Teaching L2 vocabulary with student- and teacher-generated gestures: A classroom perspective

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A Thesis

in

The Department of Education

Presented in Partial Fulfillment of the Requirements

for the Degree of Master of Arts (Applied Linguistics) at

Concordia University

Montreal, Quebec, Canada

June 2016

CONCORDIA UNIVERSITY

School of Graduate Studies

This is to certify that the thesis prepared

By: Jordan Clark

Entitled: Teaching L2 vocabulary with student- and teacher-generated gestures: A classroom perspective

and submitted in partial fulfillment of the requirements for the degree of

Master of Arts (Applied Linguistics)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ABSTRACT

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This action research project explored the use of gestures for teaching and learning French vocabulary in an upper-beginner adult classroom with 21 students from various language backgrounds. Over the course of four weeks, the teacher developed and used four sets of themed activities using both teacher- and student-generated gestures to introduce new vocabulary to the students, encouraging students to take an active role with respect to creating gestures. Detailed classroom observations and the teacher's field notes showed that students became comfortable using gestures after the first class and that the gesture activities had positive effects on student participation and the classroom interaction. Weekly quizzes and a final vocabulary test revealed benefits of gesture-based activities for word learning. Students' comments suggested that they enjoyed the gesture activities and that the gestures helped them remember words better, particularly when the word naturally evoked a gesture or when the gesture contained clues for word length or pronunciation. Several pedagogical considerations guiding the design and implementation of gesture-based vocabulary activities in a second language classroom are discussed.

Acknowledgements

I give my sincere thanks to Pavel Trofimovich for his unwavering assistance with the conceptualization, planning and analysis of this action research project. The advice of my committee members, Kim McDonough and Joanna White, was extremely helpful in making the project more effective and broader in scope. Finally, I would like to thank Suzanne Stirling for her inspiration with many of the learning activities that I designed and used throughout the project.

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Chapter 1

In the second language (L2) classroom, vocabulary instruction typically involves listening activities, dialogues, gap-fill exercises, and association tasks, focusing on learners' ability to understand and produce verbal content (Oxford & Crookall, 1990). This type of instruction follows a traditional cognitivist view of second language acquisition (SLA), which has dominated SLA studies for several decades (Larsen-Freeman, 2007). According to this view, the brain is the self-contained and self-sufficient locus of language learning. It receives input, changes its internal state, and modifies its output accordingly. However, recent developments in neighbouring fields of linguistics and cognitive science indicate that such a conceptualization of language learning is incomplete: language learning involves more than processing verbal input and producing verbal output.

In fact, language appears to be grounded in the body and to be closely tied to the brain's sensorimotor functions (see Barsalou, 2008, and Atkinson, 2010). For instance, speech activates the brain's sensorimotor areas (Hauk, Johnsrude, & Pulvermüller, 2004), and vice-versa, senses and movement activate the brain's language areas (Bonda, Petrides, Frey, & Evans, 1994). In essence, language, mind, and body are interconnected, as most linguistic events also involve sensory and body experiences. The link between language and the body most clearly surfaces when we speak. Although we are largely unaware of it, our speech is accompanied by a parallel modality—gestures. For example, the narrative "I was slowly chopping at the tree's trunk. Chop, chop, chop… Finally it started to tip, and then came crashing down," would likely be accompanied by a sideways chopping gesture coinciding with each spoken "chop," followed by a vertical arm

rotating slowly at first, then accelerating towards a horizontal position. These co-speech gestures illustrate and expand upon speech, and the two follow phonologically, semantically, and pragmatically synchronous paths (McNeill, 1992). Researchers attribute a range of functions to gestures, such as adding supplementary information to what is said (McNeill, 1992), facilitating lexical retrieval (Krauss, Chen, & Gottesman, 2000), and structuring spatial information prior to speaking (Kita, 2000).

The past decade has seen an explosion of research into the use and function of spontaneous co-speech gestures in SLA (see Gullberg, 2008, for a review). When teaching vocabulary, teachers naturally use iconic gestures—defined as kinegraphic or pictographic representations of actions or objects (McNeill, 1992)—and these gestures have been shown to be an important factor in comprehensible input (Allen, 2000; Lazaraton, 2004; Smotrova & Lantolf, 2013). Abstract gestures—metaphoric and dietic (pointing)—are also used to teach various aspects of grammar (e.g., Smotrova, 2014). Learners use gestures to get meaning across in communicative settings (McCafferty, 2002), and gestures have also been shown to help learners with lexical retrieval and the formulation of utterances (Morett, 2014).

SLA thus appears to be characterized by multimodal and embodied learning processes, and experimental researchers have made attempts to show how making use of physical modalities, such as gestures, leads to more effective learning. Most studies to date have focused on the use of iconic gestures to teach vocabulary, a natural choice for teachers because iconic gestures are not culture-specific but rather illustrate the word in question (Lazaraton, 2004). An example of an iconic gesture used for teaching L2 words would be flapping one's arms to illustrate the word "bird." Studies have shown that

words learned with gestures are remembered significantly better than words learned through first language (L1) translations (Kelly, McDevitt, & Esch, 2009; Macedonia & Klimesch, 2014; Mayer, Yildiz, Macedonia, & von Kriegstein, 2015) and are also used more in production (Macedonia & Knösche, 2011). Many of these studies have shown that the advantage for words learned with gestures increases over time (Macedonia & Knösche, 2011; Macedonia & Klimesch, 2014; Mayer et al., 2015), suggesting that gestures especially benefit long-term retention of vocabulary.

These findings support studies on multimodal learning, which have shown that vocabulary learning is enhanced when both verbal (oral and written language) and nonverbal (visual) modalities are used (Chun & Plass, 1996; Plass, Chun, Mayer, & Leutner, 1998). Interestingly, however, gesture-based techniques have been shown to also be more effective than other visual techniques, including pictures (Khanukaeva, 2014; Mayer et al., 2015; Tellier, 2008). This may be due to the active nature of producing gestures: Research has shown that the benefit of gestures is strongest if learners repeat the gesture themselves instead of simply viewing it (Mayer et al., 2015), which is compatible with theories emphasizing the importance of "deep" input processing and active learner involvement (Craik & Lockhart, 1972; Laufer & Hulstijn, 2001).

To summarize, pairing words with gestures seems to lead to better and longer-lasting learning, compared to audiovisual or picture-based techniques. This is consistent with the views of language as part of embodied, multimodal cognition (Atkinson, 2010; Barsalou, 2008) and suggests that gesture-based instruction has the potential to make classroom vocabulary learning more effective. However, most of the evidence for the importance of gestures in vocabulary learning has come from lab settings which differ in

numerous ways from authentic classrooms, and research techniques used in lab-based experiments are not directly transferable or relevant to classroom contexts. For instance, the technique used in most research on gesture-based vocabulary learning involves students repeating words and gestures in a rote manner, following the instructor's model. Clearly, such an approach to learning is not ideal for classrooms with a focus on meaningful student interaction, nor is it likely to yield the same results as in the lab. In the words of Lightbown (2000), "No matter how sound the research on which new ideas, materials and techniques are based, pedagogical innovations must be implemented and adapted according to local conditions, the strengths of individual teachers and students, the available resources..." (p. 454).

To the best of my knowledge, there is no current classroom-based research which has explored how gestures could be used with adults in a student-centered, communicative framework. Furthermore, it remains largely unknown how students perceive and react to the use of gestures in classroom-based vocabulary instruction. In light of these gaps, this study employed an action research methodology to explore how gestures can be used to teach vocabulary to adults in a student-centered, communicative classroom and investigated the students' perceptions of gesture-based techniques.

Chapter 2

Introduction

Words are the building blocks of language, and learning vocabulary is one of the main tasks faced by second language (L2) learners (Hulstijn, 2001). There have been numerous calls for vocabulary teaching to be given a more central role in L2 programs. Even though learners can and do acquire vocabulary incidentally—for example, through communicative activities (Joe, 1995; Newton, 2013) or extensive reading (Krashen, 1989)—vocabulary is learned more effectively when supported by direct teaching (Folse, 2004; Laufer, 2005; Zimmerman, 1997). This is especially true at lower proficiency levels, because learners need to develop a sizeable vocabulary (at least 3,000 word families) before they can begin to learn new words from context (Laufer, 1997).

Although many teachers rely on first language (L1) translations to explain word meanings (e.g., Franklin, 1990), this is not always possible—for example, in heterogeneous classrooms or when the teacher does not speak the learners' L1—nor is it necessarily ideal, partly because learners can be misguided into thinking that L1 and L2 words are fully equivalent in their meaning. Nonverbal (visual) materials, and especially gestures as a form of natural nonverbal communication, can therefore be ideal as ways of illustrating unknown word meanings to learners. Indeed, research shows that words are learned and remembered better when visual supports, including gestures, are used (Plass et al., 1998; Tight, 2010; see Mayer, 2001). However, many published pedagogical materials provide little guidance on the teaching of word meanings to learners (Cook, 2003), and teachers are given no assistance with using gestures for the teaching of vocabulary. Therefore, the goal of this study, addressed to classroom L2 teachers, was to

both illustrate and examine ways in which visual support in the form of gestures could be incorporated into vocabulary instruction in L2 classrooms.

