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To my husband Alexander and my son Meir

Abstract

The present study aimed to evaluate the effects of iconic gestures on young learners' vocabulary acquisition in L2 settings. The main purpose of the study was, therefore, to determine the effects of teacher and learner gestures on vocabulary acquisition in a Norwegian primary school. Secondly, the study set out to evaluate the benefits and challenges of a gesture-based approach to vocabulary instruction.

In recent years, researchers have shown an increased interest in studying use of gestures in L1 and L2 instruction. McNeill (1992) was one of the first who argued that speech and gesture make up a single integrated system. Since then most of the studies demonstrated that verbal information was better recognized and recalled if subjects encoded it by performing gestures (Allen 1995; Tellier 2008; Macedonia et al. 2011, Rowe et al. 2013). The present study contributed to an understanding of gesture as an important aspect of L2 teaching and learning as in the Norwegian settings traditional methods of introducing new L2 vocabulary using pictures and the textbook are still prevalent. This study is even more relevant at the level of primary school where vocabulary instruction serves as a stepping stone to further second language learning. Overall, far too little attention has been paid to the effectiveness of gestures in L2 acquisition among the very young learners in Norway, so this study attempts to increase interest in this topic among teachers and educators and contribute to an understanding of the role played by iconic gestures in L2 vocabulary instruction.

The methodological approach taken in this study was a mixed methodology based on an experiment. During regular class instruction over a period of three weeks, 42 pupils of the second grade were presented with ten English words paired with either an iconic gesture, or an image. Tests on the recall and recognition immediately after the instruction and after a 2-week delay served as the primary tool to collect data. Classroom observations and the semi-structured interview with the teacher were then conducted in order to investigate the benefits and the challenges of the gesture use in the classroom.

The prediction that gesture production during vocabulary instruction would lead to better recall and recognition than picture observation in the immediate and delayed post-tests was partially supported. In brief, the findings of the present study revealed a relationship between the use of gestures and improvement of L2 vocabulary learning in the long-term retention and in the recognition test type. These findings, in general, demonstrated that gestures could be used as a teaching strategy to improve learners' vocabulary mastery.

The study also showed that the gesture-based approach allowed the pupils to learn new words via playful activities and exercises with gestures and movements as one of the main

purposes of the research was to introduce to the teachers the activities with physical movements and gestures, which they can use in their lessons with young learners. In the process of the vocabulary teaching, the pupils benefited from the use of hand movements in various ways, for example, motivation and concentration increased considerably in the lessons, engagement was also enhanced when the teacher offered opportunities for physical participation during lessons. Moreover, the gestures provided numerous opportunities for group work and peer teaching in the classroom. In addition, the study also revealed that gestures could be used as a tool for differentiating the learners in terms of their learning styles and language abilities. To sum up, it could be concluded that the use of gesture seemed to improve vocabulary mastery and enhance motivation and engagement of the second grade pupils in a Norwegian school.

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List of abbreviations

DPT – delayed post-test

ESL – English as a second language

GG – gesture group

L1 – first language

L2 – second language

NVC – non-verbal communication

PG – picture group

PT – immediate post-test

RCL – recall test

RCGN – recognition test

SLA – second language acquisition

TPR – Total Physical Response

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1. Introduction

The present thesis is a study of whether and how gestures contribute to young learners'¹ vocabulary acquisition in English as a second language (ESL). Particularly, the research is an investigation of the effectiveness of using iconic gestures in the L2 classroom during the acquisition of new lexical items, which are introduced to two 2nd grade classes in a Norwegian primary school. In a quasi-experimental design, the outcomes of gesture-based vocabulary learning was compared with the results of picture-based instruction. The methodological approach taken in this study was a mixed methodology; the data had been collected through quantitative and qualitative methods. The research data in this study was obtained from three main sources: tests, classroom observations and the teacher's interview. The study, thus, focuses on vocabulary acquisition by young learners and the findings should contribute to the growing area of research on gestures as a learning and teaching strategy in L2 vocabulary educational settings.

1.1. Background of the study

Teaching and learning vocabulary is a fundamental component in the area of language learning. Regardless of this importance, until recently, there was little or no emphasis on vocabulary teaching. Nowadays, however, language teachers and researchers have recognized that vocabulary is an important aspect of language and it is becoming increasingly difficult to underestimate the role that vocabulary plays in learning a foreign language (Read 2000).

Considering vocabulary instruction in Norway, it is important to take into account the revised English Subject Curriculum (ENG 1-03) in the current national curriculum. The subject of English, according to it, covers four main subject areas: (1) language learning, (2) oral communication, (3) written communication, and (4) culture, society and literature.² Good competence in English presupposes, according to the guidelines, the ability to use the English language and to have knowledge of how it is used in different contexts. For this reason, in order to succeed in communication in a foreign language, vocabulary acquisition should be taken into consideration as word production, recognition and comprehension form the fundament in the development of English linguistic competence. Thus, it is crucially important to provide

¹ Young learners are defined as learners spanning the ages of 6 to 16 (Hasselgreen et al. 2012)

² http://www.udir.no/kl06/ENG1-03/Hele/Komplett_visning/?lplang=eng

optimal conditions for achieving mastery of vocabulary in English classrooms. However, the national curriculum guidelines do not specify what classroom methodology a teacher should implement in the lesson. This study, therefore seeks to obtain data, which will provide some insights into the approaches and strategies teachers could apply in order to develop vocabulary in young learners of English.

Furthermore, the trends in teaching practices in Norwegian L2 classrooms show that teachers are quite traditional in terms of teaching techniques and methods of instruction; for instance, they tend to rely on the textbook to a great extent (Drew, 2004: 20). Considering L2 learning conditions in Norway, in which learners usually memorize word lists through translation techniques or by means of pictures and textbooks, there appears a need for pupils to be presented with some other techniques of vocabulary learning. Supplementing the textbook with other materials could therefore be advantageous.

A great deal of interest has surrounded language learning in childhood as nowadays there is a clear tendency towards lowering the starting ages of foreign language teaching (Drew 2004: 18). As far as Norway is concerned, the onset age was lowered from the 4th grade to the 1st grade in 1997. Furthermore, in accordance with the current English subject curriculum, teaching time is limited to 138 teaching hours in total over the four-year period.³ According to the survey conducted in 2004, Norwegian English teachers in grades 1 to 4 are mostly form teachers, and roughly 40 per cent of all the teachers in Norway have no formal higher education in English (Drew 2004). All these aspects indicate a need to carry out the study on young learning and teaching in Norway.

The reason for the choice of the vocabulary instruction and the age group of young learners in this study is determined by the fact that vocabulary acquisition, despite its significance, is one of the major challenges in foreign language learning⁴. Often foreign language learners are confronted with the fact that the language material that they have learned decays within a short time. This situation is even more relevant at the level of primary school learners as they are more vulnerable in terms of retention and inattentiveness during their learning process. In her guidance for primary teachers, Phillips (1995) has convincingly stated that the way young children learn a foreign language and therefore the way to teach it depends on their developmental stage. Children at the elementary level are considered to be ready to learn a foreign language, and often they are well motivated and engaged in all types of activities

³ <http://www.udir.no/k106/ENG1-03/Hele/Timetall/?lplang=eng>

⁴ In this thesis the distinction between acquisition and learning was not made, as the study was conducted in the classroom and the researcher focused both on the vocabulary input and the acquisition of the new words by the pupils during practical activities.

the teacher tends to offer them (Phillips 1995). Hence, younger learners respond to language according to ‘what it does or what they can do with it’ (Phillips 1995: 7). Therefore, it is crucially important to provide vocabulary learning to young learners through experience (experience with situations) and associations (words related to pictures and actions) (Drew 1998; Cook 1991). Another reason for providing learners with such a concrete and situated understanding in the first stages of their language acquisition is that, according to Gee (2004), people should start first with concrete understandings, and as they gain more related experience in an area, they gradually begin to represent that experience more abstractly. As they gain such understanding, they can generalize it and, further, apply to many situations (Gee 2004). Gestures and other non-verbal aids could provide such support in educational settings. Although, as estimated, nearly 82% of all teachers' communications are non-verbal (Allen 1999), far too little attention has been paid to non-verbal teaching methods in educational settings. Studies of second language acquisition and the authors of L2 teaching materials often exclude gestures and other nonverbal aspects of language from the classroom or present them as a part of ‘strategic competence’ (Lazaraton 2004 : 80).

Throughout the thesis, the term *gesture* is used to refer to a sub-set of non-verbal communication. While a variety of definitions of the term have been suggested and each researcher examines different type of gesture, this paper will use the definition developed by McNeill (1985: 351), who has defined gestures as manual symbols, which occur only during speech, are synchronized with linguistic units and parallel in semantic and pragmatic function to the corresponding linguistic units. McNeill (1985: 1992) was one of the first who has argued that speech and gesture make up a single integrated system of meaning expression. Gestures, as reported in several studies so far, have been shown to be an effective procedure for the comprehension of the target language material and classroom management (Gullberg 1998; Lazaraton 2004; Sime 2006 etc.). Furthermore, there has been little work on the impact of gestures on vocabulary acquisition both for adults and children, but most of it has demonstrated that verbal information is better recognized and recalled if subjects encode it by performing gestures (Allen 1995; Tellier 2008; Macedonia et al. 2011, Macedonia and Kriegstein, 2012).

The present work focuses on the gesture use at the level of vocabulary acquisition, both receptive and productive, and emphasizes the role of non-verbal aids in second language learning. Such a study would be welcomed due to the lack of research in this field in the Norwegian classroom. In addition, much of the research up to now in this field has been either descriptive, or quantitative in nature. This paper seeks to evaluate the usefulness of iconic gestures in the L2 classroom, integrating both qualitative and quantitative approaches.

Moreover, this study arose from the personal interest of the researcher in gestures as a tool for enhancing L2 instruction among young learners, as the analysis of the literature shows that gesture as nonverbal aid is often underestimated or forgotten by teachers and educators in L2 teaching. Overall, far too little attention has been paid to the effectiveness of gestures in L2 acquisition among the very young learners in Norway, so this study attempts to increase interest in this topic among teachers, learners and educators and contribute to an understanding of the role played by iconic gestures in second language vocabulary instruction.

1.2. Aims of the study

The present study focuses on the vocabulary instruction to Norwegian young learners of English and compares the test performance on new lexical items of two pupil groups: one, which was presented with pictures and the other, presented with iconic gestures. An iconic gesture, referring to McNeill (1992: 12), is one that ‘bears a close formal relationship to the semantic content of speech’. This study contributes to an understanding of the role played by iconic gestures in second language vocabulary instruction.

The present study therefore intends to investigate the usefulness of iconic gestures as a novel non-verbal technique of teaching vocabulary and compares them with the traditional strategies that are currently used at the elementary level in a Norwegian school (translation and images). Moreover, the study seeks to assess the benefits and challenges of using gestures in the classroom from the perspective of the teacher and the researcher. The aim of this study is, thus, to evaluate the effect of teacher’s and learners’ gestures on the vocabulary teaching and learning in one of Norwegian primary schools. The thesis addresses the following research questions:

- 1a. Does seeing and producing iconic gestures have an impact on young learners’ L2 vocabulary learning as reflected in immediate and delayed test performance?
- 1b. Does seeing and producing iconic gestures have an impact on young learners’ L2 vocabulary learning as reflected in recall and recognition test performance?
2. What are the benefits and challenges of using iconic gestures in L2 vocabulary instruction among the second graders in a Norwegian school?

The first research question will be answered by the use of quantitative methods of data collection and analysis, whereas the second question is addressed through the descriptive, i.e.

qualitative, aspects of the investigation.

Considering the results of previous studies on the effects of gestures coupled with verbal information, it can be predicted that enactment of gestures as a novel of teaching is likely to be effective in the participants' vocabulary learning and retention.

1.3. Methodology

In this research project, the experimental design was chosen in order to measure the learning outcomes of teaching L2 vocabulary using gestures. According to Dörnyei (2007: 120), the main advantage of the using experimental design is that it is the best method of establishing 'cause-effect relationships and evaluating educational innovation' By using the experimental design with post-tests as main methods of data collection one can compare the effectiveness of ESL vocabulary teaching by means of gestures and pictures. For this particular research, it was not feasible to assign subjects at random to experimental and control classes. Moreover, the author of the study intended to conduct this research under the conditions closer to those normally found in educational settings. Consequently, the collaboration with already existing classes in a Norwegian school was considered appropriate for this study. It is worth noting that the quasi-experimental design has become an accepted research methodology in field studies and, as a result, it is 'generally accepted that properly designed and executed quasi-experimental studies yield scientifically credible results' (Dörnyei, 2007: 117). Nevertheless, it was important for the validity of the research to match the two chosen intact class groups in terms of age, ability of learners and teaching methods.

The data for the study was collected at a primary school in the county of Rogaland during the first half of the school year of 2013/2014. Two classes in one of the Norwegian primary schools studying ESL (N = 42; mean age 7.4) took part in the study. Ten English words, namely action verbs, had been selected and associated either with pictures, or with iconic gestures. The gesture group (GG) and the picture group (PG) had three weeks of instruction through games and activities, after which tests of both receptive and productive vocabulary learning with short-term and long-term delay were conducted in both groups of subjects.. The pupils' test performances on the new vocabulary items was measured both immediately and after a two-week delay. To investigate whether effects of iconic gestures persist or decay over time was the first purpose of the research. Another purpose was to measure the test results on

the recall and the recognition test types.

In addition, in order to evaluate the benefits and challenges of the use of gestures in the class, the data from the teacher's interview and classroom observations was integrated into the study. The teacher from the experimental group was interviewed after the instruction period. The interview was semi-structured and sought to gain insights into the teacher's reflection on her experience of using gestures during vocabulary instruction. One lesson observation in each class was carried out before the project in order to get a general idea of the level of proficiency of learners and to evaluate whether the teacher used gestures in the lesson or not. Observations of both groups during the project focused on how the participants functioned during the instruction period in the classroom and how the learners from the experimental group dealt with the given tasks compared to the learners from the control group. By employing the qualitative methods of data collection in the experimental study, the present work attempted to assess the effect of gestures in L2 classroom from multiple perspectives: the learners', the teacher's and the observer's. Thus, for the current research, the most appropriate paradigm suited for an attempt to investigate the effects, benefits and challenges of using gestures in the introduction of new vocabulary to young learners was a mixed-method approach.

1.4. Outline of the thesis

The overall structure of the thesis takes the form of six chapters. Following the Introduction, chapter 2, elaborates on the relevant theory in relation to the gesture studies. The chapter begins by laying out the theoretical dimensions of the study, and provides the definitions of key terminology; this chapter contains sections, which outline the main categories of gesture types and functions of gesture. Furthermore, the chapter provides reviews of some research studies that are related to the main theme of the thesis, namely, gesture and learning, gesture and first language (L1) and gestures and second language acquisition (L2). Chapter 3, 'Methods', presents the methodological approach employed in the study, namely the mixed-method approach. This chapter includes theory about the quasi-experimental design and describes the major research instruments - tests, observations and the teacher's interview in the research project. Chapter 4 presents the findings of the study. Chapter 5 discusses the results of the study, including both quantitative and qualitative findings and compares them with the previous

research. In addition, the chapter includes a discussion of the limitations of the research and some recommendations for future research in this area. Finally, the conclusion gives a brief summary of the study findings and indicates the practical implications for the classroom.

2. Literature review

2.1. Introduction

The aim of the present chapter is to examine issues related to the notion of gesture, its and functions, and to provide a review of the studies of gesture and its impact in the language classroom. The first section introduces the main terms and notions associated with the gestures. These areas are, firstly, non-verbal communication and multimodality; secondly, communication and representation; and mode. The notions of non-verbal communication and multimodality are viewed mostly from the perspectives of learning and language learning. The sections that follow introduce the definition of the concept of gesture and review various classifications of gestures. The subsequent section, 'Functions of gestures', addresses the question of gesture use in communication and language learning. This section examines also the issue of the relationship between gesture and speech, dwelling on the McNeill's viewpoint. A summary of the main studies is provided in the next three sections, which are structured around the main studies: gestures and learning, gestures and L1, and the effects of gesture on L2. The final section of the chapter is divided into four main subsections, which refer to different aspects of using gestures in the classroom.

2.2. Non-verbal communication and multimodality

Nowadays, texts are moving and changing; they cannot be considered as static forms existing in isolation anymore. Contemporary texts are becoming multimodal, which means they combine writing and image (on screen or page), moving images, music and speech (on a DVD or on a website) and gesture. In other words, language is no longer a unique or even central mode of communication. Bodily communication, or non-verbal communication (NVC), is closely intertwined with language and has been often underestimated in the past. However, a growing body of literature has investigated what role NVC plays in social, cultural and other areas of study concerned with human behaviour, such as linguistics, politics, education, international connections and so on. Undoubtedly, this tendency is related to an increased interest in the communication conveyed through television, movies, computer games and virtual reality (Allwood 2002: 7).

The importance of non-verbals in the domain of education and language learning has been pointed out by many researchers (Kress 2001; Gee 2004; Gee and Levine 2008). Nevertheless, much uncertainty still exists about the question of what is non-verbal

communication and how it differs from non-verbal behaviour. This problem follows from the difficulties of defining what is non-verbal and, consequently, what is communication. As Argyle (1988) stated, non-verbal communication takes place whenever one person influences another by means of non-verbal channels, such as tone of voice, facial expression or gesture. This may be intentional or unintentional. Non-verbal behaviour (NVB), or the expression of emotion, according to Argyle (1988), is an unintentional process of using non-linguistic signals. However, in many circumstances neither a speaker, nor a listener can distinguish non-verbal signals, so they experience a mixture of NVC and NVB. In the present study, the term non-verbal communication encompasses a special emphasis on the intentionality of communication, whereas the term non-verbal behaviour does not contain the concept of intentionality. This is highlighted in the following definition of NVC introduced by Rossini (2012) and fully adopted in this thesis. He defines NVC as:

the intentional transmission of information, either for representational, emotive, poetic, and conative purposes, from a transmitter A to a receiver B, mainly and prototypically through the visual channel, but also through the vocal-auditory channel, by means of specific codes, either innate or culturally-determined, that are not usually specialized for verbal communication.

(Rossini 2012: 32)

In recent years, there has been an increasing amount of literature on communication as a multimodal concept. According to Kress (2001), who is critical of the traditional ‘monomodal’ approach to communication and representation, communication is inevitably multimodal. It is necessary to clarify what is meant by *communication* and *representation* in the context of the multimodal approach. While a variety of definitions of these terms have been suggested in the literature, this paper will use the definitions provided by Kress (2001), who views them as two inseparable notions. However, in order to provide a theoretical distinction of the terms, he defines *representation* as the process that focuses on what the individual wishes to represent about the thing represented; *communication*, on the other hand, refers to how that process is accomplished in the environment of making that representation suitable for a specific audience (Kress 2001:4).

Thus, multimodality describes approaches that understand communication and representation to be more than language, and which attend to the full range of communication forms people use – image, gesture, gaze, posture, and so on – and the relationship between them (Jewitt 2009: 14). According to Jewitt (2009), the starting point for multimodality is to extend

the social interpretation of language and its meanings to the whole range of representational and communicational modes or semiotic resources for making meanings that are employed in a culture, such as image, writing, gesture, gaze, and posture.

As this section has turned to multimodality, it will be necessary to clarify some terms referred to this concept. One of the most important is the notion of *mode*. Mode is a 'socially shaped and culturally given resource for making meaning' (Kress 2009: 54). Image, writing, music, gesture, speech, moving image, soundtrack are examples of modes used in representation and communication. The resources of a mode can differ from culture to culture, for instance, one particular body movement or a mode of speech in French culture is not identical to gesture or speech in another (Kress 2009: 55). Moreover, what is done by speech in one society may be done by gesture in another or, on the contrary, a meaning expressed by gesture in one culture may need to be spoken in the other (Kress 2009: 57). Hence, meaning can be made, distributed, received, and interpreted through many representational modes, not just through language, speech or writing, but in multimodal combination of several modes (Kress 2009).

Consequently, this approach challenges the view that suggests the superiority of language among other modes of communication. This view has been promoted by Kress (2001, 2009) who has argued that multimodality offers a new perspective for understanding language, not assuming its superiority. What is important to assume is that language provides a framework and some conceptual tools for communication and language learning, whereas multimodality, according to Kress (2001), has the effect of expanding the meaning-making potential through various non-linguistic modes of communication (gesture, colour, design, etc.).

The evidence of the multiplicity of modes can be clearly seen in the educational settings, as the classroom is a place where gestures, images, videos are widely used in order to make meanings, interpret and materialize them. As Kress argues (2001: 1), learning happens through all modes as a complex activity in which speech or writing are involved among a number of modes. Consequently, language becomes simply one of several modes that are simultaneously in use in teaching and learning. Each of the modes that is active in the classroom contributes to the overall meaning in a unique way. Summing up, as noted at the beginning of the section, the present study attempts to look beyond one modality (spoken language) and to see connections across modalities and their role in language learning in general, and vocabulary acquisition in particular.

2.3. Definitions of gesture and its nature

Gesture is considered a part of non-verbal communication as a whole. Gesture as a subset of a broader term, NVC, is frequently used as a term in the field of applied linguistics and language teaching and yet it is a concept that needs to be explicitly defined. In this chapter, first, the various use of the term in the literature is provided; second, the definition of gesture adopted for the thesis is given.

Regarding the etymology of the word *gesture*, it goes back to a Latin verb, which means ‘to bear, to carry; to perform, to accomplish’ (Kendon 2004). In earlier uses, the word referred to deportment or the way in which a person carried his own body (Kendon 2004). The word in its modern use derives from the medieval word, *gestura*, which means ‘mode of action’ (Kendon 2004). Later and up to the beginning of the eighteenth century the word was used to refer to the expressive use of the body – namely, of the hands and face, and that is why the focus on gesture was chiefly in the area of rhetoric (Stam and McCafferty 2008).

Contemporary studies define gestures as symbolic movements of the arms and hands related to ongoing talk (McNeill, 1992). Gesture, according to Kendon (2004), is name for ‘visible action’ when it is used as an utterance or as a part of utterance. Gestures, according to McNeill (1985: 351), are manual symbols, which are synchronized with linguistic units and parallel in semantic and pragmatic function to the same linguistic units; they can perform text functions like speech and develop together with speech in children. Another important issue, emphasized by McNeill is the complementarity of gesture in relation to speech. Gesture is not a different version of the same verbal plan and not a translation from speech into another modality. On the contrary, gesture and speech are two separate, yet integral entities each arising from the same emergent thought and essential to the expression of meaning (McNeill 1992, 2000).

The problem of the definition of the term *gesture* was first mentioned by Kendon (1986), who pointed out that the notion of gesture remains exceedingly broad if to embrace in it all kinds of instances where an individual engages in movements. Similarly, this view was also adopted by McNeill (1992: 37), who argued that many authors interested in gesture studies failed to distinguish among different categories, ‘with the result that those no-verbal behaviours that differ fundamentally are confused or conflated’. To deal with the confusion, Kendon (1986) suggested denoting all gestures that occur in association with speech and which seem to be bound up with it as part of the total utterance by the term of *gesticulation*. He labelled the gestures that, in contrast, are standardized and function independently of speech, *autonomous gestures*, or *quotable gestures*. A more detailed account of the types of classifications developed

by different scholars will be given in the section 2.4.

For the purpose of the clarification of terminology issues, the term *gesture* in this paper is used in a sense of *co-verbal gestures*, proposed by McNeil and Levi in 1982, cited in Rossini (2012: 21). The definition of *co-verbal gestures* is the following: ‘a subset of gestures strictly correlated to and co-occurring with speech within communicative acts’ (Rossini 2012: 39). This concept encompasses the whole range of gestures that can only occur together with speech. McNeill and Levi (1982), cited in Rossini (2012) divide them into beats, metaphors, and *iconics*, or *iconic gestures*, referring to McNeill’s classification. An iconic gesture is one that ‘in form and manner of execution delivers a meaning relevant to the simultaneously expressed linguistic meaning’ (McNeill 1992).

