Assessing the Impact of Gesture Instruction on Hearing Adult University Students Learning American Sign Language as a Foreign Language

by

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Abstract

American Sign Language (ASL) is a popular language of study for post-secondary students. For many of these students, the classroom is the only face-to-face contact they have with the language, fluent signers, and the signing community. Current teaching approaches instruct students in the widely accepted signs documented in dictionaries, but in real-world social settings signers also draw on meaningful gestures. Consequently, students may encounter sign language outside of the classroom that is different from the prescribed uses demonstrated and practiced in class. In this qualitative study, classroom research is combined with an exploratory research design and a mixed-methods approach to quantifying data. Gesture is positioned as a key part of the early learning process for beginner, hearing adult university ASL students. The study was informed by theories of gesture (Kendon, 2004), noticing (Schmidt, 1990, 2001; Swain, 1985, 1993), comprehensible input (Krashen, 1981, 1985), comprehensible output (Swain, 1995; Skehan, 1998) and interaction (Long, 1980; 1996). The study investigated whether direct, explicit instruction on gesture: 1) increased the number of communicative gestures produced by students; and 2) resulted in students who could better articulate the uses, functions, and placements of gesture in ASL. During a 12-week course, two existing ASL classes at the same level and taught by the same teacher were assigned to either an explicit or implicit instruction condition and assessed for comparability in their pre-existing gesture use in ASL. Whereas the explicit instruction group received, at fixed intervals, a sequence of five videos that focused on the uses of gesture in ASL, the implicit instruction group received a sequence of five videos that reviewed course content. Total intervention time was 30 minutes for each group. Findings suggest that students who were given explicit
instruction about gesture in ASL have a deeper understanding of the role that gesture plays in sign language and use significantly more gestures in their own signed discourse, potentially enhancing their ability to communicate effectively in ASL. Implications and future directions for research are discussed.
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<th>Description</th>
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<tr>
<td>ASL</td>
<td>American Sign Language</td>
</tr>
<tr>
<td>ASL/FL</td>
<td>American Sign Language as a Foreign Language</td>
</tr>
<tr>
<td>CEFR</td>
<td>Common European Framework of Reference for Languages</td>
</tr>
<tr>
<td>FL</td>
<td>Foreign language</td>
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<tr>
<td>L1</td>
<td>First language</td>
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<tr>
<td>L2</td>
<td>Second language</td>
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<tr>
<td>LSQ</td>
<td>Langue des signes québécoise (Quebec Sign Language)</td>
</tr>
<tr>
<td>MSL</td>
<td>Maritime Sign Language</td>
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<td>SLA</td>
<td>Second language acquisition</td>
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<tr>
<td>SL</td>
<td>Sign language</td>
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Glossary

**BSL:** British Sign Language.

**Composite utterance:** A signer produces composite utterances that are made up of both signs and gesture.

**Constructed action:** Occurs when a signer uses their upper body to mimic the facial expression, eye-gaze, mouth configuration, limb and torso positioning (etc.) of the referent.

**Deaf:** The use of the term Deaf with a capital D refers to people who are audiologically deaf, who use sign language as their primary language, and who self-identify as members of the Deaf community. They may also identify as politically and socially deaf. Deaf is a cultural as well as linguistic designation.

**deaf:** The term deaf with a small d refers to audiological status. Someone who is deaf is non-hearing but may not use sign language and may not consider themselves part of the Deaf community. It is mainly a physical and linguistic designation.

**Deaf culture:** Deaf culture is a combination of the language, traditions, history, experiences, and social norms that are common amongst Deaf community members.

**Depiction:** the signer’s ability to represent semantic components (Dudis, 2007) using elements such as classifier constructions, depicting verbs, and/or constructed action.

**Classifiers:** a category of signs that are produced by using meaningful handshapes that represent salient characteristics of the referent (Schembri, 2003).

**Emblems:** Emblems are gestures that are produced using standard forms and that are used as stand-alone speech acts. For example, the thumbs up gesture.
**Foreign language:** A foreign language is a language other than the speaker’s L1, but that does not have official standing or is not widely spoken within the country. In this research, the term foreign language is a better fit for the context: hearing adult learners taking up ASL in a post-secondary setting rather than in a deaf education or first-language context.

**Gestural viewpoint:** A signer may take on one of two gestural viewpoints during constructed action: the character viewpoint (the narrator performs the part of the character (McNeill, 2005) using their whole body), or the observer viewpoint (the narrator is removed from the action and describes actions from a third-person perspective using classifiers and descriptive verbs).

**Gesture:** Gesture is defined very broadly as deliberate expressive movement. The movement is an excursion (not a sustained change) that returns to a starting or neutral point. I.e., the body part used is lifted away from the body and then returned. Gesture or gesturing is the term used when the signer performs deliberate expressive movement of the body that communicates meaning as part of the utterance but is not a sign.

**Gloss:** A gloss is a written representation of ASL that uses English words to approximate the meaning of what is signed. A gloss is written in all capital letters, following the order that the signs are produced. For example: “It’s cold outside today” would be glossed as TODAY OUTSIDE COLD.

**Handshape:** In ASL, handshape refers to the shape of the signer’s hand(s) during the production of a sign. Handshape is one of the phonological parameters of ASL.

**Homesign/home sign:** A system of gestures that are created and used within a family that has at least one deaf member. Since neither the deaf nor hearing family member
know sign language, they create gestures (that may become systematized within the family) to communicate. See Goldin-Meadow and Mylander (1994) for more information.

**Iconic**: Iconic signs are ones where the sign looks like that entity that it represents.

**Iconicity**: Iconicity in ASL is the perceived relationship between a sign and its referent; the non-arbitrary mapping between the sign meaning and the sign form. An iconic sign is one where the form of the sign has a direct link to its referent; in other words, the sign looks like what it refers to.

**Kinesic codes**: Codified or systematized body movements.

**LSF**: Langue des Signes Française.

**LSQ**: Langue des Signes Québécoise.

**Markedness**: In ASL, markedness is measure of the complexity of a sign’s handshape.

**Modal gesture**: A gesture that intensifies or indicates the manner of effect.

**MSL**: Maritime Sign Language.

**MVSL**: Martha’s Vineyard Sign Language.

**Parsing gesture**: A gesture that marks a part of speech, such as the end of an argument.

**Performatve gesture**: A gesture that is related to the expression of a performative act, for example promising or denying.

**Recipient**: The recipient is the person to whom a signer is addressing their communication, or who is viewing the signing (this can be either the signer’s partner, the instructor(s), or the viewer of a filmed signed discourse).

**Second language**: Second language (L2) has a two-part definition. A second language is a language learned and used by a speaker that is not their first language (L1) or mother
tongue, but that is used for public communication and may be recognized as an official language within certain countries. French would be a second language for many English-speaking Canadians.

**Signer:** A person or participant engaged in signing; someone who uses sign language.

**Signing:** The term used when the signer is expressing themselves in ASL using established signs and grammar.

**Sign language:** Sign language refers to a class of languages that use the body and visual medium to communicate. There are many different sign languages around the world.

**Sign language community:** Community that includes “[s]ign language interpreters, hearing parents and siblings, ex-oralists, and possibly non-Deaf who are Deaf educators, and signing Deaf” (Eckert, 2010, p. 325).

**Sign parameters:** Parameters refer to the four phonological segments or parameters that combine to form signs. These are: handshape, movement, location, and palm orientation.

**Sonority cycle:** A model proposed by Sandler (1993) where the location of a sign (L) is akin to a consonant while the movement (M) is like a vowel. These two category types are organized sequentially in ASL, making for signs that can be articulated and perceived clearly because of the contrasts between the location and movement segments.
1. Chapter One: Introduction

A few years ago, I was involved in a meeting that included hearing signers, deaf signers, non-signing English speakers, and American Sign Language (ASL) interpreters. We were discussing the challenges of university teaching and some of the areas in which we felt we had improved as we became more experienced teachers. “When I first started teaching”, I signed “I didn’t want to be too strict. I was uneasy about asserting my authority, so it was easy for students to /twist my arm/ and I would let them have their way.” For “twist my arm” I used an arm-twisting gesture (Figure 1.1), alternating with the sign PLEASE and a slight body shift to show that I was reconstructing the students’ actions.

Figure 1.1

*Arm Twist Gesture*
The signed sequence looked something like:

…EASY STUDENT they-index-sweep-right (shift right) /twist arm/ PLEASE /twist arm, twist arm/.

I could have chosen an existing sign. I could have used CONVINCE, or ASK, or BEG (Figure 1.2), but none of these accurately conveyed the interaction or the relationship between my students and myself. They had not convinced me with logical arguments; they had not simply asked; they had not exactly pleaded with me. The interaction was along the lines of “Awwww, c’mon”.

The arm twist gesture was not one I had chosen at random. It was a gesture that I had used in social situations, particularly between myself and deaf or signing friends. In fact, it was my deaf teacher-mentor who had first introduced me to the gesture. The interpreter voiced and signed an apology, saying she did not know what I meant. My two deaf colleagues both interjected and explained to the interpreter that I was describing how I had been an “easy” teacher. “She was soft”, one signed. “Easy for students to take advantage of”, the other added. When the meeting wrapped up, I asked one of my colleagues if what I had expressed was unclear. “I know it was an English idiom, maybe the meaning doesn’t work in ASL”, I stated. “No”, he replied, “The interpreter just didn’t get the gesture. Deaf understand it because deaf know and use gesture.”

Shaw (2013) notes that novice hearing signers are often “colloquially positioned as body language amateurs” (p. 2) compared to deaf signers—despite the fact that hearing people gesture all the time. After this meeting, I became more conscious of my gesture use while signing. I realized that the ASL I was accustomed to using socially was highly gestural in parts, yet I did not directly teach anything about gesture in my classes. I paid
Figure 1.2

ASL sign for BEG

lip service to the idea of using gesture; I encouraged gesture as a means of visual communication, and I supported it as a fallback when students had not yet learned a particular sign. I had been putting gesture in the position of a crutch rather than supporting its use as an integral part of the language, even though I regularly used gesture in my own signed communication both inside and outside of class. I had never really investigated the ties between gesture and ASL. Was I doing a disservice to my students—to future members of the signing community—by not including more gesture-focused lessons in my teaching? Would teaching about gesture impact their signing at all, or would it change nothing? Could I encourage more gesture use in new signers, so that they would not end up lost or confused when faced with gesture used alongside signs?
Current ASL teaching approaches and curricula focus heavily on instructing students in the frozen lexicon of ASL—those widely accepted signs that exist in dictionaries. Many ASL curricula either ignore gestural communication altogether or rank it as something less than (and apart from) sign language. New ASL as foreign language (ASL/FL) learners, who are accustomed to working with two modalities (speech and gesture), must suddenly switch to encoding all linguistic information using their hands and bodies. In my own teaching experience, in most cases this edges out learners’ existing gestures, creating a heavy linguistic and cognitive load that is placed solely on their underdeveloped visual-gestural system.

But why, if students can eventually learn all the signs, do they need to be able to use gesture at all? As Vermeerbergen (2006) explains, in any given sign language users can draw from the existing frozen lexicon. Those are the signs that are encoded formally in dictionaries, that have been recorded, and that can be looked up. But signers also make use of a productive lexicon that does not have a stable construction or meaning, and that draws on gestural and sign creation possibilities that take form through a creative process. In some cases, even if a frozen sign is available for adequate use, fluent signers “may still prefer to create their own signs, whether to ‘complement’ the frozen verb sign or not” (p. 182). This means that it is important for ASL/FL learners to be able to recognize spontaneous gesture use and understand its placement and function within signed discourse, and it is equally as important that they can produce gesture within their own signing.

As noted above, the social use of sign language can be different than the prescribed uses demonstrated and practiced in classes. Language use changes depending
on who the signer is addressing, how familiar they are with the audience members, the signing skill level of the audience, and the setting. In casual settings signing can be faster and more expansive. More marked facial expressions are used, and signers may include signs that are appropriate only to informal conversation (idiomatic signs and creative metaphors). Signs may be less clearly articulated (using only one hand of a two-handed sign or using the environment in place of the non-dominant hand, for example using the table rather than non-dominant hand as a contact point for RIGHT/CORRECT). There may also be a greater use of signs that are more like gestures—a shrug instead of DON’T-KNOW (Sutton-Spence & Woll, 1999).

Studies of gesture have significantly expanded what we think of as language, at least where co-speech gesture is concerned. (Co-speech gestures are those gestures that are produced simultaneously while someone is speaking.) It is theorized that gesture and speech are part of the same computational stage and that they develop together as psychological performances (McNeill, 1985, 1992, 2005). Gesture is described as an intentional part of communication (Kendon, 1994, 1997, 2004, 2008; Corballis, 2014; Flusser, 2014) that actively expresses meaning in concert with spoken language rather than as a separate bodily system.

Gestural research grows every year and as it grows it increasingly interacts with other research domains (Stam & Ishino, 2011), but for sign languages like American Sign Language the relationship to gesture has been historically complex and somewhat uneasy. In the early days of sign language research, the connection to gesture was something negative. Sign languages were dismissively considered languages of pantomime. In 1984 sign languages were rejected as foreign languages by a California task force and were
instead grouped with computer and artificial languages (Chapin, 1988). Until 1997 ASL was listed in the Modern Language Association’s *MLA International Bibliography* under “invented” languages, right before Klingon (Brueggemann, 2008).

When researchers set out to prove that sign languages are as linguistically valid as spoken languages, they emphasized the similarities between spoken and sign languages. Highlighting similarities rather than differences allowed researchers to argue for the linguistic status of ASL by virtue of its compatibility with oral languages (Armstrong, 2002; Vermeerbergen, 2006); if ASL could be analyzed with the same tools as spoken languages then it, too, must be a language.

As a result of these linguistic arguments, ASL was forced to try to fit itself into a language research paradigm that was dominated by a formalist model of linguistics. As Kendon (2008) describes it, “what linguists have traditionally looked at—phonology, morphology, and syntax—is what can be done with those aspects of language that can be written down” (p. 357). This left sign languages in a difficult position. How does one use writing (which is two dimensional and sequential) to describe a language that is three-dimensional and nested? In spoken languages, sounds and words are sequential; they occur one after another, as in the sentence *I meet you*. Signs are nested; they use spatial orientation, movement, and handshapes simultaneously and can express the same idea (*I meet you*), in a single sign *I-MEET-YOU*. Writing the sign down makes it appear as if it is made up of three sequential actions, when it is actually one sign. While video technology is ubiquitous now, even 25 years ago capturing instances of sign language for later

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1 Klingon is a constructed language spoken by the fictional Klingon race in the *Star Trek* universe from the television series of the same name. The speech sounds and writing system of the language were created by Dr. Marc Okrand. The words were developed to sound as alien as possible while still being pronounceable by the actors.
analysis required substantial time and access to expensive equipment. Greater availability of high-definition video cameras, easy digital storage, and new software have made analyzing video and sign data less cumbersome. New generations of cellphones have better-quality on-board cameras and microphones that make it possible to capture spontaneous gestural, spoken, and sign language events that occur unexpectedly out in the real world. But the history of ASL research and the negative reaction of some linguists (and non-linguists) to visual language study cast a long shadow.

Debates on whether or not ASL is a real language have mostly been put to rest and ASL has been accepted as a naturally occurring human language. Despite this acceptance, ASL research has continually been plagued by a fundamental division: what Karlsson (1984) describes as either a sign language compatibility view, or a sign language differential view. Either sign languages are similar to oral languages (and can use the same toolset that oral languages use for analysis), or sign language structure is different and unique from oral language (and needs to be modelled and analyzed differently). Ultimately the sign language compatibility view became dominant (Vermeerbergen, 2006), in part because researchers felt compelled to prove and re-prove the status of sign languages as real languages.

Early research into ASL focused on the similarities between sign and speech, applying the same linguistic principles that were used to describe spoken language (such as phonology and sub-lexical structure) to ASL. The arbitrariness of the sign, in the Saussurian sense, was so powerful that any meaning derived from iconicity was believed to be less sophisticated, inferior, or more primitive (Armstrong, 2002; Taub, 2001) and the role of iconicity in sign language was downplayed (Vermeerbergen & Leeson, 2011;
Woll, 2003). *Iconicity* in sign languages refers to the non-arbitrary mapping between sign meaning and sign form; in other words, iconic signs are those that look like the objects to which they refer.

The focus on speech-to-sign analogs and on arbitrariness hindered more gesture-sign crossover research; to imply that sign languages may be more gestural than what was then analyzable under a formalist linguistic paradigm was akin to removing hard-won linguistic prestige from the language. For decades research into sign language was marginalized because “the features in the enacted manifestation of signing…cannot be analyzed conveniently by a written-language-derived formalist language model” (Kendon, 2008, p. 357). It wasn’t until the early 1990s that investigators began to study sign languages using cognitive linguistic principles and showed how sign languages use underlying metaphoric and imagistic mapping to derive signs for abstract concepts (Armstrong, 2002; Wilcox, 2000).

Hockett (1978) wrote that “the dimensionality of signing is that of life itself, and it would be stupid not to resort to picturing, pantomiming, or pointing whenever convenient” (p. 274-275). In separating ASL from gesture, ASL instructors may be doing new hearing adult students a disservice. Current approaches to teaching ASL are function and needs based, with a heavy emphasis on learning lists of individual signs and combining them with the correct syntax and grammar. The risk in this approach is that it encourages the development of signers who can create a sentence using all the correct signs, but who may lack the creative self-expression or linguistic flexibility that exists in real-world ASL use.
Students need both knowledge of language and knowledge of sociolinguistic appropriateness in order to be able to communicate competently and effectively. An important goal of ASL/FL instruction should be to help learners prepare for the varieties of language use that they will experience while in the wider signing community. For learners who take up ASL because they intend to combine it with a public-facing career (for example social work or education) this is critical.

While researchers have tended to brush aside any linguistic differences that arise due to the differing modalities of speech (oral/aural) and sign (manual/visual), recently the research agenda has begun to move in the opposite direction and some researchers have “revived the claim that sign is (at least in part) gestural” (Goldin-Meadow & Brentari, 2017, p. 1). For new hearing learners of ASL, an approach to teaching ASL that involves also teaching about gesture would draw on the multimodal possibilities of visual language at large.

The past 20 years have seen an increase in the number of ASL classes that are offered to hearing students at both the secondary and post-secondary levels across North America. Doré, (2014) identified 8-10 universities and 18 colleges across Canada that offer ASL as a foreign language course. In 2013 enrollment in ASL classes in the U.S. increased almost 20% from 2009. That same year ASL displaced German as the third most-enrolled in language with more than 109,000 enrollments across the country.

Here, and throughout this dissertation, I refer to ASL as a foreign rather than second language. While other designations would work, I use foreign language because the students that I examined were studying ASL outside of the target language context. In other words, they were in a situation where the classroom was, for most of them, the only
face-to-face contact they had with the language, fluent signers, and the signing community. They were not immersed in the target language environment. This is typical of foreign language courses at the university level. The students in university classes are for the most part adult, hearing undergraduates who share a common language (in this case, English), which is the language of instruction used in all their other courses. Foreign languages are typically studied as subjects rather than as second languages, which are used outside the classroom. As a result, when discussing hearing, adult ASL university students I will label them more specifically as ASL foreign language (ASL/FL) students, and the classroom as the ASL foreign language (ASL/FL) classroom.

1.1 The Problem

As described previously, ASL is a popular foreign language choice for many, but there is a lack of empirical research regarding ASL pedagogy in relation to hearing adult foreign language university students. While applied linguists have investigated the teaching and learning of foreign languages for decades, the first applied sign linguistics symposium was only held in 2009. The field of applied sign linguistics is a relative newcomer. Methods of learning and teaching sign languages generally rely on spoken language models that have a much longer history of analysis.