Gestures in L2 Vocabulary Learning

Research has shown that pairing words with illustrative (iconic) gestures (e.g., cupping the hand into a "C" and tilting it downwards for "to pour") can help students learn vocabulary. Macedonia (2013) proposes a technique in which the instructor says a word while performing an iconic gesture and gets the learner to repeat the word and the gesture. Studies using variations on this technique have found that words learned in this way are recalled better (Kelly et al., 2009; Macedonia & Knösche, 2011; Morett, 2014) and used more in writing (Macedonia & Knösche, 2011) than words learned via L1 translations, for both concrete and abstract words. Words paired with gestures also show better recall compared to words introduced with other visual supports, such as pictures, especially when learners actively repeat the gesture along with the word (Mayer et al., 2015; Tellier, 2008).

These findings suggest that gestures could be a useful support for classroom vocabulary instruction. Several studies using gestures to teach vocabulary in children's classrooms have indeed found benefits for gestures over pictures (Khanukaeva, 2014; Porter, 2016). With adults, however, apart from early research investigating the effectiveness of Total Physical Response (TPR) as a technique (Asher, 1969), where students hear commands in the target language and respond with the corresponding action (e.g., stand up, walk, sit down),[1] most existing research on gestures and vocabulary learning has been conducted in decontextualized, lab-based settings and has generally targeted artificial languages. In addition, most research has focused on the teaching of

words with gestures as part of teacher-fronted and teacher-driven activities. For example, the technique proposed by Macedonia (2013) affords only a passive role for learners with respect to gesture creation and use, whereas the general trend in communicatively oriented L2 classrooms is towards giving learners a more active role in their learning. Some researchers have hinted that having students invent their own gestures could be effective (Macedonia & Klimesch, 2014), but this has only been explored to date (with promising results) in a small lab-based pilot study (Mathison, 2014). Further work is therefore needed to shed light on how gestures can best be used for vocabulary instruction in authentic classrooms, especially communicative, student-centered classrooms, and how students would respond to such techniques. This work will provide valuable information for teachers who might wish to incorporate gestures into their own teaching practices.

Action Research on Novel Classroom Techniques

There have been numerous calls for more classroom-based research to test and adapt research-based ideas and techniques for use in real classrooms (e.g., Ellis, 2010; Spada, 1997). Classroom research in general is mutually beneficial to teachers and researchers, as teachers are more receptive to research conducted in authentic environments, and researchers gain access to the large body of knowledge that teachers have accrued working in the very settings which researchers hope to impact (Lightbown, 2000). Of particular use to teachers, however, is action research—where the teacher is the researcher, the driving force behind planning, conducting, and assessing research outcomes. In action research, the teacher-researcher identifies a teaching area he or she would like to improve and embarks on a cyclical process of change: plan, act, observe,

reflect, replan, and so on (Burns, 2010; Kemmis & McTaggart, 1998). By placing the teacher at the heart of the process, action research is an ideal way to test and adapt new techniques for authentic classrooms.

Many teachers have used action research as a reflective approach to testing and adapting novel techniques for classroom use. Regarding vocabulary, Huyen and Nga (2003) used an action research design to explore the use of word games in a Vietnamese ESL classroom and found that games were motivating and effective thanks to the low-stress environment and friendly competition they created. Other vocabulary learning techniques investigated through action research include keywords (Benge & Robbins, 2009) and vocabulary notebooks (Ralph, 2010), as well as ways to support word learning through music (Wood, 2001) and television (Kingston, 2001). A key advantage of action research is the opportunity to assess student perceptions, which are all the more important in student-centered classrooms. By combining teachers' observations with student perceptions, action research can yield a clear and situated picture of a technique in use. And although action research is inherently context-specific, its findings can be used to inspire and guide other teachers (as well as researchers and administrators), and there have been numerous calls for more action research (Burns, 2013; Rainey, 2000).

The Present Study

Given the positive role of gestures in L2 vocabulary learning and the lack of classroom-based, teacher-friendly research on gesture use in L2 vocabulary teaching, this action research project therefore explored how gestures could be incorporated into vocabulary instruction in an upper-beginner French as a second language (FSL) classroom, taught by the first author (hereafter, the teacher). Consistent with the teacher's

emphasis on student-centred and communicative learning, the study blended activities where the teacher taught gestures to the students (teacher-generated gestures) with activities where students created their own gestures (student-generated gestures), and also explored students' perceptions of the various gesture activities. The study thus addressed gaps in the existing literature regarding (a) the use of gestures for learning vocabulary in authentic classrooms, especially as part of communicative instruction, (b) the need to give learners an active role in the creation and use of pedagogical gestures, and (c) the importance of obtaining students' perceptions of such activities. The following research questions guided this project:

1. What are the most important constraints to consider when designing gesture-based vocabulary activities?
2. Are the activities using teacher- and student-generated gestures, as designed, effective for teaching vocabulary in the classroom?
3. How do students perceive gesture-based vocabulary activities?

Method

Classroom Context

The target context was an upper-beginner FSL class in a community centre for recent immigrants and newcomers in Montreal, Canada. The class, made up of 21 students (18–52 years old), was linguistically and ethnically diverse, representing Spanish (8), English (5), German (2), Polish (1), Portuguese (1), Thai (1), Korean (1), and Persian (1) language backgrounds. Students also knew up to two additional languages (most often English). Students had been in Canada between two weeks and three years (M = 9 months), with the exception of one student from an English-speaking province, and all

had been assessed by the centre as having upper-beginner proficiency. Students reported a range of prior experience learning French (up to 5 years, *M* = 10 months) and reported using French outside of school between 0 and 70% of the time (*M* = 9%). Although students' reasons for learning French varied (integration and immigration, seeking employment and/or postsecondary education, learning the language as part of a live-abroad experience), all had high motivation, as assessed informally by the teacher through students' performance and class participation. The session lasted six weeks, with the teacher responsible for the first and second of three 3-hour classes per week. The teacher taught with an assistant whose main tasks were to help supervise activities and answer students' questions and who also assisted with data collection for this project.

Gesture Materials

The teacher designed and used four gesture-based activities, which were to be implemented in class once per week for the first four weeks of the session as part of a theme-based lesson, to help students learn new vocabulary. The topics of the lessons featuring gesture activities included (in order) *la cuisine* (cooking, teacher-generated gestures), *les directions* (directions, student-generated gestures), *le déménagement* (apartments and moving, teacher-generated gestures), and *la santé* (health, student-generated gestures). The sequence of teacher-, student-, teacher-, student-generated gesture activities allowed students to get guided practice with gestures before alternating between both activity types, thus giving them a chance to compare the two and see which they preferred. Gesture-based activities took place in the first class of each week-long theme-based lesson sequence and were supported through other communicative activities, such as presentations, roleplays, and interactive games, to give students the opportunity

to reuse the vocabulary over the remainder of the week. Weekly quizzes (described below) allowed students to review the past week's target words and provided an incentive to study. All materials used in gesture-based activities can be found in Appendix A.

The *cuisine* lesson introduced students to the concept of using gestures to learn vocabulary through teacher-generated gestures. Before the first gesture activity, the teacher explained the technique and its potential benefits to the students and outlined the research project, and had all willing students sign a written consent form (all students accepted). The target words—action verbs (8), such as *couper* (to cut), *ajouter* (to add), and *mélanger* (to mix)—and their gestures were then introduced through a recipe that the students read one at a time. Whenever a target word arose, the teacher repeated the word along with an iconic gesture and had the students repeat both word and gesture several times. Students then got into pairs to write their own recipes which they presented in small groups. The presentations took the form of a live cooking show, and students were instructed to perform a gesture for each action verb.

The *directions* lesson was the students' first opportunity to generate their own gestures. The target words (11) included nouns (e.g., *coin*, corner), verbs (e.g., *traverser*, to cross), and prepositions (e.g., *en face*, in front of), and the teacher had prepared cards showing a target word along with an illustration. In pairs, the students first went through all 11 cards and settled on a gesture for each word. Then, pairs played a guessing game where one student would draw a card and perform the corresponding gesture, and the partner would guess the word. Finally, students changed partners and played the guessing game with their new partner. Afterwards, students further practiced the new vocabulary by giving each other directions using a map of the city (with no gestures required).

In the *déménagement* lesson, the teacher used a dialogue between a landlord and a prospective tenant to introduce the lesson's target vocabulary: eight words pertaining to apartments and moving, including verbs (e.g., *déménager*, to move), nouns (e.g., *électroménager*, home appliance), and adjectives (e.g., *disponible*, available). As in the *cuisine* lesson, students read through the dialogue and after each target word, the teacher would get them to repeat the word several times along with a (teacher-generated) gesture. Then, students got into pairs to write landlord-tenant roleplays using the new vocabulary.

The final lesson using gesture activities targeted health, and was students' second opportunity to generate their own gestures. Student were organized in pairs, and each pair received one of two dialogues between a doctor and a patient that contained five target words and illustrations to indicate their meaning. Pairs read through their dialogue and decided on a gesture for each target word. Then, students got together with someone who had practiced the other dialogue, and taught each other the word-gesture combinations from their dialogue. Afterwards, they played an interactive game in which half the students were patients and the other half were doctors, and patients had to obtain diagnoses for their given symptoms from as many doctors as possible.

Assessment

To answer the first research question, which asked what constraints are important to consider when designing gesture-based vocabulary activities, the teacher kept a detailed journal of his lesson development process as it evolved over the course of the session. Specifically, the teacher noted any constraints that arose while planning the gesture activities and recorded how each gesture lesson went, what questions or concerns were brought up by students, and how these could be planned for.