In this section, a brief overview of the etymology of the term and the description of the main principles of defining the gesture as a subset of NVC have been provided. Moreover, the section has presented the problem of definition of gesture that has been discussed by several authors (Kendon 1986; McNeill 1992). In addition, the terms *co-verbal gesture* and *iconic gesture* are defined. The chapter that follows moves on to consider the classification systems of gestures.

2.4. Classifications of gestures

A number of classification schemes for gestures have been proposed in the area of gesture research. All of them are varied depending on the number of the groups of gestures and the labels for types of gestures but there is much common agreement on the main principles of categorization. First, the majority of researches of gesture recognize that gesture may function autonomously, or independently of speech, and all schemes recognize spontaneous gestures with no formal ‘standards of well-formedness’ (McNeill 1992). The hand movements that represent, illustrate or emphasize some aspect of what is being conveyed by speech are labelled by many authors as co-speech, or speech-associated, gestures (Gullberg 2008: 278). Second, most of the authors draw a distinction between speech-associated gestures that provide a direct representation of some aspect of the utterance, and the gestures that have a more abstract sort of relationship with what is being said (Gullberg 2008). Third, a class of conventionalized, culture-specific gestures that constitute fixed form-meaning pairs are also distinguished by most of the authors (Efron (1972[1941])); Kendon 1986, 2004; McNeill 1992). These hand movements are often called *emblems*. For instance, the ‘ring’ gesture alternatively means ‘OK’,

‘good, ‘money’, depending on where it is used (Gullberg 2008: 278). A brief summary of the main classifications of gesture types is given in this section, for the sake of exemplification, but the McNeill’s model of gestures will be described in details.

The first theoretical attempt to distinguish different classes of body movements was suggested by David Efron (1972[1941]), who provided definite evidence of how culture determines the type of certain body movements during conversation. He grouped them into six types: emblems, ideographs, deictics, spatial movements, kinetographs and batons. By focusing on the gestures of immigrant and assimilated Southern Italians and Eastern European Jews in New York, he found, for example, that Italian immigrants used far more illustrators of objects and movements than Jewish immigrants, who used more ideographs, cited in Argyle (1988: 197).

Later, Ekman and Friesen (1969), building on the classification of Efron, produced their own version of categorization: emblems, for example, included gestures, which are not totally arbitrary, but show to some extent an iconic relationship with the conveyed meanings. Furthermore, they included batons, ideographs, deictics, spatial, kinetographs and pictographs into the category of illustrators, movements that are directly tied to speech. They also provided a set of parameters for gesture categorization, namely, Intentionality, Awareness, Culturally Shared Meaning and Modification of Listener’s Behaviour. To sum up, the authors proposed five classes of non-verbal behaviour on the basis of their origin, coding and usage: emblems, illustrators, affect displays (facial expressions that show emotion), regulators (movements that are involved in conversation and turn-taking) and adaptors (movements involved in interpersonal contact and ‘self-grooming’ (Ekman and Friesen (1969) cited in Stam and McCafferty (2008).

In the same vein, summarizing previous works on classification of human gestural repertoires, Argyle (1988: 188), provided the following generalized typology including three main types of bodily movement: emblems, illustrators and body-focused movements. *Emblems* refer to those non-verbal movements, which have a direct linguistic translation, for which the meaning is known by all or most members of a group or subculture; *illustrators* are the movements that are directly linked to speech and function to illustrate what is being said. *Body-focused movement*, or adaptors, may not be perceived as meaningfully related to the speech in which they accompany. They occur during periods of greatest cognitive load or when a person is anxious or under stress.

Taking into account that there are different kinds of gestures and each of them should be treated and studied in a different way according to its particular domain of interest, Kendon (1986) proposed the organization of hand movements into the system of all existing hand

movements. This system, elaborated by McNeill (1992), is provided in Figure 2.1 below:



Figure 2.1. Kendon's continuum

McNeill organised the types of gestures on a continuum, according to their degree of convention and their link to speech. At the left end of this continuum, which he called *Kendon's continuum*, gesture is used in conjunction with speech. *Gesticulations* refer to free-form and 'idiosyncratic spontaneous movements of the hands and arms accompanying speech' (McNeill 1992: 37), or co-speech gestures. At the other end, gestures are used independently of speech, such as *sign languages*, which are composed of codified gestures that have linguistic properties and are characterized by complete lexical and grammatical specification (McNeill 1992). *Pantomimes* are placed in the middle, as they can be performed in alternation with speech, they can depict objects, actions or an entire story. *Emblems* are formalized and culturally codified gestures that can function on their own. Between gesticulations and pantomimes, *language-like gestures* are placed. They represent context-dependent gestures, which are inserted in the place of a syntactic unit during speech. As regards the present work, it focuses on co-speech gestures, situated on the left of the continuum. Throughout the paper, the term *gesture* is used to refer to body movements accompanying speech, particularly, the study focuses on studying the influence of iconic gestures.

For the present study, the classification of co-speech gestures suggested by McNeill (1992) will be adopted. It is important to note that the term *gesture*, according to McNeill, is at the left-hand end of Kendon's continuum, namely gesticulations, i.e. movements which occur only during speech. He grouped co-speech gestures into four types: iconic gestures, metaphoric gestures, beats and deictic gestures. *Iconic gestures* are closely related to the semantic content of speech. As already mentioned, an iconic gesture is one that 'in form and manner of execution delivers a meaning relevant to the simultaneously expressed linguistic meaning' (McNeill, 1992). McNeill emphasizes that this type of gestures often appears to be more capable than speech at showing relevance as iconics are unconstrained by systems of rules and standards, unlike speech. Iconic gestures may be kinetographic, representing some bodily action, like sweeping the floor, or pictographic, representing the actual form of an object, like outlining the shape of a box.

Metaphoric gestures may be pictographic or kinetographic like iconics, but they exhibit images of abstract concepts, rather than a concrete object or action. Metaphorics are

semantically parallel to sentences with abstract meanings (McNeill 1985: 356). As the metaphors are formed on the basis of cultural knowledge, metaphoric gestures can be a source of information about cultural attitudes of the speaker.

Deictic gestures refer to things by pointing with the hand, the finger, etc. They can be either actual or metaphoric. For example, we may point to an object in the immediate environment, or we may point behind us to represent past time. *Beats* are gestures that have no propositional content of their own. They are gestures that demonstrate parallels of pragmatic functions of language (McNeill 1985: 359). In a beat gesture, the hand moves with a rhythmical pulse that lines up with the stress peaks of speech. As McNeill (1985: 359) states, beats are emphasizing discourse-oriented functions where the importance of a linguistic item arises not from its own semantics, but from its relation to other linguistic items. For instance, a typical beat gesture is a simple flick of the hand or fingers up and down, or back and forth, the movement being short and fast.

This study deals with iconic gestures as a sub-set of co-speech gestures, or gesticulations (in Kendon's terms). It is also worth noting that the empirical part of the research studied non-spontaneous gestures, as they were intentionally performed by the teacher presentation of new vocabulary and were imitated by learners in their practical activities and during the retrieval part of their test performances.

Having defined what is meant by gesture and described the main classifications of gestures, the next section of the thesis addresses the ways in which hand movements function and refer to the content of the accompanying word or utterance. The overview of the main functions and the core theories on the relationship between speech and gesture is provided in the next section.

2.5. Functions of gesture

The review of the functions of gestures provided in this section demonstrates the evidence from the recent studies of teacher's and learner's use of gestures in L1 in general and in L2 classrooms in particular. Traditionally, co-speech gestures were considered purely communicative. However, in recent years, a large and growing body of literature has investigated other functions of gesture, such as interpersonal, pragmatic and cognitive ones. Most of the authors, however, reach the agreement that gestures may be accomplishing several functions at once. For example, Gullberg (2006, 2008) argues that gestures are multifunctional.

The author describes self- and other-directed functions, but she points out that they can serve those functions simultaneously (Gullberg 2006: 105). According to Stam and McCafferty (2008), gestures tend to serve both communicative and cognitive functions at the same time. Krauss et al. (2000) identified three main functions of gestures, which are the communicative function, tension reduction and lexical retrieval function.

The viewpoint that gestures should be considered mainly according to their communicative and pragmatic functions they may have on recipients is convincingly supported by Kendon (1986). He was among the first to argue that to ignore gesture is to ignore part of the conversation. He argues that ‘gesticulation arises as an integral part of an individual’s communicative effort’ (1986: 12). Gesticulation as an important component of the utterance produced has a complementary relationship to what is encoded and the utterance unit cannot be fully understood if its gestural component is ignored (Kendon 1986: 12). According to the author, this applies to all kinds of gesticulation, including beats. To sum up, Kendon (1986) considers that the communicative function of gesture is primary, as gestures that co-occur with speech constitute ‘consequence of the process of the translation of thought into utterance’.

The functions of gesture and relationship between gesture and speech, and, consequently, thought, have been widely investigated. The majority of the researchers agree on the close link between gesture and speech. Depending on whether they view gesture and speech as dependent or independent processes, Stam and McCafferty (2008) classified the set of theories on gesture and speech into four groups. According to the first approach, gesture precedes speech. The gestures start in the mental image that the speaker is translating into speech, and the way the translation process determines which type of gesture will be used (‘speech-primacy’ gestures, i.e. beats, or ‘motor-primacy’ gestures, i.e. iconic and metaphoric gestures) (Freedman 1972), cited in Stam and McCafferty (2008). Conversely, proponents of the second view claim, that gestures and speech result from separate processes and these two processes are globally autonomous and with speech production being the dominant process (Hadar and Butterworth 1989). The third approach proposes that gesture and speech develop in parallel but with no collaboration. The advocate of this gestural model, De Ruiter (2000), asserts that gestures are initiated and produced in three stages: first, a sketch is produced, then a motor program for the gesture is generated, and finally the gesture is executed. However, he claims that this model does not account for beats. The fourth model suggests that gesture and speech are two independent processes that collaborate (Kita 2000). He describes speech and gestures as two processes arising independently from two different types of thinking – analytical and spatio-motoric. Kita asserts that gestures are primarily ‘actional’ rather than representational, and they can help organize spatial information for speaking (Kita 2000).

The advocates of the view that the function of gestural movement is primarily cognitive believe that the study of gestures may provide some evidence on the processes by which thought is translated into utterance (McNeill 1992, 2000; McNeill and Levy 1982; Alibali, Kita, and Young 2000). In particular, McNeill and his colleagues propose the cognitive theory of gesture, which is fully based on its close relationship with speech (McNeill and Levy 1982; McNeill 1992). Focusing on language production, McNeill (1992) empirically proves the hypothesis that gestures are a natural part of speech, and that gesture and speech form an integrated system. Since then, the linkage between gesture and language has received more attention among researchers who have developed and enriched McNeill's theory. Gestures and the spoken utterances often have identical meaning, although they convey this meaning in completely different ways: speech utterance is linear through time, whereas gesture is imagery. Referring to McNeill (1992), gestures are imagistic, holistic expressions of the same thought that speech conveys in linear, hierarchical form. Each modality, due to the unique semiotic features, can go beyond the meaning possibilities of the other, and this is the foundation of the use of gesture as an access into the mental processes of the human.

Suggesting that speech and gesture form a single, fully integrated system and arise from the same underlying mental process, researchers provide some evidence of cognitive functions of gestures in SLA (Alibali et al. 2000; Valenzeno et al. 2003). Morsella and Krauss (2004) show empirically, first, that gestures can improve the recall of spatial information; second, gestures also serve cognitive functions, such as facilitating speech production. One of their findings is the evidence of a decrease in speech rate of the participants in the context of gesture restriction. According to their viewpoint, the restriction seems to lead to 'dysfluency because gestures normally aid speech production by activating the sensorimotor features of semantic representations' (Morsella and Krauss 2004: 421). In their conclusion, they have emphasized that gestures serve multiple intrapersonal and interpersonal functions.

One of the studies that support the view that gestures aid conceptual planning of speech is the experimental research conducted by Alibali et al. (2000). The results of the study supported the view that spontaneous gestures are involved in the conceptual planning of utterances. The authors claim that the action of gesturing helps speakers to organize spatial information for verbalization, and in this way, gesture plays a role in conceptualizing the message to be verbalized. It follows from the view that gesture may play a role, not only in speech production, but also in cognitive activity more generally. Thus, the researchers state that 'any theory of human performance will not be complete without an understanding of the role of gesture in cognitive activity' (Alibali et al. 2000: 610). These studies add to the growing body of evidence showing that teachers' pointing and gesturing can indeed facilitate student

learning and enhance their comprehension.

One of the possibilities why teachers' gestures facilitate students' comprehension is that gestures capture and maintain students' attention. In order to prove this hypothesis, Valenzeno et al. (2003) showed preschool children videotaped lessons with and without gestures about the concept of symmetry. The researchers found that children who participated in the verbal-only lesson were less attentive to the content that was explained than children who viewed the verbal-plus-gesture lesson (Valenzeno et al. 2003). An alternative explanation, provided in the same study, is that teachers' gestures facilitate students' comprehension because they provide redundancy in the message. Because gesture is a second communicative channel, a student has two 'opportunities' to comprehend a message that is expressed in both speech and gesture (Valenzeno et al. 2003).

Another use of gesture is to provide interpersonal functions in the educational settings. One of the examples is the study carried out by Allen (2000), who examined a foreign language classroom in terms of the teacher's gesture behavior and found that the teacher's use of gesture induced an encouraging atmosphere for learning. In a similar way, through metaphoric and deictic gestures, learners were able to establish relationships in time and space with people, objects, and events in their discourse even without adequate linguistic signals (Gullberg 1999).

In brief, in the recent years there have been a growing number of studies that considered gestures to be not only a communicative and speech production concept, but also serving cognitive functions in learning in general, and in foreign language teaching in particular. This section has dealt with the arguments that support this point of view, mainly, the theory promoted by McNeill (1992) on speech and gesture as a part of a single system. Despite some arguments against this theory, most of the authors agree that this theory is a unique, empirically based, and biologically driven theory of the relation between thought and speech (Orton 2007). The current study is one of the numerous works that support the postulates of this theory and attempt to apply its main principles when considering gesture use in L2 acquisition within the Norwegian settings in a primary school. Before turning to the use of gestures in L2 classroom, the next section deals with reviewing the literature on the effects of gestures in learning in general

2.6. Gestures and learning

Even a casual observer notices numerous examples of hand movements used by teachers and learners, so this section of the thesis turns to the empirical evidence of the role of gestures in

educational settings. The purpose of this section is to describe more specifically the literature on gestures and learning, and to provide some insights into the ways of to what extent and how gesture can be used in the educational environment.

One reason why gestures can be a useful tool and a great advantage in teaching is that it can facilitate the learning process in kinesthetic learners. It is valuable to consider, according to Leaver et al. (2005), Hughes (2010), that there are, probably, many different types of learners and ways of learning. In such types of learners, or in terminology of Gardner (1993), types of intelligences, the most known are visual, verbal, auditory and kinesthetic types. Gardner (1993) suggest that there are seven types of intelligences, maintaining that a person favours each of these to varying degrees. Referred to Leaver et al. (2005), 'visual' learners acquire new information through sight. 'Verbalists' keep in memory the letters of the word. 'Auditory' learners, in their turn, perceive new information through sound. Finally, 'motor' learners acquire new information through movement. These factors might also have some implications for the choice of teaching techniques and the choice of activities implemented in class.

Another relevant theory in terms of gesture use and learning is Krashen's Monitor theory, in particular, the Affective Filter hypothesis. Considering second language acquisition, the scholar claims that the 'affective filter' is an imaginary barrier which prevents learners from acquiring the second language (Krashen 1982), cited in Drew (1998). Motivation, self-confidence and anxiety are considered to be the factors which should be taken into consideration by teachers in order to produce 'low filters'. Learners should not be tense, stressed, uncomfortable, or bored in the process of learning, otherwise they are deprived of the opportunity to acquire a language. Thus, it is crucially important to provide a classroom with such an environment for pupils where they succeed in acquiring L2.

Gestures, as proposed by Goldin-Meadow (1999), can influence the information exchange between teachers or parents and learners in two different ways. First, gesture demonstrates to teachers the child's level of comprehension. Hand and arm movements, as well as body movements sometimes reflect what children know implicitly and something they cannot yet express explicitly (Goldin-Meadow 1999: 76). The information conveyed in gestures could be even more complete than in accompanying linguistic utterances. Furthermore, as Goldin-Meadow and Sandhofer (1999) demonstrate in their study, gestures could help the teachers recognize those pupils who are most ready to learn. They illustrate their points by showing that gestures accompanying speech encode meaning differently from speech. While gesture relies on visual and mimetic imagery to convey an idea holistically, speech conveys meaning relying on codified words and grammatical devices. Nonetheless, the information conveyed in gesture and in speech can overlap a great deal. There are, however, times when

gesture conveys different information from speech. For example, if a child verbally describes the different heights of two objects but gesturally represented the different widths, adults may make an assessment of that child's knowledge that incorporates height and width. Hence, this child produced a gesture–speech mismatch. Children who produce mismatches on a task have ‘information relevant to solving the task at their fingertips’ (Goldin-Meadow and Sandhofer 1999). Therefore, according to the researchers, a learner who gestures more is closer to understanding and benefits more from instruction than those learners who express less in their gestures. To sum up, gesture can open a ‘window into the implicit knowledge of a child’ and can be helpful tool that allows teachers or caregivers to adjust the instructions and scaffolding to fit with the child's level of comprehension (Alibali and Goldin-Meadow 1993).

A similar view on gestures providing some insights into the process of thinking and learning is supported by Cook et al. (2006), who empirically proved that gestural output is helpful in educational settings. To investigate the reasons for this, they experimentally manipulated children's gesture during instruction in a new mathematical concept or arithmetical principle. They found that requiring children to gesture while learning the new concept helped them retain the knowledge they had gained during instruction. In contrast, requiring children to speak but not gesture while learning the concept had no effect on solidifying learning. Gesturing can thus play a role in learning, due to the fact that gesture offers a representational format that requires relatively little effort to produce, thereby freeing resources that can then be used to encode new information in a more lasting format. Expressing information in gesture may produce stronger and more robust memory traces than expressing information in speech because of the larger motor movements involved or because of the potential for action-based, bodily encoding (Cook et al. 2006).

As discussed above, gestures have the potential to make the learning process more varied according to the learning abilities and much faster. The findings of several studies suggest that using gestures to represent ideas could be extremely helpful in constructing and retaining new knowledge (Cook et al., 2006; Goldin-Meadow 1999). The next section describes the impacts of gestures in language acquisition and learning in general.

2.7. Gestures and L1

This section follows on from the previous chapters, which outlined the strong evidence that gesture is an important indicator of thinking and knowledge, and thus can play a role in mental

development. Cognitive development, in turn, is driven by the development of language and communication. As proposed earlier, one of the primary functions of gestures is the function of communication. However, it has been widely known that when one is speaking on the telephone, even though a listener is not able to see him, the speaker often gestures. It has been suggested that this can be explained by the fact that a speaker is not trying to benefit a listener but to benefit himself as gesturing helps a person plan what is supposed to be said and to find the words to say it (Doherty-Shedden 2003: 81). Similarly, even people who are born blind and who have never seen a single gesture, perform it when talking to someone (Iverson and Goldin-Meadow, 1998). Thus, gestures are not only an inborn feature of humankind non-verbal behavior, but more importantly, there are considerable links between gestures, language and thought.

One of the first authors who convincingly demonstrated that there is an unambiguous relationship between language development and the appearance of the gesture as a visual sign for the child, was Vygotsky (1983). The linguist in his major study of the prehistory of written language saw the value of examining children's non-verbal behaviour and the social interactions in which they take part Vygotsky (1983). In order to examine how social interaction can facilitate intellectual growth, he considered the use of gesture as a means of communication during child development. For instance, a piece of wood appears to be a baby in a game because the same gestures that depict holding a baby in one's hands can be applied to it. What is valuable to point out at this point is that gestures establish some stage of children's sign development in general and the development of oral and written language in particular.

Moreover, Vygotsky (1983) assumed that the origins of written language were in gesture, play, and drawing. The scholar used various vivid examples as evidence that the prehistory of written language began with the gesture. For instance, in order to assist memory a person in the past tied a knot, which was one of the first forms of the written word. Gesture is the initial visual sign that contains the child's writing. Vygotsky convincingly argued that 'gestures are writing in the air' (1983:281). The gesture is the initial visual sign that contains the child's future writing or, in other words, written signs frequently are simply gestures that have been fixed (Vygotsky 1983). In the child's development, two other domains link gestures to the origins of writing – scribbling and symbolic play, in which a child assigns meaning to an object through gesture (1983: 82). Overall, the author considered that language is the foundation for the development of human thought.

With regard to early stages of L1, several researchers conducted a series of studies of toddlers and pre-schoolers in their language acquisition. In 2000 the longitudinal study undertaken by Goodwyn et al. reported that non-verbal communication abilities, specifically

gestures, influence language development. In this study, they taught the parents a system of baby signs to use when interacting with their children. The parents and their children took part in the study from when the babies were 11 months old to three years old. Another group of parents also took part in the experiment but was told to focus on consciously naming verbally objects while interacting with their infants. A third group of parents was given no instruction at all. Findings suggest that babies whose parents had taught them gestures did better in a number of measures of verbal language than those who did not receive this treatment.

Focusing on short-term memorization in a free recall task, Tellier (2005) conducted an experiment in which young children, aged 5 years old, had to memorise words in L1. Some of the children just had to look at the gestures and repeat the words heard, others had also to reproduce the gestures they saw. The results supported the claim that the use of teacher's gestures in the learning of L1 vocabulary can have an effect on memorisation, as in a free recall task the children who reproduced the gestures performed better than the control group. In addition, the researcher made the conclusions that her study on short-term memorisation of L1 words could also be helpful when conducting further experiments on long-term memorisation of L2 lexical items.

In the same vein, De Nooijer et al. (2013) studied the effects of different instructional conditions (i.e., no imitation, imitation during encoding, imitation during retrieval, imitation during both encoding and retrieval) on learning of novel verbs in L1. Participants were Dutch primary school children ($M = 10$, $N = 120$). This study suggested that imitation of gestures either during learning or during an immediate recall test could have an effect on the number of verbs that is correctly recalled on both an immediate recall test and a delayed test after one week. Imitation could potentially be a useful tool in word learning, but the conditions under which it can be successfully used should be further investigated.

The evidence presented above thus supports the idea that gestures affect learners' performances to take advantage of the process of L1. This section demonstrated that hand gestures influence speech production both in terms of acquiring L1 and in terms of using it. Furthermore, the analysis of literature reported in previous sections suggests that in many ways lack of gesture use or inattentiveness of teachers to learners' gestures might impede learners' abilities not only to express themselves but also to think. So, considering the fact that both verbal and non-verbal modalities provide important foundations for the development of the first language, the next section will describe the main findings of the empirical work in the domain of second language acquisition.

2.8. Gestures in L2

This section aims to describe the main research data so far that shows the impact of gestures on second language development. The section consists of four sub-sections, which focus on four aspects of gesture use as a tool for reinforcing second language acquisition. They are (a) emblems and culturally specific gestures in the context of L2 learning, (b) spontaneous teacher and learner gestures and their role in the classroom, (c) gesture as a technique and instructional method in L2, and (d) gestures in EFL vocabulary teaching and learning.

2.8.1. Acquisition of culturally specific gestures in L2

Many researchers in the field have pointed out the relevance of the studying of gestural repertoires and cultural emblems. In her overview of the reasons for studying gestures in a second language context, Gullberg (2006) states that gestures as culturally specific unities can be treated as part of what learners can acquire in a target language. Summarizing the most remarkable works in this field, she maintains that non-verbals are part of the culture and should be taught as such.

