lunch	-	✓	1
dinner	-	✓	1

}4

vocabulary	answer	with help	score
circle	-	✗	0
square	square	-	2
rectangle	rectangle	-	2
triangle	-	✓	1

}5

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	✓	1
cloudy	-	✓	1

}3

Group 3 Pupil 10

vocabulary	answer	with help	score
fork	fork	-	2
knife	-	✓	1
spoon	-	✓	1

} 4

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	-	✓	1
lunch	lunch	-	2
dinner	dinner	-	2

} 6

vocabulary	answer	with help	score
circle	circle	-	2
square	-	⊗	0
rectangle	rectangle	-	2
triangle	triangle	-	2

} 6

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	cloudy	-	2

} 5

Group 3 Pupil 11

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

} 3

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	-	✓	1
dinner	snack	⊗	0

} 5

vocabulary	answer	with help	score
circle	circle	-	2
square	-	✓	1
rectangle	rectangle	-	2
triangle	triangle	-	2

} 7

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	-	✓	1

} 4

Group 3 Pupil 12

vocabulary	answer	with help	score
fork	-	✓	1
knife	knife	-	2
spoon	-	✓	1

} 4

vocabulary	answer	with help	score
breakfast	-	Ø	0
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

} 5

vocabulary	answer	with help	score
circle	circle	-	2
square	-	Ø	-
rectangle	rectangle	-	2
triangle	triangle	-	2

} 6

vocabulary	answer	with help	score
windy	-	Ø	0
sunny	sunny	-	2
cloudy	windy	Ø	0

} 2

Group 3 Pupil 13

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

} 3

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	snack	-	2
lunch	lunch	-	2
dinner	-	Ø	0

} 5

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	-	✓	1
triangle	-	✓	1

} 4

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	-	✓	1

} 4

Group 3 Pupil 14

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	spoon	-	2

} 4

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

} 6

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	rectangle	-	2
triangle	triangle	-	2

} 6

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	✓	1
cloudy	-	✓	1

} 3

Group 3 Pupil 15

vocabulary	answer	with help	score
fork	-	✓	1
knife	knife	-	2
spoon	-	✓	1

} 4

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	-	✓	1
dinner	-	✓	1

} 6

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	triangle	✗	0
triangle	-	✗	0

} 2

vocabulary	answer	with help	score
windy	-	✗	0
sunny	sunny	-	2
cloudy	-	✗	0

} 2

Group 3 Pupil 16

vocabulary	answer	with help	score
fork	-	✓	1
knife	knife	-	2
spoon	-	✓	1

} 4

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

} 7

vocabulary	answer	with help	score
circle	circle	-	2
square	square	-	2
rectangle	triangle	✗	0
triangle	-	✓	1

} 5

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	✓	1
cloudy	-	✓	1

} 3

Group 4 Pupil 1

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	spoon	-	2

} 4

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	snack	-	2
lunch	-	✓	1
dinner	dinner	-	2

} 6

vocabulary	answer	with help	score
circle	circle	-	2
square	square	-	2
rectangle	-	✓	1
triangle	triangle	-	2

} 7

vocabulary	answer	with help	score
windy	windy	-	2
sunny	sunny	-	2
cloudy	-	✓	1

} 5

Group 4 Pupil 2

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	spoon	-	2

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	snack	-	2
lunch	lunch	-	2
dinner	dinner	-	2

vocabulary	answer	with help	score
circle	circle	-	2
square	-	✓	1
rectangle	-	✓	1
triangle	-	✓	1

vocabulary	answer	with help	score
windy	-	⊗	0
sunny	sunny	-	2
cloudy	-	⊗	0

Group 4 Pupil 3

vocabulary	answer	with help	score
fork	-	⊗	0
knife	-	✓	1
spoon	-	⊗	0

vocabulary	answer	with help	score
breakfast	-	⊗	0
snack	snack	-	2
lunch	lunch	-	2
dinner	-	⊗	0

vocabulary	answer	with help	score
circle	circle	-	2
square	square	-	2
rectangle	-	⊗	0
triangle	-	✓	1

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	⊗	0
cloudy	-	⊗	0

Group 4 Pupil 4

vocabulary	answer	with help	score
fork	fork	-	2
knife	-	✓	1
spoon	spoon	-	2

} 5

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	lunch	-	2
dinner	dinner	-	2

} 8

vocabulary	answer	with help	score
circle	circle	-	2
square	-	✓	1
rectangle	rectangle	-	2
triangle	triangle	-	2