The second research question, which asked whether the activities using teacher- and student-generated gestures were effective for teaching vocabulary in the classroom, was explored in relation to students' participation in activities and their success in word learning. To assess how effective the activities were in getting students to participate and use word-gesture combinations, the teacher and his assistant completed in-class observation checklists modeled after the COLT observation scheme (Spada & Fröhlich, 1995). Specifically, the observer recorded and judged students' use of target words ("correct" = correct and comprehensible or "incorrect" = incorrect or incomprehensible) and the quality of their gestures ("good" = iconic and congruent or "bad" = incongruent or minimal/none), by checking the appropriate box each time a target word was uttered or attempted. A congruent iconic gesture was operationalized as clearly illustrating the target word, and comprehensibility was defined as whether it was possible to understand the word. The teacher also took notes during and after each lesson on how the gesture activities unfolded: How well students participated, what issues arose, and what changes to classroom management were made on the spot.

Students' word learning was assessed by means of four weekly quizzes (shown in full in Appendix B), each taking place one week after the in-class lesson, and a final vocabulary test given one week after the last quiz. Students completed a pretest before each gesture-based lesson, in which they were given a list of the target words and were asked to check known and unknown words. The quizzes took the form of fill-in-the-blank exercises based on the recipe, dialogue, or other material used to learn the words the week before. The teacher read the text, pausing and performing an iconic gesture for each target word, and students were required to write the appropriate word. The final

vocabulary test was completed in the last week of class, one week after the last quiz. For this test, which was based on the Vocabulary Knowledge Scale (Wesche & Paribakht, 1996), students were provided with a list of all target words and asked to indicate their knowledge of each word on a 1–4 scale (1 = "I don't remember this word," 2 = "I recognize this word but I don't know what it means," 3 = "I recognize this word. I think it means…" [correct synonym, translation or use in sentence given], 4 = "I know this word. It means…" [correct synonym, translation or use in sentence given]).[2]

Two research instruments administered during the final gesture-based lesson (*santé*, in week four) were used to answer the last research question, namely, how students perceived the gesture-based vocabulary activities. First, the students completed a questionnaire featuring 12 questions to be rated on a 5-point Likert scale (e.g., 1 = "not well," 5 = "very well"), targeting the students' experience carrying out the gesture activities (questions 1–4), their perceived learning (questions 5–7), their preference for learning through teacher- versus student-generated gestures (questions 8–10), and their enjoyment using gestures (questions 11–12), as well as one open-ended question asking them to list which words they learned especially well through gestures. After completing the questionnaire, students got into pairs and engaged in brief (3–8 minutes) audio-recorded discussions of their experience with gesture-based vocabulary learning. Each pair was provided with a digital recorder and a set of open-ended questions targeting the same broad themes as the questionnaire. To minimize language-related difficulties, the questionnaire and discussion questions were available in Spanish and English (see Appendix C), and the students chose to conduct their discussions in Spanish (3 pairs), English (4 pairs), or Portuguese (1 student).

Data Analysis

The vocabulary pretests served to establish each student's prior knowledge of the target vocabulary. To ensure that the dataset was consistent, quiz results were compiled per lesson, only across students who were present for the previous week's lesson and only counting words marked as "not known" on the pretest. Following these criteria, a total of 15 students were included in the analyses of the *cuisine* and *directions* lessons and 12 in the *déménagement* and *santé* lessons. The results of the final vocabulary test were compiled per lesson and averaged across students. Once again, a student's response was only counted if the student had been present for both the lesson and its corresponding quiz and had marked the word as "not known" on the pretest.

The questionnaire results were averaged across students for each question. The audio-recorded discussions were transcribed by the teacher, who is fluent in Spanish and English, with assistance (for transcription and translation) from a colleague for one discussion in Portuguese. The teacher used a holistic, bottom-up technique to code the transcripts, first highlighting salient comments, then grouping these into categories and finally grouping these categories into broad themes (Duff, 2008).

Results

Teacher's Notes

The teacher's detailed notes, which documented the process of preparing gesture-based activities, revealed that gestures lent themselves naturally to oral and interactive activities, such as dialogues and guessing games, but less so to activities involving writing. Even though the target vocabulary was always provided in written form (e.g., through dialogues, glossaries, images with words), students mostly practiced the

vocabulary orally. In the current setting, this aligned with the focus of the class, which was to help newcomers integrate into the local community by building their oral communication skills.

Teacher-generated gesture activities appeared simple to prepare and implement (see Appendix D for descriptions of gestures for all target words). In this study, a text or dialogue would be read together as a class, and each time a target word came up, the teacher would briefly get the students' attention and have them repeat the word-gesture combination. Afterwards, the teacher would revisit all target words with the class by performing a gesture and having students supply the word. For abstract words, the teacher could take the time to ensure that gestures were related to the word in some way—for example, by using a common Mexican gesture meaning "yes" (raising and curling the index finger) to illustrate *disponible* (available) in the *déménagement* lesson. By planning gestures beforehand, the teacher was also able to think of ways to build elements such as word length and pronunciation into the gestures. For example, the gestures for multisyllabic words like *déménager* (to move) and *électroménager* (home appliance) had the same number of movements as there were syllables in the word, and the gesture for *rez-de-chaussée* (ground floor) had three movements for four (written) syllables to show how the "e" in *de* is not pronounced. Although the teacher sometimes improvised new gestures on the spot if students did not fully understand a word's meaning, he reverted to using one single gesture once all students understood the meaning so that there would be a single, memorable word-gesture pairing.

Student-generated gesture activities took more careful planning. This was in part because students needed to learn word meanings without any assistance with gestures

from the teacher in order to generate their own gestures. L1 translations were not an option as the class was heterogeneous in language background, and students did not have a high enough level of French for L2 glosses to be viable. The teacher therefore opted for providing students with an image for each target word, creating "visual glossaries" for each set of target vocabulary. This proved very successful; although it added to preparation time, it also provided the students with a handy reference in case they forgot the gesture for a particular word. And because the teacher could not prompt each individual student to repeat their unique word-gesture combinations, repetition had to be built into the activity. This took the form of a guessing game played with flashcards in the *directions* lesson, and a pair-teaching task in the *santé* lesson.

The structure and ordering of gesture-based activities evolved over the course of the session. Although the teacher originally made sure that the students' first exposure to words occurred alongside gestures, this turned out to be rather restrictive; for example, it precluded beginning a lesson with pair or group discussions or other activities in which repeating word-gesture combinations seemed out of place. Thus, in the third and fourth gesture-based lessons, students were exposed to part of the target vocabulary through association exercises and discussions before beginning the gesture activities. This did not appear to detract from the students' willingness to pair the words with gestures afterwards. Furthermore, it seemed to be helpful for the third (*déménagement*) lesson, which contained a number of difficult, multisyllabic target words, as it gave the students the opportunity to focus purely on the pronunciation of difficult words before adding the gesture component. Finally, it became apparent during the first student-generated gesture

activity (*directions*) that the teacher needed to go over the pronunciation of the target words before students started generating gestures and using word-gesture combinations.

Classroom Observations

The teacher's classroom notes and journal entries, as well as the gesture-word combination checklists completed during the gesture-based activities, served to assess how effective these activities were in getting students to use word-gesture combinations. Students used various strategies when generating their own gestures for the *directions* and *santé* activities. Students would use their hands to act out action words like *marcher* (to walk), *tourner* (to turn), and *tousser* (to cough), or facial expressions to act out words relating to feelings and body states, such as *fatigué* (tired) and *rhume* (common cold). When the accompanying image suggested a gesture, such as a man pressing his fingers against his temples for *mal de tête* (headache), many students would base their gesture on that image. However, many words and images did not suggest an obvious gesture, and students resorted to creative solutions when generating gestures for these. For example, students used objects to indicate *près* (near) versus *loin* (far) and *à côté* (next to) versus *en face* (in front of), or different intensities of the same facial expression to differentiate between *mal de tête* and *migraine*. Students were also successful in generating gestures that were understood by their partners for some of the more abstract words in the *santé* lesson (such as *stress*, commonly gestured as waving one's hands on either side of one's head with a wide-eyed expression), albeit with more difficulty and more uncertainty than in the *directions* lesson.

Based on the teacher's notes regarding the use of gestures across time, gestures were much more natural and also tended to evolve over time (especially for student-

generated gestures) for concrete and gesturable words, and were more fixed across students and time for abstract words. For example, when students performed the recipe in the *cuisine* lesson, the gestures they produced were natural and resembled spontaneous co-speech gestures more than the exact gestures taught to them by the teacher. Students often adapted their gestures to the context, for example using different gestures for *ajouter* (to add) depending on whether the ingredient added was liquid ("pouring" gesture) or solid ("sliding off of cutting board" gesture). They also invented iconic gestures on the spot for verbs that had not been taught by the teacher. In contrast, the gestures that the students performed when reviewing the *déménagement* vocabulary were typically the same ones that the teacher had taught them three weeks earlier and students performed them in a much more deliberate (and at times theatrical) manner, especially when they involved multiple movements. Thus, gestures were either treated as fluid or fixed depending on how naturally gesturable the word was.

The teacher's journal entries showed that students became increasingly more comfortable and enthusiastic about using gestures over the four weeks of gesture-based vocabulary lessons. During the first gesture lesson (*cuisine*, teacher-generated), students were receptive to the idea of using gestures to learn language and believed that it would help them learn. Several students even shared positive previous experiences with teachers who had used gestures to practice pronunciation and communication. However, during the learning phase of this lesson, students required lots of encouragement to repeat both the gesture and word after the teacher. All students repeated the word-gesture combination at least once, but students were more willing to repeat gestures than words, and many continued performing the gestures but repeated the words only once or twice.