Numerous researchers have argued for the need for explicit instruction of authentic and culturally specific gestures in foreign language teaching (Antes, 1996; Pennycook, 1985 etc.). Undoubtedly, to be a native speaker of a language entails not only being fluent verbally but also having command of the gestures that accompany spoken language (Antes 1996: 439). Much of the discussion on non-verbals in the teaching of a L2 refers to emblems (Antes 1996; Allen 1999; Jungheim 1991, 2006). Emblems are, according to Ekman (1980: 89), symbolic actions where ‘the movement has a very specific verbal meaning, known to most members of a sub-culture or culture, and typically are employed with the intention of sending a message’. They are used to replace a word, phrase, or expression, or to repeat or qualify the verbal message. Since the use and meaning of specific emblems can vary among different cultures, misunderstanding or failure to communicate may occur when non-members of a culture try to use or interpret emblems according to the meaning assigned to the emblems in their own culture. Raffler-Engel (1980: 227) states, ‘If we are to be bilingual we also need to be ‘bi-kinetic’, for a target language spoken without the body motions of the source language manifests a foreign accent in more ways than simply in its inadequate gesticulation’.

One of the first studies that demonstrated that gestural repertoires are not innate and can be learned was the study by Efron (1941). The comparison of the gesturing style of the Yiddish

speaking Eastern European Jews and Southern Italians in two generations showed that the level of cultural integration determined whether speakers displayed the gestural repertoires of the native group (Yiddish or Italian) or the surrounding culture (American English). He found that Italians employed many pictorial, depictive gestures, whereas the Yiddish speaking Jews used gestures which were 'ideographic' in manner, illustrating the logical structure of the talk.

Different authors have emphasized the importance of target language gestures for SLA in the classroom settings, but few attempts have been made to assess and test gestural acquisition. Focusing on the classroom acquisition of gestures, Jungheim (1991), cited in Jungheim (2006) examined whether Japanese students of English learned the meaning of American emblems better when given explicit instruction or when they were exposed to them and left to deduce the meaning. The findings suggested that the group who had received explicit instruction succeeded better in test performance than the group of learners who had to deduce the meaning of the emblems by themselves. In short, the above studies have provided some evidence that learners of foreign languages do need to 'acquire gesture usage' as part of their overall communicative language ability (Jungheim 2006:128).

In a recent study conducted by Kellerman and van Hoof (2003), the use of language-specific gestural patterns by the native speakers of English, Dutch and Spanish (as they call them 'manual accents') was described in terms of their transition to L2. In the experiment, participants were supposed to tell the story with plenty of actions during which they tended to use 'path' gestures in descriptions of motion events. According to their findings, there are culturally specific gestural patterns, and they are often transferred to the L2 and they may reveal 'L1-based thinking patterns not detectable in otherwise fluent and correct L2 speech' (Kellerman and van Hoof 2003: 251). In conclusion, the authors have stated that the importance of gesture in the study of second language acquisition should not be underestimated although gestures often form no part of any L2 teaching syllabus.

In this section, the gestures that are conventionalized within a community have been discussed; on the other hand, gestures, which are subject to individual variation, can be also widely used in L2 learning. Therefore, it can be of great interest to investigate how spontaneous movements of hands and arms that accompany speech contribute to accessing language learners' underlying mental representations, or, if used by a teacher, can enhance the possibility of comprehension on the part of learners. The next section seeks to answer these questions.

2.8.2 Spontaneous gestures in the L2 classroom

Gestures are traditionally seen as a compensatory mode for L1 speakers (in aphasia or in prelinguistic children) (Gullberg 2006). Many researchers have noticed that L2 speakers tend to use more gestures in L2 than in L1 (Gullberg 1998). Language teachers gesture naturally when they speak whether they are speaking in their first or their second language.

As mentioned in previous sections, spontaneous gestures are created by the speaker at the moment of speaking, which means that they are phonologically, semantically and pragmatically synchronic with speech (McNeil 1992). However, they are not codified or lexicalized gestures, unlike language-like gestures (that fill a slot in a utterance) or emblems, which have a direct verbal translation and for which this precise meaning is known by most or all members of a group (Johnson et al. 1981: 402). In terms of L2 learning, it is often necessary to look not only at the learner's speech but also at his accompanying gestures to get a complete picture of the learner's progress (McCafferty and Stam 2008). In her study, Gullberg (1998) empirically examines L2 learners' use of gestures as communication strategies. The findings show that L2 learners gesture to compensate not only for lexical problems, but also for grammar, and to achieve fluency in the target language; in other words, the learners reveal their difficulties or their progress with the help of gestures.

Several studies have attempted to explain to what extent nonverbal aids play a role in the overall assessment of learners' communicative competence. The study of the oral proficiency of two students conducted by Neu (1990), who interviewed two adult students (a Japanese and a Saudi Arabian) in order to assess their communicative competence using a number of criteria (verbal/vocal, facial/head movement etc.). The researcher reports that although the Japanese speaker's verbal performance was better than the Saudi Arabian's, the latter was perceived as more communicatively proficient because of his gestures and other nonverbal behaviours.

Turning now to teachers' use of gestures in L2, it is important to emphasize that it is crucially important to consider nonverbal acts. For instance, teachers, who say one thing but send a contradictory paralinguistic message, should realize that it is a gesture that will be conveyed to their students (Pennycook 1985:272). Furthermore, the effective use of gestures by an instructor in L2 classroom is an important tool to create a positive atmosphere and to enhance learners' comprehension. Therefore, many researchers focus on how language teachers' use of gestures can contribute to second language acquisition (Allen 2000; Lazaraton 2004; Sime 2006). A number of studies have found that teachers and speakers of a foreign language interact in a manner known as *foreigner talk*, which is a register of speech characterized by an increased use of representational gestures and beat-like movements (Adams

1998; Allen 2000). As noted by Adams (1998), the gesture use in these cases may help learners to process information in the target language.

Focusing on lexical acquisition, Lazaraton (2004) attempts to examine the teacher talk and use of gestures in the L2 lessons. The data collected through microanalysis and observation of lessons demonstrate a significant potential of gestural input to L2 learners (Lazaraton 2004:106). The results show that the teacher in the classroom uses a variety of spontaneous gestures to provide explanations of the meaning of new words. According to her case study, the learners receive considerable input in nonverbal form that may modify and make verbal input comprehensible. Lazaraton (2004: 107) argues that nonverbal behavior is a fundamental aspect of pedagogical repertoire that must be taken into account. In addition, the author interestingly points out that some gestures are more comprehensible and facilitative than others for learners and more research is needed to examine this area of gesture studies.

In a study that set out to examine teacher's gestures, Sime (2006) explores language learners' perception of the functions that L2 teacher performs in the EFL classroom. Focusing on the learners' opinions of the teacher's gestures, she suggests that learners generally acknowledge the importance of the gestures of their instructors; moreover, the researcher identifies three major functions of teachers' non-verbals in a classroom context: cognitive, affective, and organizational. One of the key conclusions that the author makes is that the recognition of teachers' gestures by learners should be taken into account as valuable to the processes of classroom interaction and learners' engagement.

To sum up, the review of gesture studies on spontaneous gestures in the L2 classroom provided above has indicated the benefits of using non-verbals by learners and instructors in the L2 classroom. Spontaneous use of gesture plays a significant role in the natural learning processes, assisting learners to develop skills and better interact with teachers. In addition, there is clearly a relationship between the use of gesture and L2 proficiency. As pointed out, the act of gesturing appears to be an important part of the process of language acquisition; moreover, gestures could be a part of the planned teaching strategy and instruction. The next section is a description of the main issues related to the use of gestures as a teaching strategy and instructional method in L2.

2.8.3. Gestures as a planned teaching strategy

In recent years, there has been an increasing amount of literature on using non-verbals as an effective teaching strategy and a learning tool in the classroom. One of the first effective language learning methods proposed and promoted by James Asher in the late 60s was Total Physical Response (TPR). The basic technique of TPR includes commands given by the teacher or other pupils (at a later stage). These commands are most often simple actions or a sequence of actions or a story. In brief, teachers develop a standard set of hand or arm movements, using action as a main teaching instrument. It is worth noting that, according to Asher, teachers giving commands and students acting them out is the best way to achieve listening fluency in the target language (Asher 1966). TPR is intended to support not only understanding, but also the memorizing of vocabulary items that can be learned through giving or responding to commands (Asher 1966) cited in Macedonia and von Kriegstein (2012). Learners are capable of listening and responding to language physically because these types of activities involve activities, which are natural for them and often coincide with L1 language development conditions. Thus, this method corresponds to the authentic sequence of native language acquisition. Nevertheless, despite its benefits for L2, the scope of TPR seems rather limited. It is not known to be used widely beyond beginner or intermediate level.

However, seeing its potential in using the body as a possible learning device, other authors have supported TPR and developed their own models which embedded gestures and other nonverbals in foreign language instruction. For example, in the German settings, a new pedagogical method is gaining more popularity among language teachers and their students, referred to Davidheiser (2002). Total Physical Response Storytelling (TPRS) was invented by a language teacher Blaine Ray in order to supplement TPR and carry it into more advanced stages of language learning (Davidheiser 2002: 25). A small scale study by Decker (2008) measures the effect of using TPRS on students' ability to become familiarized with verbs in Spanish. The results of the action research project with 26 students have revealed a high level of participation and engagement and demonstrated that this method can give the students the opportunity to practice speaking with a more natural use of the language. Overall, the findings show that TPRS is a helpful method that puts the use of the verb in context for the students.

Another example of how gestures as an instructional tool could enhance foreign language learning is the work of Carels (1981), who proposes the systematic use of pantomimic gestures in foreign language learning. The author explains one effective teaching technique in which the teacher first narrates a story using gestures to illustrate new vocabulary. At the end of the activity, the gestures are performed again to reinforce the new words for the students. Moreover, he suggests that these gestures should not only be performed by the teacher, but also

by the learner, as a memory supporting strategy.

Several authors have tried to adopt and explore the findings made by Carels and argued for introducing the kinetic approach to language instruction. For instance, Seaver (1992) states that language teachers often reduce language teaching to the single channel of strictly linguistic features, thus ignoring kinetic sources of input in language instruction. He provides empirical evidence in order to demonstrate how to include mimetic activities for a variety of language instruction outcomes. The use of pantomime for teaching culture and grammar, and introducing new vocabulary, according to the findings of the study, can promote foreign language acquisition and enhance students' motivation (Seaver 1992). However, in order to be cautious and flexible in the use of gestures, the teacher should observe students' reactions and understanding of gestures as gestures can also be artificial and exaggerated (Seaver 1992).

As the literature review in this section suggests, gestures introduced in the lesson seem to play an important role in teaching and learning languages. Gestures can work as a planned strategy in teaching a language; moreover, the use of gestures can be an effective memory retrieval tool, which can be applied to the process of vocabulary instruction in the L2 classroom. The next section provides a review of the most relevant studies in the field of L2 vocabulary learning.

2.8.4. The effects of iconic gestures on vocabulary learning in L2

There has been little work on the impact of gestures on short-term and long-term retention of vocabulary both for adults and children, but most of it has demonstrated that verbal information is better recognized and recalled if subjects encode it by performing gestures (Allen, 1995; Tellier 2008; Kelly et al. 2008; Kelly et al. 2009; Macedonia et al., 2011, Macedonia and Knosche, 2011).

One of the first works that demonstrated the superior influence of gestures on memorization of L2 sentences was conducted by Allen (1995). In order to test the hypothesis and examine the effects on learning of French vocabulary, she worked with 112 American students in French, who were presented with ten French sentences with their English equivalents. The experimental group was taught the sentences with accompanying illustrative, semantically related gestures typical of French culture. Five sessions in total were conducted over a period of eleven weeks. As the results showed, the gestures had an impact on greater

recall of the verbal expressions. The results revealed that the students learned the target expressions, accompanied by gestures more effectively than the expressions that were presented without gesture. Even though Allen's experiment was one of the first studies in this field and it had several limitations, it had been estimated by many researchers as an important contribution in the experimental work investigating the issues of gestures and language learning.

In a 14-month longitudinal study, Macedonia (2003) examined the effectiveness of gesture in single word retention. She has demonstrated that verbal items belonging to different word categories benefited from gesture use during learning. She trained university students to learn 36 words (9 nouns, 9 adjectives, 9 verbs and 9 prepositions) in an artificial language corpus. For 18 items, participants only listened to the word and read it. For another 18 items, participants were additionally instructed to perform the gestures proposed by the researcher. Retrieval was assessed through cued recall tests at five different time points. The results reveal significantly better retrieval in the short- and long-term for the enacted items.

In the study aimed to investigate whether gestures have an impact on children's words retention, Tellier (2008) examined French speaking children's novel word acquisition in a foreign language. The researcher presented eight common words (*house, swim, cry, snake, book, rabbit, scissors, and finger*) to two groups of children (mean age 5.5). The items were associated either with a picture and or illustrated by a gesture that the children saw in a video and they thereafter performed. The items accompanied by gestures were better memorized than items enriched visually by the pictures. The findings demonstrated that the use of gestures during the instruction and their reproduction facilitated young learners' vocabulary performance compared with the performance of the words which were illustrated with pictures only.

Similarly, Kelly et al. (2009) investigated the effects of different modes by presenting 28 young adults with 12 novel Japanese verbs. The words were presented by means of four different conditions (speech, speech and congruent gesture, speech and incongruent gesture, repeated speech). The results showed that the learners performed best in memorizing in the mode that consisted of speech and congruent gesture. Another study conducted by Macedonia et al. (2011) examined the role that co-speech gestures play in word learning. The researcher and her colleagues paired the novel words with meaningful iconic and meaningless gestures. The empirical evidence proved that iconic gestures lead to significantly better memory performance than meaningless gestures. The observed difference can be explained by the difference in the specific motor activity performed together with the word to be learned.

In addition, it would be useful to mention here an experiment conducted by Rowe et al. (2013), as the present study to some extent replicates some procedures and testing tools. In the

study, the researchers have examined the role of pictures and gestures in preschool children's ability to learn new words for familiar items. As for the method, 62 preschoolers (mean age 4 years and 8 months) participated in the experiment, which was carried out in one of the university-affiliated preschools in the United States. The researchers introduced six words in a novel language to the subjects, having in mind that they were familiar with the test objects ('book' as 'mip', 'hat' as 'jik' etc.). Children were trained and tested individually. Each child was taught two new words in each of three conditions: the word alone, the word with a matching picture, or the word with a matching iconic gesture. As a result, the children were tested on English translation (recall), immediate comprehension (recognition) and follow-up comprehension one week later. The results of the study suggested that use of various nonverbal aids could support word learning for children from different language backgrounds, abilities and gender. However, the authors suggested that if the children had been asked to perform the gesture themselves during the learning and recall phases of the experiment, they would have had higher rates of learning. The importance of considering the interplay between the learner's characteristics and instructional strategies was pointed out by the authors (Rowe et al. 2013).

As for the mechanisms underlying the beneficial effects of enacted (produced) gestures on word retention and verbal memory, there were proposed several theories. Macedonia and Kriegstein (2012) summarized the results of behavioural and neuroscientific studies that shed light on the question of whether enactment favours the retention of verbal information because of a motor representation or due to imagery processes. According to the review, some researchers emphasized the key role of the overt action performed by the learner (Engelkamp and Zimmer 1985), cited in Macedonia and Kriegstein (2012). The authors demonstrated that the free recall of enacted sentences was superior to the recall of spoken sentences and to the recall of visually imaged sentences. In short, the researchers argued that enactment adds something to the memory trace in the memory representation of the verbal item; it made the trace richer and it was consequently easier to retrieve the information.

In addition, the beneficial use of gestures could be explained in terms of depth of encoding (Allen 1995). According to Macedonia (2003), a complex code that includes sensory and motor information is deep and, as a result, improves retention and resistance to decay. Tellier (2009) also attempted to answer the question in terms of the depth of encoding due to multimodality. Furthermore, in their study, Kelly et al. (2009) argue that gesture helps to deepen the motor image and thus the memory trace of new information.

In conclusion, the findings of the different studies confirmed the close relationship between gesture and language in general and gesture and word learning in a foreign language in particular. Thus, vocabulary acquisition appears to be reinforced by using gestures during

the process of instruction and memorization in the ESL classroom. Nevertheless, it should be pointed out that, until now, very little empirical research with Norwegian young learners appears to have been done in the ESL classroom using experimental design as the main method. This study is an attempt to fill these gaps by exploring the effect of gestures on young ESL learners' vocabulary acquisition in one of the Norwegian primary schools.

2.9. Summary

This chapter introduced the literature review related to the concept of gesture as the major object of investigation. This chapter began by describing the nature of non-verbal communication and multimodality and their relation to gesture. It went on to define the gesture as a sub-set of NVC and review the most prominent attempts of the researchers to classify hand movements. Furthermore, it addressed the basic issues that aided the definition of gesture, its functions and main uses in the language classroom.

Gestures, or co-speech gestures or gesticulations (in Kendon's terms) are idiosyncratic spontaneous movements of the hands and arms accompanying speech (McNeill 1992). Several classifications of gestures have been proposed, but the one that is adopted in this study is McNeil's classification of co-speech gestures, including iconic, metaphoric, deictic gestures and beats. Iconic gestures, according to McNeill, can be defined as gestures of the concrete, which express images of actual objects and/or actions. Furthermore, this chapter also provides a summary of the major studies in this field, which adopted McNeill's (1992) theoretical model and the particular evidence suggesting that speech and gesture are deeply connected systems each arising from the same emergent thought, separate, yet integral and each essential to the full expression of the meaning. As for the actual use of gestures in speech, gestures are multifunctional: they serve most often communicative and cognitive functions. The role that gestures play in communication and cognitive processes in the classroom both in L1 and L2 is explored in the final sections of the chapter.

The review of the literature on gesture studies in the domain of learning in general and language learning in particular with the focus on second language acquisition is provided. To sum up, gesture studies could be grouped into two categories: culturally oriented (teaching culturally defined or authentic gestures; nonverbal competence) and pedagogically oriented (gestures in the classroom; gestures as a planned teaching strategy; and verbal input and vocabulary instruction by means of gestures) (Kusanagi 2005). As demonstrated above, both

theoretical and empirical studies in this field demonstrated that the verbal modality and the motor modality (gestures) are intertwined greatly in the context of L1 and L2. Moreover, it should be noted that most of the studies focusing on lower-level learners revealed that young learners benefited from both nonverbal and verbal input. However, very little empirical research concerning the effects of gestures on vocabulary acquisition appeared to have been done using a combination of quantitative and qualitative methods. Therefore, this study aimed to contribute to this growing area of research by exploring the impact of gestural input among young learners in a Norwegian classroom employing a mixed-method approach, which will be discussed in the next chapter.

3. Methodology

3.1. Introduction

This chapter includes the description of the methodological approach and the research procedures designed and conducted in order to investigate whether the gesture-based instruction of new lexical items is effective compared with picture-based instruction. The introduction is followed by an overview of the methodological approach and the research design; the next section is the description of the research participants. The chapter devoted to the data collection procedures is divided into three parts. The first sub-section aims to describe the materials and the instruction procedures that were conducted during the first stage of the data collection; the second part presents the testing procedures and the last sub-section includes the overview of the qualitative methods of the research: the classroom observation and semi-structured interview with the teacher. The choice of the methods is justified and an outline of the main conditions under which the measurements were taken is provided. This subsection is followed up by the presentation of data analysis procedures. Finally, reflections on validity and reliability issues, ethical considerations and limitations concerning the research project are discussed.

3.2 . Methodological approach

In order to examine, whether the iconic gestures have an impact on the acquisition of young learners' L2 vocabulary learning in L2 or not and, what benefits and challenges the use of gestures has in the L2 classroom, a mixed-method design was chosen. It was considered that qualitative analysis would usefully supplement and extend the quantitative measures. In terms of educational settings, quantitative research and naturalistic enquiry (i.e. descriptive methods of data collection) are becoming complementary methods rather than mutually exclusive (Duff, 2010; Hillocks, 2005; Dörnyei, 2007; Creswell, 2011). The research design of this study could be strengthened by collecting qualitative data on classroom teaching procedures, pupils' motivation in learning, engagement in practical activities and teachers' expectations etc., in both control and experimental groups. Using the typological organization of mixed models mentioned by Dörnyei (2007: 169), this research represents a mixed-method design pattern which can be indicated as 'QUAN → qual', where 'QUAN' stands for quantitative research and 'qual' stands for qualitative research. In other words, 'QUAN → qual' refers to the study that consists of two sequential phases of collection of data, where quantitative is dominant.

The present study combined quantitative and qualitative approaches where quantitative

research (quasi-experiment with tests as the main techniques for data elicitation) was the primary method of data collection, whereas classroom observation and the teacher's interview supplemented the outcomes of the test results. Moreover, they provided important insights into the benefits and challenges of the gesture use as a tool for vocabulary learning. As Nunan pointed out, such qualitative information could be crucial for the interpretation of quantitative data (1992: 41). In the present study, classroom observations and the teacher's interview served this interpretive and descriptive function.

3.3. Quasi-experimental design

The experimental design involves procedures through which one can explore and analyse the relationship among the variables through the use of the control and experimental group in order to test hypothesis about the effect of a new 'treatment' (Nunan, 1991: 41). According to Dörnyei, the main advantage of using experimental design is that it is the best method of establishing 'cause-effect relationships and evaluating educational innovation' (2007: 120). As Nunan (1992: 47) has argued, experiments are designed to collect data in such a way that threats to the reliability and validity of the research are minimized.

Turning now to the present project, the choice of the design was fully determined by the research questions and the aims of the study. The experimental design is one of the more practical ways of measuring the effectiveness of intervention in L2 vocabulary instruction. The effects of the novel instruction, namely usage of iconic gestures in vocabulary instruction, were investigated by conducting immediate and delayed post-tests on recall and recognition of new lexical items and their results were compared through the use of statistical procedures.

In some cases researches face the circumstances such as the impossibility of randomly assigning subjects to experimental and control groups. These difficulties sometimes 'dictate that a quasi- or pre-experiment rather than a true experiment be conducted' (Nunan, 1992: 40). Due to some practical considerations, working with 'non-equivalent groups' has become an accepted research methodology in field studies and as a result, it is "generally accepted that properly designed and executed quasi-experimental studies yield scientifically credible results" (Dörnyei, 2007: 117). For this particular research, it was not feasible to assign subjects at random to experimental and control classes. Nevertheless, it was crucially important for the

validity of the research to match the two chosen intact class groups in terms of age, ability of learners and teaching methods.

3.4. Participants

The study was performed in one of the Norwegian primary schools. The participants were 44 Norwegian pupils (28 males and 16 females), enrolled in two classes of the second grade, and two teachers providing instruction in the classes. One pupil for whom English was a mother tongue and one pupil who did not attend most of the instruction sessions and one of the test sessions were removed from the test results since their performances were not considered to be representative of the main group of pupils. The number of pupils represented in the tests was thus 42 (21 from each of the groups). The ratio for boys and girls participating in this study was equal for both groups (13 boys and 8 girls). For this study, the researcher used a convenience sample that consisted of two classes taking part in the quasi-experimental design.

Tables 3.1 and 3.2 below show a summarized description of the main information about the groups, which was useful for obtaining basic insights and an initial impression of the sample of the present study. The tables provide an overview of the frequencies, that is, the number of subjects in each group, their gender distribution and the mean age of the sample. The age range of the subjects was from 6.84 to 7.82 (M = 7.4). As indicated in the Table 3.2, the mean age for the participants was 7.4 and the groups are quite homogeneous in terms of age as SD (0.29) was rather low.