Most sign language acquisition studies have focused on ASL as a first language in deaf individuals (Hilger, Loucks, Quinto-Pozos & Dye, 2015). Since studies of adult ASL/FL students are few (Rosen, 2004), there is much that we do not know about how sign language is acquired and represented in the minds of hearing adult speaker/hearers (Beal & Faniel, 2019; Ortega-Delgado, 2013). We know especially little about the early
stages of ASL acquisition in this group, and it is unclear how learners’ skills develop at this stage (Beal, 2020). There is not enough research yet to be able to accurately describe developmental patterns and acquisition factors (Ferrara & Nilsson, 2017). The research I conducted looked at hearing adult university students in those early stages of learning—students who had been studying ASL for fewer than four months—to try to illuminate their learning at that stage and see what their gesture production looked like with, and without, explicit instruction.

We know little about how hearing adult students learn ASL, and we know even less about the use of gesture by hearing signers (Brentati, Nadolske, & Wolford, 2012). This leaves ASL teachers in a position where they tend to rely on intuition and anecdotal evidence as they design their classes and course materials (Thoryk, 2010; Rosen, Turtletaub, DeLouise, & Drake, 2015; Willoughby et al., 2015). This dependence on intuition and experience rather than empirical study has been openly stated by ASL/FL material developers, such as those involved in the creation of the popular *Signing Naturally* textbook series (Smith, 1988). The lack of research into ASL/FL teaching and learning has been noted by several researchers (see for example Doré, 2020; Hilger, Loucks, Quinto-Pozos, & Dye, 2015; McKee, Rosen, & McKee, 2014; Quinto-Pozos, 2011; Willoughby, Linder, Ellis, & Fisher, 2015).

Calls for improvement in ASL teaching challenge ASL instructors themselves to engage in classroom, intervention, and/or action research and to approach sign language teaching in a scholarly manner (Rosen et al., 2015; Traxler & Nakatsukasa, 2020; Rosen & Woodward, 2020). Arguably, sign language teachers could try to take on the role of teacher-researcher in order to bridge the gap between research and pedagogy, act as
facilitators, and reflect on their teaching. The research presented in this dissertation is undertaken by one such teacher-researcher, who took on that role as part of the continued investigation and development of sign language teaching to hearing adult learners.

1.2 Self-Introduction

I am hearing, and ASL is a second language for me. I am not deaf, and do not have any immediate family members who are deaf, so I do not have strong ties to the culture and politics of the deaf community. However, I am a member of the ASL teaching community, working with hearing, adult university students, and I am part of a wider community of people who use and work in ASL on a daily basis. Like Leeson, et al. (2017), I use signing community as a more encompassing term that better reflects the diverse backgrounds of those who regularly use sign language, but who may or may not be deaf.

Many traditional sign language studies distinguish between big D and little d D/deaf to differentiate between two groups of deaf people. Deaf is commonly used when referring to those for whom deafness and sign language use are a primary part of their cultural identity, while deaf is used for those who are audiologically deaf but who do not sign, or who do sign but do not consider themselves to be culturally/politically deaf. But as Napier and Leeson (2016) point out, the makeup of the deaf community is shifting: medical interventions and changes to education policies mean that more deaf people learn sign language later in life. There is also a growing number of hearing signers who regularly interact with deaf signers either through their work, family ties, or social
groups. In this dissertation, I use the term deaf generically to refer to hearing status without judgement about culture or identity (Napier & Lesson, 2016).

1.3 Positioning the Study

Deaf, hard of hearing, and hearing instructors were invited to take part in this study. While several showed initial interest, in the end only two instructors (one hearing, one hard of hearing) chose to have their classes participate. This may have been (in part) because my research plan was rather inflexible. I designed the gesture videos to be used in a specific order and released at approximately two-week intervals, and it is possible that the instructional demands of the research may have interfered with the flow of classes. However, there was a rhythm and plan to the research that needed to be strict in order to draw conclusions from the study. The concern that the research demands may have added too much to an already full teaching load were confirmed when one instructor was not able to release all the videos on time; student data from that group was not useable. Pedagogical choices are sensitive, and ultimately instructors are responsible for responding to the needs of their students, not the needs of the researcher.

An additional reason that some instructors cited for not taking part was because I used my voice in the gesture intervention videos. The program from which instructor and student participants were recruited emphasizes an immersion approach to teaching and learning ASL; in the classroom, teachers and students communicate through signs, gestures, and written English with little or no spoken language used during class time. Cameron (2001) points out that participants (or in this case, potential participants) voice the thoughts and opinions that circulate in their community. When a participant declines
to participate in research because there will be voicing involved it is both an individual response and a reflection of the social world in which they move. Voicing in an ASL class, by either the students or the instructors, is a controversial subject. This is true even in a class of hearing, adult, university foreign language learners who share a common language—English—as the medium of instruction. Many instructors institute a No Voice policy in their ASL classes. This is meant to immerse students in the visual language world, familiarize them with deaf social and cultural norms, and foster students’ understanding of their hearing privilege. It is believed by some instructors that this approach results in more proficient signers who present a less English-influenced form of ASL (Tanner & Doré, 2019). The policy is also political. There are complex and long-standing power differentials between hearing and deaf people; the No Voice policy may help ensure that hearing and deaf teachers are using and accessing the same linguistic resources, thus putting them on a more even playing field in the classroom.

If a controversial or taboo topic is likely to arise in a study, Appleby (2017) advises that the researcher think through their own position and decide the type of response they wish to make if confronted with opposing positions. In the videos prepared for the implicit instruction group, I used sign and gesture only—reflecting the program policy of not voicing. I consciously chose to voice in the gesture intervention videos that were provided to the explicit instruction group because I wanted to explore how an early-level course might use this type of explicit voiced instruction. This was not done to challenge the No Voice policy, but to look at the impact of explicit instruction as it might be taught in early level or preparatory courses—before students have the language level necessary to understand instruction in the target language.
It is challenging for hearing adult learners to incorporate the kinds of movement and expressive practices used by native or highly fluent signers, but it has also been recognized as an essential component of the language. The Council of Europe (2020) specifically acknowledges that, “In short, productive sign creation combines meaning-bearing elements that, in the respective combinations, cannot be found in the sign language lexicon...learners have to reapply grammatical rules for productive signing, reapply combinatory restrictions, keep track of spatial assignments, and consider the applicability of principles for stylistic-aesthetic purposes” (p. 144). There are some colleges and universities that now offer courses on gesture as pre-ASL preparatory courses, or as courses that can be taken prior to for-credit ASL courses (D. Quinto-Pozos, personal communication, January 20, 2022). These types of courses address the physicality of ASL and may help prepare students for the physical and visual demands of sign language learning, including the use of gestures. However, there is little information on how (or even if) explicit instruction on gesture actually influences ASL learning or whether it results in increased gesture use. That is what this study explored.

There are multiple groups of stakeholders in ASL teaching: the deaf community, the instructors, and the students. This study focused on students, and my ethical responsibility as an applied linguistic in this study was to explore the needs of that group. I recognize that my ability to move between spoken and signed languages is a privileged position that is not accessible to deaf instructors. I knew that, to some, using my voice would be a controversial decision and might result in fewer participants, but I made an informed choice that I felt worked for the type of exploratory study that I wanted to conduct. In future, a follow-up study could examine the needs of instructors in relation to
teaching gesture or involve the wider signing community in developing introductory-level gesture lessons that use no voice.

Having provided background for the research that is the focus of this dissertation, I now move to an overview of the study. Below I introduce the two research questions that guided this study, explain how I combined different research fields to examine gesture use in ASL, and then provide an overview of the rest of this dissertation.

1.4 Research Questions

This project was several years in the making. I began by visiting ASL classrooms and discussing gesture use with hearing, adult students and their teachers. During classroom visits I gave short presentations on gesture use in ASL. I interviewed ASL teachers and signers informally and discussed the potential project. The notes I took during the in-person classroom visits and discussions aided in the development of a series of short gesture intervention videos that presented and explained (at an introductory level) how gestures can be used in ASL.

My study grew into an exploratory gesture intervention study—one where I relied on a different approach to gesture than what was typically being used in the classes I visited—with the goal of analyzing what impact the interventions might have on hearing adult students' gesture development. Using two groups of students, my study looked at the impact of explicit instruction on hearing adult ASL/FL university students’ understanding and use of gesture. The interventions relied on explicit instruction, informed by theories of noticing (Schmidt, 1990, 2001; Swain, 1985, 1993), comprehensible input (Krashen, 1981, 1982, 1985), comprehensible output (Swain, 1985,

My questions were: 1) If beginner, hearing, adult ASL/FL university students are given explicit instruction on the uses of gesture in ASL, does it (over time) increase the number of communicative gestures in their signing compared to a group who are given implicit instruction? 2) Does explicit instruction in gesture result in students who can better articulate the uses, functions, and placements of gesture in ASL, compared to a group that receives implicit instruction?

This research showed that hearing, adult university students who were given explicit instruction on the uses of gesture in ASL not only had a better understanding of the role that gesture plays in sign language, but after three months of instruction they used significantly more gesture in their own signed discourse.

1.5 Combining Research Fields to Explore Gesture use in ASL

There is no prescribed framework for examining gesture use in hearing, adult ASL students, and so this study drew on three areas of research: ASL studies, gesture studies, and second language acquisition. I used research from ASL studies to provide background, context, to explain the linguistics of ASL, and provide some information on what is known about how hearing adult students learn ASL. Gesture studies provided theories of gesture as well as some research on how gestures are used in sign languages. From second language acquisition I drew on theories that apply to foreign language learning. The relationship of these fields to the present study is illustrated in Figure 1.3.
1.6 An Overview of this Dissertation

The current chapter (Chapter One) has explained why and how this study was initiated and developed. It highlighted some of the reasons why gesture should be considered when teaching ASL as a foreign language to adult hearing students. I also introduced myself as a researcher and explained how this study drew on three different fields of research. The remaining chapters are as follows:

**Chapter Two** provides background information on ASL and touches on some of the current and ongoing issues in ASL/FL research. **Chapter Three** provides a literature review that examines two key areas of empirical research relevant to the study’s purpose and research questions: 1) learning a visual language as a foreign language, and 2) the role of gesture in sign language production. **Chapter Four** presents the theoretical and
conceptual frameworks that informed the study. This chapter includes a more in-depth look at the theories of gesture and the theories of language learning that informed this study and that shaped my ways of thinking about gesture and ASL. **Chapter Five** describes the methods that were used to carry out the research. **Chapter Six** presents the results and the discussions of the results. In **Chapter Seven** I conclude this study with a recap of the findings and outline the study limitations. I also reflect on the research journey, discuss some of the challenges I faced, and offer suggestions for future research.
2. Chapter Two: Background

For those unfamiliar with sign language, this chapter provides a brief background regarding ASL, including information on common misconceptions, as well as a short history of ASL (its development, ASL as a foreign language, and information on current learners). This chapter also presents a description of the phonology of ASL, followed by some of the challenges for ASL learners and the errors they produce. This background is essential because it situates the research questions within the broader context of ASL’s history, linguistic structure, and the learning challenges that hearing, adult students face.

2.1 Misconceptions about ASL and sign languages

There is not one universal sign language. American Sign Language (ASL) is the sign language used in the United States and the majority of Canada. But Canada also has two other distinct sign languages: Maritime Sign Language (MSL) used by older signers in the Atlantic provinces (Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador) and Langue des Signes Québécoise (LSQ) used in Quebec. Internationally, just as other countries have distinct spoken languages, so there are distinct sign languages. These sign languages might share some common features (such as use of the signer’s face for grammatical purposes) but they are not mutually intelligible. Even when two countries share a spoken language, their sign languages can be vastly different. For example, while British English and North American English share common roots, British Sign Language (BSL) is notably different from American Sign Language. The two sign languages even have a different system for representing letters of the same alphabet—ASL using the hand and fingers of the signer’s dominant hand, BSL
using both hands. However, despite their differences, sign languages are more similar to each other “than they are like the surrounding spoken languages in their locale” (Brentari, 2005, p. 157). These similarities include overlapping forms of iconic signs from unrelated sign languages, which may be one of the reasons that people incorrectly think there is one universal sign language (Ortega, 2012).

2.2 A Brief History of ASL

ASL is not derived from English. It is not a simplified form of English (Klima & Bellugi, 1979), and it was not created by hearing people to help deaf people. It is a natural language with its own grammar and structure (Neidle et al., 2000). It has all the properties and linguistic characteristics of a spoken language, such as phonology, morphology, syntax, and semantics (Sandler & Lillo-Martin, 2006) only in the visual channel rather than aural.

While there is no universal sign language, the desire to communicate is universal. Wherever there have been deaf people, there have been sign languages (Baker-Shenk & Cokely, 1980), but the early development of ASL is poorly documented (Campbell et al., 1992; Wilcox & Wilcox, 1991), and we know little about deaf people living in America prior to 1817 (Baker-Shenk & Cokely, 1980). It is believed that the present form of ASL evolved over the past 200 years (Campbell et al., 1992), and 1817 is the year that is commonly used to mark the beginning of the deaf community in America. This is the year that the American School for the Deaf (ASD) was established in Hartford, Connecticut. (Originally named the Institution for Deaf-Mutes; later the American Asylum at Hartford for the Education and Instruction for the Deaf and Dumb.)
The school was established through the work and partnership of three men: Mason Cogswell (a prominent hearing Hartford physician and father to a deaf daughter), Thomas Hopkins Gallaudet (hearing minister and Yale graduate), and Laurent Clerc (a deaf French educator and graduate of the Institut National de Jeunes Sourds). Because of Clerc’s involvement, old French Sign Language (Langue des Signes Française, or LSF) was brought to North America (Shaw & Delaporte, 2015). The history of modern ASL, and the etymology of contemporary signs, can be traced to the languages used at the Hartford school. These included old French Sign Language (introduced by Clerc), as well as home signs and Martha’s Vineyard Sign Language (MVSL).

The first annual report to the directors of the Hartford school (Annual Report 1817) lists the names of 14 students. Enrollment grew rapidly, and this number had increased to 41 by the second year (Annual Report, 1818). The home state residences of these students varied, as did their ages and language backgrounds. Many of the students came from mostly hearing families and had never signed before attending the school. To be able to communicate, the families created home signs—semi-formalized gestures that were used at home. Because they were created in isolation, students arrived at the Hartford school relying on different home signs for communication.

Some students may also have arrived at the school using a now extinct sign language that was used in Martha’s Vineyard for decades before the founding of the Hartford school (Martha’s Vineyard Sign Language, or MVSL). Hereditary deafness was common on the island, resulting in a large population of both hearing and deaf community members who signed (Groce, 1985). Shaw & Delaporte (2015) report that students from Martha’s Vineyard began attending the school in 1825. Since island
residents were among the first generations of ASD students, it is likely that some MVSL signs became incorporated into ASL.

Laurent Clerc’s role in the founding of the school, and his place as one of the school’s first teachers, meant that students were introduced to LSF. Clerc had been educated at the National Institute in Paris, and his dialect of LSF would have been reflective of his education and the area from whence he came. The comingling of these three methods of communication influenced not just the language development of the students at ASD, but the development of ASL as a whole.

Despite a long history of use, it was not until William Stokoe’s pioneering work in the 1960s that ASL was recognized as a language. Armstrong and Karchmer (2002) point to Stokoe’s work—specifically to the publication of the *Dictionary of American Sign Language on Linguistic Principles* (Stokoe, Casterline, & Cronenberg) as a watershed moment for the recognition and acceptance of ASL as a language. Stokoe (1960) showed that American Sign Language uses a systematic distribution of manual behaviours that corresponded to phonemes, morphemes, and syntax in spoken language. What Stokoe did was monumental in that he expanded the definition of language beyond speech (McClave, 2001). More than fifty years of hard and persistent work later, most people understand that sign languages are equivalent to spoken languages in complexity and expressiveness (Ortega & Özyürek, 2013; Chen & Koulidobrova, 2016).

2.3 ASL as a Foreign Language

By the mid 1980s, ASL programs were being established in high schools and universities across the U.S. (Wilcox & Wilcox, 1991), but ASL was not widely accepted
as a foreign language until the 1990s (Miller, 2009). The downside to the rapid expansion of ASL programs is that demand for classes has outpaced research, teacher training, and curriculum design. ASL has been taught as a foreign language at colleges and universities for decades, but until the 1980s, sign language teaching methods preceded linguistic sign analysis (Mertzani, 2015). Sign language linguistics is an important area of study, and an understanding of sign linguistics is needed in order for sign languages to be effectively taught (Merzanti, 2015).

Continued work on sign language linguistics has progressed, but is far from complete (Brentari, 2011). More research is needed on what works for sign language teaching. Efforts have been made to align ASL with the Common European Framework of Reference for Languages (CEFR) (Snoddon, 2015), but this does not solve problems related to how to teach the language, nor does it consider the language use variations within the signing community. For example, Merzanti (2015) comments that “it is not sufficient to identify the context of CEFR levels according to [sign language] learners’ needs; it is necessary to know what can then be done to help SL learners to achieve the levels. This also raises the issue of communicating with the broader society, for example, with the deaf community” (p. 52).

2.4 Who is Learning ASL?

The number of ASL users in the general population is not systematically or routinely collected (Mitchell et al., 2006). We know that enrollment in ASL has increased in infant, K-12, and post-secondary settings (Thoryk, 2010). We also know that ASL has become increasingly popular among hearing adults (Cooper et al., 2011; McKee et al.,
2014; Rosen, 2008; Willoughby & Sell, 2019). However, Mitchell et al. (2006) showed that the conflation of deafness and ASL signing has been, and continues to be, misleading and makes determining the actual number of signers difficult.

This dissertation focused on university-age students and so the demographic information presented here is specific to that context. The majority of students in university ASL programs are female and under the age of 30 (Beal, 2020; Peterson, 2009; Stauffer, 2011). In U.S.-based studies, ASL students tend to be white and have hearing parents (Stauffer, 2011).

Despite these outward similarities, this does not mean that ASL students are a homogenous group. Adult students bring a complex set of variables to the language learning process, many of which are difficult to quantify. They have different first languages, aptitudes, and study habits. Students also vary in the level of confidence they have in their language learning ability, with students who have high self-esteem tending to become more competent signers (Bontempo et al., 2014).

Students also vary by prior experience with ASL or other languages, and familiarity with the deaf community (Tanner & Doré, 2019). They enroll in sign language class for both personal and professional reasons (Mayberry, 2006; Tanner & Doré, 2019; Woll, 2013); some want to become interpreters or speech therapists, others want to communicate with deaf friends or family members, and some are simply curious about the language (Tanner & Doré, 2019). Student motivations for learning vary widely, but most students of ASL aim to use their language to interact in some way with members of the local signing community (McKee et al., 2014). This is why it is important to
understand how the signing community uses gesture in their discourse and prepare students to use it in similar ways.

2.5 Parts of Signs: The Phonology and Morphology of ASL

As noted above, sign languages have analogous levels to spoken languages—phonology, lexicon, morphology, syntax, and discourse (Sandler & Lillo-Martin, 2006). While spoken languages transmit linguistic information primarily through the auditory mode or channel, sign languages use the visual channel. Signs make up the ASL lexicon, and these signs are composed of discrete phonological units. Whereas spoken languages use sounds in meaningful combinations to form words, sign languages use the visual parameters (phonological constituents) of handshape, location, movement (Stokoe, 1960), and palm orientation (Battison, 1978). The four main parameters are briefly described below. This is followed by a description of how these parameters combine in the formation of signs.