In the final activity, where students presented recipes and were instructed (though not reminded) to use gestures, two-thirds of the students produced no gestures at all.

After the initial class, it was easier to motivate students to perform word-gesture combinations. Maintaining a positive, playful, and nonjudgmental environment seemed to greatly improve students' willingness to use gestures in both teacher-fronted and paired gesture activities. Table 1 summarizes the proportions of words and gestures produced over the course of each lesson. This table shows that after the first class, students produced good gestures in at least 86% of the given opportunities (compared to just 38% of the time in the initial *cuisine* lesson). Student participation and enjoyment was especially high during the *directions* (student-generated) lesson, where students enjoyed the "guessing game" aspect as well as seeing the differences between their gestures and those of their second partner, and during the *déménagement* (teacher-generated) lesson, where the class was high-energy, and every student enthusiastically repeated both the gestures and the words. The journal entry from the *santé* lesson noted that the students were low-energy for the first part of the class but that their engagement picked up when they started the gesture activity. Nonetheless, when students were teaching each other their gesture-word combinations, they often repeated gestures without saying the corresponding words. This issue was also noted during teacher-generated gesture lessons, with the teacher continuously encouraging students to repeat words. No clear distinction is seen in Table 1 between teacher- and student-generated gestures activities; both techniques worked well in certain activities and less well in others. Specifically, the *déménagement* teacher-generated gesture activity worked better than the *cuisine* activity, and the *directions* student-generated gesture activity worked better than the *santé* activity.

Table 1

Summary of Classroom Observation Checklists

	Word		Gesture	
Lesson	Correct	Incorrect/none	Good	Bad/none
Cuisine[a]	34/40 (85%)	6/40 (15%)	15/40 (38%)	25/40 (62%)
Directions[b]	48/53 (91%)	5/53 (9%)	53/53 (100%)	0/53 (0%)
Déménagement[c]	8/8 (100%)	0/8 (0%)	8/8 (100%)	0/8 (0%)
Santé[d]	14/22 (64%)	8/22 (36%)	19/22 (86%)	3/22 (14%)

Note. Words supplied by students were classified as correct (correct and comprehensible) or incorrect/none (incorrect, incomprehensible or absent). Gestures were classified as good (iconic and congruent) or bad/none (incongruent or absent). Proportions are based on the number of opportunities for gesture-word pairing that were observed in each lesson. [a]Final practice activity (18 students present); [b]learning activity and practice activity together (18 students present); [c]learning activity (19 students present); [d]learning activity (16 students present).

Vocabulary Tests

The students' weekly quizzes and the final vocabulary test were analyzed to assess the effectiveness of the gesture-based vocabulary activities in terms of word learning. Students enjoyed the quizzes in general and reported that they served as valuable learning opportunities. Gestures were present during the quizzes, performed by the teacher to elicit the target words and by a number of students as they tried to recall the words. Gestures were also used when reviewing the quizzes afterwards.

Results of the weekly vocabulary quizzes are summarized in Figure 1, which categorizes words into words known (recognized) beforehand, words learned between the pretest and the quiz, and words not learned, separately for each student who completed

both the relevant pretest and the quiz. Across topics, students did not know between zero and eight words beforehand ($M = 3.6$) and learned up to six words ($M = 2.2$). There was large individual variation across students for all three categories. The estimates of the numbers of words learned are also conservative because the quizzes (requiring word production) tested a higher level of word knowledge than the pretests (requiring word recognition).

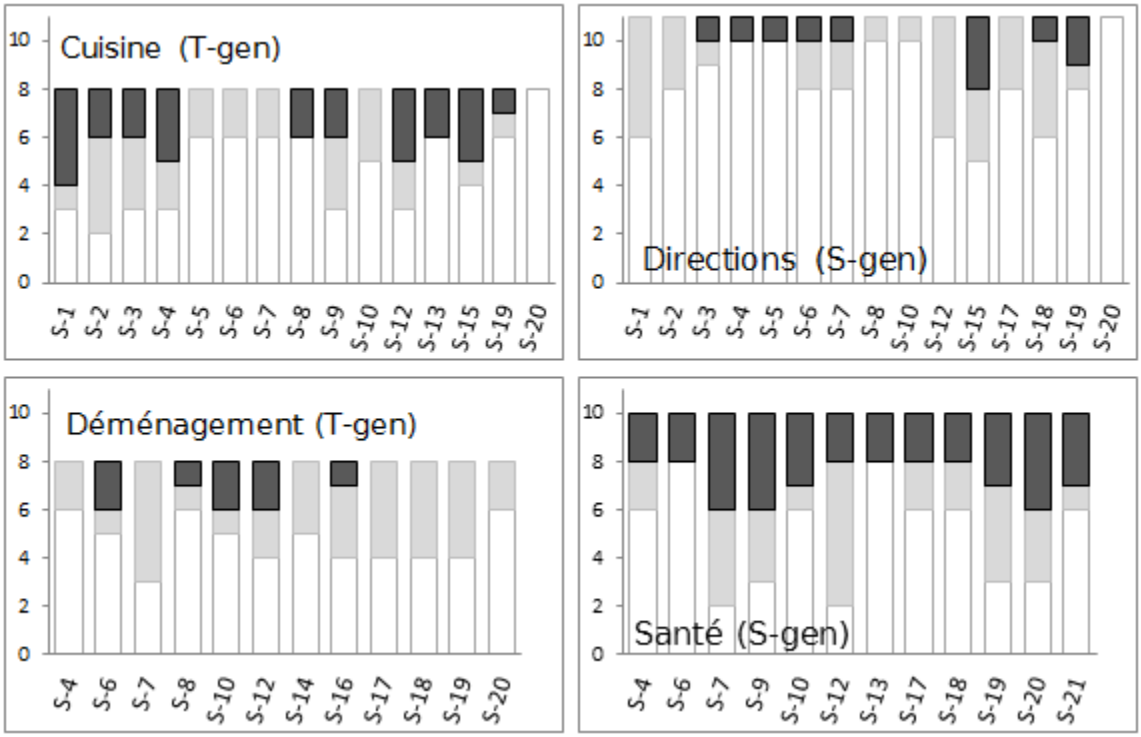

Figure 1. Results of the four weekly vocabulary quizzes. White = number of words already known (based on pretest); light grey = number of words learned through the lesson; dark grey = number of words left unlearned. S = student who completed both the relevant pretest and quiz. T-gen = teacher-generated gesture activity; S-gen = student-generated gesture activity.

The *directions* and *déménagement* lessons yielded the highest proportions of words learned, with students supplying on the quiz 74% and 80% of words they initially didn't know, respectively, versus 52% and 46% for the *cuisine* and *santé* lessons. Overall, students learned the majority of words they didn't know for all topics except the *santé* lesson, which also had the highest number of initially unknown words. Once again, there was no clear difference in word learning between the teacher- and student-generated gesture lessons. Finally, the students all scored quite high on the final vocabulary test (summarized in Table 2), with little variation in scores between topics or students. The journal entry following that class indicated that students were enthusiastic about using gestures again to review the vocabulary one last time, and that they often produced the gestures exactly as they were used in the lessons (notably for the *déménagement* vocabulary), with comical results for some of the more difficult or elaborate ones.

Table 2

Results of the Final Vocabulary Test

Theme	*Range*	*Mean*	*SD*	Words learned[a]
Cuisine (*n* = 15)	2–4	3.85	0.24	39/41 (95%)
Directions (*n* = 15)	2–4	3.76	0.23	31/34 (91%)
Déménagement (*n* = 12)	2–4	3.88	0.20	24/25 (96%)
Santé (*n* = 12)	2–4	3.84	0.36	30/32 (94%)

Note. "*n*" refers to the number of students included in the analysis of each vocabulary theme. Possible responses for each word were: 1 = "I do not recognize this word," 2 = "I recognize the word but I don't know what it means," 3 = "I *think* this word means [*correct answer*]," and 4 = "I

know this word means [*correct answer*]." [a]A word was considered learned if the student gave it a score of 3 or 4.

Student Perceptions

The questionnaire provided a quantitative description of students' perceptions of the gesture-based vocabulary activities, revealing broad tendencies across students. Descriptive statistics for selected questionnaire items are given in Table 3 (with complete results presented in Appendix C). As shown in Table 3, students believed that gestures had helped them learn vocabulary ($M = 4.3$) and they enjoyed the activities ($M = 4.8$). However, students varied as to their preference for teacher- versus student-generated gestures ($M = 2.8$). Nonetheless, nearly all said that they would like to continue using gesture-based vocabulary activities ($M = 4.8$).

Table 3

Selected Results from the Student Perception Questionnaire (18 Students)

Question	*Range*	*Mean*	*SD*
In general, how well did you learn the new words in the gesture activities? (1 = "not well," 5 = "very well")	3–5	4.3	0.8
How much did you enjoy using gestures in learning activities? (1 = "did not enjoy," 5 = "enjoyed very much")	4–5	4.8	0.4
Did you prefer when the teacher showed you a gesture for a word, or when the students got to invent the gesture? (1 = "teacher," 5 = "students")	1–5	2.8	1.4
Would you like to continue using gestures in the classroom to learn vocabulary? (1 = "no," 5 = "yes")	3–5	4.8	0.5

Three broad themes emerged from the transcripts of students' comments, each a constellation of related subthemes. The most frequent comments made by students revolved around gestures' role in helping them memorize the target vocabulary. Many students hinted at the common frustration of memorizing lists of written words:

> It's like in school… when I read a textbook and I have to read all the stuff, I have to memorize all the stuff, but since I'm just reading it and I'm not actually seeing it or I'm not seeing any pictures of it, I just forget about it. A year later, it's gone.