Gender	GG ⁵		PG ⁶		Total	
	Frequencies	Percent (%)	Frequencies	Percent (%)	Frequencies	Percent (%)
Male	13	61.9	13	61.9	26	61.9
Female	8	38.1	8	38.1	16	38.1
Total	21	100	21	100	42	100

Table 3.1. Gender distribution

⁵ GG – the gesture group
⁶ PG – the picture group

Group	N	M	Min	Max	SD
GG	21	7.32	6.84	7.78	0.28
PG	21	7.41	6.94	7.82	0.30
Total	42	7.37	6.84	7.82	0.29

Table 3.2. Age of the sample

As far as the pupils' background and language abilities are concerned, the majority of the pupils were native Norwegian speakers, except for one, a pupil whose mother tongue was English. The pupils in both classes were described by the teachers as having little or no proficiency in English and in need of intensive English instruction. Both groups of children were not familiar with the type of vocabulary input by means of gestures. Overall, the general impression after the first set of observations conducted before the research, was that the participants of both groups represented quite similar level of proficiency in English as a second language.

As for the teachers' backgrounds and methodology, the teachers have a general teaching education degree at the University of Stavanger, which lasted for 5 years. The teacher of the GG has 7 years of teaching experience, whereas the PG teacher's experience is 10 years. Both classes were taught in a similar manner as the teachers of the same grade collaborated quite often in terms of materials and methods, and they employed similar types of instruction. The teachers confirmed before the experiment that the usual way for introducing new vocabulary items was through the visuals or some practical activities with new words (songs, exercises, games etc.). During the first stage of the observational period, it was noted that the teachers did not use many gestures or other body movements in order to add to planned vocabulary instruction; on the contrary, they exploited gestural movements mostly when they attempted to engage some pupils by motivating them to answer the questions, e.g. in order to improve classroom management. In brief, in terms of the teaching methods that the teachers exploited, both classes were quite alike.

The second grade pupils as a target group were chosen for the project because this group of learners is at the first stages in the process of acquiring new words in their L2. Their developmental stage allows them to participate in a study which requires sustaining attention for the duration of the study, understanding the instructions, and learning a substantial number of new words within a relatively short time. Moreover, younger learners have the advantages of being great mimics, are often unselfconscious, and prepared to enjoy the activities that a teacher has designed for them (Phillips 1995: 7). In addition, no research has been found that

surveyed this target group in terms of gestures as an effective tool for vocabulary mastery in Norway.

3.5. Data collection procedures

The present quasi-experiment aimed to compare two different learning situations in the acquisition of new words in English by Norwegian second grade pupils. Two classes in one of the Norwegian schools, namely the picture and the gesture group (PG and GG), were chosen to take part in the study. In each learning situation, ten English action verbs were individually paired with either a colour picture depicting the word or a corresponding hand gesture performed by the teacher. Overall, the data collection process carried out in this research project contained several stages, namely, sessions of instruction followed by tests, observational procedures during the instruction and testing, and the semi-structured teacher interview at the end of the study.

3.5.1. Materials and instruction procedures

Turning now to the first stage of the data collection procedures, two classes in the Norwegian school were assigned to two different learning situations. Both groups were at the same level of proficiency and were taught English around 2 hours per week. However, different techniques of vocabulary instruction were employed in the two diverse teaching contexts. The PG was taught new vocabulary items paired with pictures, whereas the GG received English vocabulary accompanied with gestures.

Ten English words were selected for the experiment with regard to the English language curriculum. All of the selected English words were action verbs (*to run, to eat, to write, to sleep, to wash, to run, to jump, to drive, to write, to knock*). The lexical items for the experiment were selected in accordance with the following main principles: they were unfamiliar to the learners, were not confusable with Norwegian equivalents, were easy to illustrate with both pictures and gestures and were consistent with the level of English language proficiency of the 2nd grade pupils. Each lexical item was presented to the pupils with one additional modality – a picture or an iconic gesture). Appendix A represents the examples of images and the hand gestures used in this study.

The following instruction procedures were conducted. The words were presented to the participants by their teachers during the first stage of instruction over the period of 3 weeks; the instruction was administered twice a week, so that each group had 6 hours of instruction. In the

PG, the new lexical items were presented visually with colour images. In the GG, the new words were presented only by producing hand gestures by the teacher and the children were stimulated to imitate them after the teacher. Under both learning conditions, the timing and the order of the presentation of the items were identical for both groups of participants. To sum up, the first week each group was presented with five words, namely, *to wash*, *to cry*, *to jump*, *to knock* and *to climb*, the second week, each group was presented with the words: *to drive*, *to write*, *to eat*, *to run*, *to sleep*. The last week of the instruction, the teachers presented the classes with all ten words. The detailed plan of the data collection procedures is presented in the Appendix B.

In the picture condition the children were offered a presentation of each new word and associated picture twice. Each child was asked to listen to the word pronounced by the teacher and was instructed to repeat it chorally. The teacher from the GG, in her turn, pronounced a word and simultaneously performed a congruent gesture. Thus, the children from the GG were presented with the words and accompanied gestures and were instructed to repeat them chorally. The pupils from the GG reproduced the gestures while repeating the words but they did not see any images. During the instruction sessions, the subjects from both groups were told to repeat each new word two times during the presentation. As a result, every participant heard every item exactly the same quantity of times, so the subjects of the both groups received the same input of vocabulary.

According to the analysis of literature, a new vocabulary item should be viewed not as an abstract system, but with all contexts and associations that determine and clarify its dictionary meaning (Cook 1991; Phillips 1995; Drew 1998). For this reason and in an attempt to make the present study as close to natural educational settings as possible, the researcher developed a set of practical activities in accordance with the additional modality, as language play and word games were supposed to be most suitable for the chosen age group. Both groups were taught English in a playful context through children's participating in various activities. As a result, pupils engaged with the target words in a variety of vocabulary games in order to ensure that they acquainted the new words. The list of activities for each of the groups is presented in the Appendix F. To sum up, the instruction period lasted three weeks for each group.

3.5.2. Tests

The type of quantitative measurements used in the research was determined by the research questions and the purpose of the study. In an attempt to identify the target information and to find out whether the target words have been stored in such a way that that participants can access them easily, the most appropriate test design was chosen (Perry, 2005: 125). As the effects of iconic gestures on the learning process compared with using of pictures were measured through quantitative methods of the data collection, recall and recognition post-tests were performed.

Several practical considerations were taken into account when choosing the format of oral recall and recognition post-test design. Firstly, the learners in the second grade in primary school were unable to produce written text in the English language. Secondly, the time factor was important as the recognition test type and recall test type items can be administered to larger numbers of participants in a minimum amount of time (Perry, 2005: 126). Finally, one of the major tasks in this experiment was not to interfere with the normal flow of the studying process but to contribute to its effectiveness, so this format of test design was proved to assist to it.

Immediately after the instruction period, which lasted 3 weeks, the subjects completed two sessions of post-tests (the immediate and delayed posttest). Each of the two sessions of the post-tests consisted of two parts, i.e. a recall and recognition test. First, the evaluation of the ability to produce the corresponding English word was measured (recall test), followed by the assessing of their ability to recognize the appropriate answer from a set of alternatives (recognition test). Pupils were asked to produce an English word as a response to visual stimuli in the recall test design and in the recognition test design the participants were supposed to show an image when they heard an English word, pronounced by the researcher. The PG and GG were shown the pictures that were unfamiliar to them (see Appendix I). The conditions in both subjects' groups were equal and the order of the shown images was the same for both groups.

Children from each group were tested individually in a face-to-face session that lasted for about 5 minutes per pupil and 2 hours in total for each group. The order of the tests and of the verbs was held constant across all children. The subjects were assigned one point for each correct answer in the test on recognition and a score of zero for an incorrect answer. In the recall test, where the participants were supposed to respond to visual stimuli, the children could also be rewarded a half point when they produced an oral error or some part of the word was missing (e.g., 'to rive' instead of 'to drive'). To be scored as correct, the subject needed to utter the word distinctly without error in pronunciation. Correspondingly, a subject could score 10 as a

maximum for all 10 items and zero as a minimum.

Two weeks later, the participants were supposed to complete a delayed post-test identical to the immediate post-test. However, the subjects were not given any instruction or additional repetitions during these two weeks between the tests. The participants' ability to produce a word in response to a visual cue and the ability to show the visual equivalents of the words were evaluated in the same way as in the immediate post-test.

It is worth noting that during the recognition test the subjects of both groups were supposed to choose the correct answers among the pictures in front of them, whereas the GG could also choose to produce the appropriate gesture and to point at the image. This option was not planned, but the researcher offered it to the pupils from the GG, as it was evident that some of the subjects felt more confident when they produced the gestures first in response to the stimuli. After they performed a gesture, the subjects answered by pointing at a picture.

3.5.3. Observation and interview

The following section discusses qualitative methods applied in this study. In order to evaluate how the chosen design of instruction functioned in the classroom and to examine the learners' behaviours under the experimental conditions, the classroom observation was carried out. The other qualitative approach aimed to describe the teacher's attitude and personal evaluation was a semi-structured interview. Thus, the data from the teacher's interview and classroom observations aimed to supplement the material that was gathered through testing the participants.

Observation, according to Dörnyei (2007: 178) provides direct information rather than self-report accounts, and thus it is one of the three fundamental sources for empirical research (with questioning and testing correspondingly). The observation for the present research, according to the two dichotomies reviewed in the work by Dörnyei (2007: 179), could be labelled as 'nonparticipant' and 'unstructured' observation. For the purpose of the research, one observation in each class was conducted before the experiment in order to get a general idea of the level of proficiency of learners and to evaluate whether the teachers were using gestures during the instruction or not. During the teaching period, the classroom observation was aimed to provide some insights into the subjects' behaviours during the research. The two groups of subjects were observed for evidence of the motivation and engagement in the activities and in order to evaluate the benefits and challenges of using gestures in the L2 classroom. Additionally, the observations aided the evaluation of the teachers' role and helped to ensure if

the teachers were instructed in accordance with the guidelines from the research design. The data were collected as they occurred without any interaction and participation of the researcher in the class activities.

The third data collection instrument was the semi-structured interview that served as an important mediating tool for adding qualitative data into quantitative inquiry. It sought to determine the teacher's reflections on her experience of using the gestures during the vocabulary instruction. The interview with the teacher on a one-to-one basis was conducted in Norwegian and lasted approximately 45 minutes. The interviewer could ask probe questions in Norwegian when necessary to stimulate the verbal recalls, such as: 'What are you thinking?' or 'What do you mean by that?' The interview was tape-recorded to ensure the accuracy of data collection. Then it was translated into English and transcribed verbatim.

The interview guide for the teacher was designed in accordance with the purposes of the study (see Appendix H). The questions in the teacher interview were determined by the main research focus, i.e. to investigate her opinions about the effectiveness, the benefits, and challenges of the gesture-based approach. It contained the following sub-sections: the background information about the teacher, the English teaching curriculum, the teaching practices, taking part in the project, its benefits and drawbacks, evaluation of motivation and engagement of the pupils, their feedback, possible involvement of gestures in the vocabulary input to young learners in the future. Although the questions had been prepared in advance by the interviewer, on some occasions, the conversation produced new information that was not expected.

Overall, the data from the teacher's interview and the classroom observations was supposed to supplement the material that was gathered through testing the participants. The advantage of using the multivariate method is that it avoids unilateral approach and, what is more important, qualitative data could help to interpret possible contradictory or inconsistent results obtained from quantitative measurements. The following is a brief report on the data analysis and some considerations on reliability and validity together with ethical implications of this study.

3.6. Data analysis

The data analysis methods used in this paper were determined by the research questions and the data collection methods used by the researcher. The first step of data processing involved converting the respondents' answers to numbers by means of 'coding procedures' (Dörnyei,

2007). The subjects were assigned one point for each correct answer and zero point for incorrect answer in the recognition test, whereas in the recall test, the pupils could also be rewarded a half point when they produced an error or some part of the word was missing (e.g. *to rive* instead of *to drive*).

In the quantitative part of the study data management and analysis was performed using the Statistical Package for Social Sciences (SPSS). Firstly, the test scores were analysed in terms of the means and standard deviation, secondly, the Wilcoxon test was applied in order to compare two related samples. The test was used in order to determine the significant differences on each lexical item for each of the groups. Considering the research questions, the test results were grouped in accordance with two main test types, that is immediate and delayed post-test performance and recall and recognition test performance. Moreover, it appeared to be relevant for the research outcomes to evaluate the test performances of the subjects on individual items.

The observational and interview data was analysed qualitatively in order to discover the benefits and challenges the pupils and the teacher faced during the research project. The interview guide was used as a tool for analysis. At this stage, the findings resulting from quantitative methods were checked against the findings obtained from the observation and the teacher interview. The benefits and the challenges were grouped according to either the perspective of the observer, or the perspective of the teacher.

3.7. Validity and reliability

Reliability refers to the consistency and accuracy of the research procedures and the research results obtained from research (Nunan, 1992: 14). The potential threats to reliability surrounding this study were prevented by using the combination of quantitative and qualitative approaches, as several researchers view these sets of approaches as complementary, not mutually exclusive (Allwright and Bailey, 1991; Green ed., 2005; Dörnyei, 2007).

In order to deal with the research problem the different sets of methods were applied in the study which also allowed us to investigate the research questions from different perspectives. The effectiveness of the pupils' vocabulary learning was measured by quantifying the test scores obtained from two sessions of post-test procedures. The test results were supplemented by descriptive interpretations of classroom observation and the teacher interview. The classes were observed on several occasions before and during the experiment. The observation data obtained prior to the data collection phase was used to serve to design the research itself. The teacher interview aimed to gain insight to the behavior of the pupils and the

teacher's cognition process and add to 'in-depth data' of the project and its results (Dörnyei 2007: 143).

According to the literature, validity deals with the extent to which a piece of research investigates what the researcher aims to investigate (Nunan, 1992: 14). Validity usually takes two forms: internal and external validity. Internal validity in experimental study, according to Allwright and Bailey, 1991: 49), means that the outcomes of the study are interpretable, so that they 'can be directly attributed to the treatment applied to the experiment group', rather than any other factors. In this research project, one of the possible threats to internal validity could be the fact that two classes obtained the instruction by the two different teachers, but that could not be modified as a form teacher in primary school provides instruction in all main subjects including English. Furthermore, in the Norwegian educational system primary school teachers usually have no formal education in EFL teaching and this affects the quality of English education in Norwegian schools (Drew, 2004; 2009).

In addition, the subjects of the research were not randomly assigned. The quasi-experimental design aimed to examine the effectiveness of the hand gestures in promoting pupils' vocabulary memorization and English language skills as naturally as possible for children, not interfering with their normal routines and practices. The teachers kept strictly to the method they had been allocated to instruct over the same period of time so that the subjects received exactly the same input of vocabulary with the only difference in the method of teaching of the new lexical items and the type of the activities. The control group (the picture group) had activities and vocabulary games, which assigned to visual aids and the learners from the experimental group (the gesture group) took part in the activities and games, which were designed and selected in accordance with the modality of the instruction for their group.

External validity (i.e. generalizability) refers to the extent to which the outcomes can be generalised or applied to other situations from samples to populations (Nunan, 1992: 15). It is important to mention, however, that all the variables that might influence the findings were carefully predicted and controlled. In other words, the participants enrolled in this study possessed the same level of proficiency, received the instruction on the similar conditions. In the present study, generalizability was not completely possible because of the scope of this study and, consequently, a small number of participants.

3.8. Limitations

As far the limitations of the study are concerned, there are several aspects of the chosen research design that should be mentioned. The first one is the sampling restrictions. It was not possible to assign the participants randomly and due to some practical considerations the sample size was relatively small. This could potentially influence and make a number of compromises to internal and external validity of the research. Another major source of uncertainty was the inability to ensure the instruction of new vocabulary by one teacher to the both groups. However, as discussed above, the nature of a quasi-experimental design, employed in the present study, presupposes the possibility of certain drawbacks associated with the use of this method, one of them being inability for random assignment of the subjects. Due to the practical reasons, the researcher tried not to violate the natural process of teaching and learning at the school.

Furthermore, it is worth pointing out that there could be an effect of test moment, which could certainly influence to some extent the test scores. The pupils at this age in Norway are not used to testing and there are no grades at the primary school. Additionally, the study was limited by the duration of the project, which was relatively short, so the participants were tested for the first time immediately after the process of the instruction and the delayed post-tests were carried out after two weeks.

To sum up, the study appears to be restricted in several ways, such as a limited size of sample, inability for random assignment of the participants and the time aspect of the project. As a result, this study could not be generalized to a broadly defined population as it was mentioned in the previous section. Therefore, combining a quantitative approach with qualitative methods in this research as multi-method approach served to enhance the validity of findings.

3.9. Ethical considerations

Collecting the data in a respectful manner for the participants applied both for qualitative and quantitative research. Prior to the data collection phase, the present research project was notified to the Norwegian Social Science Data Services (NSD). The project was approved by NSD. The NSD approval scheme is provided in Appendix E.

The issues of ethics in this research project included mostly, in its preparation part, the procedures to recruit the participants. The aim and the design of the research were clarified to the potential participants in advance. The teachers were asked to take part in the study on a

voluntary basis and were informed about their right to withdraw from the study at any time. The letters to pupils and their families were disseminated, and the parents were informed about the nature of the research and assured that the identities of all the participants would remain confidential. The teachers were assured that the classroom observations and conducting the tests would not disrupt the flow of the curricula and activities in the classes. The information letters to pupils and teachers are given in the Appendix C and D.

3.10. Summary

This chapter has described the methods used in this investigation. The quasi-experimental research was conducted in classroom settings in order to answer the research questions and to investigate the learning outcomes of teaching ESL vocabulary for young learners in a Norwegian primary school by using gestures.

Data was collected through tests as quantitative measurements of the learning outcomes of the learners. Each test was divided into two components: recall and recognition tests. There were two stages of each of the post-tests. First, the evaluation of the ability to produce a new word was conducted, then, testing the recognition of the new words by showing a corresponding image. Additionally, the data was collected by qualitative research methods, namely, classroom observation of the both groups and teacher interview. These methods provided an opportunity to explore to what extent and in which ways gestures affected word learning more descriptively. The more detailed description of the results obtained from the data collection procedures will be presented in the next chapter.

4. Findings

4.1. Introduction

In this study, iconic gestures were used as a tool of vocabulary instruction in a group of 2nd grade pupils in a Norwegian primary school. The central research question of this study was whether or not seeing and producing iconic gestures had an impact on vocabulary learning as reflected in immediate and delayed test performance, in recall and recognition test conditions. Secondly, the research aimed to address the effects of the implementation of gestures as well as the benefits and challenges of their use in the classroom practice. In particular, in order to determine the extent to which this novel technique influenced the pupils' attitudes and behaviours in activities, the results were analysed from two points of view, the teacher's and the observer's. The purpose of this chapter is to present the findings obtained from the data collection methods, described in the previous chapter. The data collected during the research is presented in a way that enables the author to answer the research questions of the study by presenting the quantitative and qualitative findings one after another. This chapter is divided into three main sections, each of the sections describing the results relating to one of the methods of data collection. The first section begins by presenting the quantitative results from the data collected by means of tests. This section presents in tables and figures the analysis of the oral test performances in two groups of the participants. The section 4.2.3 is devoted to the summary of the total scores and the test performance on individual lexical items for both group. This section is followed by a presentation of the findings from the classroom observations conducted before and during the instructional period. In addition, some observations that the author made during the test performance are provided. This chapter also includes the results of a one-off teacher's interview conducted with the teacher who instructed the gesture group.

4.2. Test results

This section describes how the data from the tests was analysed and how the significant measurements were calculated. The data obtained from the study of the effects of gestures on vocabulary learning were analysed at the first stage by means of descriptive statistics. In order to provide information about the average test scores of subjects in respect of their test performances in both conditions (picture and gesture condition) measures of the central

tendency were used, namely calculations of mean scores, the standard deviation, minimum and maximum scores. Secondly, the data was analysed by means of the Wilcoxon test. The findings from the data analysis are presented in the tables and figures in the present section and in Appendix G. As explained above, the main purpose of this section was to investigate how young Norwegian learners had performed in tests on both immediate and delayed and the recall and recognition tests.

4.2.1. Immediate and delayed test performance

In order to compare short-term retention with long-term retention the average scores of GG and PG were analysed and presented in Table 4.1. The data display the scores that all the subjects have received on their recall and recognition tasks in the immediate and delayed post-tests.

As Table 4.1 indicates, GG participants gave a mean of 6 correct answers (Mean 6.00, SD 2,61) and in the PG a mean of 6.74 (SD 2.28) in the recall test type.

TEST TYPE		GROUP	M	SD
IMMEDIATE POST-TEST	RCL ⁷	GG	6.00	2.61
		PG	6.74	2.28
		Total	6.37	2.45
	RCGN ⁸	GG	8.33	1.74
		PG	8.10	2.36
		Total	8.21	2.05
DELAYED POST-TEST	RCL	GG	7.79	1.90
		PG	6.67	2.41
		Total	7.23	2.22
	RCGN	GG	8.81	1.47
		PG	7.71	1.76
		Total	8.26	1.70

⁷ RCL – recall test

⁸ RCGN – recognition test

Table 4.1. Descriptive statistics of each group's performance on the recall and the recognition post-test in immediate and delayed post-tests.

The PG subjects averaged 8.10 (SD 2.36) points for the recognition test, whereas the GG averaged 8.33 (SD 1.74) correct answers. The mean score for both groups is 8.21, which differs greatly from the mean score obtained by both groups on the recall test (6.37). When analysing the standard deviation (SD), a measure of the dispersion of a set of data from its mean, it can be seen that SD is quite high in the PG compared to the GG on the recognition test. This seems to indicate that there was more variation in the test scores in the PG than in the GG.

As shown in Table 4.1, the scores revealed that the PG performed better in the immediate recall test than the GG, but in the immediate recognition test, no great difference was observed. Standard deviation was lower in GG (1.74), meaning that there was greater variability in the test scores in PG and less variability in GG. However, there was very little difference between the groups in both conditions.

Furthermore, Table 4.1 provides also the summary statistics for each group's performance in the delayed post-test. On average, the scores in the GG were higher than the scores in the PG on the delayed post-test recall and recognition test performance. Overall, comparing the test scores on short-term and long-term retention tests for both group, it can be seen that the GG outperformed the PG in terms of the recognition test in the immediate test performance and recall and recognition tests in the delayed performance, whereas the difference between the scores in the immediate recall test are higher for the PG.

As for the mean numbers of the test scores per group in both test types in recall and recognition tests, they are summarized in Tables 4.2 and 4.3. The numbers represent the averages which are summed up for both test types (recall and recognition), for example, 14.33 is the total for 6.00 in recall post-test and 8.33 in recognition post-test for GG. Overall, while the PG had a slightly higher score, the performance on the post-test did not differ greatly for GG and PG. Standard Deviation for the PG (4.08), on the contrary, shows that the scores in PG are more varied and more heterogeneous than in GG on the same post-test performance.

Group	N	M	SD
Gesture group	21	14.33	3.67
Picture group	21	14.83	4.08
Total	42	14.58	3.84

Table 4.2. Overall scores of both groups on immediate post-test.

As for the summarized average test scores on the delayed post-test, the results from Table 4.3 indicate that the GG performed better than the PG (M 16.60 compared with M 14.38 in PG). Another interesting observation about the overall measures is that Standard Deviation is again higher in the PG (3.20 for GG and 3.77 for PG). Moreover, in Tables 4.2 and 4.3 there is a considerable difference between total scores of delayed post-test performance (15.49) and the corresponding scores on immediate post-test (14.58).

Group	N	M	SD
Gesture group	21	16.60	3.20
Picture group	21	14.38	3.77
Total	42	15.49	3.63

Table 4.3. Overall scores of both groups on delayed post-test.

The average scores of the immediate and delayed test performance of each group were compared in order to assess the effects of gesture-based instruction on each of the ten items. The results, summarized in Table 5 in Appendix G, showed that the mean scores for the PG were higher for the items *to wash*, *to cry*, *to knock*, *to drive*, *to write* and *to run* in the immediate test performance, whereas the item *to run* was also better scored in the delayed test performance in the PG (M=6.3 compared to M=4.3 in the immediate test and M=7.4 compared to M=6.7 in the delayed test). For the rest of the items, the GG outperformed the PG in the delayed performance.