2.5.1 Handshape

Handshapes include the use of the signer’s fingers and hands (dominant and non-dominant) in a variety of shapes. For example, the hands may be open, closed, or curved, while the fingers are bent, interlaced, or touching at the tips. There are several reference books that provide excellent descriptions and images of these and other handshapes, for example, *The Canadian Dictionary of American Sign Language* (Bailey & Dolby, 2012).

Markedness in ASL is used to describe the phonological complexity of signs based on their handshape (Ortega, 2013). Sign handshapes are divided into two sets: marked or unmarked (Battison, 1978). Unmarked handshapes are those with the most distinct shapes
using either “all of the fingers in a range of joint configurations, or solely the extended index finger” (Brentari, 2005). The unmarked handshapes are the B, A, S, O, C, 1, and 5 shapes in ASL (Figure 2.1). It is the unmarked handshapes that are acquired first by deaf children learning a sign language as a first language (Marentette & Mayberry, 2000). Marked handshapes use other fingers and joint configurations and require more effort or more dexterity to produce.

2.5.2 Location

Signs may be produced in front of the body in what is considered neutral space, to the left or right, up or down, close to the body or further away. The sign may also make contact with a particular point on the body such as the cheek, forehead, chest, or upper arm.

Figure 2.1

* B, A, S, O, C, 1, and 5 Handshapes in ASL*
2.5.3 Movement

Signs can move in multiple ways—arc forward or backwards, twist, move in circles, shakes, zigzags, or strike downwards or upwards.

2.5.4 Palm orientation

The palm of either hand can be facing upwards, downwards, to the right or left, towards the signer’s body, or away from it.

2.5.5 Non-manual signals

In the addition to those four parameters there are non-manual movements of the body, head, face, mouth, and eyes (Brennan, 1992) that are used to signal grammatical functions such as yes-no questions, information-seeking questions, topic markers, relative clauses, or act as a contrastive feature. See Figure 2.2 for an example of the yes/no and information-seeking question grammar in ASL.

Figure 2.2

Yes/No and Information-Seeking Question Grammar in ASL
2.5.6 ASL Morphology

Together, the parameters described above combine in ways that are recognizable as signs. Sandler (1986) proposed a model with two segment types for ASL phonology: movement and location. This model was built into a sonority cycle (Sandler, 1993), where the location of a sign (L) is akin to a consonant while the movement (M) is like a vowel. These two category types are organized sequentially in ASL, making for signs that can be articulated and perceived clearly because of the contrasts between the location and movement segments. In the model, signs have beginnings and endings. They start at a location, proceed through a movement where the sign changes location, moves internally, or both, and are completed at the new location or when the internal movement is complete. Viewed through this lens, signs manifest linearly in an LML (location, movement, location) form, comparable to a spoken language CVC (consonant, vowel, consonant) form (Sandler, 1993).

The majority of ASL morphemes have one of three shapes: LML, LMLML, or L, with LML being the canonical shape. The sign TRUE/SURE (Figure 2.3) is an example of the canonical sign form. The sign begins with the side tip of the extended index finger resting against the mid area of the chin. The sign then moves to a new location a short distance in front of the first (away from the chin). The hand shape remains constant throughout.

Signs may have both a movement to a new location and an internal movement, as seen in the sign LIKE (Figure 2.4). The sign begins with the tip of thumb and middle finger in contact with the chest. The sign moves forward to a new location a short
Figure 2.3

The Sign TRUE/SURE in ASL

Figure 2.4

Change in Handshape and Location for the Sign LIKE in ASL
distance away from the chest, and the hand shape changes so that the thumb and middle finger are touching. The second handshape is temporally aligned with the second location.

Signs can also have an internal movement only, with no change in location, as in the sign COLOUR. The sign begins with the fingers spread, palm facing the signer’s body. The fingertips of the ring, middle, and index fingers are held near or against the chin and all four fingers wiggle. There is only sign internal movement and no movement to a new location. These phonological constituents can be assembled in ways that are arbitrary (where the sign bears no obvious relationship to the referent) or iconic (where a sign represents a clear mapping to its referent, i.e., the sign looks like the entity that it represents).

While the parameters (as categories) are the same for all sign languages, the phonemes themselves differ. For example, Chinese Sign Language uses hand configurations that are not used in ASL (Klima & Bellugi, 1979). However, even with those differences, both iconic and arbitrary signs always conform to the phonological parameters of their language and their production is consistent across users. For example, in ASL the sign TRUE/SURE (Figure 2.3) is produced using the extended index finger of the dominant hand, placing the edge of the extended finger briefly against the middle of the chin with the palm facing left, and moved in a quick small arc forward. Small changes to the parameters result in a different sign: The sign TELL (Figure 2.5) is similar to TRUE/SURE, but the tip of the extended finger is placed just under the chin, with the palm facing the signer’s body, and then moved forward in a small, quick arc forward.
The above information on the phonology and morphology of ASL is meant to illustrate the complexity of the language and to reiterate that learning a new system of phonology in a new modality poses a considerable number of challenges for hearing adult students. Because of this, Chen Pichler (2009, 2011) refers to hearing ASL students as second language, second modality (L2/M2) learners. The L2/M2 label recognizes that these students need to learn to adjust to the modality differences between spoken and sign languages (Chen Pichler, 2009, 2011; McKee & McKee, 1992; Rosen, 2004).

Although adult students come to ASL with fully developed motor and spatial skills, they are not accustomed to using those skills to process language. The specific motor capabilities needed for accurate ASL lexeme and sentence production develop over time as the learners cognitively map the linguistic elements of ASL onto their psychomotor skills (Lupton & Zelnik, 1990). As Rosen (2004) describes the process, “L2 adults learn to incorporate their phonological representation of ASL articulatory features
as they develop cognitive control of their body schema for language purposes” (p. 37). Even confident language students who have learned additional spoken languages as adults can find ASL to be a challenge (Wilcox & Wilcox, 1991; McKee & McKee, 1992).

2.6 Perceptual and Production Challenges for Hearing Adult University Students

When they first enter the ASL classroom, adult students do not immediately possess the visual phonological skills that are needed to become proficient. This is something that needs to be systematically addressed in ASL/FL education (Bocher et al., 2006; Mirus et al., 2001). Both students and teachers report that for students, adapting to the visual-gestural modality and becoming comfortable using their bodies is difficult (McKee & McKee, 1992), as is mastering facial expressions and developing general manual dexterity. ASL learners encounter both perceptual and production difficulties (Williams & Newman, 2016), and tend to overestimate their receptive comprehension abilities (Beal, 2020). Learners may need to be taught the visual discrimination skills necessary to perceive the difference between signs (Baker-Shenk & Cokely, 1980).

Early research (Klima & Bellugi, 1979) determined that short term memory capacity for signs appears to be lower than short term memory capacity for words. An updated study on sign and word recall (Geraci, et al., 2008) found that when controlling for articulation rate, sign span in deaf participants was lower than word span in hearing participants, meaning that serial sign recall can be considered more difficult in terms of the processing role placed on short term memory. This suggests that hearing students who
are new to the sign modality may require significant time to develop strategies that allow them to process and recall sign language fluently.

There is some evidence that students who take up ASL at later ages tend to be linguistically limited (Chamberlain & Mayberry, 2000; McIntire & Reilly, 1988; McKee & McKee, 1992). In other words, adult ASL students’ phonological processing is typically more laborious and less automatic compared to those who learn ASL in childhood (Mayberry, 1995). Based on results from ASL proficiency tests, students graduate from university with basic or conversational-level ASL skills (Beal, 2020). This dissertation is focused on the use of gesture in beginner ASL students, but the point above stands as an indicator that the overall language attainment of ASL students at university may be low.

2.7 Learner Errors

Bochner et al. (2011) claim that L1 to L2 spoken transfer errors—specifically phonological substitutions—do not occur in ASL L2 phonology acquisition because of the fundamental differences between the channels used to transmit linguistic information. In other words, you cannot transfer the phonology (sounds) from a spoken language onto the phonology (movement, location, handshape, palm orientation) of a sign language. This does not mean that learners make no mistakes in ASL phonology, only that their mistakes need to be explained by something other than L1 spoken language transfer errors. However, researchers considering transfer may have been looking in the wrong place. As will be discussed in section 3.6, there are visual resources in a spoken L1, such as gesture, that may transfer to ASL to a degree (Woll, 2013; Taub et al., 2008).
One way of explaining learner errors has been through explorations of the aural versus the visual communication channel; learning a new language in a different modality than ones’ first language may present developmental patterns that do not occur for additional language learning in the same modality (Chen Pichler & Kouliдобrova, 2016), as discussed below.

2.7.1 Sign Production

Producing ASL signs is a complex activity (Lupton & Zelnik, 1990) and students make frequent production errors (Rosen, 2004). Hearing signers tend to have greater variability in their production of signs compared to native deaf signers, with articulation consistency increasing somewhat as signers become more proficient (Hilger et al., 2015).

Students can more accurately produce one-handed signs compared with two-handed signs, and body-anchored signs (signs that are articulated by touching a specific spot on the signer’s body) are more accurate than those produced in space (Ortega & Morgan, 2015). Students appear to be able to comprehend nonmanual grammatical markers—such as those used for negations or questions—but have difficulty producing them (McIntire & Reilly, 1988).

When it comes to sign movement, ASL/FL students may engage the proximal joints closer to their bodies (shoulders or elbows) as they sign, before they begin to engage their distal joints (wrists) (Mirus et al., 2001). Correct movement patterns require time to develop; they increase in speed and improve in symmetry and replicability as the learners gain more experience with the language (Lupton & Zelnik, 1990).
2.7.2 Sign Perception

ASL/FL students also have difficulty with sign perception (Williams & Newmann, 2016). A study of ASL student perception of phonological contrasts (Bochner et al., 2011) suggested a hierarchy of perceptual difficulty; movement contrasts being the most difficult and location the easiest, however other research has found a different order (Ortega, 2013) and there is no consensus on the order of acquisition (Williams & Newman, 2016).

Perception problems can also affect how students analyze their own signing and linguistic progress. Stauffer (2011) found that students have only a moderate ability to assess their ASL competency in a way that is similar to their instructors, and this ability does not appear to improve over time as learners progressed through the ASL program. Early feedback is paramount for students to develop signed proficiency that progresses beyond an intermediate stage of ability.

2.8 Gaps in Research on Teaching and Learning ASL as a Foreign Language

While spoken language research in foreign language education has been going strong for decades, the same cannot (yet) be said for ASL/FL learning. Studies of ASL as a foreign or second language are still relatively rare (Beal & Faniel, 2019; Ferrara & Nilsson, 2017; Taub, Galvan, Pinar, & Mather, 2008), and most research has been conducted with already-fluent signers rather than those currently learning ASL as a foreign language (Campbell et al, 1992). Gaps can be found in several areas of ASL/FL teaching.
Though it is beyond the scope of this dissertation, it should be noted that there is a lack of teacher training, and many teachers are working in insecure or non-tenured positions (Willoughby & Sell, 2019). This can impact student learning. For example, student and teacher perceptions indicate that syntax and grammar are thought to be students’ biggest weaknesses. However, students ascribe their struggles to how different ASL is in relation to English, while teachers feel it might actually be a teaching problem—stemming from teachers’ lack of knowledge, lack of teaching materials, and the approach used to teach grammar (McKee & McKee, 1992).

2.9 Chapter Summary

Chapter Two offered background information on ASL and provided a minimal introduction to areas of study that cover much more than what can be addressed here. It was meant as an overview for those who are not familiar with ASL to help situate the research questions in the broader ASL/FL context. The chapter included misconceptions about sign languages, a history of ASL, a profile of ASL students, a breakdown of the phonology of signs, and the common learning challenges that hearing adult students face. The chapter concluded with some of the gaps that exist in ASL/FL teaching research. The background presented in this section was not exhaustive but touched on some of the current and ongoing issues in sign language studies and sign language adult foreign language education. The next chapter (Chapter Three) provides a literature review of some of the predominant areas in sign language-gesture studies. Together, these two chapters should help scaffold the reader’s understanding of the scope of the work undertaken in this dissertation.
3. Chapter Three: Literature Review

The previous chapter provided background information to help readers become aware of some of the history and current issues in ASL teaching and learning. In the present chapter I review literature from the area of sign-gesture research. There is not (as yet) a large body of literature that directly addresses improving gesture use in hearing, adult ASL/FL students; this dissertation is a step in that direction. The literature review presented here addresses several relevant topics in the area of sign language and gesture research in order to provide an outline of what we know about the relationship between gesture and sign. The review touches on five areas of research: iconic and depicting signs, the ways that signs and gestures blend, the gesture-sign relationship, the intersection of gesture and sign in ASL/FL students, and finally how gesture could be used as a way to facilitate ASL learning.

3.1 Iconicity and Depicting Signs

This section furthers the discussion of iconicity in ASL (introduced in Chapter Two) and introduces the idea of depiction. Iconicity or iconic signs occur when the form of the sign looks like the objects to which it refers. Depiction occurs when the signer uses their face, hands, and body to produce visual descriptions that are not signs. Depictions can be iconic, but they can also include classifiers, depicting verbs, or constructed action, all of which are explained below. Iconicity is almost always present in a sign in some way, whether in the handshape, movement, or another sign parameter (Perniss et al., 2010). (See section 2.5 for a discussion of sign parameters). Likewise, research into the frequency of ASL depictions has shown an average of twenty instances of depiction per
minute in ASL produced by deaf native signers (Thumann, 2010). That means there are up to twenty opportunities per minute for signers to add gesture or a blend of signs and gestures to their discourse.

In the context of this dissertation, iconicity plays a key role in ASL/FL learning at the early stages (Campbell et al, 1992; Mayberry, 2006) when it is used as a memory aid (Campbell et al., 1992; Ortega & Özyürek, 2013; Woll, 2013). At the same time, ASL learners have been shown to struggle with depiction-related features (Ferrara & Nilsson, 2017; Thumann, 2014). Ferrara and Nilsson (2017) found that hearing sign language students used depiction less frequently than their instructors in a live communication elicitation test. The authors suggested that students may need to be exposed to depiction in a variety of settings and may benefit from explicit instruction on how depicting signs (and by extension, gestures) relate to other signs and spaces in the signed discourse (Ferrara & Nilsson, 2017). The following sections further examine the key concepts of iconicity and depiction in order to emphasize why the relationship between gesture and sign is so important to the language development of ASL/FL learners.

3.1.1 Iconicity

As previously discussed, *iconicity* in ASL is the perceived relationship between a sign and its referent; the non-arbitrary mapping between the sign meaning and the sign form. An iconic sign is one where the form of the sign has a direct link to its referent; in other words, the sign looks like what it refers to. For example, the sign for ICE-CREAM is a pantomime of licking an ice cream cone. While Klima and Bellugi’s (1972) early work stated that ASL is a “self-contained, largely arbitrary system, not a universally understood language or pantomime” (p. 61), more recent research has shown that
Iconicity is an intrinsic and pervasive feature of sign languages (Sutton-Spence & Woll, 1999; Woll, 2013; Taub, 2001; Johnston & Schembri, 2007).

The visual modality allows a greater number of non-arbitrary mappings than spoken languages do (Vinson et al., 2014), although Vinson et al. (2014) also caution that just because iconicity is more immediately evident in sign languages does not mean it should be labelled as a modality quirk, i.e., something that is unique to visual language and therefore easily explained as a visual language thing without further investigation. For example, Shaw and Delaporte’s (2015) etymology dictionary of ASL gives numerous examples of signs that were once iconic but have evolved to become arbitrary. Therefore, iconicity should not be overlooked in linguistic investigations.

3.1.2 Depictions

Iconicity is only one way that ASL creates form-meaning mappings. According to Dudis (2007) there are signs that exhibit iconic mappings (as described above), and then there are depictions. Dudis uses the ASL noun sign for BIRD as an example of a sign that is iconic but non-depicting. In the articulation (production) of the sign, the signer opens and closes their thumb and forefinger near their mouth in an imitation of a bird’s beak (Figure 3.1). However, the sign is frozen or fixed. It is signed in the same way each time, and it maps to the referent bird, but does not describe the actions of a bird (Dudis, 2007). Depiction involves showing “what something looks like or is like” (Streeck, 2008, p. 289), in other words, it involves the signer using their hands, face, and body to describe what something looks like or how an event happened. For example, the sign BIRD (described above) is iconic but non-depicting. If the signer flaps their arms and/or pecks forward and backward with their head, that would be depiction.
In academic terms, Thumann (2013) describes depiction as “the representation of aspects of an entity, event, or abstract concept by signers’ use of their articulators [the specific body parts used to produce the sign], their body, and the signing space around them” (p. 317). Depiction adds information to the lexical items used in ASL discourse and includes the addition of gesture, where gesture refers to any body motion, or part of the body, that is used meaningfully in ASL (Mandel, 1977). Depictions differ from signs that are conventional in form and that obey formational rules. In brief, depiction is an umbrella term that refers to a signer’s ability to “convey visual imagery in narrative discourse” (Beal-Alvarez & Trussell, 2015, p. 6). It is a technique that is considered to be characteristic of ASL fluency (Lupton, 1998).

Depiction can be created or performed in several ways. It may involve using classifier constructions, depicting verbs (Liddell, 2003), and/or constructed action—
elements that refer to the signer’s ability to represent semantic components (Dudis, 2007). I describe each of these in turn, below, to illustrate the many ways that depiction enters everyday signed discourse.

Classifiers are a category of signs that are produced by using meaningful handshapes that represent salient characteristics of the referent (Schembri, 2003). These handshapes stand in for or describe the semantic features of nouns. Semantic or entity classifier handshapes represent an entire noun—for example a vehicle (Figure 3.2) or a person—while size and shape specifier (SASS) handshapes are used to signify the shape and extent of an object’s surface (Figure 3.3), or the shape and linear arrangement of several objects (Beal-Alvarez & Trussell, 2015; Dudis, 2004; Liddell, 2003; Schembri, 2003).

Figure 3.2

Vehicle Classifier
Depicting verbs use semantic/entity classifiers or size and shape specifiers to signify the presence of an entity in a particular location, to outline the background against which an entity moves or is placed, or to show the path of movement and action of the entity. But depicting verbs alone are limited in what they can demonstrate about a referent (Quinto-Pozos, 2007), particularly animate referents like people or animals.

In constructed action (CA), a signer uses their upper body to mimic the facial expression, eye-gaze, mouth configuration, limb and torso positioning (etc.) of the referent, providing a level of detail not available in either signs or depicting verbs alone. Constructed action is particularly relevant to this dissertation because it introduces the notion of gestural viewpoints. Gestural viewpoints describe how gesture can happen in a first- or third-person point of view where the signer is either acting in the role of
themselves or another entity, or where the signer is somewhat removed and is describing a scene. The following subsection will expand on constructed action and viewpoints in relation to gesture.

3.1.2.1 Constructed Action and Gestural Viewpoints. Constructed action (CA) is frequently used for reporting or quoting the words, signs, or actions of another party. Speakers (of any language) do this all the time, prefacing a reported dialogue with “And then they said” followed by a quote or report of what was said. During CA in ASL, (sometimes referred to as a role shift), the signer acts in a first-person or character point of view. The signer gives up their role as themselves and assumes the role of another entity, using “gestures intended to illustrate the actions of others” (Liddell & Metzger, 1998, p. 660).