In contrast to these feelings, the majority of students present (9/15) reported that learning words through gestures made memorization more effective and often linked this to having repeated the gestures themselves. Students described such learning as "sticky," "easy to remember," and "faster." Some students felt that gestures helped them because they matched their visual learning style. Others spoke of the general importance of nonverbal elements in word memorization: "I think it makes you remember them better because you're, like, recalling a memory rather than just a word, […] it's better, sort of more association." Several students (6/15) reported that when they couldn't think of a word, seeing or thinking of its gesture brought the word to mind: "Automatically, you remember the gesture and the word comes to you, it pops into your head."

However, many students (7/15) felt that gestures were not appropriate for learning all words. There was general agreement that gestures are most apt for learning clearly iconic (gesturable) words, such as action verbs and easily depicted nouns and adjectives. Students especially reported difficulty using gestures with the *déménagement* vocabulary, for which many gestures were abstract. Nonetheless, one student reported learning these words and gestures exceptionally well: "Never, never will I forget that this [raises index

finger in the air and curls it] is *disponible*… [a]nd *rez-de-chaussée* and *électroménager*, this I will never forget." Some students (4/15) highlighted the fact that although the gesture activities used in the course were effective for learning the words for speaking, students did not learn well how to write them. This was felt all the more strongly because the learning activities mainly focused on oral interaction whereas the quizzes were written. All in all, however, students felt that the gestures did help them form deeper knowledge of the words. As one student put it, "Once you use the words with body language, you more understanding because you're not understanding by your brain but by your heart too."

The second theme that emerged in students' comments concerned the differences between teacher- and student-generated gestures. Students were in broad agreement as to the advantages and disadvantages of teacher- and student-generated gestures. A slight majority (5 vs. 3) felt that generating their own gestures led them to memorize the words better. Some of these students cited the fact that this technique allowed them to find a gesture that was truly meaningful to them, and hence more memorable:

> The advantage of students inventing it themselves is there is that connection, there's a reason why they come up with that action. If it's the teacher, the teacher might come up with it based on his understanding, like where he comes from, the culture. Like for example the action for *disponible*, that action in Asia it means to die.

However, other students (6) felt that using student-generated gestures could lead to problems when students had different gestures for a particular word. Some students also reported feeling less "apt" than the teacher at generating and teaching gestures.

Overall, although the same advantages and disadvantages were cited by many students, no general consensus emerged as to which was preferred: Five liked teacher-generated gestures better, one preferred student-generated, and six liked both equally. One student neatly sums up this ambivalence:

> I think it's more interactive when you work with students to [generate gestures], but it's also less clear for everybody to have the same idea. You know, and when the teacher does it's more like, OK this is what it is. […] I don't know which one is better or not but either way it helps.

The final theme in students' comments related to enjoyment and the classroom dynamic. No question targeted the related themes of enjoyment and classroom dynamic directly, but a number of students (5/15) reported that the gesture-based vocabulary activities changed this dynamic in a positive way. This was most felt when students were tasked with generating their own gestures. Many also reported having enjoyed the gesture-based activities and that this enjoyment had helped them learn. Students liked how gestures placed an emphasis on vocabulary in the classroom, with one student noting how gestures can serve as a framework for direct vocabulary instruction: "the gestures make it activities rather than just learning a list of vocab, so I definitely think I've learned more that I would have [because of] the gestures." Finally, a number of students were vocal in their desire to keep on using gestures to learn vocabulary: "In fact I liked it a lot, I believe they should always use [gestures] and not just right now during this experiment."

Discussion

This action research project set out to explore how gestures could be incorporated into classroom vocabulary activities, what potential effect this would have on learning, and how students perceived the gesture activities. Overall, students' responses to the gesture activities were highly positive and the activities gave rise to strong student participation and learning.

Designing Gesture-Based Vocabulary Activities

The first research question asked what constraints might be important when designing gesture-based vocabulary activities. Although the teacher initially felt that students had to use gestures when first introduced to the target words, this did not appear to be the case: In the *déménagement* lesson, students paired words with gestures well after their first exposure to these words, with no negative effects on student task participation or learning. Thus, gestures can be incorporated into various stages of vocabulary building, at the time of initial exposure or later practice. In addition, gestures seem to lend themselves well to oral activities but less so to activities involving writing. No initial learning activities and only two final practice activities (in the *cuisine* and *déménagement* lessons) involved student writing, so many students acquired good oral knowledge of the words but lacked spelling knowledge. It would thus be important to complement gesture-based vocabulary activities with writing-focused activities to help complete students' word knowledge.

Teacher- and student-generated gesture activities require different types of planning. Teacher-generated gesture activities can be planned simply by adding gestures to whatever dialogue, text, or other material is normally used to introduce new

vocabulary. Although a teacher can improvise the gestures, using teacher-generated gestures allows the teacher to prepare the gestures in advance and build in extra elements. Teachers could also get inspiration from French Sign Language, as many gestures are transparent in their meaning (see Elix, 2012). In this study, a number of gestures—notably for abstract words in the *déménagement* lesson—contained clues for word length and pronunciation, where the number of movements was equal to the number of syllables pronounced. This helped raise students' awareness of the silent "e" in French. Other possibilities could be to represent vowel height (e.g., as represented orthographically though "e", "è," and "é" in French) by different hand heights, or nasal versus nonnasal vowels by different movements. All such clues could just as easily be incorporated into gestures for concrete words.

Teachers who wish to give their students an active role in generating gestures will need to plan a way to provide students with word meanings without supplying the students with gestures *a priori*. This was accomplished in this project by creating one-page glossaries with an image for each target word, which could be preferable to word translations or L2 glosses because images strengthen the nonverbal component of the input, a desirable trait mentioned frequently by the students in this study as well as researchers (Mayer, 2001; Plass et al., 1998).

Effectiveness of Activities

The second research question asked whether the gesture-based vocabulary activities, as designed, were effective for teaching vocabulary in the classroom and, by extension, how they might be improved. Interestingly, both student- and teacher-generated gesture activities were equally successful overall; each technique had one

particularly successful lesson (*directions* and *déménagement*, respectively), both in terms of student participation and learning. What made these two lessons most successful? It is safe to assume that the *cuisine* lesson involved less gesture production because it was many students' first time using gestures in the classroom, and poorer quiz results because students didn't know what to expect. Two factors seem to be at play for the remaining lessons. The first factor was that students repeated the word-gesture combinations multiple times in the *directions* and *déménagement* lessons, but not in the *santé* lesson. The *directions* activity had repetition built into the task: After generating gestures, students used flashcards to play a guessing game, performing each gesture or guessing the word up to four times. In the *déménagement* activity, the teacher was able to prompt the students to repeat each word-gesture combination several times. However, the peer teaching task used in the *santé* lesson did not bring about much repetition; many students repeated the gestures just once or twice, and repeated the words only two thirds of the time. Therefore, it is important that student-generated gesture activities be designed to ensure that students repeat their word-gesture combinations multiple times.

The second factor in making some gesture activities especially effective pertained to the teaching and learning of abstract gestures, specifically in the *déménagement* lesson. The dynamic in this lesson was different from the others in several ways. For one, getting students to perform abstract gestures brought a fun and comical dynamic to the class, which may have made the students more attentive and the whole experience more memorable. In fact, this explanation was also suggested by Macedonia and Klimesch (2014) to account for the success of their gesture-based instruction in a classroom context (albeit using an artificial language). The teacher also explained most of the gestures as

their meanings were not transparent; these explanations likely helped the students understand the gestures and engage more deeply with the words as well. In retrospect, the peer-teaching activity in the *santé* lesson could have been made more effective by having students explain to their partners how and why they chose a specific gesture. Finally, the gestures for the three longest words contained built-in clues for word length, which the teacher pointed out. Thus, explaining the meanings of, and extra clues contained within, the gestures could help students create nonverbal mnemonic "keywords," a technique which has been found to be useful in (traditional, verbal) word learning (Levin, 1981).

Student Perceptions

The final research question focused on how students themselves felt about gesture-based vocabulary activities. The discussion and questionnaire results show that students' response was very positive. Students had fun with the gesture activities and reported that this enjoyment helped them learn. Many students appreciated the focus on vocabulary in general, and one indicated that using gestures in such a way transformed otherwise rote vocabulary practice into interactive activities that increased motivation to learn vocabulary, echoing Huyen and Nga's (2003) results using vocabulary games. Furthermore, most students felt that pairing new words with gestures helped them remember the words better. In the discussion, words learned with gestures were described, for example, as being more "sticky" and that thinking or seeing the gesture made the word "pop into your head." This corroborates the experimental research cited previously, which showed that words learned with gestures are recalled better, especially in the long term (Macedonia & Klimesch, 2014; Mayer et al., 2015; Tellier, 2008), and that they are also used more in production (Macedonia & Knösche, 2011). Thus,

students' positive perceptions of gesture-based vocabulary instruction, in line with their quiz and final test results, confirms that the benefits of gestures are not restricted to controlled settings but can be brought successfully to real classrooms.