Overall, the test scores on each item for both groups, combined together, on the delayed test performance were better than the performance on the immediate test. As can be seen from the data in Tables 6 and 7 in Appendix G, the summarized mean scores for both groups in both test types (recall and recognition test) were higher for each item in the long-term retention compared to the short-term retention.

To find out if any of the differences were significant, nonparametric tests for two related samples were conducted. The normality of data distribution was tested by Kolmogorov Smirnov test. However, since the scores were not normally distributed, comparisons between the two groups were made using the nonparametric Wilcoxon test for two related samples. In order to see if the delayed post-test results were significantly different from the immediate post-test results, this test was applied when analysing the results of immediate and delayed test performances for both groups for each word. The differences between the test results are

presented in Tables 4.4 and 4.5, where the significant differences (sig<0.05) are highlighted. The borderline cases with significant difference equals to 0.059 are regarded in this study as approaching statistical significance.

As seen from Tables 4.4 and 4.5 below, significant difference, where sig<0.05, were found for 5 out of 10 words in the recall test in the GG (*to cry, to jump, to knock, to write, to run*). The Wilcoxon test did not show any significant difference between the scores in delayed and immediate post-test in the recognition test type in both group, except the item *to run* in the GG.

Vocabulary item	GG	PG
1. To wash DPT ⁹ – PT ¹⁰	.083	.257
2. To cry DPT – PT	.014	.885
3. To jump DPT – PT	.059	.581
4. To knock DPT – PT	.059	.276
5. To climb DPT – PT	.260	.608
6. To drive DPT – PT	.131	.297
7. To write DPT – PT	.021	.527
8. To eat DPT – PT	.157	.317
9. To run DPT – PT	.014	.470
10. To sleep DPT – PT	.102	.915

Table 4.4. Test results of Wilcoxon test on delayed and immediate post-tests. Recall test

⁹ DPT- delayed post-test

¹⁰ PT – immediate post-test

Vocabulary item	GG	PG
1. To wash DPT – PT	.317	.655
2. To cry DPT – PT	.564	.096
3. To jump DPT – PT	1.000	.157
4. To knock DPT – PT	.317	.564
5. To climb DPT – PT	.317	.096
6. To drive DPT – PT	.180	.739
7. To write DPT – PT	.705	.257
8. To eat DPT – PT	.317	.317
9. To run DPT – PT	.046	.083
10. To sleep DPT – PT	.317	.480

Table 4.5. Test results of Wilcoxon test on delayed and immediate post-tests. Recognition test

Further analysis, presented in Table 4.6, shows that there is a significant difference between the delayed post-test and the immediate post-test results during recall ($\text{sig}=0.006$) for both groups. Furthermore, there is a significant difference in overall mean scores between post-test and delayed post-test ($\text{sig}=0.020$). On the other hand, there is no significant difference ($\text{sig}=0.787$) between the test results in the immediate and delayed post-test results in recognition test type. The present table also shows that there are only minor differences in the test performances of the immediate and delayed post-test on the recognition test (8.21 and 8.26).

TESTS	Mean	SD	sig.
PT Rcl	6.36	2.45	0.006
DPT Rcl	7.22	2.21	
PT Rcgn	8.21	2.05	0.787
DPT Rcgn	8.26	1.69	
OVERALL PT	14.58	3.84	0.020
OVERALL DPT			

Table 4.6. Overall results of Wilcoxon test for both groups (GG and PG)

Summing up, the results from this section suggest that the scores on the delayed post-test were higher than the scores on the immediate post-test for both groups in total. Furthermore, There is a considerable difference between the GG test scores and the PG test scores in the delayed recall and recognition post-test, whereas in the immediate test, the PG scored slightly higher than the GG. The next section moves on to analyse the test scores on the recall and recognition test performance.

4.2.2. Recall and recognition test performance

The second part of the analysis is concerned with calculating the differences between the two test types aiming to investigate performances of the subjects on the recall and recognition tests. In the recall test, the aim was to measure whether and to what extent the participants acquired new lexical items by showing to the subjects the visual equivalents of the newly instructed words. In the second part of the post-test, the main purpose was to measure the ability to recognize the new lexical items, i.e. whether the subjects were able to point to the visual equivalents of the words that the researcher pronounced.

In order to compare the mean scores of the recall and recognition tests, first, the descriptive statistics were used. The means and standard deviations of test scores on the recall and the recognition in the immediate and delayed post-test condition for the two groups are presented in Table 4.7. Comparing the GG average with the PG average on the delayed recall post-test, it is noticeable that in this case the average score is higher than for the PG. The PG had the average of 6.67 correct answers, whereas the GG averaged 7.79. The results, as shown in Tables 4.1 and 4.7, indicate, surprisingly, that the mean score for both groups on the delayed post-test performance was higher than for the immediate post-test performance (M 6.37 and 7.23). This difference requires more detailed analysis, which could be provided by means of non-parametric tests, which are described further. As far as the recognition test is concerned, there is a difference in test performance between two groups, namely, the mean of the GG (M 8.81, SD 1.47) is higher than the mean of the PG (M 7.71, SD 1.76).

Summing up, the GG recalled a mean of 6.9 words, the PG recalled a mean of 6.7 words, whereas in the recognition tests the mean scores were 8.6 and 7.9 respectively. Table 4.7 evidently shows that test on active production of newly learned words (recall test) represents

more challenges for learners than the test on recognition novel lexical items. The data from Table 4.7 shows that the participants performed better in the recognition test than in the recall test, in other words, the production of a word in reaction to visual stimuli was more difficult for them than the recognition of a word and correlating it with a corresponding picture.

Group	Recall		Recognition	
	PT	DPT	PT	DPT
GG	6.00	7.79	8.33	8.81
Mean	6.9		8.6	
PG	6.74	6.67	8.10	7.71
Mean	6.7		7.9	

Table 4.7. Average scores by type of test (recall and recognition).

Furthermore, in order to investigate whether there is a significant difference between the subjects’ scores for individual vocabulary items under the two conditions (recall and recognition) or not, the Wilcoxon test was used. It involves calculating the differences between the scores in recall and recognition tests for each word in both groups, first, in the immediate post-test condition, and, secondly, in the delayed post-test performance. The results of the correlational analysis are summarized in Tables 4.8 and 4.9.

There was a significant difference between the two conditions, e.g. recall and recognition, in the immediate post-test in the GG for 9 out of 10 words (except the word *to eat*). The words *to write* and *to run* had a significant difference in the PG (0.017 and 0.007 respectively). Table 4.9 shows, for instance, that there is a significant difference between the scores on recall and recognition for the word *to drive* under both conditions. The words that had significant difference between the results were, additionally, *to cry* (for GG), *to jump* (for PG), and *to run* (for PG).

Vocabulary item	GG	PG
1. To wash RCGN ¹¹ - RCL ¹²	.046	.386
2. To cry RCGN - RCL	.011	.584
3. To jump RCGN - RCL	.059	.577
4. To knock RCGN - RCL	.059	.564
5. To climb RCGN - RCL	.059	.228
6. To drive RCGN - RCL	.008	.091
7. To write RCGN - RCL	.018	.017
8. To eat RCGN - RCL	.564	.180
9. To run RCGN - RCL	.058	.007
10. To sleep RCGN - RCL	.059	1.000

Table 4.8. Test Results of Wilcoxon test. Immediate post-test

Vocabulary item	GG	PG
1. To wash RCGN - RCL	.157	.890
2. To cry RCGN - RCL	.025	.190
3. To jump RCGN - RCL	1.000	.038
4. To knock RCGN - RCL	.317	.450
5. To climb RCGN - RCL	.257	.891
6. To drive RCGN - RCL	.017	.015
7. To write RCGN - RCL	.729	.070
8. To eat RCGN - RCL	1.000	.317
9. To run RCGN - RCL	.160	.002
10. To sleep RCGN - RCL	.157	.346

Table 4.9. Test Results of Wilcoxon test. Delayed post-test

¹¹ RCGN – recognition test type

¹² RCL – recall test type

In addition, it is important to note for further discussion that during the recognition test the subjects of both groups were supposed to choose the correct answers among a limited number of unfamiliar pictures in front of them, whereas the GG could also choose to produce the appropriate gesture and to point at the image. Although not pre-planned, this option was suggested to them during the test performance by the researcher, as it was evident that some of the subjects felt more confident when they produced the gestures in response to the stimuli (the word pronounced by the researcher). After they performed a gesture, the subjects answered by pointing at a picture. Another typical behaviour for the GG was observed during the recall test, when some of the pupils while pronouncing the test item, gestured. They did this subconsciously and mostly simultaneously or preceding the pronunciation. These observations could be relevant for the interpretation of the test scores obtained from the GG and could account for the significance of the differences between the recognition and recall test performances of both groups. Further analysis is related to the test scores on individual lexical items.

4.2.2. Test performance on individual lexical items

Turning now to the analysis of the test scores of each item, it is important to note that the presentation of the averages and percentages of test scores for each of the words is also relevant for the study. This part of the analysis could provide some important insights into the impact of the use of gestures on vocabulary learning. Therefore, all scores were analyzed by means of descriptive statistics and cross tables analysis in order to find out the mean, standard deviation and the total of scores for each word for both groups and for all tests types. Moreover, an item analysis was conducted by aggregating all retrieval results for each word for all participants at all time points. The data obtained from the analysis are presented in Figures 4.1, 4.2, 4.3 in the present section, and in Appendix G (Figures 8, 9, 10, 11).

An overview of the correlational analysis of scores for groups on the recall and recognition tests is provided in Figures 4.1 and 4.2. Interestingly, in the recall testing (for the immediate and delayed post-tests) the participants retained better the item *to knock* (GG scored 36.5 and PG 38.5) with the total 75 scores, conversely, on the recognition tests the item *to jump* gained better scores in both groups (the total 82). According to Figure 4.2, GG made no mistakes on the recognition test on the item *to jump* (42 out of 42). Regarding the item that scored lower than the others, it is apparent from the figures that for the GG and PG the verb *to*

write was the most difficult word to be retrieved and produced correctly. As a result, it scored 16.5 and 15 correct answers respectively. Figure 4.2 indicates that the number of correct answers for the item *to write* in the recognition test was equal (25) for both groups.

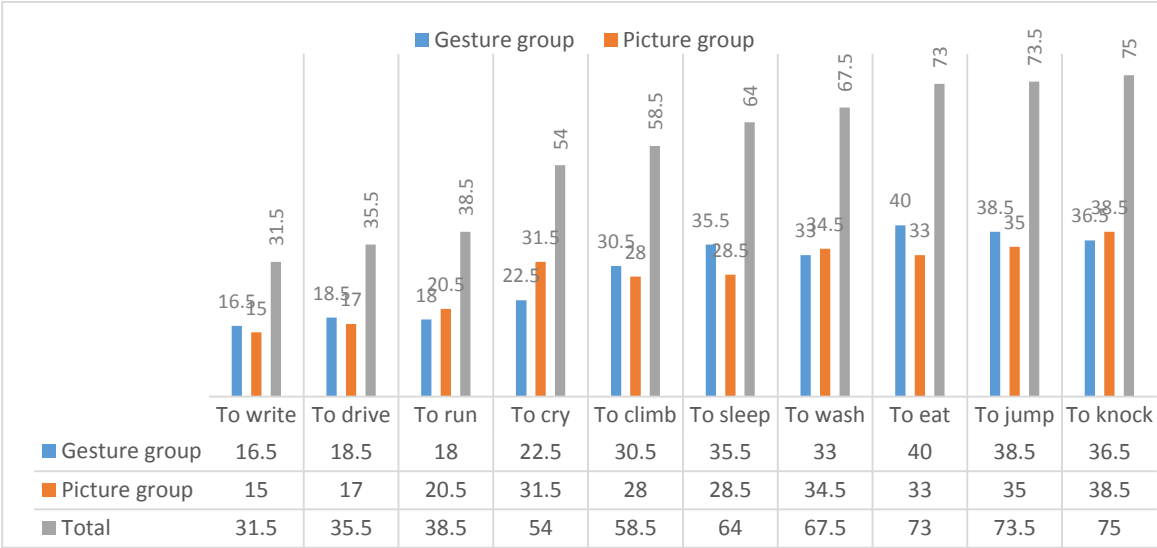


Figure 4.1 Frequency of correct answers by word in recall test (PT and DPT)

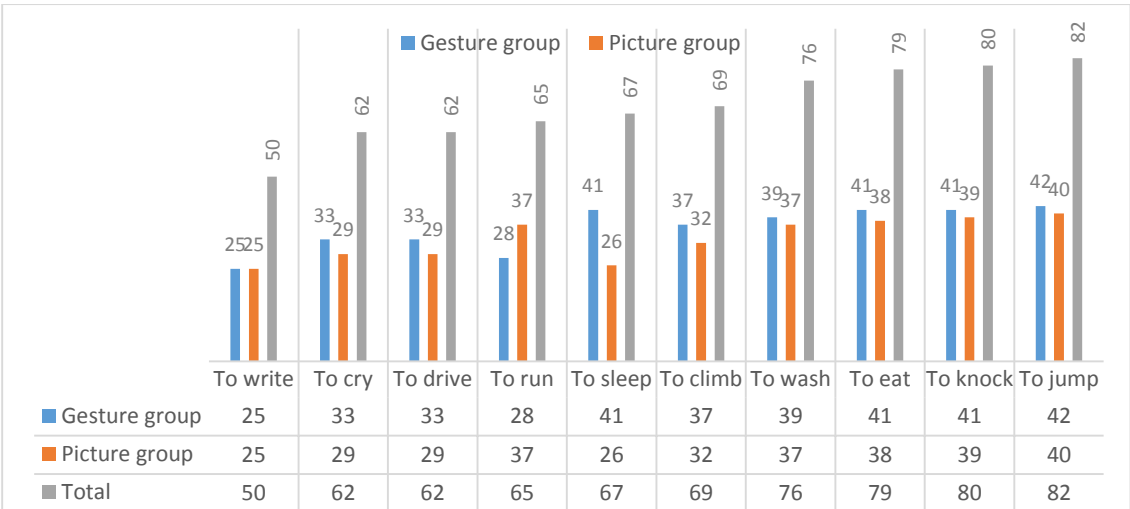


Figure 4.2 Frequency of correct answers by word in recognition test (PT and DPT)

As shown in Figures 4.1 and 4.2, most of the results of the test performances for recall and recognition tests are quite similar between the groups. Overall, the scores were higher in the recognition test, compared to the recall test. Another interesting observation from the correlation analysis on the recognition test is that the verb *to sleep* scored 41 correct answers in the GG compared to 26 correct answers in PG.

Total scores and the percentage of correct answers for each word were calculated, and the resulting data are presented graphically as Figure 4.3. According to the data from the figure, the percentage of correct answers per group ranged from 48% to 92% on the different items. It can be seen that during all the testing period, the words *to jump* and *to knock* scored best, with

92.56 % and 92.26 % respectively, of all retrieved items at all time points, whereas *to write* shows only 48.51%. The item *to eat* (90.48%) has the third highest percentage of correct answers among the participants of both groups during the recall and recognition stages of test performances. Furthermore, the words that were scored lower by the participants of both groups and at all time points are the items *to write* (48.51%), *to drive* (58.04%), *to run* (61.61%) and *to cry* (69.05%). For a more detailed correlation analysis, the mean, standard deviation and other correlations between variables for each type of test performance and for each group, see Appendix G.

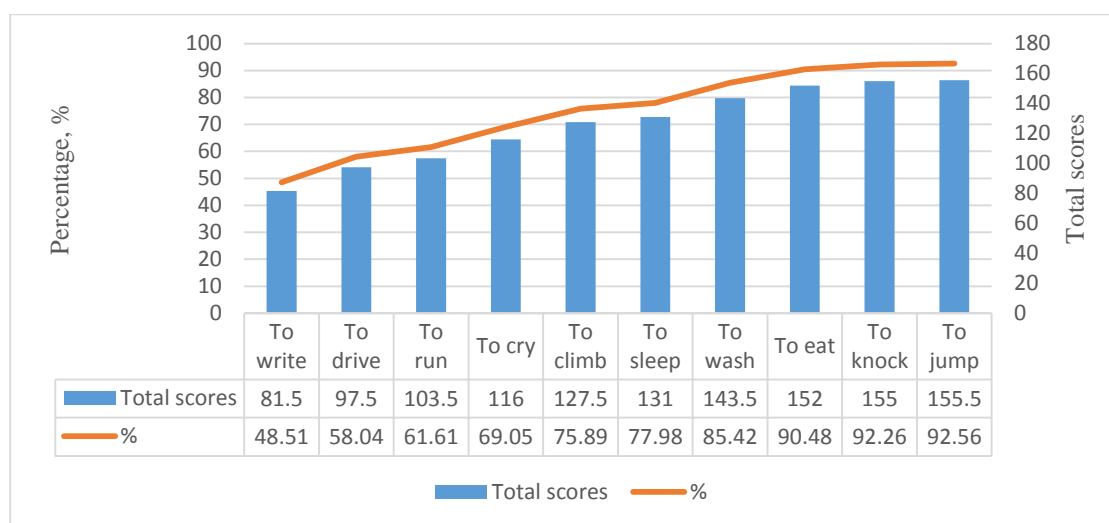


Figure 4.3. Total scores of each item and its percentage of the total scores

In order to enhance the quantitative data analysis of the research and to ensure that the research questions are fully covered, the quantitative data analysis was supplemented with classroom observations across both groups and a face-to-face interview with the teacher of the gesture group. The next section describes the main qualitative procedures in detail and the analysis of the data gathered in the research.

4.2. Classroom observations

By using qualitative procedures, according to Dörnyei (2007:28), a researcher can uncover subtle meanings that are “inevitably lost in quantitative research”. By employing observations and teacher’s interview in the present research, the researcher intended to examine and interpret perceptions, attitudes and behaviours during the use of gestures in vocabulary instruction in the 2nd grade. Moreover, as this study aims to answer a question regarding the effects of gesture

use on motivation and engagement of young learners, the data obtained from the observations and the teacher's interview provide relevant insights.

The results from the classroom observations that have been conducted during the pre-research period and the last week of the instruction period are presented in this section. As already mentioned, the type of observation that was used could be described as nonparticipant unstructured observation (Dörnyei 2007: 179). The researcher did not take part into the activities and no observation scheme had been prepared in advance. The purpose of the first session of classroom observations was to gain an insight into the level of proficiency of the participants before the experiment and to find out to what extent and how the teachers used hand or body movements. The second round of observations was carried out during the instructional period. It focused on how the learners behaved in the class, whether they were motivated and engaged during the activities. It was particularly of interest to investigate what challenges and successes the pupils experienced. Observations in both groups were carried out during one lesson of English in each class before the research, and one lesson during the instructional period. While the first observation was described in the Methods chapter, the observations conducted during the instructional period are presented here.

During the instructional period, the focus of the observation was on the pupils' reactions on the teachers' input and their participation in the practical activities. In both conditions, the level of concentration and engagement varied throughout the lesson. However, in general, the classroom atmosphere was positive and the pupils were actively engaged in the lesson.

As far as the PG is concerned, the pupils demonstrated positive attitudes to the games, especially to colouring activities and pictionary (a guessing game with drawing pictures on the board). Most of the subjects displayed interest and asked for more hand-outs and the possibility to take them home in order to show to their parents. While the pupils were especially engaged with colouring activities, during memory games with picture cards, the pupils showed little concentration as most of them found those activities challenging.

Regarding the GG, they also seemed to enjoy the activities and showed the highest degree of participation in games 'Simon says', 'Guess the mime' and 'Follow the leader'. These games were considered to be appropriate for implementing gestures in the class. The games were aimed to train verbal learning by means of integrating physical activities in the lesson. The pupils actively took part in these games, moreover, because they were familiar more or less with the rules. The game 'Simon says' was an English version of widely known game 'Kongen befaler'¹³, where the children were eliminated from the game by either following instructions

¹³ 'Kongen befaler' – The king commands

that were not immediately preceded by the phrase *Simon says*, or by failing to follow an instruction which does include the same phrase. This game was one of the favourite activities among the children. The game provided the opportunities for everyone in the class to practice the target words at the same time; moreover, it trained concentration and listening skills. The same types of skills were activated in the game ‘Follow the leader’, where the children were supposed to imitate the gestures and movements after the teacher or peers. The detailed description of the games are given in Appendix F. Overall, four types of behaviour were observed in the GG during practical activities. They are summarized in Table 4.10.

Activities	‘Simon says’, ‘Guess the mime’, ‘Follow the leader’	‘Can you?’, ‘Simon says’, ‘Guess the mime’, ‘Follow the leader’	‘Remember the list’, ‘Can you?’	‘Remember the list’
Type	Active participation	Interest, but without active participation	Aspiration to learn words	Inattentiveness and lack of concentration
Explanation	Pupils took part in all the activities, even if they made mistakes or pronounced words incorrectly. Pupils took the initiative.	Pupils were not engaged in the activities, but they displayed that they knew the target material.	Pupils followed carefully the teacher and the peers, as they did not remember the target words.	Pupils did not really join in, just watched. They displayed little attention and motivation.

Table 4.10 Typical behaviours for the GG in the instruction.

As an example of the detailed behaviours during an activity with gestures, ‘Guess the mime’, is described. The game was aimed to act the words out by showing correct gestures. This activity was also popular among the young learners, so they actively participated in it. During this game, the pupils were supposed to mime the target words to the peers without saying them. First, the teacher grouped the pupils into two large groups equally, the left part and the right part. She explained the rules that every group would send a pupil to the stage; he or she could choose a flash card with a word then produce a gesture. The pupils were highly motivated at the

beginning of the game; many of them volunteered to go first. The performance of the pupils varied with their English proficiency. Many children willingly provided help when they saw their fellow classmates met difficulty on the stage while others chatted with their friends around them. Some students lost their interest in the game. For example, a shy boy near the back of classroom was eager to join the game at the beginning but since his neighbours did not pay attention to his willingness to communicate, he began to play with his textbook. In contrast, several more positive pupils could not wait to show off themselves by speaking loudly, one of them even came to the front of class to help his classmate. The teacher was also advised to ask the pupils what others were doing in order to check their memory on the lexical items. The majority of the pupils performed well when they answered to the teacher and recollected who showed which word. Even the boy that lost his interest during the performances of his team raised his hand in order to answer the teacher's question. Even though, he did not participate in the game, it was quite clear, that he watched what others were doing and remembered it. This activity and the use of gestures in it, evidently, had some effects on the engagement and the verbal memory of the learners.

To sum up, the observations during the instructional period demonstrated that the gesture-based instruction offered the opportunities for the learners to take part in the playful activities, and seemed to have some effects on the L2 learning and teaching.

4.3. The teacher's interview

This section presents the interview with the teacher. The following overview is based on the interview guide, which is divided into 6 main parts: Background information, Curriculum, Teaching practices, Participation in the project, Evaluation of the project, Future experience and Comments. The complete interview guide is given in Appendix H.

As for the background information, the teacher, referred to as Mari, is currently a 2nd grade form teacher working at the school with a single class all the time (from the 2nd to 4th grade). She has 7 years of teaching experience. The teacher has a general teaching education degree from the University of Stavanger (5 years). It is worth noting that the teacher is a class teacher, not an English teacher, as most of teachers at the primary level (grades 1 to 4) in Norway.