} 7

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	✓	1
cloudy	-	✓	1

} 3

Group 4 Pupil 5

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

} 3

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	-	✓	1
lunch	-	✓	1
dinner	-	✓	1

} 4

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	-	✓	1
triangle	-	✓	1

} 4

vocabulary	answer	with help	score
windy	-	✓	1
sunny	-	✓	1
cloudy	-	✓	1

} 3

Group 4 Pupil 6

vocabulary	answer	with help	score
fork	fork	-	2
knife	-	✓	1
spoon	spoon	-	2

} 5

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	-	✓	1
lunch	-	✓	1
dinner	-	✓	1

} 4

vocabulary	answer	with help	score
circle	circle	-	2
square	-	✓	1
rectangle	-	✓	1
triangle	-	✓	1

} 5

vocabulary	answer	with help	score
windy	windy	-	2
sunny	sunny	-	2
cloudy	-	✓	1

} 5

Group 4 Pupil 7

vocabulary	answer	with help	score
fork	-	✓	0
knife	knife	-	2
spoon	spoon	-	2

} 4

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	-	✓	1
dinner	dinner	✓	0

} 5

vocabulary	answer	with help	score
circle	circle	-	2
square	square	-	2
rectangle	-	✓	1
triangle	triangle	-	2

} 7

vocabulary	answer	with help	score
windy	-	✓	1
sunny	sunny	-	2
cloudy	-	✓	1

} 4

Group 4 Pupil 8

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✗	0
spoon	-	✗	0

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

vocabulary	answer	with help	score
circle	-	✓	1
square	-	✓	1
rectangle	-	✓	1
triangle	-	✓	1

vocabulary	answer	with help	score
windy	cloudy	✗	0
sunny	sunny	-	2
cloudy	-	✗	0

Group 4 Pupil 9

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

vocabulary	answer	with help	score
breakfast	-	✗	0
snack	-	✓	1
lunch	dinner	✗	0
dinner	-	✓	1

vocabulary	answer	with help	score
circle	square	✗	0
square	-	✗	0
rectangle	-	✗	0
triangle	triangle	-	2

vocabulary	answer	with help	score
windy	cloudy	✗	0
sunny	-	✓	1
cloudy	windy	✗	0

Group 4 Pupil 10

vocabulary	answer	with help	score
fork	-	✓	1
knife	-	✓	1
spoon	-	✓	1

} 3

vocabulary	answer	with help	score
breakfast	breakfast	-	2
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

} 7

vocabulary	answer	with help	score
circle	circle	-	2
square	square	-	2
rectangle	rectangle	⊗	0
triangle	triangle	-	2

} 6

vocabulary	answer	with help	score
windy	windy	-	2
sunny	sunny	-	2
cloudy	-	✓	1

} 5

Group 4 Pupil 11

vocabulary	answer	with help	score
fork	moon	⊗	0
knife	knife	-	2
spoon	-	⊗	0

} 2

vocabulary	answer	with help	score
breakfast	-	⊗	0
snack	-	⊗	0
lunch	lunch	-	2
dinner	dinner	-	2

} 4

vocabulary	answer	with help	score
circle	-	✓	1
square	-	⊗	0
rectangle	-	⊗	0
triangle	triangle	-	2

} 3

vocabulary	answer	with help	score
windy	-	⊗	0
sunny	sunny	-	2
cloudy	windy	⊗	0

} 2

Group 4 Pupil 12

vocabulary	answer	with help	score
fork	-	✓	1
knife	knife	-	2
spoon	-	✓	1

} 4

vocabulary	answer	with help	score
breakfast	-	✓	1
snack	snack	-	2
lunch	lunch	-	2
dinner	-	✓	1

} 6

vocabulary	answer	with help	score
circle	circle	-	2
square	-	✓	1
rectangle	-	✗	0
triangle	-	✓	1

} 4

vocabulary	answer	with help	score
windy	-	✗	0
sunny	sunny	-	2
cloudy	windy	✗	0

} 2

Answer sheets for long-term testing

Group 3

71	vocabulary	answer	with help	score
	fork	spoon	✓	0
	snack	dinner	✓	0
	square	circle	✓	0
	sunny	rainy	✓	2
	knife	fork	✓	0
	breakfast	lunch	✓	0
	triangle	triangle	✓	2
	cloudy	windy	✓	0
	spoon	-	✓	0
	lunch	snack	✓	0
	circle	circle	✓	2
	windy	cloudy	✓	0
	dinner	dinner	✓	2
	rectangle	-	✓	1