On the whole, students felt that gestures were most appropriate for learning vocabulary that is intrinsically gesturable, such as directions and cooking. Students reported having difficulty using gestures for the *déménagement* vocabulary because it does not naturally evoke iconic gestures. As discussed previously, however, this lesson had good student participation and learning. Furthermore, two of the four word-gesture combinations that students reported as being most memorable were from the *déménagement* lesson: *électroménager* (home appliance) and *rez-de-chaussée* (ground floor). The gestures for both words included clues as to the number of syllables, which students reported being useful. Thus, students may find gestures for abstract vocabulary useful when these contain extra clues, but not so much otherwise. This partially upholds Macedonia and Knösche's (2011) claim that gestures are a valuable tool for learning both abstract and concrete words, showing that students themselves find gestures useful for abstract words only when the gestures contain extra clues.

Comparing teacher- versus student-generated gestures, students were divided as to which they prefer. Some enjoyed the creative freedom that came along with inventing gestures and reported that these gestures were more personally meaningful. Others reported that they learned the words better when they created the gestures themselves. The two most commonly cited reasons for preferring teacher-generated gestures were that (a) all students have a consistent gesture for each word and (b) the teacher is more knowledgeable and thus more apt at generating gestures. These reasons are at odds with

the goals of using student-generated gestures, which are to allow students to create personally meaningful gestures and give them a more active role in their learning. As shown in this study, both teacher- and student-generated gestures seem to lead to good vocabulary learning. Therefore, teachers might need to motivate students, encouraging them to feel comfortable generating their own gestures. Creating a positive and playful learning environment is very helpful here, as well as favouring student-centered activities in general.

At least two factors seem to underlie some students' reluctance to invent gestures. First was the issue of gesture consistency, which was almost always discussed in relation to the quizzes: Students were sometimes unsure which word was targeted when the teacher's gesture for a word mismatched the gesture generated for it by students. This could easily be resolved by leaving gestures out of the evaluation of words learned with student-generated gestures. Second, students' preference for teacher-generated gestures might reflect a commonly held view that teachers are "transmitters of knowledge," with an associated student preference for teacher-fronted instruction (Cotterall, 1995; Garrett & Shortall, 2002). Thus, the teacher's goal of increasing student agency through student-generated gesture activities was likely not shared by all students. Previous studies have found similar dynamics (Chan, 2001; Garrett & Shortall, 2002), and in the future, it may be helpful for teachers to discuss with students the topic of student agency and active learning to help them understand the potential benefits. These factors show that although student-generated gestures may yield better learning than teacher-generated gestures in lab settings (Mathison, 2014), other factors come into play in real classrooms which affect the learning outcomes. Overall, however, it appears reasonable to suggest that a

balance between an emphasis on teacher- versus student- generated gestures in vocabulary learning tasks is ideal as long as the issues of how this vocabulary is tested and how much agency learners share with the teacher are addressed.

Altogether, the findings discussed above extend previous research on the use of gestures for teaching vocabulary by targeting a real language and featuring a communicative, student-centered environment. In doing so, many of the confounds that experimental researchers sought to avoid—variations in learner characteristics and prior knowledge, peculiarities of the target language, environmental factors—were embraced by this study as fundamental characteristics of an authentic context. As shown above, many of these characteristics had an effect on students' participation, learning and perception of the gesture-based activities. This action research project thus further builds upon prior experimental research on gesture-based vocabulary instruction by highlighting a number of external factors that come into play in actual classrooms and providing a clearer and more teacher-oriented picture of the pedagogical potential of using gestures to teach vocabulary.

Conclusion

This action research project explored the use of gestures for vocabulary instruction over one brief session (4 weeks) and in only one setting, reporting that both teacher- and student-generated activities can lead to word learning and that the most important factors determining activity success are repetition and meaningful student engagement with the gestures. Teachers working in other contexts will judge for themselves how applicable these findings may be to their situation. Nonetheless, these results suggest that gestures can be used to support vocabulary instruction in various

ways, that students find gestures helpful and fun, but that students might need to be reminded of the value of student agency in their own learning. Gestures are particularly useful for teaching vocabulary in settings with limited access to multimedia and technology as they can be used to provide visual support for a range of vocabulary, while being easy to do and free of cost.

Clearly, teachers could modify and adapt the materials and techniques implemented here in a number of creative ways to further enhance their students' learning. Teachers could consistently use teacher-generated gestures whenever they teach a gesturable word, noting these words as they go along and reviewing the words and gestures with the students at the end of class. Similarly, different elements could be built into student-generated gesture activities to make students engage more deeply with the words, thus making the words more memorable. For example, students could be tasked with creating gestures that include clues for word length and pronunciation, helping them to actively explore the relationship between spelling and pronunciation. Students could also explain the meaning and origin of their gestures to a partner and, in doing so, link the target word to a broader semantic field. Finally, it might be interesting to help students—especially those who are visual learners—to be more autonomous with gestures by encouraging them to develop gestures on their own, for self-study. All in all, it is hoped that this initial foray into the use of gestures in classroom-based vocabulary instruction will inspire other teachers by giving them some tools to explore what gesture-based vocabulary instruction might look like in their classrooms.

Notes

1. Even though TPR has been used successfully as a teaching tool for various languages (e.g., Glisan, 1986), its popularity has waned due to its inherently limited scope. Because TPR focuses mostly on comprehension, especially at lower levels, it is not readily practicable for abstract vocabulary or for more advanced language functions (Oxford & Crookall, 1990). Furthermore, TPR is entirely teacher-centred and therefore not in line with today's focus on learner-centred instruction and communicative language teaching.
2. Although the original scale employs a fifth level for words used correctly in a sentence, this is often of little use because students who know the meaning of a word can typically use it in a sentence (Milton, 2009); therefore, the test combined levels four and five.

Chapter 3

The current action research project has shown that gestures can be used successfully to teach vocabulary in the language classroom and that most students find this type of instruction more beneficial than approaches which exclude nonverbal communication. These findings build upon results of existing experimental research by confirming, through classroom observations and student perceptions, that gestures can help students learn vocabulary in authentic settings. For teachers, this means that in addition to using gestures spontaneously, as good teachers already do (Allen, 2000; Lazaraton, 2004; Smotrova & Lantolf, 2013), gestures can be used intentionally to make vocabulary instruction even more effective. These findings also further expand the scope of the prior research by exploring ways in which gesture-based vocabulary teaching techniques can be adapted and incorporated into a communicatively-oriented, student-centred framework.

Gesture-based vocabulary instruction is, however, only one way in which gestures can support, enrich, and enliven classroom-based language teaching. For example, research has shown how techniques involving student actions and movement, including but not limited to gestures, can help with learning pronunciation (e.g., Baker, 2014), idiomatic expressions (Allen, 1995), or even logographic characters, such as Japanese *kanji* (Thomas, 2015). On a more spontaneous level, gestures aid L2 learners in their interaction by helping them convey meaning (McCafferty, 2002) as well as retrieve words and formulate utterances (Morett, 2014). With encouragement and guidance from their teachers, learners could begin to integrate verbal and nonverbal communication, as they already do in their L1 (McNeill, 1992), and thus tap into the benefits that such

integration has for communication and learning. The intentional use of gestures during vocabulary instruction could thus be a stepping stone towards encouraging a broader use of gestures in the classroom, both intentionally and spontaneously.

If we expand our view yet further, we can see that gestures themselves are part of an emerging picture that language is grounded in the body and sensory experience (Barsalou, 2008), and that these physical experiences play a role in language learning (Atkinson, 2010). Tight (2010), for example, found that words were learned best when learners manipulated the corresponding objects in addition to seeing and naming them. Ryan-Sheutz and Colangelo (2004) report on successful language learning for a group of learners who took part in a full-scale theatre production. Tasks involving real-world sensory experience such as these give learners a rich context for the language they are learning, allowing them to ground this language in physical reality. Thus, by recognizing how gestures, the senses, and the physical environment contribute to language learning, SLA can begin to expand out of the narrow cognitive paradigm that has been its mainstay (Larsen-Freeman, 2007), and teachers can explore ways to engage learners through body and mind.

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Appendix A. Learning materials for gesture-based vocabulary activities

Week one: *la cuisine*

Recipe used to teach teacher-generated gestures:

RATATOUILLE

INGRÉDIENTS

1 ou 2 aubergines coupées en dés
2 branches de céleri coupé en dés
1 gros oignon haché
2 poivrons rouges coupés en dés
6 tomates italiennes
¼ de tasse de vinaigre
huile d'olive au goût
1 cuillerée à soupe de sucre
½ tasse d'olives vertes ou noires, hachées
une pincée de sel et de poivre

PRÉPARATION

En premier, préchauffer le four à 400 degrés F.

Ensuite, dans un grand bol, mélanger les aubergines, le céleri, l'oignon et le poivron. Ajouter l'huile d'olive.

Couper les tomates en deux et hacher les olives.

Ajouter le vinaigre, le sucre, les tomates et les olives au bol. Bien mélanger.

Saler et poivrer.

Enfin, mettre sur une plaque et mettre au four.

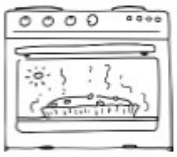
Cuire les légumes environ 50 minutes. Quand les légumes sont grillés, les sortir du four.

Goûter. Saler et poivrer au goût et servir!