In terms of the curriculum, Mari reported that in the 2nd grade learners in this particular school were supposed to have one to two lessons of English, but in practice they had so-called 'English minutes' several times a day almost every day (at the beginning of the day and later in

the middle of the day). Regarding teaching techniques and practices in English lessons, she assumed that her lesson plan was typical for all second-grade classrooms in the school. Almost every second grade used the same textbooks, exercise books and activities in the school. Second graders usually sang songs, learned English expressions according to topic (time, weather, food, numbers etc.), played games, learned rhymes etc. One of the most frequent ways to introduce new vocabulary for the teacher was to use flash cards, which contained a picture and a corresponding word. The teacher usually asked pupils to pull a card with the correct word when she pronounced it when they spread flashcards face-down on the floor. Mari pointed out that this was one of the favourite activities for her pupils. She had never used any kind of instruction by means of gestures; the only game with the use of movements and gestures that was familiar to her was the game 'Simon says' ('Kongen befaler' in Norwegian). In response to the question about her use of gestures in the classroom, she said that she probably used gestures because they might help her communicate better. She felt that gestures also seemed to attract students' attention.

When asked to think about why she had decided to take part in the experiment, she responded that it seemed to be an interesting experience for her as she was open to something new in terms of teaching strategies and techniques. She believed that it was essential for teachers to be aware of the effectiveness of different methods of vocabulary teaching to choose the ones that are the most effective. She said that it would be useful to employ some activities with movements in her lessons, as second graders were very active and interested in learning new things.

As for the overall evaluation of the project, Mari pointed out that it was a positive and helpful experience for her to take part in the study, as it is always useful to try something new in the teaching practice with young learners in order to enhance their motivation. It was effective, particularly, in the sense that this type of instruction benefited most of the pupils, especially those who are fond of active games with a lot of motion. From Mari's point of view, almost all children at their age do love those activities. Mari's experience was that the pupils found it more enjoyable to do the activities straight after instructional training, since most of them wanted to change the activity and do something active. Most learners were glad to be part of the process of introducing the words, as she sometimes chose a pupil to show a word to others by means of gestures.

In response to the question about the pupils' engagement and motivation, Mari indicated that pupils displayed quite a high level of engagement during the vocabulary input. She observed that they took part in the instruction and were eager to imitate gestures that she produced. Most pupils raised their hands more often, compared to usual lessons when she used

pictures. She felt that the pupils were more motivated than usual, particularly at the beginning of the project, as this was new for them. Mari varied teacher's instruction with the possibility for children to come forward and present some words with accompanying gestures while the others repeated after them. Overall, the majority of the pupils were quite engaged and capable of following her during the instruction. As one of the possible reasons for that, Mari named the opportunity for pupils to use their body in order to participate in the lesson and learn new material. Comparing the usual instruction in the classroom (songs, cards with the pictures, questions to answer etc.) with gestural input of new vocabulary, she pointed out that the pupils were more eager to perform physical action than just to pronounce a word or a sentence. Consequently, in her opinion, this could influence their motivation.

Regarding the pupils' attentiveness during instruction, she reported that her gestures during the instruction most likely influenced the pupils' attention. Mari considered gestural input a positive way to get the pupils' attention, especially for those who tended to wander. She noticed that there were some parts of the instruction when some pupils tended to wander and were bored. The most difficult aspect for her was to maintain the high level of concentration and attention among the pupils during the whole period of instruction, as some of them got bored and impatient with that part of the project when they were supposed to repeat the gestures three times after a new item had been introduced. For her pupils repeating after the teacher 10 words three times each was a novelty. However, she realized that such a type of introduction was an exception and was relevant for the experimental design only, since in a normal lesson flow it would be difficult to employ it (due to time limits etc.). She concluded that in order to increase attentiveness of her pupils, the process of instruction ought to be more varied and entertaining for pupils. The different activities and games could help in creating an enjoyable and playful atmosphere where the pupils would direct their attention to the instruction.

Furthermore, questions to the teacher were related to the games and practical activities. As Mari pointed out, the games used on the lessons were useful in order to practice words through interaction and assess how the pupils learned the material. The games that received more positive attitude among the children were 'Simon says', 'Follow the leader' and 'Guess the mime', since the pupils were supposed to be attentive to get the tasks done and, on the other hand, had the opportunity to take a lead and show their knowledge. On the contrary, the most difficult game for pupils was the game where they were supposed to make sentences using action verbs and a modal verb 'can'. They tried to memorize the previous speaker's sentence and add a new word to the list but had to repeat also the phrase before. The teacher explained this by the fact that this game was unfamiliar for most of them and she found it difficult for them to retain all the words, although they worked in groups of 6-7 people.

Regarding the feedback Mari received throughout the project from the pupils, she noticed a positive attitude towards gestural instruction as she got several comments and questions about it. The pupils seemed to be involved as they displayed interest and curiosity. The only negative feedback she had was that some of them were worried about the testing period and felt nervous more than usual. She explained it by the fact that they did not use individual testing so often. Moreover, the researcher who tested them was a stranger to them. So sometimes, she had to explain to them that these assessments had nothing to do with their grades. This reaction occurred in her class as, she assumed, in the Norwegian educational system it was not common to assess the pupils at the early stages.

In general, Mari's impressions about the words the pupils found the most difficult coincided with the statistical results. She named the words *to write* and *to drive* as the most difficult to memorize for the majority. She mentioned that they were often mixed with each other or pronounced wrongly. One of the possible reasons for that, in her opinion, could be the fact that they sounded alike to them and were more difficult to pronounce in comparison to other new words (e.g. *to jump* or *to eat*).

Summing up, Mari was satisfied with the project's outcomes as she thought that it was likely to have a positive effect on young learners, especially on those who preferred to perform physical activities and games with motion. In her opinion, it was important to give young learners a chance to choose among several alternatives as their interests and personalities, as well as learning abilities could vary. Teachers need to consider individual differences among their pupils when they try various ways to draw their attention. In addition, teachers should use varying teaching methods to overcome boredom in the class: using quizzes and competitions, making students sing and tell stories, using visual aids along with physical activities and gestures. Therefore, the combination of different techniques of instruction is, from her viewpoint, the most useful and beneficial way to teach new words more effectively. Moreover, it is a good way to improve interaction among the pupils. She would definitely try to employ games and activities with movements in her lessons and try to include some gestures in vocabulary input, as she believes that some physical activity is important at a young age. The overall impression of the project by the teacher was quite positive.

4.4. Summary

A summary of the core findings of this study and of the principal issues that have arisen during the data analysis is provided in this chapter. The chapter began by a summary of the main quantitative results that were obtained during the two stages of tests (immediate post-test and delayed post-test). The results were analyzed by means of the descriptive statistics and non-parametric tests. Moreover, the chapter outlined the total scores and the percentage of correct answers for each lexical item. An important part of the chapter was to describe the behaviors and pupils' reaction on the novel instruction performed by the teacher. This information, received through the data collected by means of classroom observations and teacher's interview, was provided at the end of the chapter. This chapter demonstrated that the gestural component in vocabulary instruction was quite beneficial and could lead to some improvement in vocabulary learning. However, it is important to identify and interpret possible reasons for the results and discuss possible areas for future research. The final chapter of the paper interprets the results in relation with the research questions of the study.

5. Discussion

5.1 Introduction

In the area of language teaching and learning, gestures have been shown to play an important role in ESL classroom, mainly, in two respects. Firstly, second language learners naturally use gestures to promote their communicative skills and these spontaneous gestures have been seen as insights into the learners' cognition (Gullberg 2006; Stam 2006). Secondly, gestural input can assist learners to grasp concepts and store new knowledge. Particularly, in contexts such as teaching young learners, where there is a great motivational variety among the pupils, the effects of the use of gestures on vocabulary become more relevant. The present research aimed to shed light on the issues of young learners' L2 vocabulary instruction and the use of iconic gestures and their effects on short- and long- term retention. To this aim, the test results on oral performance following a 3-week instructional period were measured. Furthermore, the teacher of the target (gesture) group was interviewed about the pupils' behaviours and their motivation in the L2 classroom and the observational data was collected and analysed.

The present chapter discusses the findings based on the test results, teacher's interview and observations made in the classroom and provides some insights into how they relate to other researchers' results. The chapter is divided into four main sections. It starts by discussing the main findings obtained from the two stages of post-tests carried out immediately after instruction and two weeks later. The first section discusses how effectively the participants coped with learning the new lexical items. The main challenges and benefits of the gesture-based instruction are described in the following section. This theme is discussed from two perspectives, namely, the teacher's perceptions and the observer's perceptions. A section about the limitations and recommendations for future research follows at the end. Due to the complex, mixed-method nature of the research, there can be some overlapping between the sections in the discussion.

5.2. The effects of the use of gestures on vocabulary learning

One of the main aims of this research was to see if the subjects would enhance their mastery of vocabulary when they saw and imitated gestures. The first research question examined the impact of the use of gestures on vocabulary learning in the immediate and delayed post-test

performances. In order to examine whether or not iconic gestures had an impact on test performance among the young learners, the researcher focused on the test scores in two tests, namely recall and recognition, and two series of tests, immediate and delayed post-tests. The test result of the experimental group, the gesture group, were compared to the results of the control group, the picture group.

5.2.1. Immediate and delayed post-test performance

The findings of the test results on the immediate test performance in the recall test suggested that the use of gestures had no statistically significant effect on the retention of vocabulary items. However, the learners from the GG benefited significantly from gestural input in the delayed post-test. According to the descriptive statistics, the averages for the GG and the PG did not vary greatly in the immediate test stage ($M = 14.33$ and $M = 14.83$). On the other hand, the pupils who obtained the instruction with gestures outperformed those who followed the traditional lessons with images in both test types (recall and recognition) on the delayed post-test. The GG group averaged 7.79 compared with 6.67 for the PG in the recall test and 8.81 compared with 7.71 for the PG in the recognition test in delayed test performance. The findings clearly demonstrated that in the context of long-term retention, the gesture use seemed to aid retention during vocabulary acquisition. Gestures can be regarded as a facilitating tool for the retrieval of novel words. Moreover, these findings, surprisingly, indicated that the long-term performance for the participants was much better than the short-term performance for both conditions (the PG and the GG).

According to the Wilcoxon test results presented in section 4.2.1, the results for each lexical item revealed that in the PG there was no significant difference between delayed and immediate test results, whereas in the GG there were five words which showed a significant difference, namely *to cry*, *to jump*, *to knock*, *to write*, *to run*. These findings highlighted that the difference between the immediate and the delayed post-tests was significant for the gesture group. Overall, according to the summarized findings for both groups, the pupils scored higher on the delayed post-test (Appendix G).

When considering the reasons for such outcomes, it can be suggested, referring to Tellier (2008), that, when reproduced, gestures act as a motor modality and therefore, have a stronger impact on vocabulary retention than pictures. It is especially relevant in the interpreting of the cases when the participants from the GG during the recognition test could choose to produce

the appropriate gesture instead for pointing at the picture. Some of the pupils tended to do it during the recall test as well. Before pronouncing the vocabulary item, they re-produced a gesture attributed to a word. It can thus be suggested that these effects can be referred as the 'enactment effect' (Macedonia et al. 2011). According to the literature, accompanying a word with an iconic gesture and thereby inducing the enactment effect is one of the reliable ways of enhancing verbal learning in L1 as well as in L2 (Macedonia et al. 2011).

Another reason for the effectiveness of gesture use may be that when the GG produced gestures imitating the teacher's gestures, it might have been easier for the pupils to understand, and to remember over a long-term period, novel information in the visuo-spatial medium offered by gesture than in the visual or verbal medium offered by image and speech. Although the test design in the research conducted by Kelly et al. (2009) differed from the present study in terms of the learners' age group and the testing procedures, the ultimate findings were in agreement with the outcomes of the present study. The study compared the effects of four conditions (gesture, speech, congruent gesture and incongruent gesture) on the adult learners of Japanese. The findings supported the superior effects of speech coupled with congruent gesture, which were confirmed in this study. Another interesting finding of the study conducted by Kelly et al. (2009) indicated that gesture did not solely function to capture attention as the results showed that a congruent gesture enhanced verbal learning better than an incongruent gesture.

To sum up, the results of the present study suggested that the use of the teacher's gestures in the learning of foreign vocabulary could have an effect on long-term retention (Tellier 2008; Kelly et al. 2009). This possibility gains support from McNeill's pioneer work, which theorized that gesture and speech form an integrated system of meaning. As far as iconic gestures are concerned, they appear to be more capable of showing relevance than speech, as they are closer to the ideas of a speaker. Gesture reflects an online dynamic process of the 'dialectic between imagery and language' (McNeill 1985, 1992).

5.2.2. Recall and recognition test types

Turning now to the discussion of the recall and recognition test results, they appeared to confirm that gestures as a learning strategy were more efficient than using images as an instructional technique. The findings showed that the GG averaged 6.9 whereas the PG gained 6.7 in the recall test, whereas in the recognition test the mean scores were 8.6 and 7.9 respectively. According to descriptive statistics, under both test types, the GG outperformed the PG,

however, very little difference was found between the groups in the recall test. On the other hand, the results showed that the scores were much higher on the recognition test for the GG and the PG. These results mainly demonstrated that the recall test was, obviously, more demanding for the subjects than the recognition test. The outcomes of the present study, however, differed from the findings of the study carried out by Tellier (2008), which showed that the gesture group did significantly better than the picture group in “the active knowledge of the vocabulary” (2008: 14). Considering the difference between the two studies, the present study was designed as quasi-experimental in nature and was undertaken in the normal classroom settings where the pupils had opportunities to use the new vocabulary in various activities, whereas in the study conducted by Tellier (2008) learning vocabulary was carried out in the controlled experimental setting.

Overall, the results of the Wilcoxon test indicated that 9 out of 10 words showed a significant difference (except the item *to eat*) between the two conditions (recall and recognition tests) in the immediate post-test, while the words *to write* and *to run* had significant difference in the PG. On the other hand, in the delayed post-test only two words were significantly different between the test types in the GG, namely, *to cry* and *to drive*, whereas in the PG there were three words that showed significantly different results (*to jump*, *to drive*, *to run*). These seemingly small but considerable differences suggested that the GG performed better in the recognition test than in the recall test.

These findings are consistent with previous studies (Allen 1995; Morsella and Krauss 2004; Macedonia and Kriegstein 2012), which suggested that enactment facilitated recall and recognition, and, more importantly, acquisition of the words, as pupils got physically involved in the process of learning. According to Macedonia and Kriegstein (2012), when learning a novel word by enacting it, a learner had a complex multimodal sensorimotor experience. Iconic gestures accompanying concrete words, in their turn, might match internal (motor) images of the concept and “create a strong connection to the novel word with a preexisting circuit that represents the concept” (Macedonia and Kriegstein 2012: 404).

In addition, these conclusions could provide some insights into the reasons of the behaviours of the participants from the GG when they gestured during the recall and recognition tests, in most cases this behaviour assisted their performances, whereas the PG did not produce any hand movements. These findings were in full accordance with the outcomes of the study conducted by Morsella and Krauss (2004), who showed that speakers gestured more when retrieving the concepts from memory than when the objects were visually accessible, hence, gestures appeared to facilitate the recall of spatial information. Moreover, according to the findings of the same study by Morsella and Krauss (2004), gestures were also responsible for

lexical retrieval, as they influenced fluency of speech in the experiment, i.e. gesture-restriction decreased speech rate. In the present study, the GG produced the hand movements during the recall test, although they did not see any picture in front of them. In addition, they did so even when the pictures were present in the recognition test in order to retrieve the correct word. Referring to Morsella and Krauss (2004), it could be concluded that the participants from the present study used gestures in the recognition test because gesturing facilitated the process of retrieving the words they needed to describe the stimuli. As for the recall test, the participants seemed to produce the target word by activating the sensorimotor organization of semantics (Morsella and Krauss 2004). As a result, in the recognition test the GG outperformed the PG greatly, whereas in the recall test, the difference between the two groups was not significant.

5.2.3. Test performance on individual lexical items

The present study provided also additional evidence with respect to the test performance on individual lexical items. The items *to write*, *to cry* and *to drive* were the words which had the lowest scores in this study for both groups and on all test conditions. On the other hand, the words *to knock*, *to jump* and *to eat* were among those items that had the highest percentage of correct answers. As for the possible explanation for this difference, the scores may be attributed to the phonological characteristics of the items. Among the five words with the lowest percentage of correct answers are four words which contain a diphthong [aɪ], i.e. gliding vowel (*to write*, *to drive*, *to cry*, *to climb*). Moreover, *to cry* is the only word in the list that has an open syllable. By the same token, a significant factor is that four of five words contain the phoneme [r], which might have sounded unfamiliar to some children since the Norwegian pronunciation of /r/ varies in the Norwegian dialects (from alveolar flap to apical trill) (Nilsen 2010). According to Drew and Sørheim (2004:127), it is now widely accepted that the development of a second language is influenced by the first language.

It is worth comparing the study with that conducted by Tellier (2008), who also suggested a significant influence of phonology on the test results. She concluded that syllabic structure could have an impact on the test scores of the lexical items. It is notable, furthermore, that the test scores found in this study are comparable to those found in the prior research, mainly, the study where the words denoting actions were used as the input materials (Kelly et al. 2009). However, it would be of interest if future researchers would study different kinds of words (nouns, adverbs). Moreover, for future work it seems relevant to examine word length

as a variable by testing monosyllabic as well as di- and polysyllabic words. In general, in terms of pedagogical implications of gesture use in L2 class, the impact of word length, word type and prosody on second language learning requires more attention.

One of possible reasons for the impact of gestures on L2 vocabulary instruction, suggested in the previous studies, is that congruent iconic gestures facilitate retention because the meaning of iconic gestures is conceptually integrated with the meaning of speech, and this integration creates stronger and multimodal memory representations (Kelly et al. 2009). In addition, as was mentioned in the previous sections, when a person has images, actions, goals, and dialogue to attach to words, they have an embodied understanding of those words. On the contrary, when words can only substitute other words, like definitions, words have only a verbal understanding (Gee 2004). Overall, the results of this study provided support for the claim that the use of embedded meanings of the words in the field of language learning and foreign language learning could enhance vocabulary instruction.

5.3. Benefits and challenges of using gestures in vocabulary teaching

Even though the post-test results indicated that the GG pupils appeared to perform at a higher level compared to the PG pupils in the delayed post-test and the recognition test, the teacher's interview and observations of lessons showed that the situation was more complex. The present section discusses the findings of the study in relation to the second research question, aiming to define the benefits and challenges of using gestures in a 2nd grade EFL class, from two perspectives: the observer's and the teacher's.

5.3.1. Observer perspective

The benefits and drawbacks of the gesture-based approach of vocabulary input, from the point of view of the researcher, are described below.

Benefits

Based on the analysis of the test results, one of the main benefits of the new technique was that the gestures were efficient in terms of long-term retention of newly learned words. From the observations in the class, it was apparent that the subjects from the GG on average performed

well during the instruction as well as during the practical activities. They appeared to comprehend the tasks that they were instructed to do. This advantage of gesture use was observed more than once, including the times during classroom activities when the learners who could not remember a word would suddenly retrieve the word and say it once the teacher showed them a paired gesture. Another example of this benefit was the cases during the testing period, when the subjects were asked to name a word, responding to a question from the researcher, but they answered correctly only after they moved their hands imitating the target gesture. Improved retention and better effects for memorization of vocabulary are supported by several studies, for example, by Tellier (2008); Macedonia et al. (2011); Macedonia and Knösche (2011).

Secondly, gestures can affect the pupils' engagement and motivation to learn. According to the observational data, the lessons in the GG were fun and engaging for pupils. Their level of commitment to the tasks varied from child to child, but on average, they appeared to engage actively. Many pupils showed enthusiasm during the instruction period. When they performed the movements themselves, they were excited to use them. Positive attitude towards the practical activities and the games was also observed. In addition, during the research project the pupils who were lacking confidence and were not motivated to speak and to take part in the games made use of gestures as a tool for expressing their knowledge without speech and language. One of the struggling pupils who was usually inactive increased his confidence at the end of the lesson and decided to participate in the game 'Guess the mime' by taking the lead and going to the blackboard.

According to Krashen's (1982:31) Affective Filter hypothesis, it is crucially important to make the ESL lessons as enjoyable and playful for pupils as possible for successful L2 acquisition. Referred to the hypothesis, unstressed, self-confident, interested and motivated pupils can make successful learners. The results of observation is in accordance with the other educators' views that positive attitude is an important part of the learning process (Phillips 1993). Phillips (1995) argued that young learners usually expect to enjoy the activities the teacher had prepared for them. In this sense, gestures can be a powerful tool for creating affordable but at the same time sufficiently stimulating environment for pupils to feel satisfied with their progress.

As for another benefit, namely concentration and attentiveness, it was observed that gestures helped the pupils stay focused and attracted their attention. The researcher noticed that pure repetition of words did not really contribute to improve attentiveness, if compared to the data gathered from the PG. It appeared that when the children of the PG repeated the words after the teacher and watched the accompanying pictures, they did it in a very mechanic and

passive way. On the other hand, in the GG, where the gestures were implemented in the instruction, the pupils together with repeating a word produced the corresponding gesture. In short, it appeared to the observer that their listening was more active and concentration was enhanced.

Moreover, taking into account, that the group of young learners could be regarded as a vulnerable group in terms of inattentiveness, another aspect for gesture use as a potential effective tool for improving concentration was that the level of concentration for struggling learners improved during the research. The problems with discipline and pupils' concentration in early grades are significant. In particular, each class contained some pupils who were challenging and were lacking the ability to be attentive. The observations during the instructional period demonstrated that the pupils who had difficulty keeping their attention on the lesson, were more attentive by the end of a 3-week period of instruction. A possible explanation for this might be that gestures as a novel and intriguing tool for learners could make the initial steps in order to draw their attention and diminish the challenges of the young learners' behaviours. Summing up, the reproduction of gestures had the effect of enactment of the words, which, in turn, could strengthen concentration, as the children were supposed to reproduce not only words but also actions after the teacher. The similar results were found in the research conducted by Tellier (2005), who did not compare the picture-based instruction with the gesture-based instruction, but measured the effects of gesture use and speech input on vocabulary learning. She also concluded that due to the active participation, the pupils enhanced their concentration in the lesson.

Furthermore, gestures afforded the opportunity for peer teaching and learning. Instead of making vocabulary learning a solitary activity, the pupils took part in group interactions and cooperative learning with peers. The pupils from the GG worked in groups or all together in the games, such as 'Simon says', 'Follow the leader' or 'Guess the mime'. The gesture-based approach allowed for group work as the pupils could easily be grouped in twos or threes and the pupils could function as a team and compete with others. Group work as an important aspect in promoting interaction and communicative skills provided opportunities for the pupils from the GG to show their skills and abilities. Participation in playful and meaningful activities with their peers built a comfortable atmosphere for L2 pupils to learn from their fellow pupils, which is important, according to Krashen's affective filter hypothesis, for creating a safe, welcoming environment in which students can learn. Summing up, the gesture-based technique could provide opportunities to engage parents, siblings and peers in the learning process.

Another aspect of the gestures as an effective technique for the L2 classroom was their easy implementation. Gesture-based learning allowed pupils to use their body. The focus was

on the learners themselves, their physical and tactile aspects compared to learning through language and image. The teacher from the GG did not use any additional tool or material in order to present the new words to the pupils.

In general, iconic gestures may be more easily applied in the class than images and even language because they are encoded in the form of visuals but compared to pictures, gestures do not require any additional device or material to be applied (Roth 2001: 377). Moreover, gestures could orient students to aspects of a visual representation not available in the classroom. It is valuable to note here that even learning of abstract concepts in L2 could be enhanced by gestures, namely, metaphorical gestures. This type of gestures allows the learners to make use of the embodiment of theoretical entities not available to perception (McNeill 1992; Roth 2001: 383). This is likely to be helpful for older learners as well. For them the benefits of gesture in learning vocabulary do not disappear, they can just evolve.

Challenges

As far as the challenges are concerned, it should be pointed out that planning and choosing the material accompanied with gestures can be demanding. It would be beneficial for a teacher to try and to practice gestures before utilizing them in a classroom. For gestures to be effective they need to be used as consistently and accurately as possible.