The recalled event space of the character’s actions is mapped onto the real-world signing space around the signer, which stands in for the area in which the character’s action takes place. The result is that the signer and the character exist in a conceptually overlapping space, where the signer’s movements and gestures are those being performed by the character (Liddell, 2000).

In constructed action, the signer takes on one of two possible gestural viewpoints, that of the first person or character point of view. A second gestural viewpoint is possible, that of the third person or observer (McNeill, 2005). In character viewpoint the narrator performs the part of the character (McNeill, 2005) using their whole body. In observer viewpoint the narrator is removed from the action and describes actions from a third-person perspective using classifiers and descriptive verbs.
Quinto-Pozos and Parrill (2015) looked at gestural viewpoints to “determine whether signers and gesturers behave in similar ways for specific types of events” (p. 17). They collected signed data from deaf ASL users who were asked to describe three cartoons and added this to a corpus that showed English speakers using gesture to recount the same three cartoons (Parrill, 2010). The results of comparisons between the hearing gesturers and deaf signers showed that while signers frequently used both constructed action and classifiers in describing an event, hearing gesturers more often used character viewpoint or observer viewpoint exclusively. It appears that signers “are particularly adept at using multiple body parts to depict two viewpoints simultaneously within the signing space” (Quinto-Pozos & Parrill, 2015, p. 26).

Quinto-Pozos and Parrill’s (2015) study demonstrated similarities between the signers and gesturers as well. All participants tended to use constructed action or a character viewpoint to describe events where a character was handling an object, showing an emotion, or behaving (bodily) in a particular way. And all participants tended to use classifiers or an observer viewpoint when describing a character or object’s trajectory through space. However, as noted above, signers more often blended their constructed action and classifier use. A signer may use a classifier to describe the path of motion the character was on while walking toward a building, while simultaneously using their face and/or body to show the emotional affect or character’s posture.

Quinto-Pozos and Parrill (2015) are careful to note that just because both gesturers and signers use handling actions to depict similar events does not mean than they do it in exactly the same way. Production of comparable categories of action does not mean exact parallels of handshape or equal complexity, but it does suggest that the
ability to express specific meaning through bodily action is already present in the
gestures used by hearing, non-signers. This raises the question of whether the ability to
use constructed action and classifiers simultaneously can be taught and taught early
enough in ASL/FL teaching that it becomes part of hearing signers’ gestural repertoires.

3.1.3 The Impact of Iconicity on ASL/FL Learning

The iconic and gestural aspects of sign languages do appear to have an impact on
ASL/FL learning. Research has shown that while iconicity does not help deaf children
learn sign language (Conlin et al., 2000; Marentette & Mayberry, 2000; Orlansky &
Bonvillian, 1984), reliance on iconicity seems to play a greater role in adult ASL/FL
learning—especially at early stages (Campbell et al., 1992; Mayberry, 2006). Someone
unfamiliar with sign language is not able to reliably guess the lexical meanings of signs
based on iconic characteristics alone (Campbell et al., 1992; Hoemann & Kreske, 1995;
Klima & Bellugi, 1979), but new signers do use iconicity as a memory aid for recalling
sign vocabulary both in production and reception (Woll, 2013). These iconic signs are
more memorable to adult non-signers (Ortega & Özyürek, 2013) and are correlated with
better recall (Campbell et al., 1992).

Vinson et al. (2014) argue that the effect that iconicity has on language
comprehension and production is a consequence of the interplay between meaning and
form, specifically the “link between features related to perception and action” (p. 76).
Adult ASL student, in particular, have more life experience than children and are
therefore more capable of linking symbolic forms with a referent regardless of their first
language modality (Ortega, 2013). Beginner adult signers also have ample experience
processing and producing communicative iconic gestures (Ortega & Özyürek, 2013) that
integrate with speech to facilitate comprehension. However, the positive effects of iconicity should not be overstated. The presence of iconic sign forms can lead ASL students to mistakenly think that the iconic structures are easy. In fact, learners often struggle to actually “think in pictures” (McKee & McKee, 1992, p. 135), and the ability to access the iconic properties of a sign can impede learners’ phonological development (Ortega, 2013).

Bochner, Christie, Hauser, and Searls (2011) state that because of the differences associated with the channel of transmission, traditional language transfer cannot influence the acquisition of L2 sign language phonology. For example, if someone who speaks English as a first language decides to learn American Sign Language, their spoken English should have no impact on their acquisition of ASL phonology. However, issues that may result from language transfer between hearing gestures and sign language learning have been largely ignored (Janke & Marshall, 2017). One exception to this is Ortega (2013), who found that sign iconicity does not assist with phonological sign acquisition (accurate sign production). Ortega’s (2013) research found a negative effect for iconicity and suggested that the similarity between the iconic signs and iconic gesture may be driving this; because iconic gestures and signs have overlapping forms with only small differences between them, adult sign language students substituted their own, less conventionalized (and less accurate) gestures for the correct iconic sign forms, while arbitrary signs were produced more accurately (Ortega, 2013; Ortega & Özyürek, 2013).

Ortega and Özyürek’s (2013) research suggested that hearing, non-signers were able to detect the iconic feature of the signs but produced an inaccurate imitation because they lacked a visual phonological system. This may be because while the gestures that
speakers produce alongside speech are not random, they do not follow formal rules (Kendon, 2004); a student’s experience with co-speech gesture does not necessarily give them the ability to produce phonologically accurate signs. If we assume that hearing adults draw on the gestural resources that are available to them as they begin learning a sign language (Janke & Marshall, 2017), then the challenge for learners is to “narrow down the many options available to them in gesture in order to converge on the narrower conventionalized system of the particular sign language that they are learning” (p. 11).

While iconicity may provide an initial boost to recognizing and recalling signs, students may still require explicit instruction in order to correctly learn to perceive and produce sign phonology (Baker-Shenk & Cokely, 1980).

In sum, iconicity and depiction are a key concern in ASL/FL learning because of their prevalence in signed discourse and multitude of ways they appear in signed discourse. The next section adds complexity to this discussion by introducing the concepts of blends, lexicalization, and grammaticalization in ASL. These are relevant to the current conversation because gesture appears in all of them, even though students and fluent signers—including ASL teachers—may not be aware of it.

3.2 Blends, lexicalization, and grammaticalization

There are close ties between signs and gestures through depiction and iconic mapping, but gesture can also exist in signs in ways that are less immediately obvious. Specifically in blends, grammaticalization, and lexicalization, all of which are ways that gesture as a general cognitive function, such as pointing or head shaking, are present in ASL. Each of these will be described in turn below.
3.2.1 Blends

Sign-gesture blends exists throughout ASL. Liddell (2000) argues that signs are produced in a conceptual blend (Fauconnier & Turner, 1996) of real space and imagined mental space. Diectic (indicating or pointing) signs used in this conceptual blend have been reconsidered as gestural (Johnston, 2013; Liddell, 1995, 2003; Liddell & Metzger, 1998). Imaginary entities (people, places, objects) are located in the real space around the signer. Signs that are directed toward elements in the blended space unify gesture and sign (Liddell, 2003); the movement of the sign towards elements that are grounded in the blended space rely on the general cognitive and gestural ability to point at meaningful locations.

Okrent (2002), took up Liddell’s (1995, 1996) suggestion that agreement verbs in ASL are a combination of verbs and pointing gestures and investigated the problems that occur in determining what is linguistic (morphological) from what is gestural when both are produced using the same articulators (body parts). Okrent drew on video stills and spectrograms from previous research on both spoken and signed discourse to explore the different language-internal restrictions that speech and sign place on gesture. In sign languages, people can manually gesture while signing lexical verbs. In spoken languages, people may use “spoken gesture” (p. 187); this includes all the modulations that people do with their voices while speaking. For example, manipulating vowel length (the word long produced as looooong) or pitch (up produced with a high pitch; down produced with a low pitch).

Looking at how vocal gestures function when they use the same channel as speech, Okrent noted that “the combination of gesture and speech in one channel puts
restrictions on the gesture because important linguistic categorical information, like lexical tone, must be preserved” (p. 196). In other words, in languages like Mandarin Chinese, where there are falling lexical tones for both up (shang) and down (xia), the lexical tone precludes using a rising contour as an expression of imagery. Similarly, there are restrictions on the way in which pointing gestures are carried out in ASL, but this does not mean that Liddell’s (1995) or Liddell and Metzger’s (1998) gesture proposal is wrong. Instead, Okrent proposed that researchers can attempt to draw a line between gesture and language by looking to three dimensions: The degree of conventionalization, the site of conventionalization, and the restriction on combination.

3.2.2 Grammaticalization

It may also be the case that what we think of as grammatical functioning in ASL is derived from hearing gesture. In North American hearing culture, lateral shakes of the head can co-occur with statements such as “That cake was so good” or “The test is really hard” (Goodwin, 1980). Schegloff (1987) referred to these as intensifiers and McClave (2001) hypothesized that the head movements used for intensification (and which are conventionalized in hearing culture) have now been assimilated by native signers. She posited that this process of gestural borrowing has been going on for some time and is likely the source for some head movements that are now grammaticalized in ASL, such as affirmative nodding and head/shoulder shift for direct quotes. Based on this, McClave proposed a set of stages wherein a gesture moves from spontaneous use by hearing people (stage one), through ritualization and conventionalization in hearing people (stage two), to the use of the conventionalized gesture by deaf people (stage three), and finally to the grammaticalization of the conventionalized gesture in ASL. Other examples of
gestural grammaticalization can be found in Janzen (1998, 1999), who traced the grammaticalization of topic markers in ASL from generalized questioning gestures, and Wilcox and Wilcox (1995) and Shaffer and Janzen (2016) who outlined the gestural sources for several ASL modals.

3.2.3 Lexicalization

Gestures can also become signs through the process of lexicalization. According to Mecca and Lichtig (2008) it can be assumed that over time gestures may begin to become like signs by approximating to the necessary phonological patterns. The more those phonological aspects are present in a gesture performance, the closer in proximity it is to a sign. The gesture becomes increasingly abstract, and elements of the original gestural enactment are only maintained through the transformation and reduction process if they remain sufficiently contrasted with “features of other gestures in the system” (Kendon, 2004; Kendon’s theory of gesture segments and gesture phrases is explored in depth in Chapter Four).

Examples of this process can be found in the investigation of sign etymology, as well as in research conducted on emerging sign languages, such as Haviland’s (2014, 2015) documentation of the development of a new sign language. Haviland (2015) described how the Tzotzil gesture for ‘COME’ underwent a process of jumping from a gesture used with speech, to a sign in a new sign language with the function of attention getting or turn-starting.

Real-time examples of how the abstraction of gestures takes place can be found in some laboratory experiments, like Gerwing and Bavelas’ (2004) work on the impact of common ground on gesture production. Gerwing and Bavelas (2004) started with the
hypothesis that the physical form of a gesture is constrained by its communicative
function (p. 158). In their experiment, hearing adult participants played on their own with
two of five possible toys, without knowing what toys the other participants were playing
with. Participants were then paired up then filmed while they discussed what they did
with their assigned toys. Just before the paired discussion, paired participants were told
whether they played with the same set of toys or not; those who had played with the same
toys knew they shared that play experience as common ground. The experiment showed a
significant influence of common ground on the amount of information that was required
for an addressee to identify the toy (p. 170). When there was no common ground, the
gestures used to identify the toys were found to be more elaborate, informative, and
precise (p. 170) than those of the common pairs.

The research also examined the accumulation of common ground between the
participants during discussion. New information was more salient in its presentation, with
the important aspects of the toy play being more precise and exaggerated. Given
information was transformed; gestures became sloppier because understanding of those
gestures could draw on antecedents in previous gestures. Even in pairs where there was
no common ground for toys initially, the precision of the physical representations of
information “faded over time” (Gerwing & Bavelas, 2004, p. 181). and “depictions of
information that was once new often emerged, transformed, in later gestures as given
information” (p. 176). This suggests a way in which gesture may evolve into formal
signs. Over time, what begins as a gesture becomes stripped down until what is left
appears abstracted. These abstract signs then must be learned by future users, but once
learned they allow for more succinct comprehension and communication. This can be
seen in many signs where, if the etymology is traced, it can be shown that the sign has evolved out of a more elaborate gesture or action. (See, for example, Wilcox’s (2009) tracing of the route of the Roman oratorical gesture through metonymic links to the development of the Italian Sign Language sign glossed as IMPOSSIBLE.)

3.3 The Impact of Blends, Grammaticalization, and Lexicalization on ASL/FL learning

Grammaticalization and lexicalization are dynamic, ongoing processes. There is no sudden split between a gesture and a sign, and the transformation takes places slowly over time (Müller, 2018). But not all gesture becomes grammaticalized or lexicalized. Before gestures take on the properties that would allow them to be labelled as signs (if they ever do) they are still integral to the functioning of the sign language system (Kendon, 2008). As part of this system, gestures assume different properties and express different types of meaning depending on the context and communicative demands that are placed upon them (Kendon, 2004).

Although ample research exists to describe these concepts, little of it focuses on their role in ASL/FL linguistic development, or their impact on the learning process. Throughout this dissertation I attempt to present arguments and research that emphasize the relevance of these concepts to ASL/FL students. Gesture in its many forms is everywhere in ASL and is regularly relied on by fluent signers. Gesture’s ubiquity in spoken and signed discourse means that it could be used as a tool to scaffold student learning. Still, overwhelmingly, research and practice have yet to formally and consistently integrate gesture into ASL/FL pedagogy.
Having described blends, grammaticalization, and lexicalization, the next section examines how signers gesture.

### 3.4 Stepping Back: Examining the Gesture-Sign Relationship

Since both gestures and signs are produced using the same articulators (hands, face, body), it is hard to find consensus on what exactly constitutes a gesture in ASL. The process of lexicalization described above may give people the idea that gesture is something that goes away once signs are established. It does not. As a result, describing how signers gesture is complex and contentious. There is disagreement on whether gestures are linguistic in the first place, and then there are also disagreements on what constitutes gesture in the context of a sign language.

Kendon (2008) explains that signs and gestures are often thought of as two distinct categories; signs are linguistic while gestures are paralinguistic. Signs are sensitive to lexical categories, rule ordering, and semantics (Emmorey, 1999). Signs also present a particular phonology in their representation (Mecca & Lichtig, 2008)—the patterned use of handshape, location, movement, and palm orientation; in other words, signs are morphemic (Okrent, 2002). But just because something cannot be analyzed as discrete morphemes does not make it non-linguistic. As Kendon (2008) points out, in Liddell’s (1995, 1996, 2003) argument that some signs are a blend of sign and gesture, the pointing movement in a sign cannot be analyzed as a discrete contrastive morpheme. It is gradient or gestural, but still “integral to the grammar of a sign language such as ASL” (p. 350).

McNeill’s (1985, 1992, 2005, 2012) view is that gesture orchestrates and is inseparable from speech (McNeill, 2012; McNeill’s theory of gesture is expanded in
Chapter Four. Gesture and speech develop together as psychological performances (McNeill, 1985), with gestures functioning as “the intrinsic imagery of language” (McNeill, 2012, p. 4). He focuses on gesticulation—the movements of speakers’ hands as they talk. On McNeill’s gesture continuum (Figure 3.4) these gesticulations are the least conventionalized and most likely to occur with speech. McNeill describes several dimensions of gestures, arguing that gestures may be more (or less) reflective of the iconic, metaphoric, deictic, or beat properties of co-occurring speech (2005). These spontaneous co-speech gestures provide a window onto our thought process while it occurs in the moment of speaking (2005). For McNeill, the language-gesture interface is a cognitive process unique to spoken language.

McNeill’s concept of gesture is specifically psycholinguistic and does not fully apply to the stance this dissertation takes regarding gesture. Nevertheless, it is used in some sign language research that does make valuable contributions to the theoretical tapestry of this dissertation. For instance, Emmorey (1999) drew heavily on McNeill’s (1992, 2005) conceptualization of gesture as something which is global and synthetic, treating gesture in sign as something different from co-speech gesture (i.e., gesture that co-occurs with speech). In McNeill’s conceptualization, the meaning of a gesture comes from the whole, but how that meaning is depicted by an individual will vary from person to person. Emmorey (1999) examined the aspects of gesture that exist in co-speech gesture but not in sign, and vice versa, summarizing that while signers do gesture, they “do not produce spontaneous idiosyncratic hand gestures that are concurrent with signing” (p. 155). Emmorey’s answer to the question of whether signers gesture is that
Figure 3.4

Adapted from McNeill’s (1992, 2000, 2005) Figures for the Gesture Continuum and Relationships to Speech, Linguistic Properties, Convention, and Character of Semiosis

<table>
<thead>
<tr>
<th>Relationship to speech</th>
<th>Gesticulation</th>
<th>Pantomime</th>
<th>Emblems</th>
<th>Sign Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obligatory presence of speech</td>
<td>Obligatory absence of speech</td>
<td>Optional presence of speech</td>
<td>Obligatory absence of speech</td>
<td></td>
</tr>
<tr>
<td>Relationship to linguistic properties</td>
<td>Linguistic properties absent</td>
<td>Linguistic properties absent</td>
<td>Some linguistic properties present</td>
<td>Linguistic properties present</td>
</tr>
<tr>
<td>Relationship to conventions</td>
<td>Not conventionalized</td>
<td>The same</td>
<td>Partly conventionalized</td>
<td>Fully conventionalized</td>
</tr>
<tr>
<td>Character of semiosis</td>
<td>Global &amp; synthetic</td>
<td>Global &amp; analytic</td>
<td>Segmented &amp; synthetic</td>
<td>Segmented &amp; analytic</td>
</tr>
</tbody>
</table>
yes, signers do gesture, but not in the way that speakers do. While speakers produce co-
speech gesture simultaneously with speech, signers produce manual gestures that occur
alternately with signing or produce facial and body gestures simultaneously with signing.
They do not produce manual gestures and signs simultaneously.

According to Emmorey (1999) if a signer produces manual gestures, they do so
during code suspension, or a break in signing. For example, when signers produce
gestures for Constructed Action, it requires that the signer stop their signing and produce
the gesture “as a separate component of a signed utterance” (Emmorey, 1999, p. 145).
Signers may also string manual gestures together, and these “tend to be fairly clear even
outside of the sign context, and this is true for the majority of manual gestures that occur
in alternation with signing” (p. 147). Signers may produce pantomimic gestures
concurrently with signs, but the gestures are produced on a different articulator (body
part), such as the head, face, or torso, while the hands are engaged in producing signs.

Emmorey (1999) maintains that gestures produced within an ASL utterance
remain separate, identifiable components. This stance is contrary to Liddell’s (1995)
description of sign-gesture blends. Emmorey’s conclusion about how signers gesture is
predicated on the argument that if and when signers produce manual gestures, they must
stop signing to do so, returning to the idea that gestures are somehow categorically
different than signs. However, if we view gesture as something that is gradient and
fundamental to the working of the language “this challenges the idea that there is an
opposition between ‘gesture’ and ‘sign’” (Kendon, 2008).

Shaw (2013) proposes a different approach to sign and gesture. She performed a
discourse analysis on recordings of two separate game night interactions, one involving a
group of four adult deaf friends, the other four adult hearing friends. Shaw found that both groups of participants produced gestured utterances like they produced spoken or signed ones. In other words, participants’ gesture took on the “full burden of communication” (p. 81), and “interlocutors were able to communicate in ways that resembled ordinary discourse” (p. 264).