Picture glossary for cooking verbs:

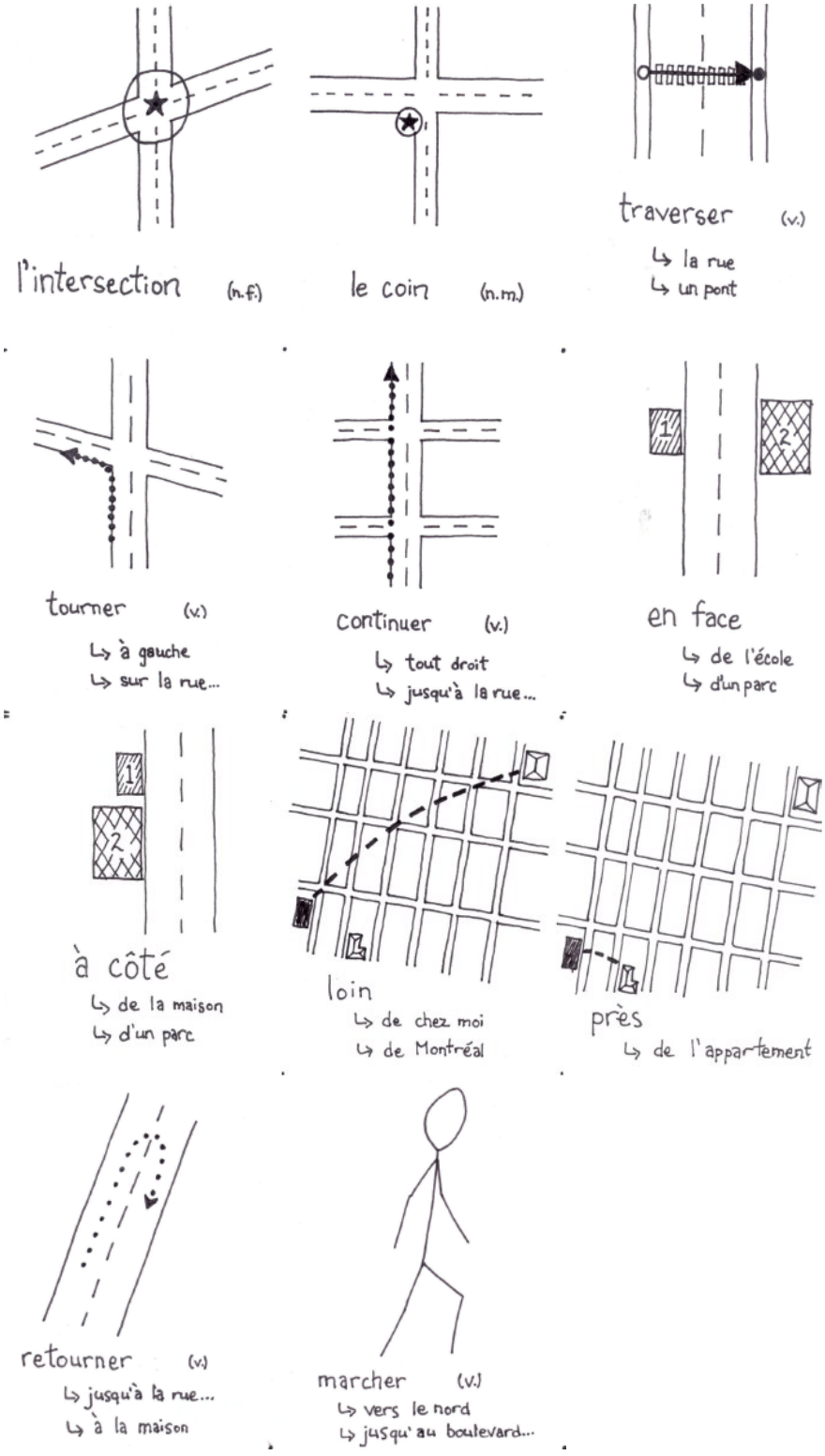
3. Écris chaque verbe à côté de l'image correspondante :

cuire *ajouter* *faire sauter* *servir* *couper* *mélanger*
mettre au four *sortir du four* *goûter* *hacher*

Week two: *les directions*

Cards used for (students) generating gestures and guessing game:



Week three: *le déménagement*

Dialogue used to teach teacher-generated gestures:

Propriétaire : Bonjour?

Locataire : Bonjour, j'appelle pour l'appartement sur l'avenue Valois. Est-ce qu'il est toujours **disponible**?

P : Oui, il est toujours disponible.

L : Parfait. J'ai quelques questions. Il y a combien de chambres à coucher?

P : Il y a deux chambres. Vous **cherchez** un appartement pour combien de personnes?

L : C'est pour deux personnes : moi et mon frère.

P : D'accord.

L : L'appartement est à quel **étage**?

P : Il est au **rez-de-chaussée**.

L : Et puis est-ce que les **électroménagers** sont inclus?

P : L'appartement vient avec un poêle et un frigo. Il n'y a pas de laveuse ni de sécheuse, par contre il y a une buanderie en face.

L : Très bien. Et est-ce que l'appartement sera libre un peu avant le premier juillet?

P : Oui, les locataires actuels vont **déménager** le trente juin.

L : C'est parfait. Est-ce qu'il serait possible de **visiter** demain, alors?

P : Oui, je vais être là demain. Pouvez-vous venir à midi?

L : Oui, midi ça va.

P : Super. L'adresse exacte, c'est le 1425, avenue Valois. C'est dans le **quartier** Hochelaga.

L : Parfait. À demain alors.

P : Merci, à demain.

Week four: *la santé*

Dialogues used for student-generated gesture activity and peer teaching task:

Dialogue 1

Chez la docteure Dupont

Médecin : Bonjour, je suis la docteure Dupont. Comment allez-vous?

Patient : Je ne me sens pas bien du tout. J'ai **mal à la gorge** et je **tousse** beaucoup.

M : Depuis quand êtes-vous malade?

P : Depuis trois jours.

M : Êtes-vous **congestionné**?

P : Oui, je suis surtout congestionné le matin.

M : Avez-vous d'autres symptômes?

P : Non, je ne crois pas.

M : Vous ne fais pas de **fièvre**?

P : Non, pas du tout.

M : Bon, je crois que vous as le **rhume**. Buvez beaucoup d'eau et reposez-vous.

P : Parfait, c'est tout?

M : Oui, c'est tout. Si le rhume continue plus de trois jours, revenez me voir.

P : C'est bon. Merci, docteure!

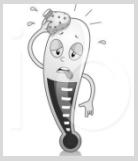
M : De rien. Bonne journée!

Vocabulaire

mal à la gorge

tousser (verbe)

congestionné (adj.)



la fièvre (nom)

le rhume (nom)

Dialogue 2

À la clinique médicale

Médecin : Bonjour, je suis le docteur Caron. Comment allez-vous aujourd'hui?

Patient : Je vais très mal. J'ai un **mal de tête** très intense depuis hier. Je suis **fatigué**, mais je ne peux pas dormir.

M : Est-ce que vous avez la **nausée**?

P : Oui, j'ai la nausée et je ne peux pas manger.

M : Je vois. Avez-vous souvent des maux de tête?

P : Oui, environ une fois par semaine.

M : Est-ce que vous buvez beaucoup de café ou d'alcool?

P : Je ne bois pas d'alcool mais je bois cinq tasses de café par jour.

M : Et avez-vous beaucoup de **stress**?

P : Oui, je travaille beaucoup et mon travail est très stressant.

M : OK, je crois que vous avez des **migraines**. Je vous suggère de boire moins de café, de travailler moins et de sortir dans la nature plus souvent.

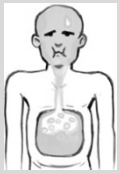
P : Parfait, je vais essayer de faire ça. Merci, docteur!

M : De rien. J'espère que vous allez mieux!

Vocabulaire

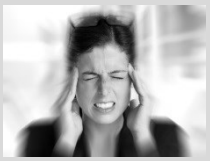
un mal de tête (nom)

fatigué (adj.)



la nausée (nom)

le stress (nom)



une migraine (nom)

Appendix B. Weekly vocabulary quizzes

Quiz 1: *La cuisine*

1. Vocabulaire de la semaine passée : Cuisiner

Écoute ton professeur et **regarde** ses gestes. **Remplis** la recette avec les verbes manquants.

RATATOUILLE

1. Préchauffer le four à 400 degrés F.
2. Dans un grand bol, _____ les aubergines, le céleri, l'oignon et le poivron.
3. _____ l'huile d'olive.
4. _____ les tomates en deux et hacher les olives.
5. _____ le vinaigre, le sucre, les tomates et les olives au bol. Saler et poivrer.
6. _____ sur une plaque et _____.
7. _____ les légumes environ 50 minutes.
8. Quand les légumes sont grillés, les _____.
9. _____. Saler et poivrer au goût, et _____!

Quiz 2: *Les directions*

1. Vocabulaire de la semaine passée : Les directions

Écoute ton professeur et **regarde** ses gestes. **Remplis** le texte avec les mots manquants.

Tu es au métro, sur le _____ sud-ouest de l'_____ St-Laurent et De Castelneau.

1. _____ le boulevard St-Laurent et _____ sur la rue de Castelneau vers l'est.
2. Dis bonjour à ton professeur d'école, et puis _____ au boulevard St-Laurent.
3. _____ à gauche sur le boulevard St-Laurent et _____ jusqu'au café.

Le café est _____ du poste de police, et _____ d'un parc.

Le café est _____ de la buanderie, mais il est _____ de l'école.

Quiz 3: *Le déménagement*

1. Vocabulaire de la semaine passée : Le déménagement

Écoute ton professeur et **regarde** ses gestes. **Remplis** le dialogue avec les mots manquants.

Propriétaire : Bonjour?

Locataire : Bonjour, j'appelle pour l'appartement sur l'avenue Duluth. Il est toujours _____?