Furthermore, the data collected from the observations indicated that not knowing the pupils well enough, such as their cognitive and affective abilities, could be challenging in providing appropriate situations for gesture input. It is important for teachers to involve a gesture as a natural part of everyday activities in the class. This challenge observed in this study seemed to be consistent with the findings by Sime (2006), who suggested that it was important for a teacher to be aware of the emotional effects that their non-verbal might have in the class. This challenge was also mentioned by the teacher.

Taken together, the challenges the teacher and the pupils faced during the implementation of non-verbals into the classroom discourse from the observer's perspective showed that there were a few constraints and factors that prevented gestures from becoming a consistent classroom strategy. Nevertheless, the general impression of the use of gestures in the 2nd grade classroom in a Norwegian school was that they had integrated reasonably well into the classroom environment. The next section moves on to discuss the benefits and challenges viewed from the teacher's perspective.

5.3.2. Teacher perspective

As was described in the previous section, there were several main benefits of the gesture use in L2 classroom during the introduction of the new items. The findings obtained from the oral tests and observations were supplemented with the findings from the teacher's interview. The following is summarized conclusions made by the teacher of the GG.

Benefits

The teacher was certainly aware of the benefits of the gesture use which led to the better performance and learning of the items. In her estimation, using gestures for word learning helped the children to internalize the items through body movements so that “gestures can help them understand what we wanted to make them acquire.” Mari assumed that since the children were new English learners, it was crucially important to assist them with every possible tool in order to increase their retrieval of vocabulary. In her opinion, gestures, had the potential to help learners remember important information. She noted several times that the children who previously struggled with remembering and concentration on the lessons, were attentive and followed her in the instruction; moreover, they showed the improved performance when responding to her in the lessons. Thus, the learning with gesture could increase the children's retention of the new vocabulary, as, according to previous research, gestures might ‘increase resources available to the speaker, perhaps by shifting the burden from verbal to spatial memory’ (Goldin-Meadow 1999: 427).

In the teacher's opinion, using gestures enabled the pupils to be active and engaged; and it motivated her to deliver interesting and not trivial lessons. Mari noted that the children seemed to like using gestures. The fact that so many children talked during breaks about the learned words, their progress and the test results was also an indication of the effectiveness of gestures as a strategy for introducing new vocabulary. The pupils also participated actively in the lessons with the games and practical activities. As mentioned before, the most popular games were ‘Simon says’, ‘Follow the leader’ and ‘Guess the mime’. These games, in her opinion, corresponded to the age of her pupils and were easy to implement in the lesson where the physical activity required.

Another important benefit for her was that gestures were extremely relevant for young learners. Children at the age of 6 – 8 could quickly lose interest and were less able to keep themselves motivated on tasks they find difficult. She observed that they really enjoyed imitating and doing the hand movements, which motivated them to keep participating in the class activities. In short, the gestures, in her opinion, undoubtedly played an important role in

creating a positive atmosphere in the class. This benefit, as stated previously, could be directly related to the Krashen's Affective Filter hypothesis (1982).

Furthermore, Mari drew attention to the fact that accompanying gestures could be an easy way to differentiate instruction in the classroom by providing various learning opportunities that appeal to various learners' backgrounds, language levels and learning abilities. What Mari suggested was that teachers needed to keep in mind that learners did not all learn the same way and by presenting information through various means, they could better reach to the learners of various language background and learning level. Therefore, L2 teachers ought to consider individual differences among students when they implement various teaching techniques in the lesson. In this respect, her comments stood in line with the theory of learning styles by Leaver et al. (2005) and the theory of multiple intelligences by Howard Gardner (1993), who proposed the idea that there were different learning styles or 'platforms of intelligence' and that material can be understood and applied by people differently. Learning vocabulary through gestures was therefore likely to be more beneficial to the children who, for instance, possessed kinaesthetic intelligences or learning styles. By incorporating gestures into the process of teaching, the pupils had a chance not only to hear and see the material (verbal-linguistic and spatial intelligence) but they also got to interpret the material through the movement of the gesture (bodily-kinaesthetic intelligence).

In addition, the findings from the teacher interview could be interpreted also in the light of the study conducted by Rowe et al. (2013), who studied the effects of non-verbal aids in word learning by preschoolers in three conditions, namely, a word alone, a word with a picture and a word with a gesture. The variables of gender, language background and language ability were measured in terms of their effects on the novel word learning. One of the important findings of the study was that overall performance on the comprehension tasks was related to the children's English language abilities; in particular, the tasks appeared to be more challenging for children with lower English language abilities than for children with higher language abilities (Rowe et al. 2013). Therefore, these outcomes tended to reflect that the characteristics of the learner could also influence the choice of the technique and materials for L2 learning as the researchers empirically proved that differentiated instruction within the classroom would benefit learners (Rowe et al. 2013). In the light of the current research, these considerations are also relevant as in the area of word learning it would be highly beneficial to teach learners using words only or using other non-verbal aids, based on the different backgrounds and abilities.

In general, based on the interview with the teacher, it seemed clear that she felt the benefit of the use of visuals, body movements, gestures through which the pupils can be

included and engaged in playful and meaningful activities. These findings agreed with the conclusions made in other studies, such as the work by Gee and Hayes (2011), who maintained that a teacher should develop embodied and situated meanings through experiences in the world of things, talk, contexts, and media that provide images, actions etc. that one can relate to words.

Challenges

Regarding the challenges for the teacher, one of the main difficulties for Mari was that she seemed to believe that gestures could be overused and might make classroom interaction rather artificial. In other words, pupils may consider excessive use of gesture in the classroom to be unnatural. In addition, Mari evaluated that her gestures could actually hinder pupils' attention to lesson content. That is why it is so important, in her opinion, to incorporate appropriate and effective gestures that assist learners' comprehension and acquisition and not distract their process of learning.

As pointed out above, gestures could be used as an important tool for differentiating learning abilities in the class. On the other hand, to meet the needs of different learners and reach 'multiple intelligences' (in Gardner's words) was at the same time a challenge, from Mari's point of view. She believed that gestures could be challenging to apply, in this context, as this technique required a lot of planning in order to be implemented correctly. Moreover, this format of vocabulary input can be a challenge for some pupils who possessed lower levels of concentration, for those who were lacking motivation and considered it a boring and useless activity. She realized, however, that the context of the experiment suggested some drilling activities and in the normal class settings it would be easier to offer the pupils the diversity of tasks and activities and to vary them according to their abilities and personalities. Therefore, one of the issues that emerged from the teacher's interview was that teachers should not just purely use gestures in the lessons without considering all the drawbacks and challenges. In other words, including gestures in the classroom should not increase the burden of the teacher; on the contrary, it should simplify the process of teaching. A teacher should take advantage of gestures, which can be extremely helpful in building classroom interaction and mastering vocabulary as they provide a rich source of materials and activities.

The results from the interview and the observations showed a wide range of the benefits and the challenges for teachers in their classroom practices. The potential pedagogical benefits of gestures should make it worth considering spending some time on planning, implementing and sharing experience about the gesture use in the L2 classroom. Gesturing in a primary school

setting could offer many relevant advantages and serve as a scaffolding tool linking verbal learning to practical learning. Gestures could potentially be a useful tool in word learning, but the conditions under which they can be successfully implemented should be further investigated.

5.4. Limitations and recommendations for future research

The findings of this study are restricted by the number of subjects and certain aspects of methodology. The small number of subjects that were tested in this study, obviously, does not produce a basis for generalisations to be made about the entire population of pupils in the 2nd grade in Norwegian schools. Had the sample been larger, the picture could have been different. However, time constraints prevented the inclusion of a larger sample of subjects in the data collection process.

Furthermore, due to practical considerations, it was impossible to randomly select the participants and to assign the same teacher for both groups. In general, it was not entirely clear whether this factor could influence the results and to what extent. It is important, hence, not to overemphasize the results of the statistical analysis and acknowledge all the limitations of the quasi-experimental design chosen in the study. On the other hand, it should be noted that the researcher tried not to violate the natural process of instruction. Would it be more or less effective for the process of learning if somebody unfamiliar for the pupils performed vocabulary instruction? It is beyond the scope of this study to examine it.

Moreover, in this study the participants underwent testing – an assessment practice that was quite unfamiliar to them as at the primary level in Norway there are no grades and no formal testing. It is worth pointing out that there could be an effect of test moment, which could certainly influence to some extent the test scores. If the participants had been put into a more naturalistic situation or, on the contrary, into a true experimental context, they might have performed differently.

Another limitation was related to the usage of visual stimuli in the test situation as the both groups were shown the pictures in the testing period. Even though they differed from the pictures shown to the PG during the instructional period, it was still the same kind of stimuli the PG got during the instruction. It could be suggested that the test results were influenced by this as the visual modality itself could have affected the pupils from the PG, as well as the GG. Therefore, future research would be recommended in order to enhance the accuracy in the recall

and recognition of the participants by using different kind of stimuli in the data collection procedures.

Further issues on the limitations of the present research relate to the choice of the material of the study. The lexical items, namely, action verbs, as discussed in the Methodology chapter, were chosen with respect to several important presuppositions, namely, word familiarity, word length, appropriate level of difficulty. The effects of the gesture use in this study seemed, however, dependent on the word type. The present study therefore was unable to examine the other word categories, such as nouns, abstract verbs or adverbs. According to the literature, memorability appeared to be related to the concreteness of the item (Macedonia and Knösche 2011). It was almost obvious that enactment of action verbs would be easier than for abstract words. For the latter, it might be the case that observing or imitating gestures would not be as beneficial for learning, because these verbs do not have a direct link to the motor system (de Nooijer et al. 2013). On the other hand, several studies revealed that abstract words would also benefit from gesture-based learning. According to the results of the experimental research conducted by Macedonia and Knösche (2011), nouns were memorized best, followed by verbs, abstract nouns and adverbs. Thus, it would be interesting to explain the impact of gestures on concrete and abstract items as well as the differences occurring between different word categories.

Finally, an issue that was not addressed in this study was whether the beneficial role of gestures was related to the fact that the participants saw or because they saw and performed the gestures. It was assumed that it was performing the gesture that led to better memory based on the literature (Macedonia 2003; Macedonia and Knosche 2011; Tellier 2008 etc.). For instance, in an early experiment, undertaken by Engelkamp and Zimmer (1983), subjects learned items by watching the experimenter performing the action and by performing the actions themselves. According to the results of this study, learning items simultaneously with performing gestures seemed to have led to greater recall, but further studies needed.

However, the quantitative methods of data collection were not the only research tool employed to obtain data in this study. Additional methods, such as observing lessons and interviewing the teacher were used to verify and supplement the data. Despite the fact that the scope of the study was limited to provide conclusive research evidence, it is still believed that all the data collection methods provided sufficient data for the trends described in the present discussion.

Summing up, only tentative conclusions and impressions about the effects of the gestures during the vocabulary instruction on children's test performance on novel verbs can be drawn. All the limitations mentioned above should be taken into consideration when

evaluating the main findings. Nevertheless, this study provided an opportunity to advance knowledge of gesture use in the second language classroom. The study has, therefore, made an important contribution to this growing area of research by exploring the pedagogical dimensions of gestures in L2 instruction in general and vocabulary instruction in particular. Further research using different methods and different materials would make it possible to examine the second language acquisition of vocabulary accompanied by gestures from other perspectives.

5.5 Summary

This chapter began by discussing the main findings of the present study. First, the pupils' test results on the immediate and delayed, as well as on the recall and recognition post-tests were discussed. The chapter went on to suggest the benefits and the drawbacks of gesture use in the 2nd grade in a Norwegian school. A review of the main limitations and the recommendations for future research was given in the section 5.5. The next chapter provides the main conclusions of the study and the pedagogical implications, which had arisen during the data analysis and the interpretation of the main findings.

6. Conclusion

This thesis aimed at examining the effectiveness of the use of iconic gestures in a second language classroom among young learners. The study was designed to determine the impact of the iconic gestures on vocabulary learning of the Norwegian pupils in a primary school in the municipality of Stavanger. In addition, the study set out to evaluate the benefits and challenges of a gesture-based approach to vocabulary instruction.

For these purposes, 42 pupils of the second grade and their teachers were asked to participate in the study. During regular class instruction over a period of three weeks, the subjects were presented with 10 English words paired with either a gesture, or an image. The participants from both groups, the gesture group and the picture group, followed the same research design, which comprised tests, classroom observations and the teacher's interview. Thus, both quantitative and qualitative methods were used in order to collect the data for the analysis. The first stage consisted of 3 weeks of instruction, followed by two sessions of oral tests. The testing phase included two post-test types, recall and recognition, conducted immediately after the instruction and after a two-week delay. Under both conditions, the two groups of subjects were supposed to meet with the researcher one by one and respond to test questions orally. In brief, the methodological approach taken in this study was a mixed methodology based on an experiment.

The present study tentatively suggested that imitation of iconic gestures either during learning or during an immediate recall test could have an effect on the number of verbs that were correctly recalled and recognized on both test types. These findings, in general, revealed that learning through enactment enhanced vocabulary retrieval and that gestures could be used as a teaching strategy to improve learners' vocabulary mastery.

The first research question addressed the effectiveness of the iconic gestures on test performance in delayed and immediate, and recall and recognition test types. Firstly, the data showed that the GG outperformed the PG in the context of the delayed post-test. For the immediate post-test condition, the test scores were higher for the PG in the recall test, and, by contrast, the participants of the GG tended to perform slightly better than the PG on the recognition test. Secondly, regarding the findings in recall and recognition test types, it appeared that the effects of the gesture-based instruction on the recall test were similar to the effects of the picture-based instruction. Interestingly, as opposed to the results on the recall test, where the scores were significantly lower on the immediate than on the delayed test, for the recognition test, there was no notable effect of time. In general, therefore, it appeared to be easier for the subjects from both groups to match the pictures to the word they heard than to

recollect and pronounce correctly the target word. Summing up, one of the main findings of the study was that the participants from the GG retrieved more lexical items during the delayed post-test on receptive vocabulary than did the PG subjects on the same test type.

Such findings were in accord with most of the recent studies examining the effects of gestures in L2 vocabulary acquisition (Allen 1995; Tellier 2008; Macedonia et al. 2011), which also demonstrated that gestures could lead to better retrieval of lexical items. One of the possible reasons for better memory through enactment, according to the literature, is multimodal encoding and complexity in the word's representation induced by the gesture and therefore enhanced depth of processing (Macedonia and Knösche 2011: 207).

The second research question sought to investigate the benefits and challenges of the use of gestures in the L2 classroom. The data was gathered through two main sources, namely, observations and the semi-structured interview with the teacher of the GG. While some challenges of using gestures were identified, taken together, the results of this part of the study suggested that the benefits of this strategy outweighed the possible challenges. In the process of learning new vocabulary in English, the pupils benefited from the use of hand movements in various ways, for example, motivation and concentration increased considerably in the lessons, retention improved and engagement was also enhanced when the teacher offered opportunities for physical participation during lessons. In addition, gestural input provided numerous opportunities for group work in the classroom during the games and practical activities. Overall, the findings from three sources of data collection demonstrated that using the gestures was an effective tool to aid the student's vocabulary mastery.

Turning to the suggestions for future research, the findings of the research concluded that studying gestures as a means of aiding second language acquisition was open for further investigation from various perspectives. For instance, due to the characteristics of the age group and considering the time constraints, only the oral modality was studied in the present research. Future studies might examine other language skills, such as listening or writing; moreover, it would be interesting to assess the effects of gestures on other word categories and compare findings with the outcomes of the present research. Changing the sample in terms of the age group, level of proficiency or learners' background might also lead to some new results, different from those obtained in the present research. In addition, it would also be beneficial to study long-term language gains.

The results of the present study pointed out some pedagogical implications for second language instruction. This study demonstrated the effectiveness of the use of gestures in games and activities aimed at vocabulary acquisition; however, gestures could be applied in other learning situations, such as telling stories, reading aloud, listening activities etc. For example,

when reading a book, the teacher may encourage pupils to use gestures and actions to demonstrate what a character is doing. Similarly, this study provided some evidence that gestures could improve L2 learning of action verbs, but gestures might be effective in learning other types of words: nouns, adverbs, adjectives denoting emotions, prepositions of place and direction, or abstract concepts.

Some recommendations could be made for promoting the use of gestures as a useful tool that could play an important role for increasing motivation and engagement in the classroom, as the gestures provided the opportunities not only for mere drilling the wordlists but also could be applied easily in playful activities, which the pupils enjoyed. Furthermore, the gestures could have an impact on enhancing the level of concentration, particularly for those pupils who were estimated as struggling in terms of attentiveness and holding the focus. The results of this research showed that gestures could help learners with kinaesthetic learning abilities, who might be lacking physical activities and exercises in the class and could probably benefit from this approach. Another important practical implication was that the activities with gestures and body movements could aid group work and peer teaching in the class. The young learners felt confident and actively participated in such activities as they enjoyed the atmosphere of cooperation and the possibility to take the lead. Summing up, one of the main advantages of the gesture use, easy implementation, showed that this teaching strategy had the potential to be used in educational settings.

In general, the study provided support for the claim that gestures could greatly enrich classrooms and increase communicative competence (Pennycook 1985). Learning through gestures might be useful for teaching a new language to very young children or, moreover, for older learners at some stages of their L2 acquisition. However, there remains much work to be accomplished in implementing gestures in L2 classroom. In addition to researchers, language teachers could also considerably contribute to this growing area of research and learn more about gesture in language in general and in L2 learning in particular by doing action research and sharing experience.

In conclusion, although the data of this study did not include enough information to draw generalized conclusions on the effectiveness of gestures in L2 vocabulary learning, the present research indicated that gesture could be used as an effective and joyful learning and teaching strategy to improve learners' vocabulary mastery.

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Online resources



http://www.udir.no/kl06/ENG1-03/Hele/Komplett_visning/?lplang=eng

<http://www.eslkidstuff.com/esl-kids-games>

Appendix A. Item, picture, iconic gesture list

WORD	PICTURE	ICONIC GESTURE
TO WASH		<p>Right hand held out, palm towards floor. Mimicking washing the other hand</p>
TO CRY		<p>Both hand raised in front of head. Both hands brought up to eyes, forming fists, moved mimicking crying.</p>
TO JUMP		<p>Both arms brought to sides, jumping</p>
TO KNOCK		<p>Right hand in fist, hand moved back and forth, three times, mimicking motion of knocking</p>

<p>TO CLIMB</p>		<p>Both arms raised above head, moving up and down, imitating climbing</p>
<p>TO DRIVE</p>		<p>Both arms held straight, hand forming fists, palms toward each other. Both arms moving in spinning motion, imitating steering wheel.</p>
<p>TO WRITE</p>		<p>Right hand in fist, but index finger and thumb stuck out, mimicking writing with a pen on a left hand. Left hand with a palm toward teacher.</p>
<p>TO EAT</p>		<p>Right hand in fist, imitating holding a spoon. Palm toward teacher. Right hand moving towards a mouth, imitating eating</p>

<p>TO RUN</p>	 A cartoon illustration of a young girl with blonde hair in a ponytail, wearing a red dress and red shoes. She is running to the right with her arms in fists and a determined expression.	<p>Both hands in fist. Arms moved back and forth, mimicking a runner</p>
<p>TO SLEEP</p>	 A cartoon illustration of a young boy with dark skin, wearing an orange shirt, sleeping in a bed. He is covered with a pink blanket, and his hands are tucked up towards his face.	<p>Both hands held out, palms together. Hands moving towards right cheek and right ear</p>

Appendix B. Plan of the study

	Week 1	Week 2	Week 3	Week 4 (after a 2 week-delay)
	Instruction period		Instruction with testing	Testing period
<u>Class 1</u> <u>Picture</u> <u>group</u>	1. The teacher gives instruction of 5 new words by showing pictures to the participants 2. Participants listen and repeat the words 3. Practice activities	1. The teacher gives instruction of the next 5 new words by showing pictures to the participants 2. Participants listen and repeat the words 3. Practice activities	1. The teacher presents all 10 words by showing pictures to the participants 2. Participants listen and repeat the words 3. Practice activities 4. Recall test 5. Recognition test	1. Recall test 2. Recognition test
<u>Class 2</u> <u>Gesture</u> <u>group</u>	1. The teacher gives instruction of 5 new words by showing gestures to the participants 2. Participants listen and repeat the words and reproduce gestures 3. Practice activities	1. The teacher gives instruction of the next 5 words with gestures to the participants 2. Participants listen and repeat them and reproduce gestures 3. Practice activities	1. The teacher presents all 10 new words with gestures to the participants 2. Participants listen and repeat them and reproduce gestures 3. Practice activities 4. Recall test Recognition test	1. Recall test 2. Recognition test
<u>Activities</u>	GG: 'Guess the mime', 'Simon says' PG: 'Find a pair', 'Pictionary'	GG: 'Can you?', 'Follow the leader' PG: 'Colouring', 'Memory game'	GG: 'Remember the list' PG: 'Remember the list'	—————
<u>Words</u>	<i>to wash, to cry, to jump, to knock, to climb</i>	<i>to drive, to write, to eat, to run, to sleep</i>	<i>to wash, to cry, to jump, to knock, to climb, to drive, to write, to eat, to run, to sleep</i>	

Appendix C. Pupil information letter

Forespørsel om deltakelse i forskningsprosjektet

Kjære elev (foresatt til elev),

Jeg heter Anastasia Khanukaeva. Jeg er Master in Literacy student ved Universitetet i Stavanger.

Jeg inviterer deg til å delta i et forskningsprosjekt om virkningen av håndbevegelser i engelskfaget i barneskole (2 trinn). Forskningsprosjektet er om Effekten av håndbevegelser på L2 vokabular læring i en norsk barneskole.

Formålet med prosjektet er å undersøke effekter av håndbevegelser (gester) i memorering av vokabular i engelskfaget i barneskole (2. trinn).

Det vil bli tatt notater og lydopptak av gjennomføring av tester og observasjon.

Prosjektet er frivillig, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Men jeg håper at du deltar i dette prosjektet og at den også får utbytte av det. Det er jeg og min veileder som vil ha tilgang til personopplysninger. Opplysningene vil bli behandlet konfidensielt.

Prosjektet er fullstendig anonymisert og det vil ikke bli lagret informasjon om deg eller det de har bidratt med i dette prosjektet.

Jeg trenger ingen andre opplysninger fra deg untatt navnet, alder, kjønn og informasjon om faglig nivået (engelskfaget) og morsmålet.

Prosjektet er planlagt ferdig innen mai 2014. Universitetet i Stavanger er behandlingsansvarlig institusjon. Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Ta gjerne kontakt med meg pr. e-post (nastikhan@gmail.com) om du har spørsmål.

På forhånd takk for samarbeidet.

Hilsen,

Anastasia Khanukaeva

Institutt for kultur- og språkvitenskap

Hulda Garborgs Hus

Universitet i Stavanger

4036 Stavanger

Mob.: 979 44 573

e-post: nastikhan@gmail.com

Samtykke til deltakelse i prosjektet

Jeg samtykker på vegne av barnet.

Jeg har mottatt skriftlig og muntlig informasjon om studien, og barnet

(_____) villig til å
delta

Signert av prosjektdeltaker (foresatte til elev)

Dato/ Sted _____

Appendix D. Teacher information letter

Forespørsel om deltakelse i forskningsprosjektet

Kjære lærer,

Jeg heter Anastasia Khanukaeva. Jeg er Master in Literacy student ved Universitetet i Stavanger.

Jeg inviterer deg til å delta i et forskningsprosjekt om virkningen av håndbevegelser i engelskfaget i barneskole (2 trinn).

Formålet med prosjektet er å undersøke effekter av håndbevegelser (gester) i memorering av vokabular i engelskfaget i barneskole (2. trinn). Resultatene av vokabular tester av de nye ord kombinert med gester skal bli sammenlignet med de som er presentert gjennom bilder.

Du som lærer vil gi instruksjon til en av klassene i løpet av tre uker.