Shaw’s findings suggests that we reframe how we view the process of using our bodies to communicate, moving away from the gesture/language dichotomy found in McNeill’s continuum (Figure 3.4), and toward an integrated understanding of gesture as language. She argues that if we assess gesture “like we assess situated interaction, specifically incorporating a model of discourse that accounts for the layers of interactional work people conduct in face-to-face interaction, we can account for the array of forms and functions that gesture presents in both [spoken and signed] modalities” (p. 6). In this dissertation I align with Shaw’s understanding of gesture; however, in order to determine the efficacy of the gestural interventions I performed in this study, it was necessary to look to Emmorey’s approach for delineating signs and gestures.

The next section discusses research that focuses on the gestures of hearing ASL/FL students, which are not easily comparable to the gestures used by native signers. The reviewed studies examine how hearing students put their gestural knowledge to use as they learn to sign.
3.5 The Intersection of Gesture and Sign in ASL/FL Students

As mentioned previously, there are few studies that explicitly focus on gesture use in ASL/FL students; below are two studies that warrant consideration. The first study, by Casey, Emmorey, and Larrabee (2012), examined how students’ co-speech gesture is affected by learning ASL. The second, by Schembri, Jones, and Burnham (2005), found significant similarities between the signs used by ASL signers and the gestures used by hearing non-signers.

Casey et al. (2012), investigated whether co-speech gesture increased after one year of academic instruction in a second language, hypothesizing that adult ASL students would show a much higher level of increased gesture compared to learners of spoken languages. Rather than relying solely on elicitation tasks, they began data collection by distributing questionnaires to learners of ASL, French, Spanish and Italian during the last week of class. The survey results confirmed anecdotal reports that learners of ASL perceive an increase in their gestures after beginning to learn ASL. This was followed by a longitudinal study of 41 adult participants, each studying a second language for one year at university. Participants were tested as they began their language course, and then again at the end of the academic year. Gestures were coded for the properties of type and viewpoint, and the researchers also coded for handshape form and presence of ASL signs. Results showed that ASL students’ rate of gesture was not significantly different from any of the Romance language learners at the beginning of the year, and though their rate increased by the end of the year, it still did not reach a significantly higher rate than the Romance learners. However, ASL learners did produce a wider variety of handshapes,
and a significant increase in their rate of iconic gestures was noted, indicating that the process of learning ASL does have an effect on gesture form.

The second study (Schembri et al., 2005) is not about ASL/FL students specifically, but about similarities in gesture use between ASL users and hearing, non-signers. The findings, I argue, apply to the demographic I am investigating, i.e., beginner adult ASL students. Schembri et al. (2005) measured the similarities in properties between sign and gesture produced across three groups: Australian Sign Language users, Taiwan Sign Language users, and hearing non-signers. Results showed that while responses for handshape differed the most, “in movement and location components, the hearing participants produced responses that matched the responses from Australian signers and the ASL targets in over 70% of all task items” (Schembri et al., 2005, p. 279). Handshape varied the most, with hearing non-signers producing more hand configurations, whereas hand configurations produced by signers tended to fall into categorical groupings, particularly for size and shape signifiers. This shows that for movement and location, the gesture used by hearing non-signers is already similar to that of signers, even without instruction.

Like Kendon (2004), Schembri et al. view gesture as an integral part of language. They argued that the data they presented demonstrated a need for language scholars to rethink their assumptions about the relationship between gesture and sign. They encouraged researchers to “seek further evidence of the extent to which movement and location…may be grammaticalized gestures or whether they involve blends of linguistic and gestural elements” (p. 287). This stance is also reflected in an earlier section of this chapter (section 3.2).
The studies considered above demonstrated that ASL/FL students produce a wider variety of handshapes and more iconic gestures than Romance language learners, and that hearing non-signers use gestures that are similar to signers—even without ASL instruction. The following section addresses how gesture might be used as a way to help new ASL/FL students learn to sign.

3.6 Gesture as a Means to Learn Sign

ASL/FL students’ first exposure to gesture happens long before they enter an ASL classroom. Gesture is something that speakers produce from the time they are children (Church & Goldin-Meadow, 1986; Jancovic et al., 1975), emerging even before language (Acredolo & Goodwyn, 1988). Gestures are produced by speakers from all cultural backgrounds, and do not require a model or an observer (Iverson and Goldin-Meadow, 1998) for production.

Looking at ASL students specifically, McIntire and Reilly (1988) found that pre-existing affective facial expressions can serve as a transition to acquiring grammar in ASL. Students go through a process of re-analysis where previous knowledge of facial expressions is now processed as grammatically meaningful. Expressions that were processed tacitly are now explicitly analyzed for their grammatical function—for example an eyebrow raise can indicate a question (Figure 2.2) or the introduction of a new topic, or it may function as part of a conditional clause marker.

Gestural abilities in a learner’s spoken first language may transfer into the acquisition of spatial features of a sign language (Woll, 2013). Taub et al. (2008) question whether it is possible to use learners pre-existing co-speech gestures—their
visual-spatial knowledge—as way to facilitate the acquisition of the use of space in ASL. They found evidence of skill transfer from gesture to ASL for the use of third-person discourse and the development of location variables. They conclude that examining gesture as a point of linguistic transfer may be useful in predicting sign language acquisition aptitude and in developing teaching strategies that make use of learners’ visual-spatial skills. The use of gesture as a means for teaching ASL can be helpful in having new learners become comfortable signing with deaf teachers, peers, and community members because, as McClave (2001) points out, gesture “is that part of thought that is most accessible to deaf observers of hearing conversations” (p. 52).

Eastman (1989) encourages the use of both gesture and mime as a way for sign language students to engage their visual-spatial faculties and practice using three-dimensional space to communicate meaningful actions, objects, and feelings without speaking and without any signs. Eastman describes gesture, mime, and facial expression as the fundamentals of ASL, and explores how students can use their face, hands, and body to convey messages. By the time the reader is introduced to signs, they already have a sense of how handshape, movement, and space contribute to the creation of meaning. Eastman’s (1989) type of explicit information about how gestures can be used to facilitate ASL learning seems to be the exception, not the rule in ASL/FL literature. Similarly, little is included in ASL/FL curricula about how or why gesture is used in ASL learning or the differences/similarities between sign language and gesture.

From a certain perspective, the use of gesture in teaching and learning in ASL has aspects in common with translanguaging. Leung and Valdés (2019) point out that translanguaging is a multifaceted and multilayered term, and that language itself can be
thought of “as a series of social practices and actions” (p. 358). Repertoire is the term we now use to describe all of the means of communication “that people know how to use and why while they communicate” (Blommeart & Backus, 2013, p. 11). Hearing students can draw on a pool of linguistic resources (gestures) from their first language that are neither spoken nor written to support their learning of ASL—a kind of translingual effect—and can creatively combine gestural resources from their first language with ASL. As part of their full linguistic repertoire, adult hearing students also have access to spoken English which, for students in the context of this study, is the medium of instruction used in most of their non-ASL classes. The use of English in the ASL classroom is not the focus of my dissertation, but (as discussed in Chapter One, section 1.3) it is an important—and controversial—issue in ASL pedagogy. This is discussed further in the conclusion of this dissertation, Chapter Seven.

3.7 Chapter Summary

In this chapter I reviewed literature from the area of sign-gesture research, specifically: iconic and depicting signs, how signs and gestures blend, the gesture-sign relationship, the intersection of gesture and sign in ASL/FL learning. As the literature suggested, the amount of research devoted to gesture in sign language is small, but it is beginning to grow. Likewise, ASL pedagogy is beginning to receive more research attention, for example as in The Routledge Handbook of Sign Language Pedagogy (Rosen, 2020). Not as much energy needs to be continually devoted to proving that ASL is more than ‘just gesture’, where gesture is no more than “random, whimsical movements of the hands, face, and body” (McClave, 2001, p. 51). Gestures are used all the time by both speakers and signers, as exemplified throughout this literature review.
Gestures may become increasingly systematized and develop into lexical items or grammatical functions. They may be used ad-hoc to add information or provide a richer visual description. In whatever way gestures are used, they are a consistent presence in ASL. Arguably, teachers should be aware of this and design instruction that introduces, explains, and encourages appropriate gesture use so that students are prepared to engage with signers in real contexts (McKee, Rosen, & McKee, 2014).

The next chapter presents the theoretical background upon which the present research was based. It includes an analysis of two theoretical perspectives on gesture; those put forward by David McNeill (1985, 1987, 1989, 1992, 2000, 2005) and Adam Kendon (1994, 1997, 2000, 2004, 2008, 2017). The chapter also describes four theories of second language acquisition that informed the development of the gesture interventions used in the study that addressed the research questions which were the focus of this dissertation. A full description of the research design is provided in Chapter Five, Methodology.
4. Chapter Four: Theoretical Framework

The literature review provided in Chapter Three looked at some specific ways that gesture and sign language research have been combined. For example, the commonalities between spoken gesture and sign language (Arik, 2009; Emmorey, 1999; Quinto-Pozos & Parrill, 2015; Shaw, 2013) or lexicalization and grammaticalization—the process by which gestures may become part of a codified sign language system (Gerwing & Bavelas, 2004; Haviland, 2014, 2015; Janzen, 2012; Mecca & Lichtig, 2008; Wilcox 2007, 2013) were discussed. Beyond the areas touched on in the literature review, there is also a growing body of research that has investigated gesture in connection with spoken second language acquisition (Gardner 2013; Gullberg, 1998; Gullberg, 2006; Matsumoto & Dobbs 2016). However, in my view the current literature on gesture cannot fully account for the multiple uses of gesture by fluent deaf or hearing signers.

Based on my own review of the literature, I argue that it also fails to adequately address the teaching of gesture to hearing ASL/FL students. Gesture may be mentioned in passing in ASL student resources, but it is not given the same attention as vocabulary learning, sentence structure, or non-manual signals (facial expression). There are currently no established frameworks for examining gesture in ASL as a foreign language. There does not appear to be a body of research that specifically investigates the role of gesture in teaching ASL as a foreign language to hearing adult students, and there are no fully developed theories of second language acquisition that consider gesture as a potential tool for teaching and improving communicative competence in ASL.
In response, this chapter revisits some of the gesture theories and concepts from Chapter Three and expands them in order to flesh out how they can be considered alongside theories of second language acquisition (SLA) to support the current dissertation. Specifically, I look at the following (see Figure 1.3):

- **Gesture Studies** to explain the extent to which gesture can be considered linguistic when used in concert with spoken or signed language. Conceptually I use theories of gestures to define and limit the scope of what I mean by gesture for the purposes of this research. I begin with a gesture studies understanding of gesture, particularly influenced by the work of Adam Kendon (2000; 2004; 2008;). I examine this understanding in relation to some of the sign-gesture research discussed in the literature review in Chapter Three, which in turn informed the development of the gesture interventions used in my own dissertation research.

- Theories of **Second Language Acquisition**, particularly rebuttals to the work of Krashen (1981, 1982), as well as theories by Long (1980, 1981), Swain (1985) and Schmidt (1990, 1994, 2001). These provided theoretical support for the design and implementation of the pedagogical gesture interventions developed for this research (see Chapter Five, section 5.5.1.2 for full details).

- Linguistics theories from **Sign Language Studies**, which I combine with the above throughout this dissertation to suggest ways that gestural integration could be taught or encouraged in ASL/FL students.

In this chapter, I first discuss theories of gesture as they relate to spoken and sign languages, expanding on the work of McNeill (1985, 1992, 2005) and Kendon (1978,
their theories of gesture have been enacted in sign language research, and then use their
theories to explain my own conceptualization of gesture. I then cover four theories of
Second Language Acquisition (SLA) that informed my research of adult ASL/FL
students. This chapter sets up the theoretical groundwork for the Methodology chapter
(Chapter Five, which follows) where I explain how I integrated these theories—
particularly Kendon (2004)—in my own study.

4.1 Theories of Gesture

There are two prominent theorists in gesture studies whose work is most relevant
to this dissertation: McNeill and Kendon. Their theories of gesture were briefly discussed
in Chapter Three. While McNeill (1985, 1992, 2005) provided me with deeper insight
into the psycholinguistic functions of gesture in relation to speech, they ultimately did not
reflect what I was seeing in either my own or my students’ use of gesture in ASL. In
contrast, Kendon’s (2004, 2008, 2014) investigations into the similarities between sign
and gesture more closely aligned with my own experiences. Kendon’s (2004) work was
particularly formative in my approach to analyzing student gestures, as described in
Chapter Five.

4.1.1 McNeill

In 1985, McNeill presented a paper outlining how speech synthesizes with
gestures to form a single speech-gesture system. This presented a challenge to the
dominant idea at the time, namely, that gestures were non-verbal (Ekman & Friesen,
1969), unrelated to language, and fundamentally different from speech (Feyereisen,
1987). McNeill’s early discussions of gesture demonstrated the value in studying gesture to both linguists and psychologists and paved the way for future gesture research in areas like cognitive research and psycholinguistics (Müller, 2018). McNeill (1985) argued that gesture and speech are part of the same computational stage and develop together as psychological performances—they are not part of two separate systems.

One of McNeill’s fundamental contributions to gesture theory is that of the growth point (2005, 2008): the nascent unit of an idea, made up of a dialectical opposition between image and language content. When discussing gesture-speech integration McNeill (2005) refers to this as gesture for thinking; while people are speaking, the categorical differences between gesture and speech drive thinking forward. This way of looking at gesture is “contrary to the assumptions of many linguistic analyses that hold that language structures should be analyzed only in terms of speech sounds plus grammar” (McNeill, 1985, p. 350). McNeill (1985) describes gestures as being above symbols in the Saussurian sense; they are “analyzable as paired signifiers and signifieds” (p. 352). Language, McNeill (2005) posits, is an imagery dialectic, where language is inseparable from imagery and where imagery is embodied as gestures. Gestures, when they are created by speakers, are co-expressive rather than redundant. They express the same underlying idea as speech in a different manner. Based on this understanding, what is linguistic versus non-linguistic is a cultural artefact and an arbitrary limitation; gestures are as much as part of language as are words.

McNeill separates idiosyncratic spontaneous gestures (e.g., hand movements while telling a story) from those that are socially regulated (e.g., head shake, thumbs up) because his interest is only in gestures that are “unwitting accompaniments of speech”
McNeill’s work is specifically aimed at spontaneous gestures precisely because they “are closely linked to speech, yet present meaning in a form fundamentally different from that of speech” (McNeill, 1992, p. 35). He hypothesizes that gesture and language are two opposite modes of thought: instantaneous imagery and temporally extended verbalization. Speech is an integrated process of utterance formation that synthesizes the two modes, and where the utterances that are produced are made up of both imagery and language (McNeill, 1992). As Müller (2018) describes it, “what McNeill is interested in are the insights into ‘imagistic’ forms of thought that only the individual spontaneously created gestures can offer” (p. 7).

These spontaneous gestures are classified into four categories: iconic, metaphoric, deictic, and beat, each occurring in conjunction with a specific type of speech (McNeill, 1992; 2005). Each of these is described in turn below. I should note that McNeill’s definition of iconicity differs from the sign language definition, and that I return to a sign language understanding of iconic (as explained in Chapter Three) in the remainder of the dissertation.

McNeill’s (1985) iconic gestures occur alongside utterances that depict concrete objects and events. McNeill (1985) defines an iconic gesture as one that “in form and manner of execution exhibits a meaning relevant to the simultaneously expressed linguistic meaning” (p. 354). Unlike iconic signs (described in Chapter Three), McNeill’s iconic gesture does not necessarily look like the object; instead, it fulfills a narrative function and exhibits a meaning relevant to the utterance by presenting an image of the signified part. McNeill (1985) gives the example of participants describing a story character going up a pipe. He explains how in all retellings of the story, participants use
iconic gestures where, even though the versions of the gesture were different, they all involved upward motion signifying the concept of upward movement. The upward motion gesture co-occurs with the narrative part of the story.

Other types of gesture are classified as metaphorical. Metaphoric gestures occur when the linguistic meaning is indirect, and the concept(s) represented are abstract. These gestures co-occur with utterances that refer to the structure of the discourse. For example, McNeill (2005) discusses the conduit metaphorical gesture of an open cup shape: palms forward, hands cupped but with fingers spread and slightly curled, hands held apart, as if offering something (Figure 4.1). The form of the gesture (the position and shape of the hands) appears iconic but what is being held is abstract—an idea, a situation, or a memory. The gesture has an iconic form with a metaphoric component.

Deictic (pointing) gestures are those that use body parts to locate or refer to entities or actions in space by setting up a reference point. This is often the outstretched first finger of the hand, but could also be the whole hand, the head, or even the eyes. The speaker-gesturer points to areas that are temporarily set up to refer to spatial or non-spatial meaning. Deixis can be used to metaphorically divide the space in front of the speaker to display concepts such as morality—good guys in the centre, bad guys on the left. Deixis can also be used to set up different loci for different ideas—something that is difficult might be placed directly in front of the speaker, with a specific instance of that difficult thing placed further out (McNeill, 2005).

In contrast to iconic, metaphorical, and deictic gestures (which are imagistic or referential), McNeill (1992, 2005) describes beats. Beat gestures do not exhibit meaning
Metaphoric Offering Gesture

iconically. They are small simple movements performed quickly and often in repetition at or near the resting position of the hands (McNeill, 1985). Beats have no propositional content of their own but are “particularly appropriate for emphasizing discourse-oriented function where the importance of a linguistic item arises, not from its own propositional content, but from its relation to other linguistic items” (McNeill, 1985, p. 359). Beats may be produced with either the dominant or non-dominant hand, while referential gestures are made with the dominant hand. Beats indicate that “the material they accompany is not part of the story line…[they] should occur at points of significant discontinuity in the discourse structure” (McNeill, 1985, p. 359). In McNeill’s division of
gestural types, beats “occupy the end of the progression of gesture types that are increasingly alienated from the primary function of the hand for object manipulation” (p. 360).

McNeill is a foundational scholar whose work is cited throughout cognitive and psycholinguistic gestural research. Still, because McNeill’s focus is on speech-linked gesticulations, his theories were not as influential in the present dissertation. Kendon’s theories, many of which happen in conversation with McNeill’s work (and which I turn to next), are more compatible with the direction of my study.

4.1.2 Kendon

Kendon (1988, 1994, 1997, 2000, 2001, 2004, 2008, 2013) offers a different approach to gesture. In McNeill’s conceptualization, gestures “serve to make manifest dimensions of meaning that are beyond the speaker’s verbal capacities at the time of speaking, or they may serve as auxiliaries in the effort of verbal expression” (Kendon, 2001, p. 192). This gives the impression that gestures are “manifestations of a current failure or a current inadequacy in the process of verbalization” (Kendon, 2001, p. 192). Kendon (1988) argues that gesture is so closely integrated with speech that it needs to be considered part of the utterance.

Whatever the form of gesture—be it iconic and concrete or metaphoric and abstract—it is “fully organized at the outset of the speech units with which it is associated” (Kendon, 1988, p. 132). This is evidenced by the fact that gestures temporally align with speech (Kendon, 1980). What this suggests is that the content of an utterance exists not solely in a language-like format (speech) but is stored in configurational structures that allow speakers to choose which gestures are used and how those gestures
relate to speech. Gesture and speech—the manual and the vocal—are two modalities on a continuum of communicative behaviour. This provides the speaker with the flexibility necessary to shape the resources of expression they choose to use in ways that align with how they interpret a particular communicative situation (Kendon, 1988).

For the discourse viewer, the differences between speech, gesture, and other movements are obvious. People can reliably distinguish gestures from speech, even without hearing what is being said (Kendon, 1978). Viewers can separate deliberate, conscious, and intentional movement from posture and orientation shifts, incidental movement, and object manipulation. Gestures are those actions that are deliberate expressive movements (Kendon, 2004, p. 15), that can be used in an utterance in different ways and take different forms (Kendon, 1988).