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	vocabulary	answer	with help	score
	fork	fork	✓	2
	snack	-	✓	1
	square	square	✓	2
	sunny	☀	✓	1
	knife	knife	✓	2
	breakfast	-	✓	1
	triangle	triangle	✓	2
	cloudy	cloudy	✓	2
	spoon	spoon	✓	2
	lunch	lunch	✓	2
	circle	-	✓	1
	windy	windy	✓	2
	dinner	dinner	✓	2
	rectangle	-	✓	1

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71	vocabulary	answer	with help	score
	fork	fork	✓	2
	snack	lunch	✓	0
	square	-	✓	1
	sunny	sunny	✓	2
	knife	knife	✓	2
	breakfast	-	✓	1
	triangle	-	✓	1
	cloudy	cloudy	✓	2
	spoon	spoon	✓	2
	lunch	-	✓	0
	circle	circle	✓	2
	windy	windy	✓	2
	dinner	dinner	✓	2
	rectangle	-	✓	1

20

	vocabulary	answer	with help	score
	fork	-	✓	1
	snack	-	✓	1
	square	-	✓	0
	sunny	sunny	✓	2
	knife	knife	✓	2
	breakfast	lunch	✓	0
	triangle	-	✓	1
	cloudy	cloudy	✓	2
	spoon	-	✓	1
	lunch	dinner	✓	0
	circle	circle	✓	2
	windy	windy	✓	2
	dinner	lunch	✓	0
	rectangle	rectangle	✓	2

16

*

*the yellow underline means an error linked to SBI

Group 3

713

vocabulary	answer	with help	score
look		/	2
snack		/	2
square		/	2
sunny		/	2
knife		/	2
breakfast	-	✓	1
triangle		/	2
cloudy		/	2
spoon		/	2
lunch	-	⊗	0
circle		/	2
windy		/	2
dinner	lunch	/	0
rectangle	-	✓	1

22

24

P14

vocabulary	answer	with help	score
look	look	/	2
snack	-	✓	1
square	-	✓	1
sunny	sunny	/	2
knife	knife	/	2
breakfast	-	✓	1
triangle	triangle	/	2
cloudy	cloudy	/	2
spoon	spoon	/	2
lunch	lunch	/	2
circle	circle	/	2
windy	windy	/	2
dinner	dinner	/	2
rectangle	-	✓	1

P15

vocabulary	answer	with help	score
look	knife	/	0
snack	snack	/	2
square	square	/	2
sunny	sunny	/	2
knife	fork	/	0
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	windy	/	0
spoon	spoon	/	2
lunch	dinner	/	0
circle	circle	/	2
windy	cloudy	/	0
dinner	dinner	/	2
rectangle	-	✓	1

17

P16

vocabulary	answer	with help	score
look	knife	/	0
snack	snack	/	2
square	-	✓	1
sunny	sunny	/	2
knife	spoon	/	0
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	windy	/	0
spoon	-	⊗	0
lunch	lunch	/	2
circle	circle	/	2
windy	cloudy	/	0
dinner	-	✓	1
rectangle	-	✓	1

15

Group 4

P1

vocabulary	answer	with help	score
fork	-	✓	1
snack	snack	✓	2
square	-	✓	1
sunny	-	✓	1
knife	knife	✓	2
breakfast	-	✓	1
triangle	triangle	✓	2
cloudy	cloudy	✓	2
spoon	-	✓	1
lunch	lunch	✓	2
circle	-	✓	1
windy	windy	✓	2
dinner	dinner	✓	2
rectangle	-	✓	1

21

P2

vocabulary	answer	with help	score
fork	-	✓	1
snack	-	✓	1
square	-	✓	1
sunny	sunny	✓	2
knife	knife	✓	2
breakfast	-	✗	0
triangle	-	✓	1
cloudy	cloudy	✓	2
spoon	spoon	✓	2
lunch	-	✓	1
circle	-	✓	1
windy	-	✓	1
dinner	-	✓	1
rectangle	-	✗	0

16

P3

vocabulary	answer	with help	score
fork	spoon	✓	0
snack	bread	✓	2
square	circle	✓	0
sunny	sunny	✓	2
knife	fork	✓	0
breakfast	-	✓	1
triangle	triangle	✓	2
cloudy	windy	✓	0
spoon	knife	✓	0
lunch	spoon	✓	0
circle	-	✗	0
windy	cloudy	✓	0
dinner	-	✓	1
rectangle	-	✓	1