Det vil bli tatt notater og lydopptak av gjennomføring av tester og observasjon.

Prosjektet er frivillig, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Men jeg håper at du deltar i dette prosjektet og at den også får utbytte av det. Det er jeg og min veileder som vil ha tilgang til personopplysninger. Opplysningene vil bli behandlet konfidensielt.

Prosjektet er fullstendig anonymisert og det vil ikke bli lagret informasjon om lærere eller elever eller det de har bidrat med i dette prosjektet.

Prosjektet er planlagt ferdig innen mai 2014. Universitetet i Stavanger er behandlingsansvarlig institusjon. Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Ta gjerne kontakt med meg pr. e-post (nastikhan@gmail.com) om du har spørsmål. På forhånd takk for samarbeidet.

Hilsen, Anastasia Khanukaeva

Institutt for kultur- og språkvitenskap

Hulda Garborgs Hus

Universitet i Stavanger

4036 Stavanger

Mob.: 979 44 573

e-post: nastikhan@gmail.com

Samtykke til deltakelse i prosjektet

Jeg samtykker på vegne av barnet.

Jeg har mottatt skriftlig og muntlig informasjon om studien, og barnet

(_____) villig til å
delta

Signert av prosjektdeltaker

Dato/ Sted _____

Appendix E. The NSD approval letter

Norsk samfunnsvitenskapelig datatjeneste AS

NORWEGIAN SOCIAL SCIENCE DATA SERVICES

Milica Savic

Institutt for kultur- og språkvitenskap Universitetet i Stavanger

Postboks 2557 Ullandhaug

4036 STAVANGER



Vår dato: 06.11.2013

Vår ref: 35980 / 2 / AMS

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 20.10.2013. Meldingen gjelder prosjektet:

35980	<i>Effekter av håndbevegelser på L2 vokabular læring i en norsk barneskole. The impact of gestures on L2 vocabulary learning in a Norwegian primary school</i>
<i>Behandlingsansvarlig</i>	<i>Universitetet i Stavanger, ved institusjonens øverste leder</i>
<i>Daglig ansvarlig</i>	<i>Milica Savic</i>
<i>Student</i>	<i>Anastasia Budakovskaya</i>

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 10.06.2014, rette en henvendelse angående status for behandlingen av personopplysninger.

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Avdelingskontorer / District Offices:

OSLO: NSD, Universitetet i Oslo, Postboks 1055 Blindern, 0316 Oslo. Tel: +47-22 85 52 11. nsd@uio.no

TRONDHEIM: NSD, Norges teknisk-naturvitenskapelige universitet, 7491 Trondheim. Tel: +47-73 59 19 07. kyrre.svarva@svt.ntnu.no

TROMSØ: NSD, SVF, Universitetet i Tromsø, 9037 Tromsø. Tel: +47-77 64 43 36. nsdmaa@sv.uit.no

Vennlig hilsen

Vigdis Namtvedt Kvalheim

Anne-Mette Somby

Kontaktperson: Anne-Mette Somby tlf: 55 58 24 10

Vedlegg: Prosjektvurdering

Kopi: Anastasia Budakovskaya Novvegen 20, 102 4044 HAFRSFJORD

Personvernombudet for forskning



Prosjektvurdering - Kommentar

Prosjektnr: 35980

Ifølge prosjektmeldingen skal det innhentes muntlig og skriftlig samtykke basert på muntlig og skriftlig informasjon om prosjektet og behandling av personopplysninger. Personvernombudet finner informasjonsskrivet tilfredsstillende utformet i henhold til personopplysningslovens vilkår.

Prosjektet skal avsluttes 10.06.2014 og innsamlede opplysninger skal da anonymiseres og lydopptak slettes. Anonymisering innebærer at direkte personidentifiserende opplysninger som navn/koblingsnøkkel slettes, og at indirekte personidentifiserende opplysninger (sammenstilling av bakgrunnsopplysninger som f.eks. yrke, alder, kjønn) fjernes eller grovkategoriseres slik at ingen enkeltpersoner kan gjenkjennes i materialet.



Harald Hårfagres gate 29
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Fax: +47-55 58 96 50
nsd@nsd.uib.no
www.nsd.uib.no
Org.nr. 985 321 884

BEKREFTELSE PÅ ENDRING

Vi viser til statusmelding mottatt 11.06.2014.

Personvernombudet har nå registrert ny dato for prosjektslutt 10.01.2015.

Det legges til grunn at prosjektopplegget for øvrig er uendret.

Ved ny prosjektslutt vil vi rette en ny statushenvendelse.

Hvis det blir aktuelt med ytterligere forlengelse, gjør vi oppmerksom på at utvalget vanligvis må informeres ved forlengelse på mer enn ett år utover det de tidligere har blitt informert om.

Ta gjerne kontakt dersom du har spørsmål.

Vennlig hilsen,
Juni Skjold Lexau - Tlf: 55 58 36 01
Epost: juni.lexau@nsd.uib.no

Personvernombudet for forskning,
Norsk samfunnsvitenskapelig datatjeneste AS
Tlf. direkte: (+47) 55 58 81 80

Appendix F. List of games and activities

1. Games and activities for the GG:

- **Remember the list (Memory game with actions)**

The children add the words to a list and make phrases (they gesture at the same time). Each child can add a new word but must also repeat the phrase that went before. The children can work in groups of four-five. They can use new words and words they already are familiar with.

For example, a possible list might be:

The teacher: I can jump.

The first child: I can jump and I can run.

The second child: I can jump. I can run and I can eat.... etc. (Slattery and Willis 2001, 50).

- **Guess the mime (Charades)**

After introducing the verbs to the pupils, one of them comes to the front of the class and takes a card with a word (or the teacher pronounces it to a pupil). A pupil then should act out the verb using gestures (mime). The rest of the class watch and try to guess what is the word. After the game children can be asked to recollect what different pupils were doing in order to check their memory (Slattery and Willis 2001: 60).

- **Follow the leader game** (based on TPR)

All pupils (or a group of children) line up behind the teacher and follow her around the classroom. The teacher does an action and shouts out the word for that action. Children copy her movements and repeat the word. Good actions include: hello, goodbye, stop, go, run, jump, sit down, ... and all the words that are used for instruction with gestures.

- **Simon says**

The teacher tells the pupils what to do by beginning: 'Simon says ... touch your nose / count to five, etc.' The children can only move when the teacher says 'Simon says'. If a pupil says 'Run!' and the pupils perform the command they are out. Pupils are eliminated if they do not perform the correct action, or if they perform an action when the leader says 'Simon Says...' (Slattery and Willis 2001: 29).

- **Can you actions**

The teacher asks: 'Can you jump?' If the pupil replies 'Yes, I can' then the teacher says: 'Ok, do it!' and the pupil does the action. If the child says 'No, I can't' say 'Too bad. Ok, can you run?' etc. These actions a teacher can also use: dance, run quickly, hop, touch your toes, cross your eyes, sing

2. Word games and activities with pictures:

- **Find a pair**

Memory game where children pick up two cards with the same picture. The cards are spread out on the table face-down (Slattery and Willis 2001, 50).

- **Memory game**

The teacher places flashcards in a row, face up on the floor or on the board. Then she turns all the flashcards over, so that the picture-side is facing down. The teacher calls out a flashcard and has the children take turns guessing which flashcard it is. If they guess correctly, they keep the flashcard.

- **Remember the list (memory game with pictures)**

The pupils add the words to a list and so make phrases (they can hold pictures with words for support and pronounce them). Each child can add a new word but must also repeat the phrase that went before (Slattery and Willis 2001: 50).

The children can work in groups of four-five.

- **Pictionary**

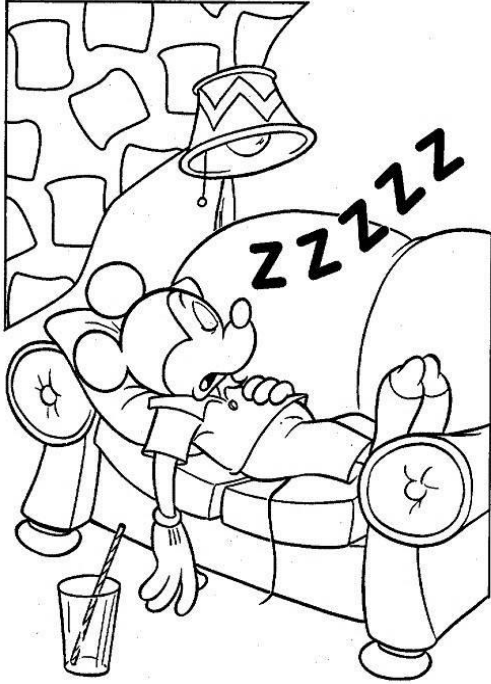
The teacher divides the class into two teams. One member of each team is asked to go to the board. The teacher gives them a word. The students only have one minute to make their team say the item of the word only by drawing picture on the board as a clue. The first team who says the word gets a point.

- **Colouring cards with pictures**

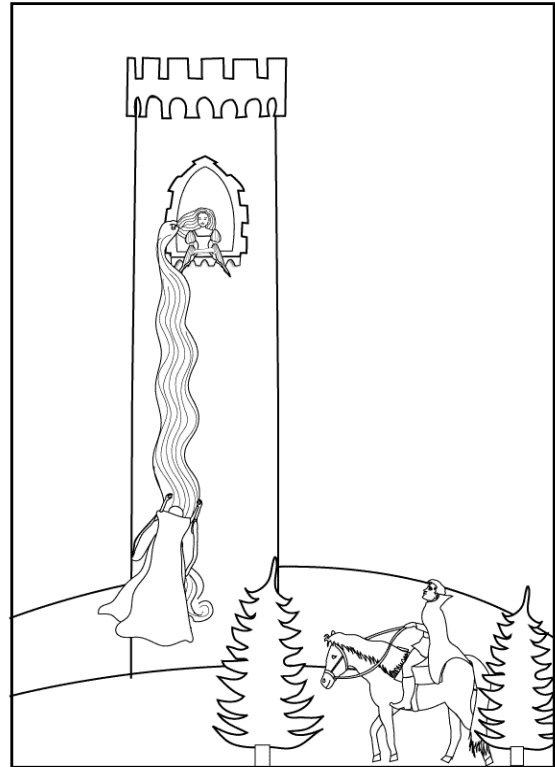
The pupils colour pictures and match them with words.

Examples of colouring cards for the PG:

To sleep



To climb



Appendix G. Tables and figures

		N	SD	M	Sum (Max = 42)
1	To wash	42	4.1	7.5	31.50
2	To cry	42	4.7	5.5	23.50
3	To jump	42	3.4	8.4	35.50
4	To knock	42	3.3	8.7	36.50
5	To climb	42	4.7	6.5	27.50
6	To drive	42	4.7	4.2	17.50
7	To write	42	4.1	3.2	13.50
8	To eat	42	3.5	8.6	36.00
9	To run	42	4.8	3.7	15.50
10	To sleep	42	4.3	7.3	30.50

Table 1. Immediate recall post-test

		N	SD	M	Sum (Max = 42)
1	To wash	42	3.0	9.0	38.00
2	To cry	42	4.1	7.8	33.00
3	To jump	42	2.2	9.5	40.00
4	To knock	42	2.6	9.2	39.00
5	To climb	42	3.5	8.5	36.00
6	To drive	42	4.7	6.9	29.00
7	To write	42	4.8	6.4	27.00
8	To eat	42	2.1	9.5	40.00
9	To run	42	4.7	6.9	29.00
10	To sleep	42	4.0	8.1	34.00

Table 2. Immediate recognition post-test

		N	SD	M	Sum (Max = 42)
1	To wash	42	3.4	8.6	36.00
2	To cry	42	4.0	7.2	30.50
3	To jump	42	2.7	9.0	38.00
4	To knock	42	2.7	9.2	38.50
5	To climb	42	3.9	7.4	31.00
6	To drive	42	4.6	4.3	18.00
7	To write	42	4.2	4.3	18.00
8	To eat	42	3.3	8.8	37.00
9	To run	42	4.7	5.5	23.00
10	To sleep	42	4.0	8.0	33.50

Table 3. Delayed recall post-test

		N	SD	M	Sum (Max =42)
1	To wash	42	2.9	9.0	38.00
2	To cry	42	4.6	6.9	29.00
3	To jump	42	0.0	10.0	42.00
4	To knock	42	1.5	9.8	41.00
5	To climb	42	4.2	7.9	33.00
6	To drive	42	4.1	7.9	33.00
7	To write	42	5.0	5.5	23.00
8	To eat	42	2.6	9.3	39.00
9	To run	42	3.5	8.6	36.00
10	To sleep	42	4.2	7.9	33.00

Table 4. Delayed recognition post-test

		Gesture group		Picture group	
		<i>PT</i>	<i>DPT</i>	<i>PT</i>	<i>DPT</i>
1	To wash	8.1	9.1	8.5	8.6
2	To cry	5.7	7.5	7.8	6.7
3	To jump	9.2	10	8.8	9.1
4	To knock	8.7	9.8	9.3	9.2
5	To climb	7.9	8.3	7.3	7.0
6	To drive	5.5	6.8	5.6	5.4
7	To write	4.4	5.5	5.1	4.3
8	To eat	9.3	10	8.8	8.1
9	To run	4.3	6.7	6.3	7.4
10	To sleep	8.7	9.5	6.7	6.3

Table 5. The average test scores on the immediate and delayed test performance for each item.

		N	M
1	To wash	42	8.2
2	To cry	42	6.7
3	To jump	42	8.9
4	To knock	42	9.0
5	To climb	42	7.5
6	To drive	42	5.5
7	To write	42	4.8
8	To eat	42	8.9
9	To run	42	5.3
10	To sleep	42	7.7

Table 6. Test performance in the immediate post-test (recall and recognition tests)

		N	M
1	To wash	42	8.8
2	To cry	42	7.1
3	To jump	42	9.5
4	To knock	42	9.4
5	To climb	42	7.6
6	To drive	42	6.1
7	To write	42	4.9
8	To eat	42	9.0
9	To run	42	7.1
10	To sleep	42	7.9

Table 7. Test performance in the delayed post-test (recall and recognition tests)

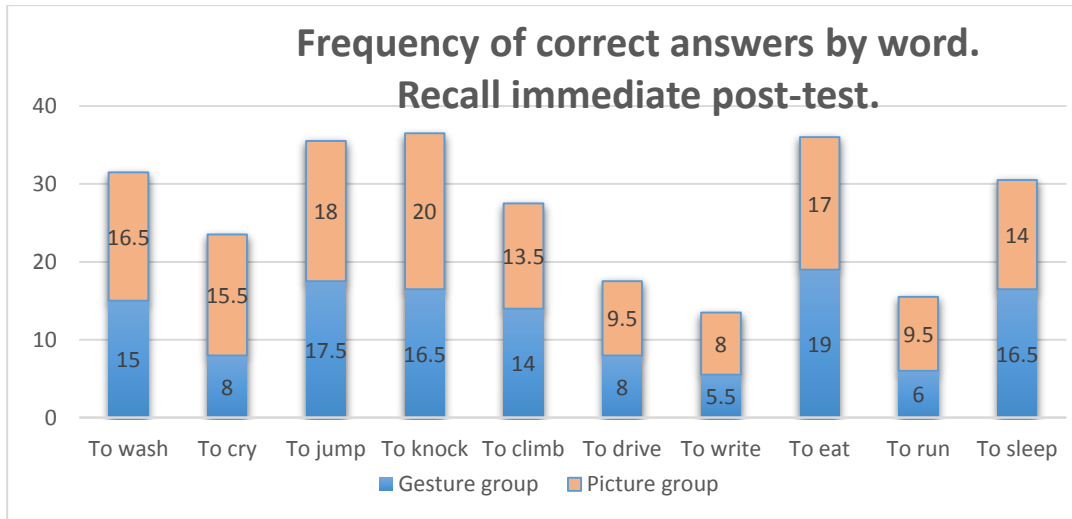


Figure 8

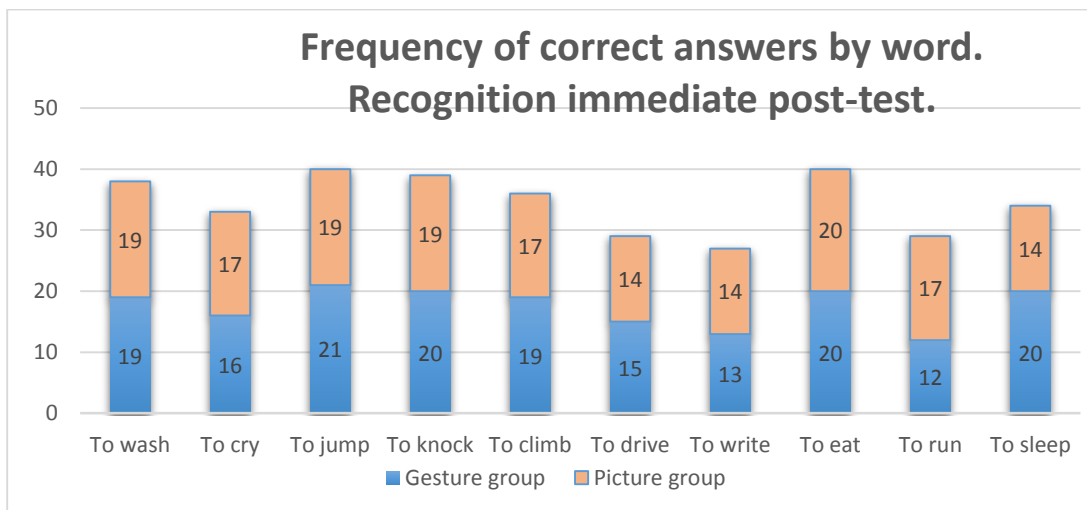


Figure 9

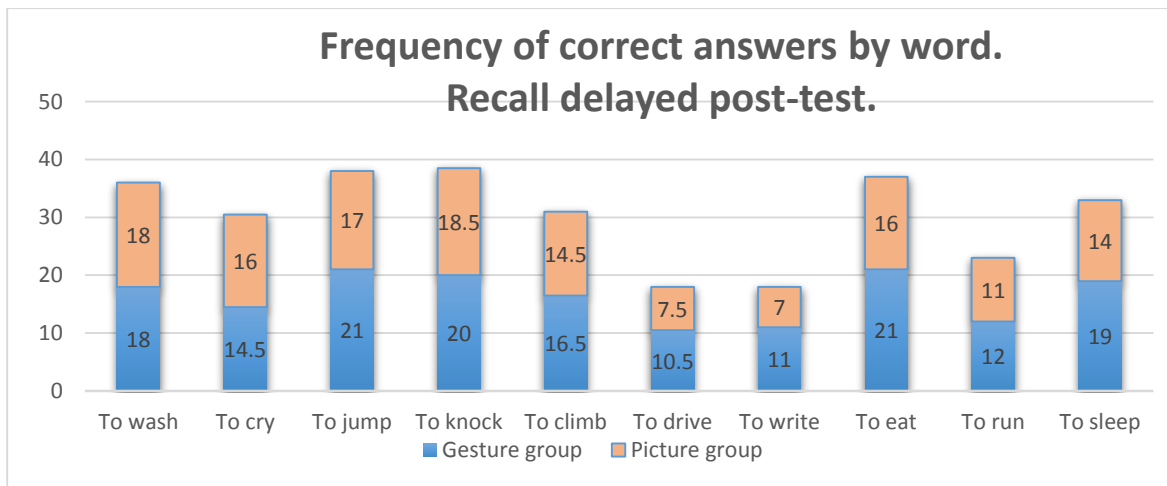


Figure 10

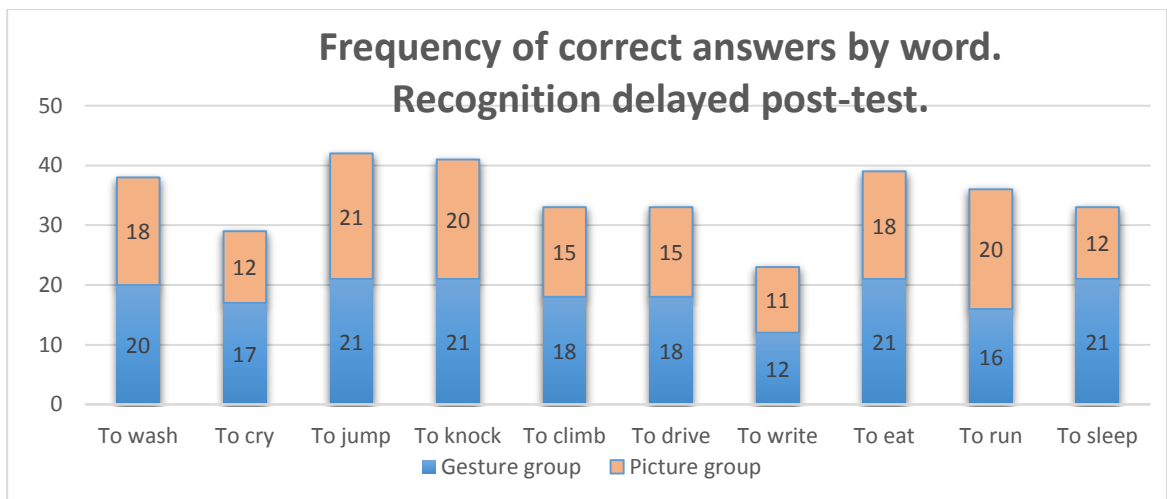


Figure 11

Appendix H. Teacher interview guide

The purpose for the interview is to help me find out information for my MA thesis

The names and the school will be kept anonymous.

The researcher will take notes and audio-record the interview on practical purpose.

A. Background information

1. How many years of teaching experience do you have?
2. Do you mind telling me your age? If hesitant: How old were you when you started teaching?
3. What teaching qualification do you have?

I am interested in learning about teaching with gestures in English language classrooms in Norway. All the information provided by you is valuable for my study, so I appreciate you sharing your experiences with me.

B. Curriculum

4. How many hours a week of English language do the 2nd grade pupils usually have?
5. What amount of new vocabulary (approximate number) are you usually supposed to introduce to them according to English language curricula (ENG1-03) in 2nd grade?

C. Teaching practices

6. How do you typically deal with introducing new vocabulary in English language subject to the pupils?
7. How important were gestures and other hand movements in your teaching before the project?
8. What are your practices in connection with gestures? (Do you use gestures when you teach vocabulary or any other aspect of L2?)
9. Have you used activities and word games with gestures and physical movements before in your teaching practice? If so, what were they? Why? How pupils reacted to them?

D. Taking part in the project

10. Why have you decided to take part in the project?

E. Evaluation of the project

11. What was the most challenging part for you in this project?
12. What do you think were the most difficult words (of 10 verbs) for the pupils to memorize? What were the easiest ones?
13. What have you noticed about your pupils' attentiveness and concentration when you introduced new vocabulary?
14. How can you evaluate the pupils' behavior during lessons where you have used gestures as an additional modality? Were they more active than usually?
15. Have you noticed their progress?
16. Do you find it easier for your pupils to learn new words when they are gestured?
17. What can you say about their motivation?
Do you feel that your pupils were more motivated than usual? If yes, was their motivation related to using gestures and movements or you could relate this to the fact that they felt it was something new in their lessons?
18. Could you tell how the pupils have engaged in various activities and games with gestures and physical movements?
19. In your view, what were favorite activities with gestures for pupils?
20. Have your pupils given any feedback to you or each other about instruction period or testing? If yes, could you give any comments on that?
21. What is your attitude to the use of gestures when teaching new words? What benefits and challenges of using gestures can you see when teaching L2 in general and vocabulary in particular?

F. Future experience and expectations

22. In your opinion, could you use this experience with the use of gestures in introducing new vocabulary in future?
23. What activities or games will you use in your future teaching experience?

G. Comments

24. Is there anything else you would like to add?

Thank you very much for your help.

Appendix I. Visual stimuli for the testing period