There are speech-linked gestures, which can occur in at least two ways: (1) Within a linguistically complete sentence where the gesture adds to the total meaning. If you remove the gesture the sentence is still complete, but the gesture adds meaning. (2) In other cases, a gesture can occur in alternation with speech. When this occurs, what is spoken is linguistically incomplete and without the gesture we cannot make sense of what is said. In both instances, the gesture itself is not analyzable as a direct replacement for a word; the gesture is dependent on the meaning of the associated words—it is linked to speech.

However, gestures, in Kendon’s conceptualization, can also become like words. These are often called emblems (Ekman & Friesen, 1969). Gestures are considered emblems when they are produced using standardized forms and when their meanings are more abstract and general than speech-linked gestures. Emblems are used not as part of a
sentence, but as a stand-alone speech act. For example, someone may give the *thumbs up* emblem as a response to an invitation like “Let’s go have a drink” (Kendon, 1988). The gesture is not a replacement for a single word like “Yes”, or “Good”, but can be used to accomplish a variety of interactional moves, depending on where in the interaction it occurs (Kendon, 1988).

When gesture is used as the sole form of utterance, *kinesic codes* (i.e., codefied or systematized body movements) begin to develop. This may begin as pantomime, where the gesturer is telling a story or conveying a narrative line. In pantomime, the viewer and the gesturer need to establish a shared context for the gestures to be understood. For example, when asked to retell fairy tales using only gesture, participants will improvise a vocabulary of gesture with stable meanings (DuFour, 1992 (cited in Kendon, 2004); Kendon, 2004). In studies of deaf children born to hearing parents, or studies of isolated deaf individuals, gestural repertoires become more elaborate, but also remain restricted because of a lack of contact with other signers; only when there is a community of signers do gestures develop into a shared system and finally a language (Kendon, 2004).

Amongst some communities, the system that develops is classified as an alternate sign language rather than a primary one. Alternate sign languages are “highly elaborate kinesic codes” (Kendon, 2004, p. 284) that have a more direct relationship to spoken language, and which are often used in situations where speech is impossible (such as the signs and hand signals used by crane operators or sawmill workers) or socially unacceptable (monastic sign language). Primary sign languages are those used by the deaf and which are developed within deaf communities. In primary sign languages, elements like space, facial expression, body posture, gaze, and movement are all geared
toward non-specialized communication in such a way that the signs are used as the sole form of utterance. Kendon (2004), citing Washabaugh (1986), explains that in the case of sign language, situations where there are high levels of isolation, lack of contact between signers, and lack of a sense of community and identity means that there is no incentive to develop a linguistic system. In other cases, where there is another form of language available (as in the case of hearing speakers), existing gestures will not develop into something more complex, and will remain simply as tools that help fulfill basic communicative needs.

Kendon’s gestural descriptions were interpreted by McNeill (1992, 2005) as a continuum (Figure 3.4), ranging from gesticulations on one end to sign languages on the other. On McNeill’s gesture continuum, manual action (gesture) is different and distinct from a sign. The continuum begins with gesticulations at the far left, followed by speech-linked gestures, emblems, pantomime, and ending with signs on the far right. The continuum is made up of four separate continua, each of which describe how the types of gesture on the continuum differ in (1) Their relationship to speech, (2) Their relationship to linguistic properties, (3) Their relationship to conventions, and (4) Their character of semiosis.

Along each of the four continua gesticulation and sign are established in opposition to one another. Gesticulations must co-occur with speech, are devoid of linguistic properties, are not conventionalized, and are global (the meaning of the parts is determined by the whole) and synthetic or holistic (meanings from across the sentence are condensed into a single gesticulation). Gestures, for McNeill, are those singular (spontaneous) gestures (what Kendon refers to as gesticulation) that sit at the leftmost
side of the continuum (McNeill, 1992). While McNeill argues that gestures are verbal (McNeill, 1985; 1987), his view of gesture is one that maintains the boundaries between gesture and language (and therefore between gesture and sign) and underscores differences (Müller, 2018).

Kendon (2008), notes several problems in McNeill’s approach to gesture. While the continuum is a useful tool for describing differences across the upper limits of gestural systems—as they proceed to become increasingly language-like—Kendon (2008) points out that this can only mean that gestures are fundamentally different from signs. Instead, Kendon focuses on similarities, challenging the opposition between gesture and sign, and arguing for a gradient of gestural phenomena and features that are “integral to the very working of the system as a language” (Kendon, 2008, p. 351). There is no “sharp dividing line” (Kendon, 1988, p. 134) between spontaneous gestures, conventionalized emblems, and the signs in a sign language (Kendon, 1988).

Kendon (2004) clarified that what he was attempting to do with the original descriptions (the ones that McNeill developed into the categorical continuum) was to show how gesture can assume different properties depending on the communicative demands placed on it. Gestures express different types of meaning depending on the context in which they occur, with circumstances promoting the prevalence of one form over another. For example, representational gestures (including pointing gestures) contribute to the prepositional content of an utterance; they represent or refer to an aspect of what is being talked about (Kendon, 2004).

Gestures can also fulfill pragmatic functions: they may be performative, modal, or parsing. Kendon (2004) gives the example of how an open hand, palm down, moved in a
decisive lateral manner (Figure 4.2) can be understood as a gesture of rejection or denial—a *performative* gesture. The same gesture can be used to intensify a negative, making it *modal*. Or it can mark the end of an argument or line of thought, making it a *parsing* gesture. The same gesture form can have different functional meanings in different contexts (Kendon, 2004; Müller, 2014). Utterance uses of visible bodily action “include uses that can be regarded as lexical and others that are not” (Kendon, 2008, p. 359). Some gesturing then becomes labelled as signing, but gesture is not the opposite of sign.

When analysing gesture, Kendon (2004) divides gestures into units and phrases. A gesture unit is comprised of the entire process of gesture production and can be broken down into three phases: preparation, stroke, and recovery. During the preparation phase, the gesture articulators move from a position of rest and into the region of space or

**Figure 4.2**

*Open Hand, Palm Down, Lateral Movement Gesture*
position on the body where the gesture will be performed. If the gesturer is using their hands as the articulator, then it is at the apex of that movement (the point at which the hands are furthest away from the resting position) that the stroke occurs. This is when the hand takes on a more defined hand shape and performs a specific movement. Sometimes the stroke is followed by a post-stroke hold (Kita, 1993) that prolongs the expression of the gesture. The stroke and post-stroke hold are what Kendon (2004) identifies as the nucleus of a gesture. This nucleus is what the viewer would identify as carrying the meaning of the gesture. After completion of the stroke (and post-stroke hold, if used) the articulator moves back to its place of rest, completing the gesture unit. This can be described more clearly with an example.

Imagine a person sitting in a chair and describing a friend who has a streak of white that runs through their hair (Figure 4.3). The speaker’s hands are resting in their lap. When the speaker describes how the streak of white runs through their friend’s hair, they bring their hand up towards the side of their head (preparation phase). As their hand reaches the side of their head, the hand shape changes so that their index finger is extended. They then use their index finger to trace a line along the side of their head, moving from front to back (gesture stroke). The speaker pauses, holding their index finger near the back of their head (post stroke hold), the hand shape then loses the distinct pointed index finger shape as the speaker lowers their hand back to their lap (recovery).
Figure 4.3

Gesture Phases Showing Where a White Streak Runs Through Hair
While the entire gesture unit is made up of preparation, stroke, post-stroke hold, and recovery, the gesture phrase is a smaller unit made up of the preparation, stroke, and post-stroke hold. Several gesture phrases can occur one after another with no recovery between them, or with no preparation stage between one stroke and the next.

Kendon (2004) examines how each stage of the gesture unit relates to speech and how speech and gesture together form semantically coherent combined expressions. The timing of gesture strokes coincides with speech in a way that can only occur if they are planned for together. Gestures are not a consequence of speech but an integral component of the utterance.

The conceptual framework for this research is based firstly on Kendon’s premise that while spoken and signed languages appear quite different if we compare them side by side, we find that there is much common ground shared between the expressive strategies employed by speakers when organizing their co-speech gesture and the expressive strategies used in sign language discourse. The kinesic actions used by speakers and those used by signers are “cut from the same cloth” (Kendon, 2004, p. 324). For example, both speakers and signers incorporate spatial inflection with deictic gestures and employ similar strategies of expression when organizing the gestural components of their utterances (Kendon, 2004). “Where kinesic action cannot be or is not conjoined with speech then it will be put to additional uses—a lexicon will have to be created, for example—but we are still dealing with something that is in the same family of communication systems” (Kendon, 2004, p. 324). Adult ASL students already have the ability to communicate meaning through gesture; in other words, “both deaf signers and hearing speakers use ‘gesture’ a great deal, but the forms and functions of these
utterance actions are diverse and receive different kinds of elaborations and work in somewhat different ways” (Kendon, 2008, p. 360).

4.1.3 Enacting McNeill and Kendon in Sign Language Studies

McNeill’s view of gesture has been broadly enacted in gesture-sign studies as a discontinuity approach. It is present in examinations that focus on differences between what makes something linguistic and what makes something gestural. This approach can be found in studies by Kegl (2008), Singleton et al. (1995) and more recently in Goldin-Meadow and Brentari (2017). In the latter, the authors take a formalist approach to language, concluding that signers communicate like speakers do—using categorical linguistic forms (signs), as well as imagistic gestures. They look for criteria that allow them to differentiate language from gesture, arguing that it is important to distinguish between linguistic and gesture forms and to establish a critical divide between the two in order to be able to make predictions about learning (Goldin-Meadow & Brentari, 2017). They write that “we should not be comparing all of the movements signers make to speech, simply because some of those movements have the potential to be gestures” (p. 2). This emphasizes that they are taking a McNeillian view of gesture, where gesture is different or separate from speech or signs.

Looking at what they term “silent gestures” (Goldin-Meadow & Brentari, 2017, p. 9) (gestures produced without speech), Goldin-Meadow & Brentari (2017) argue that there is a qualitative difference between gestures produced along with speech and gestures that are produced without it. Gestures that are produced by hearing individuals without speech instantly begin to take on linguistic properties and to resemble signs; thus, they might be more appropriately labelled as ‘spontaneous sign’ rather than gesture.
Goldin-Meadow and Brentari claim that the qualitative differences and the instantaneous shift that occur in silent gestures provide support for a categorical divide between gesture and sign. However, their actual perspective on the relationship between sign and gesture is unclear, and they later state that silent gestures lack the properties of conventional sign, or even of home sign (described in Chapter Two).

Occhino and Wilcox (2017) note that Goldin-Meadow and Brentari present a view of language where “there is a clear dichotomy between categorical, discrete, countable, invariable, and stable on the one hand (i.e., language), and gradient, uncountable, variable, and idiosyncratic on the other (i.e., gesture)” (Occhino & Wilcox, 2017, p. 36), asserting that “this dichotomy is too simplistic to describe gesture” (p. 36). Kendon, (2017) also notes a lack of clarity in how the authors employ the term gesture, pointing out that they use and define it in several different ways. Hall (2017) suspects that this lack of clarity “stems from a tension between wanting to delineate what is gestural from what is linguistic in the face of a reality in which the lines between language and gesture are often blurry” (p.29). Being able to distinguish gesture from language is not as important as understanding the process of how gesture becomes language, or even how the silent gesture of hearing people may influence a developing sign system (Hall, 2017). A process-oriented view of gesture, says Hall (2017), “need not undercut the key insight that the manual modality contains more than one semiotic mode. But it does free us up to worry less about precisely where to draw the line” (p. 29).

Based on all of the above, in Chapter Five (Methodology) I provide a detailed explanation of the specific definition of gesture used in this dissertation’s research design.
Now that theories of gesture have been explored, I examine theories of second language acquisition that shaped my thinking about the linguistic development of students in the ASL/FL classroom and that contributed to how I designed the interventions.

4.2 Theories of Second Language Acquisition

Since (as noted in Chapter One) there is a lack of empirical research into ASL pedagogy in relation to adult foreign language students, this study relied on theories of second language acquisition that originated in the teaching of spoken languages. My thinking about ASL teaching and learning as it relates to this study was shaped by four theories: comprehensible input, the interaction hypothesis, comprehensible output, and the noticing hypothesis. These theories are briefly described below and are then revisited in Chapter Five (Methodology) where I describe how they were applied in the development of the gesture interventions.

4.2.1 Comprehensible Input

Krashen’s (1981, 1982, 1985) Input Hypothesis is one of five hypotheses that together make up his Monitor Model (Krashen’s overall theory of SLA). It is important to note that Krashen’s model of SLA rests on the distinction between acquisition and learning, and his theories have been challenged in the SLA literature (McLaughlin, 1987). For Krashen, acquisition and learning are two separate things, and they result in different types of linguistic knowledge. According to this theory, genuine learning occurs only through acquisition, which is a subconscious process that follows a natural language acquisition order, independent of any explicitly taught rules or the order in which rules
may be taught. Language learning, on the other hand, is conscious and results in meta-
linguistic knowledge—knowing about the language. The input hypothesis is only related
to acquisition.

Under the Input Hypothesis, input is the primary driver of language acquisition.
Without input, nothing can happen. This input also needs to be comprehensible.
Comprehensible refers specifically to input that contains language structures that are just
a little bit beyond the learner’s own current competence, or i + 1. Simplified language, as
provided by a sympathetic native speaker or instructor, provides all the necessary
contextual and extra-linguistic clues that allow that next level of input to be
comprehensible without explicitly teaching the next grammatical structure (Krashen,
1985).

Input does not need to aim to be i + 1; if communication is successful then i + 1 is
automatic. If the learner is placed in a low-anxiety situation and provided with
comprehensible input that they want to engage with and are ready to hear, then speaking
(or language production) subsequently emerges naturally as a result of acquisition.
Conscious learning has little impact on language production, other than to act as a
language editor (Krashen, 1982) during times when the learner is both aware of the rule
and consciously concerned with correctness (Krashen, 1985).

One of the main criticisms levied against Krashen’s theory is whether input alone
is enough to account for how learners themselves correct, adjust, and experiment with
new forms of the language (McLaughlin, 1987). SLA theories developed since Krashen
assert that learners need access to more than input. For example, learners need
opportunities to try out the language in a variety of communicative situations with
differing linguistic demands in order for them to attain communicative competence.

Krashen’s (1998) response to these subsequent hypotheses (specifically the Comprehensible Output Hypothesis or the Interaction Hypothesis) is that output produced during interaction does not contribute to acquisition. Krashen contends that at most interaction “can be a good source of comprehensible input” (Krashen, 1998, p. 180) in situations where it assists the interlocutor in making input more comprehensible. He also argues that comprehensible output is too scarce to contribute to competence and that there is a lack of evidence that comprehensible output actually leads to acquisition. Moreover, Krashen claims that high levels of linguistic competence are possible without comprehensible output.

4.2.2 Interaction Hypothesis

While comprehensible input is necessary for second language acquisition, other theorists have argued that input alone is not sufficient to promote acquisition. Long (1980, 1996), following the work of Wagner-Gough & Hatch (1975) proposes that the interactional structure of conversation between speakers may play a role in second language learning.

Input supplies learners with linguistic forms to use, but it is through interaction—particularly the negotiation of meaning—that linguistic forms are able to perform functions “such as expansion, repetition, and clarification” (Long, 1981, p. 259). These interactions and negotiations take different forms depending on whether the conversation is between two native speakers (NS), or a native speaker (NS) and a non-native speaker (NNS) (Long, 1983). In the case of NS-NNS conversations Long (1983) claims that they show greater interactional modifications and simplifications. However, inquiry into the
interaction hypothesis has also examined the contribution of NNS-NNS conversations to the learning process.

The interaction hypothesis argues that “conversation is not only a medium of practice, but also the means by which learning takes place. In other words, conversational interaction in a second language forms the basis for the development of language rather than being only a medium for practice” (Gass, 2003, p. 234). Participants in Gass’ (2003) study had regular conversational practice time with their instructor and peers. During this time, they negotiated meaning using both signs and gestures, forming composite utterances and finding out what they and their peers could understand. When a negotiation is successful the learner gleans information about their utterances.

Interactions simultaneously provide the learner with input, feedback, and the opportunity to produce modified output, all of which are “conditions considered theoretically important to SLA” (Gass et al., 1998, p. 299). This does not mean that interaction is the direct cause of acquisition, but that interaction may serve as a priming device (Gass, 1997) that prepares the learner for future language use and potential learning. Interaction serves language acquisition by facilitating attention to form in conversation and during negotiation of meaning (Long, 1996).

4.2.3 Comprehensible Output and pushed output

Swain (1985) observed,

While comprehensible input and the concomitant emphasis on interaction in which meaning is negotiated is essential, its impact on grammatical development has been overstated. The role of these interactional exchanges in second language acquisition may have as much to do with “comprehensible output” as it as to do with comprehensible input. (p. 236).
The Output Hypothesis acts as a complement to both Krashen’s (1981, 1985) input hypothesis as well as Long’s (1981, 1986) interactionist view of SLA as in the Interaction Hypothesis.

After observing the outcomes of French immersion programs in Canada, Swain (1985) noted that while the learners were exposed to high amounts of comprehensible input, they still lacked target-like language abilities even after years within an immersion program. Swain proposed that what was missing were opportunities for the learners to use the target language. The case for pushed output argues that learners in situations where they are exposed to rich comprehensible input will still “fail to develop more marked grammatical distinctions…and full sociolinguistic competence” (Ellis, 2016, p. 261). This is because it is through producing the second language, as opposed to only taking it in, that learners may notice and become aware of linguistic problems.

Output requires learners to pay attention to language form and focusing on form may push learners to modify their output. Pushed output, in Swain’s (1995) proposal, encourages language learners to move from top-down (semantic) to bottom-up (syntactic) processing. Pushed output can be triggered by the learner themselves if they are engaged in tasks that encourage them to explain their language use, or by an external source of feedback such as an instructor.

Pushed output may also spring from the need to communicate while engaged in a language task, particularly one where the learner’s typical linguistic conservatism, which may be more accurate but less demanding (Skehan, 1998), no longer works to get their meaning across. A communication breakdown can encourage form restructuring where the learner is able to test hypotheses about the language.
4.2.4 The Noticing Hypothesis

Schmidt (1990) uses the notion of consciousness to tie together “such related concepts as attention, short term memory, control vs. automatic processing, and serial vs. parallel processing” (p. 131). For Schmidt, “conscious processing in a necessary condition for one step in the language learning process and is facilitative for other aspects of learning” (p. 131). Schmidt’s discussion of consciousness (1990) is an interesting one, pertinent to any language classroom. While Krashen identifies true learning as the subconscious acquisition of language through input, it could be argued that by the very state of being in a classroom (which, in the case of post-secondary students most learners have actively chosen to be in) learners are primed to focus attention (notice, be conscious of) the language used in the classroom. They arrive with notebooks, sit in places where they can see and attend to information, and ask questions when information is unclear. There is an intention to learn, and effort is put forth in the process.