3

P4

vocabulary	answer	with help	score
fork	fork	✓	2
snack	bread	✓	2
square	-	✓	1
sunny	sunny	✓	2
knife	knife	✓	2
breakfast	-	✓	1
triangle	triangle	✓	2
cloudy	cloudy	✓	2
spoon	spoon	✓	2
lunch	lunch	✓	2
circle	circle	✓	2
windy	windy	✓	2
dinner	dinner	✓	2
rectangle	-	✓	1

25

Group 4
15

75

vocabulary	answer	with mark	score
fork	spoon	/	0
crack	crack	/	2
square	square	/	2
sunny	sunny	/	2
knife	knife	/	2
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	windy	/	0
spoon	fork	/	0
lunch	dinner	/	0
circle	circle	/	2
windy	cloudy	/	0
dinner	lunch	/	0
rectangle	rectangle	/	2

76

vocabulary	answer	with mark	score
fork	spoon	/	0
crack	crack	/	2
square	-	/	1
sunny	sunny	/	2
knife	fork	/	0
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	cloudy	/	2
spoon	-	/	0
lunch	lunch	/	2
circle	circle	/	2
windy	windy	/	2
dinner	dinner	/	2
rectangle	rectangle	/	2

77

vocabulary	answer	with mark	score
fork	spoon	/	0
crack	crack	/	2
square	square	/	2
sunny	sunny	/	2
knife	knife	/	2
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	cloudy	/	2
spoon	-	/	0
lunch	lunch	/	2
circle	circle	/	2
windy	windy	/	2
dinner	dinner	/	2
rectangle	rectangle	/	2

78

vocabulary	answer	with mark	score
fork	spoon	/	0
crack	-	/	1
square	-	/	1
sunny	-	/	1
knife	spoon	/	0
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	windy	/	0
spoon	knife	/	0
lunch	dinner	/	0
circle	circle	/	2
windy	cloudy	/	0
dinner	dinner	/	2
rectangle	rectangle	/	2

24

13

Group 4

24

P9

vocabulary	answer	with help	score
fork	knife	/	0
snack	-	✓	1
square	side	/	0
sunny	-	✓	1
knife	fork	/	0
breakfast	-	✓	1
triangle	-	✓	1
cloudy	muddy	/	0
spoon	-	✓	1
lunch	lunch	/	2
circle	square	/	0
windy	cloudy	/	0
dinner	-	✓	1
rectangle	-	✓	1

vocabulary	answer	with help	score
fork	fork	/	2
snack	snack	/	2
square	square	/	2
sunny	sunny	/	2
knife	knife	/	2
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	cloudy	/	2
spoon	spoon	/	2
lunch	dinner	/	0
circle	circle	/	2
windy	windy	/	2
dinner	lunch	/	0
rectangle	rectangle	/	2

P10

P11

vocabulary	answer	with help	score
fork	knife	/	0
snack	snack	/	2
square	triangle	/	0
sunny	sunny	/	2
knife	spoon	/	0
breakfast	breakfast	/	2
triangle	triangle	/	0
cloudy	cloudy	/	2
spoon	-	✓	1
lunch	lunch	/	2
circle	circle	/	2
windy	windy	/	2
dinner	dinner	/	2
rectangle	rectangle	/	2

vocabulary	answer	with help	score
fork	spoon	/	0
snack	snack	/	2
square	square	/	2
sunny	sunny	/	2
knife	fork	/	0
breakfast	breakfast	/	2
triangle	triangle	/	2
cloudy	cloudy	/	2
spoon	knife	/	0
lunch	lunch	/	2
circle	circle	/	2
windy	windy	/	2
dinner	dinner	/	2
rectangle	rectangle	/	2

P12

21

22

Appendix 4

Examples of flashcards used during the lessons



breakfast 1



breakfast 2



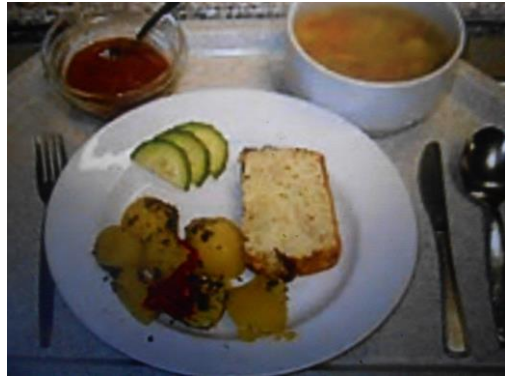
snack 1



snack 2



lunch 1



lunch 2



dinner 1



fork 1



fork 2



square 1



square 2

Appendix 5

plasticine models of breakfast, lunch and dinner made by the participants