P : Oui, bien sûr.

L : Parfait. J'ai quelques questions. Il y a combien de chambres à l'appartement?

P : Il y en a deux. Vous _____ un appartement pour combien de personnes?

L : C'est pour deux personnes : moi et mon frère.

P : D'accord.

L : L'appartement est à quel _____?

P : Il est au _____.

L : Et puis est-ce que les _____ sont inclus?

P : L'appartement vient avec tout : poêle, frigo, laveuse et sécheuse.

L : Très bien. Et est-ce que l'appartement sera libre un peu avant le premier juillet?

P : Oui, les locataires actuels vont _____ le vingt-cinq juin.

L : C'est parfait. Est-ce qu'il serait possible de _____ demain à 18 h?

P : Oui, très bien. L'adresse exacte, c'est le 550, avenue Duluth Est. C'est dans le _____ Le Plateau.

L : Parfait. À demain alors.

P : Merci, à demain.

Quiz 4: *La santé*

1. Vocabulaire de la semaine passée : La santé

Écoute ton professeur et **regarde** ses gestes. **Remplis** les dialogues avec les mots manquants.

Dialogue 1

Chez la docteure Dupont

Médecin : Bonjour, je suis la docteure Dupont. Comment allez-vous?

Patient : Je ne me sens pas bien du tout. J'ai _____(1) et je _____(2) beaucoup.

M : Depuis quand êtes-vous malade?

P : Depuis trois jours.

M : Êtes-vous _____(3)?

P : Oui, je suis surtout congestionné le matin.

M : Avez-vous d'autres symptômes?

P : Non, je ne crois pas.

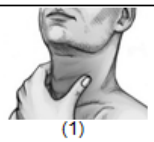
M : Vous ne fais pas de _____(4)?

P : Non, pas du tout.

M : Bon, je crois que vous as le _____(5). Buvez beaucoup d'eau et reposez-vous.

P : C'est bon. Merci, docteure!

M : De rien. Bonne journée!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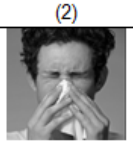

(3)


(4)


(5)

Dialogue 2

À la clinique médicale

Médecin : Bonjour, je suis le docteur Caron. Comment allez-vous aujourd'hui?

Patient : Je vais très mal. J'ai un _____(6) très intense. Je suis _____(7), mais je ne peux pas dormir.

M : Est-ce que vous avez la _____(8)?

P : Oui, et je ne peux pas manger.

M : Est-ce que vous buvez beaucoup de café ou d'alcool?

P : Je ne bois pas d'alcool mais je bois cinq tasses de café par jour.

M : Et avez-vous beaucoup de _____(9)?

P : Oui, je travaille beaucoup et mon travail est très stressant.

M : OK, je crois que vous avez des _____(10). Je vous suggère de boire moins de café, de travailler moins et de sortir dans la nature plus souvent.

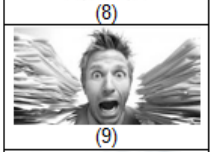
P : Parfait, je vais essayer de faire ça. Merci, docteur!

M : De rien. J'espère que vous allez mieux!


(6)


(7)


(8)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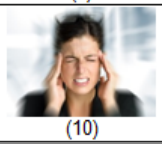
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Appendix C. Student perception questionnaire (with results) and discussion questions

Question	Range	Mean	*SD*
1. Did gesture-based activities seem very different or similar to other language learning activities? *(1 = very similar; 5 = very different)*	1–5	2.6	1.2
2. How well did you understand the teacher's explanations during the gesture-based activities? *(1 = not well; 5 = very well)*	3–5	4.8	0.5
3. How difficult was it to invent gestures for words (for *Directions* and *Santé* topics)? *(1 = difficult; 5 = easy)*	3–5	4.3	0.7
4. How difficult was it to perform the gestures during the activities? *(1 = difficult; 5 = easy)*	2–5	4.7	0.8
5. In general, how well did you learn the new words in the gesture activities? *(1 = not well; 5 = very well)*	3–5	4.3	0.8
6. Compared to using images to learn words, how well did you learn using gestures? *(1 = not well; 5 = very well)*	3–5	4.1	0.8
7. Compared to using verbal explanations (in French) to learn words, how well did you learn using gestures? *(1 = not well; 5 = very well)*	3–5	4.6	0.6
8. Did you prefer when the teacher showed you a gesture for a word, or when the students got to invent the gesture? *(1 = teacher; 5 = students)*	1–5	2.8	1.4
9. How well did you learn the words where you invented the gesture (for *Directions* and your dialogue in today's *Santé* class)? *(1 = not well; 5 = very well)*	1–5	3.9	1.1
10. How well did you learn the words where other students invented the gesture and taught you the gesture (for your second partner's dialogue in today's *Santé* class)? *(1 = not well; 5 = very well)*	3–5	3.9	0.9
11. How much did you enjoy using gestures in learning activities? *(1 = did not enjoy; 5 = enjoyed very much)*	4–5	4.8	0.4
12. Would you like to continue using gestures in the classroom to learn vocabulary? *(1 = no; 5 = yes)*	3–5	4.8	0.5
13. What words were especially good to learn with gestures?			

Discussion questions

1. In general, what did you like about gesture-based activities?

2. In general, what did you not like about gesture-based activities?

3. Did you prefer when the teacher invents the gesture, or when you get to invent it? What are the advantages and disadvantages of each?

4. What vocabulary topics were the best to learn with gestures (*La nourriture, Les directions, Le déménagement, La santé*)? Why?

5. What vocabulary topics were the worst to learn with gestures (*La nourriture, Les directions, Le déménagement, La santé*)? Why?

6. Do you think that gestures helped you learn vocabulary? Why or why not?

Appendix D. Description of gestures used for all target words

Word	Gesture
	La cuisine
ajouter (to add)	Simulate "pouring" (C-shaped hand, tilt downwards) or "sliding off cutting board" (one hand palm-upwards, other hand palm-downwards and sliding across).
mélanger (to mix)	Simulate "stirring a pot" (one hand cupped, palm-upwards, other hand closed, circling first hand).
couper (to cut)	Simulate "cutting a cucumber" (one C-shaped hand is palm-downward as if holding a vegetable on a cutting board, other hand performs a slicing motion beside left hand).
mettre au four (to put in oven)	Simulate "opening an oven door and placing a dish inside."
sortir du four (to remove from oven)	Simulate "opening an oven door and removing a dish."
cuire (to cook or bake)	Cup right hand, facing upwards (symbolizing a bowl). Left hand faces the chest, and fingers undulate, simulating a flame. (This gesture is a difficult one to get across.)
goûter (to taste)	Bring closed hand (palm-downwards as if holding a spoon) to mouth, and open and close mouth.
servir (to serve)	Simulate "serving a plate with one hand" (hand, palm-upwards as if holding a plate, is brought down and forwards).
	Les directions
intersection (intersection)	Cross arms in a vertical X.
coin (corner)	One hand is vertical, other hand is horizontal with fingers of both hands touching (forming a corner).
continuer (to continue)	Point both forefingers straight ahead.

marcher (to walk)	Describe walking motion using two fingers. OR: Take a few steps (whole body).
tourner (to turn)	Thrust one hand forward and then curve it around to the side.
traverser (to cross)	Describe an arc motion with one hand, horizontal with palm downwards (as if crossing a bridge).
retourner (to return)	Clench hands into fists with thumbs extended and pointing backwards, over shoulders.
en face (in front of)	One hand is held vertical, with palm towards face, and is alternately brought towards and away from face.
à côté (next to)	One hand is held vertical, with palm towards thigh, and is alternately brought (sideways) towards and away from face.
près (near)	Hold two forefingers vertically, close to each other, as if pins on a map.
loin (far)	Hold two forefingers vertically, far from each other, as if pins on a map (arms extended).

Le déménagement

disponible (available)	Raise and repeatedly curl one forefinger (this is a common Mexican gesture meaning "yes").
chercher (to look for)	Bring hand to forehead (as if to shield eyes from the sun), and swivel head from side to side.
visiter (to visit)	Point forefinger and ring finger, forming a V, alternately towards eyes and then away (common North American gesture for "I'm watching you.").
quartier (neighbourhood)	Extend forefinger and describe circles above head.
étage (floor: 1st, 2nd, 3rd)	With one hand, palm downwards, do three horizontal strokes, beginning at waist (or table) height and going higher each time (as if describing the three floors of a building)

rez-de-chaussée (ground floor)	With one hand, palm downwards, do three horizontal strokes, each at waist (or table) height (one stroke for each pronounced syllable)
électroménager (home appliance)	Using two hands, do six consecutive strokes, as if describing the six sides of a large box (seeing as appliances come in boxes)
déménager (to move out)	Using two hands, first do two strokes (one at a time) as if packing a box, then two strokes (one at a time) pointing thumbs over shoulders (signifying "get out of here"; one stroke for each syllable)

La santé

mal de gorge (sore throat)	Hold throat.
fièvre (fever)	Bring palm to forehead.
congestionné (congested)	Pinch nose.
tousser (to cough)	Bring fist in front of mouth.
rhume (common cold)	Make sad, sick face.
mal de tête (headache)	Touch temples with forefingers and ring fingers.
fatigué (tired)	Bring palm to touch mouth.
nausée (nausea)	Place palms over belly and move them in circles.
stress (stress)	Wave hands (vertical, palms inwards) forward and backwards beside head, with a stressed-out facial expression.
migraine (migraine)	Hold entire top of head with full hands, with pained facial expression.