For Schmidt, noticing (at the level of awareness) is necessary for input to become intake. Where Krashen seems to consider input synonymously with intake, Schmidt (1990) defines intake as “that part of the input that the learner notices” (p. 139). This noticing occurs through a variety of mechanisms such as alertness, orientation, preconscious registration and selection that together are dubbed attention. In Schmidt’s (2001) view, this attended learning “is far superior, and for all practical purposes, attention is necessary for all aspect of language learning” (p. 2). Schmidt works under the hypothesis that “SLA is largely driven by what learners pay attention to and notice in target language input and what they understand the significance of noticed input to be” (p. 3).
Schmidt is also explicit in separating his use of noticing from metalinguistic awareness. He does this by “assuming that the objects of attention and noticing are elements of the surface structure of utterances in the input, instances of language, rather than any abstract rules or principles of which such instances may be exemplars” (p. 4). While there is no consensus on translanguaging, in general it recognizes that learners engaged in learning a second language use their first language, other languages they know (in full or part), and other modes of meaning making—their entire linguistic repertoire. Translanguaging can be promoted through intentional pedagogical decisions that benefit additional language learning (Cenoz & Gorter, 2017) by normalizing bilingualism without diglossic functional separation (Creese & Blackledge, 2015). In other words, by paying attention to the first language as a resource in learning the additional language.

4.3 Chapter Summary

This chapter unpacked theories of gesture and second language acquisition, some of which were introduced in Chapter Three, and all of which will be revisited in Chapter Five in the context of the present dissertation’s research design. In this chapter, I described McNeill’s and Kendon’s theories of the ways that gesture interacts with speech and sign. Both bodies of work are influential in gesture studies, but ultimately, I take a Kendonian approach to the definition of gesture and how it functions within ASL discourse. I also described four theories of second language acquisition, all of which played a role in shaping how the gesture interventions that were developed for this study were designed and delivered.
The following chapter (Chapter Five: Methodology) provides more detail on the dissertation research, which addressed whether explicit instruction on the uses of gesture in ASL resulted in students who used more gesture and who were better able to articulate the uses and functions of gesture in ASL. Chapter Five describes the study’s design, the development and use of the gesture intervention videos that were the focus of this dissertation research and examines their impact in ASL classes of hearing, adult ASL/FL university students. It also explains how data were collected, and how gestures were coded and analysed.
5. Chapter Five: Methodology and Methods

Based on my review of the existing literature (Chapter Three) and an overview of theory (Chapter Four), I conducted this qualitative, classroom-based study using an exploratory research design (Cresswell, 2014) and a mixed-methods approach that involved quantitizing qualitative data. I applied an intervention model to two university-level ASL/FL classes to investigate the impact of the use of gesture in teaching ASL to hearing, adult university students. As per Chapter Three, to the best of my knowledge, this topic has never been investigated in any systematic way. My research objective was to explore what occurs when a systematic and controlled gestural intervention is applied to a class of hearing ASL university students, studying ASL as a foreign language (FL), guided by the following research questions:

- What qualitative differences in gesture knowledge could be found in students who are exposed to gestural interventions that use explicit instruction compared to those who receive implicit instruction?
- What quantifiable differences (such as number of gestures, time spent gesturing, and total time spent signing) might exist between the two groups?

As will be discussed in Chapter Six (Results and Discussion) the analysis of the collected data showed significant differences between the two groups, suggesting that instructors can help students blend appropriate gesture use into their signing at an early stage of acquisition. The findings of this study could be valuable for both hearing and d/Deaf instructors of hearing ASL students, particularly those who are interested in using, or who currently use, gestural practices in their teaching.
This chapter explains how the theories and research findings outlined in the theoretical framework and literature review chapters (Chapters Three and Four) were used during the research that is the focus of this dissertation. Where possible, I have provided images and examples that contextualize and make clear how the data were analyzed.

Ethics approval for this study was granted by the Research Ethics Board of Carleton University in October 2017 (clearance #107772). Informed consent was obtained from all participants.

I begin this chapter by providing a description of gesture and sign as they are defined in this study. I then explain my methodological approach, the procedures that were followed, and the analyses that I performed on the collected data.

5.1 Background: Defining Signs and Gestures

Like Kendon (2004), I maintain that gesture and sign are two different labels applied to communicative acts involving the body and that signs and gestures both have important parts to play. I want students to recognize that there is a fluidity to sign language as it exists in real world language practices and to be able to understand and begin to use signs and gestures the way they are used functionally amongst signers in a socially shared communicative setting (Müller, 2018).

The precise line between gesture and sign is not my primary concern, but in this study I do make a distinction between signs and gestures—not because I believe them to be easily separated categorical items, but to determine if it was possible to encourage more gesture use in hearing ASL students, and to see if students could be guided towards
understanding gesture as a regularly occurring part of sign language. This dissertation takes a Kendonian view regarding gesture and sign language: In sign language, gesture is not an add-on but “a component integral to the function of the system” where the function “may vary according to communicative circumstances and speakers’ rhetorical aims” (Kendon, 2008, p. 358).

How gestures relate to signs—and where the line between gesture and sign lies—depends on the definition of gesture one employs (Müller, 2018). The incremental changes along the spectrum between gesture and sign, where differences are gradient rather than categorical, makes it is difficult to pin down precisely when and how a gesture system takes on the characteristics that would allow it to be labelled a sign. Kendon (2008) cautions that the term gesture itself is vague because it continues to be used in different ways. As explained in Chapter Four, for McNeill (2005), gestures are the spontaneous, idiosyncratic, holistically expressive movements that embody mental images that are inseparable from language. However, in other language studies, gesture “seems to be used to mean any sort of expression in signing that can’t be analysed in discrete, categorical terms” (Kendon, 2008, p. 349-350). But then, Kendon himself has used gesture as a catch-all term. As Müller (2018) has pointed out, Kendon uses gesture to refer to sign-like gesture, gesture signs, and other gestures in the system—any “kinesic forms of expression that are utterance dedicated visible actions used as utterances” (p. 4).

My concept of gesture stems from my view of language (strongly influenced by Kendon) where language is multimodal, as well as usage-based and dynamic (Müller, 2018). The totality of what someone expresses is a product of a composite utterance (Enfield, 2009). In spoken language this manifests as both speech and gesture, but also as
vocal intonation and eye-gaze—all of which contribute to the meaning of an utterance. In a sign language, composite utterances contain elements of both gesture and sign that function together. For research purposes, it was necessary to draw a descriptive and usage-based line between signs and gestures to analyze the effects of the interventions. For definitions of sign and gesture I draw on descriptions used by McNeill, Kendon, Mecca and Lichtig (2008) and Emmorey (1999). These were previously discussed in Chapter Three (Literature Review) and Chapter Four (Theoretical Framework). Below, I begin by defining the concept of a sign. I then explain my definition of gesture, and end by describing the gestures and movement types that were not addressed in this study.

5.1.1 Defining Sign

Signs, in this study, were taught to students by their instructor as discrete lexical items. In signed discourse, signs are those items that are recognized as having a definable meaning common amongst members of the signing community. Signs present a particular phonology (Mecca & Lichtig, 2008) that is consistent across signers. Signs are also sensitive to lexical categories, rule ordering and semantics (Emmorey, 1999).

5.1.2 Defining Gesture

As noted in section 5.1 it may be difficult to draw a line between a sign and a gesture, and the term gesture itself can be vague. However, defining a gesture by saying it is not a sign and subsequently labelling anything that is not a sign as a gesture is not systematic enough. For this study, I defined gesture by looking at three ways that gestures manifest in signed discourse: the gesture form and production; the gesture type; and the occurrence or placement of the gesture within a signed sentence. These are described below.
5.1.2.1 Gesture Form and Production. Gestures are other deliberate expressive movements that contribute to the meaning of a signed utterance. The gestures may be produced by any visible body part or combination of parts: the hands and arms, the head, eyes and face, or torso. Some differences between signs and gestures lie in the specifics of how they are produced; gestures display less finger complexity than is generally used in a sign language (Brentari et al, 2012), and hearing gesturers tend to conflate and combine path and manner of movement (Özyürek et al., 2015). These production tendencies are just that—tendencies. The gestures may also take on sign-like properties, or (when used repeatedly within the same stretch of discourse) begin to approximate signs in their production.

5.1.2.2 Gesture types. Gestures may be spontaneous sign-linked (speech-linked) gestures, emblems, or pantomime. They may be representational, including diectic or pointing gestures, or pragmatic (including performative, modal, and parsing gestures). In speech situations gestures can be used to do what words cannot, or to communicate what the speaker cannot verbalize. In sign language, these gestures become another way of communicating manually. In some cases, the gesture may be used to express something the learner does not currently have a sign for, but in others it may replace a sign, or expand on the meaning of a sign and provide a clearer visual description, such as in the case of taking the character viewpoint and acting out what the character did.
5.1.2.3 Gesture occurrence and placement. When and where gestures appear in a signed utterance varies. The signer may use a single gesture to replace a descriptive phrase (Kendon, 1988), or may string a series of gestures together in a longer gestural (pantomimic) expression. Sometimes gestures are used in alternation with signs, in a mixed syntax form. When this happens, gestures are dependent upon the signs that come before and after them. A gesture that occurs in alternation with signs would convey little or no meaning when used alone. Like speech-linked gestures, these gestures are dependant on the associated signs to convey meaning.

5.1.3 Unaddressed Movement and Gesture types

Finally, one gesture type that I did not include are what McNeill calls beats. I did not address these because the mode of language delivery (manual) does not allow that type of gesture to be performed in the same way. Beats (as a form of emphasis) present differently in ASL. The signing itself becomes more rhythmic and emphatic. For example, a speaker may vocalize something like “You must try again!”, while simultaneously tapping the edge of their palm against the table in front of them. A signer would instead slow down each of their signs and produce them with a stronger, more exaggerated movement and a more distinct hold/pause between each sign to achieve the same effect. Examining the equivalent of beats in ASL would be a study on its own. I also ignored posture changes, self touch, and nervous shifts. Instead, I focused on deliberate expressive movement.

It is not easy to determine where a sign ends and a gesture begins, and in many cases it may be more fruitful instead to focus on the versatility of the manual modality or to turn to comparative studies “of the different ways in which bodily action is used in the
construction of utterances, whether this is done by those who combine such actions with speech or by those who do not” (Goldin-Meadow, 2014, p. 358). For example, Müller (2014), followed and expanded on Kendon’s analyses of gesture forms and their context of use. She has shown how linguistic structures may emerge from body movement, conducting research with the aim of moving “towards a grammar of gesture” (p. 146). I want to underscore that theoretically my views on gesture align with Kendon. It is in the practical application of theory for research and teaching purposes that I find it necessary to distinguish between gesture and sign. For this study specifically, it was necessary to separate sign from gesture to determine if the interventions—which had the goal of encouraging students to use more gesture—were successful.

5.2 Methodological Approach

The study presented here is a comparative group study in the tradition of classroom-based research. It is a classic qualitative thematic coding study using an exploratory research design (Cresswell, 2014) and a mixed methods (MM) approach to quantitizing data. A characteristic of mixed methods research (MMR) is methodological eclecticism (Teddlie & Tashakkori, 2010), which allows the researcher to select and implement the most appropriate techniques for investigating the phenomenon of interest.

As is often the case with MM, my philosophical orientation was based in pragmatism (Teddlie & Tashakkori, 2009), and as part of this orientation I relied on abductive reasoning (Morgan, 2007) to draw conclusions. The evidence that can be gathered through classroom research is rarely complete, but with abductive reasoning it is still possible to form hypotheses and make observations using the available data.
Pragmatism also allows for the sequential combining of quantitative and qualitative methods (Morgan, 2007). MM allowed me to work with intact groups of learners, establish their overall comparability using a $t$-test, assign each group to a different intervention instruction method (explicit or implicit instruction), and then examine the groups for differences in gesture use and gesture understanding.

This study drew on two groups of participants, i.e., two extant classes taught by the same instructor in an ASL program. Given the small number of students, and guided by the purpose of this study, a qualitative inquiry strategy was chosen. However, it was possible to transform the qualitative data into quantitized data (Tashakkori & Teddlie, 1998), thereby “assigning numerical values to data conceived as not numerical” (Sandelowski, Voils, & Knalf, 2009, p. 210). I used a data conversion or transformation process (Teddlie & Tashakkori, 2009) to convert the qualitative data of the signed assessments into numeric codes that could be analyzed statistically. In other words, I used a qualitative approach to data labelling, coding, and categorization within a quantitization-dominant research approach.

In my analysis of the signed assessments, I first labeled the gestures and signs that students produced during their signed discourse using protocol coding (Saldaña, 2016). This was an essential background step for the subsequent quantitization. I then moved to magnitude coding (Saldaña, 2016) to examine the frequency with which labels appeared in the data in order to quantitize the signs and gestures that participants produced. I grouped and counted the labels by type, and then ran statistical analyses (independent samples $t$-tests) on the resulting numbers to test for significant differences between the
groups. This was done separately for each set of signed assessments, comparing the explicit to the implicit instruction group across four different measures.

Traditionally, $t$-tests are used in quantitative studies, but modern thinking in mixed methods does not rigidly consider the containers of qualitative and quantitative as dichotomous categories or containers. Rather, such research approaches are considered along a multidimensional continuum of inquiry logic (Fox & Artemeva, forthcoming; Morgan, 2007; Niglas, 2010; Teddlie & Tashakkori, 2010). In this study I used independent samples $t$-tests, not as a specific methodology, but as a technique to determine the impact and significance of the interventions. Given the number of participants with which I was working, and that my study had two clearly defined groups, using $t$-tests was a pragmatic approach to analyzing the quantitized data from the signed assessments.

The signed assessment analysis was followed by a qualitative coding approach that I used to analyze the student questionnaires. The questionnaires were coded using in-vivo coding, followed by concept coding (Saldaña, 2016). The resultant categories were used to examine whether participants in the explicit instruction group had a different understanding of the role and functions that gestures play in ASL discourse. These results were also used to support and explain the quantitized results of the signed assessment analysis and increased the credibility, trustworthiness, and transferability of the overall findings.

While I consider this study to be a form of classroom or classroom-based research, in some respects it could also be viewed as a form of action research (Bassey, 1998; Costello, 2011; Frost, 2002). The two are not mutually exclusive; action research is
often undertaken in classrooms by teacher-researchers. In this case, the topic was of personal interest to me and my professional practice, the idea for the study developed through reflections on my own teaching and learning experiences in mind, and the outcomes changed my teaching practices—so it could very well be termed action research (Galloway, 2017). However, I also wanted to bridge the gap between existing gesture theories and ASL learning and contribute to the ongoing (and under-researched) investigations of adult sign language learning. For those reasons I felt that classroom research, rather than action research, was the more appropriate label for this study.

5.3 Study Overview
My research looked at the impact of explicit instruction on student understanding and use of gesture. See Figure 5.1 for an overview of the study procedures. Over 12 weeks (one university semester) both the implicit and explicit instruction groups that took part in this study were presented with a series of videos (described in section 5.5.1). The implicit group videos (review videos) featured short, signed monologues that reviewed course content. Gesture was used in these videos, but not explained. The explicit instruction group videos (gesture intervention videos) described gesture and gesture use in ASL. For both groups, the class instructor set up brief reflective assignments that participants completed and submitted after viewing each video; the gesture intervention videos and the review videos were fully integrated into class content by the instructor as part of the students’ regular class activities.
Figure 5.1

Overview of Study Procedures

Implicit instruction group
*Hearing adult ASL university students*

- Five review videos
  - applied over 12 weeks of class

Explicit instruction group
*Hearing adult ASL university students*

- Five gesture intervention
  - videos applied over 12 weeks of class

Signed assessments collected
1. Qualitative labeling
2. Quantitative
3. Statistical analysis

Questionnaires administered
*Qualitative analysis*

Results of signed assessment and questionnaire analysis used to address research questions
In the study reported here, students spent four hours per week in the ASL classroom—a total of 48 hours over 12 weeks. In comparison, the gesture intervention videos totalled 30 minutes and 50 seconds. The information the students viewed in the gesture intervention videos was just over 1% of the total time they spent learning ASL. This included only the amount of time they spent in class and watching the videos. It did not include time students may have spent practicing.

Throughout the semester all students took part in regularly scheduled signed assessments. The assessments examined students’ productive language skills—their ability to express themselves in ASL by producing clear and appropriate discourse. This research made no changes to the assessment process and had no bearing on how the course instructor graded the students’ work. Students completed three signed assessments: the first assessment was weighted at 24% of their final grade, the second was also weighted at 24%, while the third was weighted at 15%.

At the end of the 12-week course, I collected participants’ signed assessments and asked them to fill out a short, anonymous questionnaire on gesture and gesture use in ASL. I analyzed students’ signed assessments and their responses on the questionnaires for differences in their use and understand of gesture in ASL.

5.4 Research Site

The research took place at a mid-sized Canadian university. The university offers a minor in ASL, with courses running from first to fourth year. Students need to take a minimum of four credits (eight classes) in ASL to complete the minor and must maintain a minimum of a C grade in each class to progress to the subsequent course level.
From 2017-2019 there were 13 first-year classes in the fall semester, and 8 in the winter. Each class had a cap of 30 students, with most classes filling completely. In subsequent years (fall 2020, and winter 2021) there were 15 classes in the fall and 9 in the winter; the number of first-year classes increased but the number of students per class was decreased to 25. In 2021, courses moved from in-person to online because of the pandemic, and the smaller class sizes were thought to better facilitate online learning. These numbers have continued to hold steady up to the time of writing and result in approximately 630 new ASL students each year at this university.

The classroom as a research site is complex and multi-dimensional. There is the physical classroom environment, and within that exists the overlapping spheres of instructional context and social context. The instructional context considers how the teacher, students, curriculum, and mode of instruction influence learning, teaching, and motivation (Turner & Meyer, 2000). The social context recognizes the classroom as a social arena for students where they find friends (or love, or rivals), and form identities (Dörnyei, 2012). These two contexts are simultaneous and interdependent, making them fluid and difficult to define (Turner & Meyer, 2000). They also interact with the processes of learning, which makes the classroom a rich area of study for multiple disciplines within linguistics, as well as education, psychology, sociology, and anthropology (Dörnyei, 2012). Classroom research provides insight into what is happening in the classroom while also contributing to a practitioner-informed knowledge base (Galloway, 2017).

Students spent four hours per week in the ASL classroom—a total of 48 hours over 12 weeks. In comparison, the gesture intervention videos totalled 30 minutes and 50
seconds. The information the students viewed in the gesture intervention videos was just over 1% of the total time they spent learning ASL. This includes only the time spent in class and watching the videos. It does not include time students may have spent practicing.

5.5 Participants

In this study, two first-year ASL classes were randomly assigned to either the implicit or explicit instruction condition. Complete random assignment of participants is difficult when engaging in classroom research. The use of non-equivalent groups in a quasi-experimental design is accepted in fields such as Applied Linguistics, or in situations where randomization is impractical (Dornyei, 2012). The implicit and explicit instruction groups in this case were made up of two separate groups (separate classes) of students, what Campbell and Stanley (1963) refer to as “naturally assembled collectives” (p. 47). To improve the validity of the results, the two classes were made up of learners at the same learning level with no previous experience. Both classes were the same length of time and taught by the same instructor in the same learning environment.

A total of 51 students participated in this study, evenly split between the implicit and explicit instruction groups (implicit N=25, explicit N=26). The total sample size of the study (N=51) is comparable to other similar studies of gesture use (N=22 in Brentari et al., 2017; N=30 in Janke & Marshall; 2017, N=50 in Schembri et al., 2005). However, using a quasi-experimental design and quantitizing results, may increase the potential for transferability.
As this was a qualitative study, with quantitization used to test for statistically significant differences between the implicit and the explicit instruction group, the demographic particulars of the participants were not a major consideration. Based on the information that students gave about themselves in the signed assessments, student demographics appeared to conform to the information reported by ASL researchers such as Beal (2020), Peterson (2009) and Stauffer (2011). Participants were mostly female and under the age of 30. Comparing participants’ majors and their year of study to past classes showed that the participants were similar in overall characteristics to ongoing groups of students studying ASL at this university (Tanner, 2014). The participating instructor noted no major observable differences between the two groups (implicit and explicit instruction) in terms of signing abilities, class attendance, or class participation.

The two classes were as similar as practically possible given the realities of university class demographics. An independent samples $t$-test provided evidence that, at the time of the students’ first assessment, there were no significant differences between the groups’ uses of gesture (see Chapter Six, section 6.6.1). The two classes were sufficiently similar to each other to fit the research purpose, which was to see if a cause-effect relationship could be established between teaching students about gesture use in ASL and the students’ subsequent understanding and use of gesture in ASL discourse.

Individual student participants were recruited at the end of the course (see Appendix A for student participant recruitment documents). During the time that the course ran, the two classes proceeded as they normally would have with the exception of the review or gesture intervention videos used as additional materials. During the 12 weeks that the course ran, neither the research nor the instructor knew which students had agreed to
participate. Only the researcher knew which students had consented to participate, and this only became known to the researcher after the course was finished and final student grades had been submitted and approved for release.

5.6 Materials and Instruments

In this study, research materials included tangible items that were designed and developed during the course of research, while research instruments were the tools that were used to collect and measure data. In this study I used both materials and instruments. The videos that were released to the classes (both the gesture intervention videos and review videos) were material items or content that were created specifically for use in this study. The signed assessments and the questionnaires were instruments that I used to collect data. I describe each of these separately below.

5.6.1 Materials

The goal of the gesture interventions was to supply learners with information about the function and uses of gesture within ASL. These interventions took place within the broader context of the ASL class. While in class, students took part in conversational ASL practice activities that allowed them to try out their own gestures and to receive feedback from interested and attentive practice partners. Relying on the theories of Second Language Acquisition (SLA) described in Chapter Four, the interventions provided input, helped participants focus on language and gesture output, and encouraged active awareness and noticing of gestural patterns and uses within ASL. In the classroom, students had opportunities for interaction and negotiation of meaning. This task created the conditions for pushed output (Swain, 1985, 1995). Through the interventions, I
attempted to offer learners explanations, examples, and activities that directed their attention to gesture as part of working of sign language as a system. Participants were exposed to the uses of gesture as they are implemented by competent signers and were also asked to focus their attention on their own gesture use. To recap, this study drew heavily on four theories of SLA: Krashen’s (1981, 1982) theory of Comprehensible Input; Long’s (1980) Interaction Hypothesis; Swain’s (1985, 1995) Output Hypothesis; and Schmidt’s (1990, 1994, 2001) Noticing Hypothesis.

5.6.1.1 Revisiting SLA Theories to Inform the Gesture Intervention Videos.

The gesture intervention videos were designed based on the SLA theories described in Chapter Four. Below I describe how each theory fit into the design of the interventions.

5.6.1.1.1 Comprehensible Input.

The languages that students already know or use (in full or in part), and the gestures they use while speaking, are all part of the full linguistic repertoire that students may draw on. I view gesture use in ASL as a form of language input, and I consider learners’ own gestural repertoires to be an important part of their ability to communicate in ASL. This study aligns with the opponents to Krashen’s theory, who argue that language acquisition—particularly in a classroom setting—requires more than input. My study did not rely solely on Comprehensible Input as a theoretical model for learning. If it did, then the ASL classroom instructor demonstrating gesture uses within their own signing, plus additional interventions where I also demonstrated gesture use within signed discourse, would have been sufficient. For research purposes I did not feel that setting up an intervention that supplied participants with comprehensible input—and nothing more—would constitute enough of a difference from that which learners were already receiving.
in the course of their regular classroom experience. The implicit instruction group was provided with level-appropriate review videos that demonstrated gesture use without explicit explanations. If Krashen’s theory is correct, then this should have been enough to spark gesture acquisition in the participants, at least to the point that there were no significant differences between the language and gesture output of the two groups.

5.6.1.1.2 Interaction Hypothesis.

Whereas Krashen rejects the role of consciousness in language learning in favour of a completely subconscious processes that he associates with acquisition, Long’s (1996) updated version of the Interaction Hypothesis specifically claims that learners must pay conscious attention to language form in order to derive benefit from engaging in meaning negotiation with other interlocutors. The gesture interventions in my research directed learners to pay attention to theirs’ and others’ gesture use, priming them to focus on the ways that gestures contribute to signed utterances, so that their own signing could begin to make use of gestures that more closely resemble the gestural patterns of skilled signers.

5.6.1.1.3 Comprehensible Output and Pushed Output.

In the present dissertation study, students engaged in pushed output through the elicitation of responses by the instructor, through structured practice activities focused on aspects of the language and completed in the target language, and through unstructured conversational practice with peers in the target language. As with the Interaction Hypothesis, providing learners with opportunities to use the target language and target gestural structures—which learners already did in their regular classroom activities—was an important feature of the gesture interventions.
5.6.1.1.4 The Noticing Hypothesis.

A student may notice on their own when a particular gesture is used. For example, they may see a signer move their hand to describe the path of movement of an object. The student notices the surface element of the language—that a gesture is incorporated—but not any rules associated with the use of that particular gesture. They may not even recognize it as a gesture, assuming instead that it is a sign. The gesture interventions paired metalinguistic knowledge (through discussion, explanation, and demonstrations) of gesture with opportunities for participants to comingle sign and gesture in their existing semi-structured classroom practice times. In this way participants were exposed to the metalinguistic rules of gesture, and also given opportunities to put them to practical use and receive feedback from their instructor and from similarly motivated peers.

In the context of gesture development, attention is also necessary for students to become aware of the gap between what they can produce and what proficient language users produce. When working with gesture in a sign language, a student needs to be able to notice the difference between their own signing and that of a more skilled signer—particularly their use of gestures. This can become difficult due to channel restrictions. It is easier for a speaker to become aware of how gestures carry meaning in tandem with spoken language. It may be more difficult to do this when the formalized and standardized aspects of the language are carried on the same channel (or modality) as the more idiosyncratic gestural accompaniments.

It is not a given that all new ASL learners will know to use their existing gestures as part of their communicative repertoire. As suggested by Swain (1985, 1993) the process of noticing can be initiated via external feedback. One of my intentions with this
study was to draw learners’ attention to their gestures and encourage them to compare what they were doing with what more skilled signers did and to look for similarities or differences.

5.6.1.2 Gesture Intervention and Review Videos. Early in the fall of 2017, I developed outlines for what would become the five gesture intervention videos and the five review videos used in this study. I visited two different first-year classes that a colleague (an ASL instructor) was teaching at the time. In one class I piloted the explicit gesture intervention material, in the other I piloted the implicit material. I visited each class five times for approximately 20 minutes each time. In one class I discussed the use of gesture in ASL and then took the students through some practice exercises. In the other class I spent time reviewing recent course content and then took the class through some practice exercises.

After the completion of the in-person visits, I decided to video record both the explicit gesture interventions and the implicit review activities. The in-person visits helped me refine the content for the interventions, and they also showed me that recording the interventions and releasing them through the class learning management system was more appropriate for research and data collection. There were two main reasons for this: relationship management and data validity.

Creating videos allowed me to present and release the intervention information in a controlled way that removed me as much as possible from the regular class processes. It put a stop to any complications that could arise from an asymmetric power relationship between teacher-researcher and student. This was a for-credit course, so it was important that the research be as unobtrusive as possible. I did not want to interfere with the rapport
between the instructor and their students and felt that students should see the classroom instructor as the authority and expert. The in-person visits also involved me too much personally in the actual working and dynamics of the class to the point that it might have affected the data I gathered.

During the in-person visits, there was too much potential for me change what I was doing in response to in-the-moment student feedback, thus altering my explicit or implicit content. There was also the possibility that interacting with the students would bias my later analysis of their work, as I would have gotten to know them (or at least recognized their faces). I wanted the study to be as objective as possible while still gaining an insider’s perspective (Galloway, 2017), and felt the best way to accomplish that was by using videos.

For the explicit gesture interventions, the goal was to introduce learners to a simple definition of gesture, explain some of the differences between gesture and sign, and provide them with examples of how gesture can integrate with signed discourse. This necessitated taking a vast, complex topic (gesture and sign) and selecting information appropriate to beginner ASL students. The interventions needed to cover the topic of gesture in sign language in a way that provided the learners with information that was actionable (they could take what they had learned and apply it to their own signing), level-appropriate (it needed to fit with the other knowledge taught to a first-year class), and understandable (not overly complex, theoretically heavy, or dependent on previous high-level linguistic knowledge). The information needed to be provided in a way that gave students examples from which to work, and that would allow them to recognize gesture use in themselves and in other signers.
Based on research into the function and use of gesture in ASL (described in Chapters Three and Four) as well as my experiences visiting the classrooms, I wrote and recorded the five gesture intervention videos outlined below. Each video focused on a different topic related to gesture and ASL. All gesture intervention videos were between four-and-a-half and eight-and-a-half minutes long. This kept them brief and reduced the possibility that students would get bored and stop watching. Below I present a brief explanation of what each gesture intervention video covered. An example of a video transcript (Gesture Intervention Video One: What are Gestures?) can be found in Appendix B, and the videos can be viewed (for a limited time) using the links in the content description of Table 5.1

The five review videos that were recorded for the implicit instruction group focused on topics that were being taught in class by the ASL instructor. All review videos were between three and seven minutes long and were signed in ASL with no use of voice. These videos did not introduce any new information to students; they were all presented as reviews of material that the instructor taught in the course. While I did not explain gesture in these review videos, I did demonstrate different forms of gesture use in my signing. Students in the implicit instruction group were still exposed to gesture in the review videos, but they were not given any explicit instruction on gesture. These videos are summarized in Table 5.2. I have not provided a full written English transcript, as these videos were all created in ASL. The videos can be viewed (for a limited time) using the links in the content description of Table 5.2.
Table 5.1

Explicit Instruction Group, Gesture Intervention Video Names and Descriptions

<table>
<thead>
<tr>
<th>Gesture intervention video title</th>
<th>Content description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gesture intervention video one: What are gestures?</strong></td>
<td>Provided a summary definition of gestures based on Kendon’s (2004) definition of gesture as intentional, voluntary movements of the body that contribute to the meaning of signed utterances.</td>
</tr>
<tr>
<td></td>
<td><a href="https://vimeo.com/252642202/3b37914012">https://vimeo.com/252642202/3b37914012</a></td>
</tr>
<tr>
<td><strong>Gesture intervention video two: Differences between signs and gestures</strong></td>
<td>Explained that signs and gestures are both intentional, but that signs have agreed upon meanings and standardized production that has evolved over time (Janzen, 1998, 1999; Kendon, 2004; Müller, 2018). Signs are meaningful units that can be used on their own, and that fall into different linguistic categories.</td>
</tr>
<tr>
<td></td>
<td><a href="https://vimeo.com/255295526/84e2478e24">https://vimeo.com/255295526/84e2478e24</a></td>
</tr>
<tr>
<td><strong>Gesture intervention video three: How do signers gesture?</strong></td>
<td>Based on Emmorey’s (1999) research into the ways that signers gesture. This video explained that since gestures and signs are produced using the same articulators, signers will often include gesture during times of code suspension, or simultaneously but on different body parts.</td>
</tr>
<tr>
<td></td>
<td><a href="https://vimeo.com/257829869/24854afc4d">https://vimeo.com/257829869/24854afc4d</a></td>
</tr>
</tbody>
</table>
| Gesture intervention video four: Gestures, mime, and classifiers | Examined gesture in comparison to the act of mime and to classifiers in ASL.  
https://vimeo.com/260153441/be4d916f0b |
| --- | --- |
| Gesture intervention video five: Gesture summary | A recap and summary of the information covered in videos one to four.  
https://vimeo.com/262315157/8109adf459 |
### Table 5.2

*Implicit Instruction Group, Review Video Names and Descriptions*

<table>
<thead>
<tr>
<th>Review video title</th>
<th>Content description</th>
</tr>
</thead>
</table>
| **Review video one: Me and my family** | I introduced myself, fingerspelled my name, and demonstrated my sign-name. I described my family, including a list used to discuss my siblings.  
https://vimeo.com/253328225/10c5d4d55d |
| **Review video two: My daily schedule** | In chronological order, I described what a typical working day looks like for me. This included referencing several different times of day.  
https://vimeo.com/255635796/ce34902591 |
| **Review video three: Reviewing yes/no questions, wh-questions, and sentence structure** | A review and demonstration of question types and ASL topic-comment sentence structure.  
https://vimeo.com/258016455/725a4a6de8 |
| **Review video four: My favourite movie scene** | A description of my favourite scene from a movie the class had watched, including character portrayal and a role shift.  
https://vimeo.com/260059317/6b7687e2f7 |
| **Review video five: Culture/history lecture review** | A review of information that the instructor had presented to the class on the founding of the American School for the Deaf.  
https://vimeo.com/262314182/eeb382f65c |
5.6.2 Instruments

5.5.2.1 Signed Assessments. Throughout the 12-week course, all students took part in regularly scheduled assessments. The assessments examined students’ productive language skills—their ability to express themselves in ASL by producing clear and appropriate discourse. Each group (implicit and explicit instruction) completed a total of three assessments. The dates of these assessments are noted in Tables 5.3 and 5.4. Since ASL is a visual language, it requires a visual form of assessment; students recorded themselves signing and the instructor viewed the recordings and provided students with a grade and written feedback. These assessments took place using a specially designed video capture program in a controlled language lab environment. Students worked in pairs of their choosing. Half of the class signed while their non-signing partners watched and provided support (by nodding and showing understanding and prompting more language with occasional questions). Then the roles switched and those who were the non-signing partners signed. All students were given the same topic and all recordings were set for the same amount of time. The instructor controlled the recording set-up; all students needed to do was position their cameras, wait for the visual countdown on screen, and then begin signing. The recordings ended automatically, and the signed assessment videos were transferred to the instructor’s console for collection. This recording process was used by all first-year ASL classes in the program.
5.5.2.2 Questionnaires. I developed a short, five-question questionnaire (Appendix C) that was filled out by students in both classes during their last class of the 12-week course. The five questions were based on a reprise of the information that was provided in the gesture intervention videos, namely,

1. Based what you learned in your ASL class, how would you describe what a gesture is?

2. Do you think gestures are important in ASL? Please explain briefly.

3. From what you learned in your ASL class, is there a difference between a gesture and a sign? Please explain briefly.

4. How can signs and gestures be used together? Please explain briefly.

5. If you have any other thoughts, questions, comments, or reflections on your experience with ASL and gesture, please add them below.

The questions asked targeted gesture use. This is discussed in the study limitations (Chapter Seven, section 7.1.4).

5.7 Procedures

I began this study by preparing the gesture intervention videos, review videos, and the questionnaires. Once these were complete, the study proceeded as follows:

1. Ethics approval was received for the study.

2. Two ASL classes were recruited to take part. These classes were at the same level (beginner, hearing, university ASL/FL students) and taught by the same instructor.
3. Once the classes were underway, the gesture intervention videos and the review videos were released to the classes at approximately two-week intervals.

4. Data from individual student participants were collected at the end of the course. Throughout these procedures I took steps to minimize some of the problems that can occur in classroom research. Each of the steps—and the problem mitigation strategies—are explained below.

5.7.1 Class Selection

In late fall 2017 I approached instructors who were teaching first-year ASL classes and explained the research to them. At this point, the gesture video interventions and the review videos had been created and the proposed research had already passed an ethics review. I had information letters prepared, but the inclusion of face-to-face conversations about the research, and making time and space for the instructors to ask questions in person, was an important part of sharing the research with the signing community in a straightforward, open, and honest way.

Two instructors agreed to allow me to release the gesture intervention and review videos in their classes. Each instructor would be teaching two first-year ASL classes in the following winter term. For each set of classes, one class was randomly assigned as the implicit instruction group, the other as explicit instruction. One of the instructors did not release the interventions on time and failed to release one gesture intervention video completely. This made the data gathered from those students unusable. As a result, data that was gathered from participants in that teacher’s classes were not included in analysis.
5.7.2 Implicit and Explicit Instruction Groups Video Release Schedule

Students in both the explicit and implicit instruction groups had access to their respective videos through their class learning management system. Videos were released to the students approximately every two weeks, on the dates listed in Tables 5.3 and 5.4 below.

Table 5.3
Review Video Release Dates and Assessment Dates, Implicit Instruction Group

<table>
<thead>
<tr>
<th>Video number/title</th>
<th>Release date</th>
<th>Assessment date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review video one: Me and my family</td>
<td>Jan. 30th</td>
<td>Feb. 1st</td>
</tr>
<tr>
<td>Review video two: My daily schedule</td>
<td>Feb. 13th</td>
<td></td>
</tr>
<tr>
<td>Review video three: Question and sentence structure review</td>
<td>Feb. 28th</td>
<td>Mar. 8th</td>
</tr>
<tr>
<td>Review video four: A scene from a movie</td>
<td>March 14th</td>
<td></td>
</tr>
<tr>
<td>Review video five: Review of culture lecture</td>
<td>March 28th</td>
<td>Apr. 5th</td>
</tr>
</tbody>
</table>
Table 5.4

*Gesture Intervention Video Release Dates and Assessment Dates, Explicit Instruction Group*

<table>
<thead>
<tr>
<th>Video number/title</th>
<th>Release date</th>
<th>Assessment date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gesture intervention video one: What are gestures?</td>
<td>Jan. 25th</td>
<td>Feb. 2nd</td>
</tr>
<tr>
<td>Gesture intervention video two: Differences between gesture and sign</td>
<td>Feb. 11th</td>
<td></td>
</tr>
<tr>
<td>Gesture intervention video three: How do signers gesture?</td>
<td>Feb. 27th</td>
<td>Mar. 9th</td>
</tr>
<tr>
<td>Gesture intervention video four: Gestures, mime, and classifiers</td>
<td>March 14th</td>
<td></td>
</tr>
<tr>
<td>Gesture intervention video five: Gesture summary</td>
<td>March 28th</td>
<td>April 6th</td>
</tr>
</tbody>
</table>

As indicated in Tables 5.3 and 5.4 above, by the time the participants completed their first scheduled signed assessment both groups had seen one video each. The explicit instruction group had seen *Gesture intervention video One: What are gestures?*, and the implicit group had seen *Review video one: Me and my family* wherein I introduced and described myself and my family. At the time that the participants completed their second scheduled signed video assessment, both groups had viewed three videos each, and both
groups of students had seen all of the videos before their final signed assessment took place.

The course instructor integrated the review videos and the gesture intervention videos (respectively) into the implicit and explicit instruction groups’ homework assignments. The week that each video was released, students were tasked with watching the video and then responding in written English to three or four short questions about the video content. Questions were answered and submitted online and marked for completion by the instructor. This integration meant that, to the students, these videos appeared to be part of their regular class work.

The gesture intervention and review videos provided input for learners outside of the classroom. The gesture intervention videos encouraged learners to pay attention to gestures and to compare their own use of gesture to the gestures used by other signers as part of the process of noticing (Swain, 1985, 1993). While in class, students received input from their instructor and from other students. Students in both groups had semi-structured practice time during every class where they interacted in ASL with other non-native speakers (students) and a highly fluent (though non-native) speaker (the instructor). During these practice times, students practiced signing in pairs or small groups on everyday topics such as what they did over the weekend, their classes or families, their favourite holidays, or where they lived. These interactions gave students the medium and means by which to develop their language (Gass, 2003) and facilitated attention to form during conversation and meaning negotiation (Long, 1996).

To maintain a more objective approach to the study I did not attend any of the classes, so I did not observe how much gesture students used during practice while in
class. I know from observing previous classes taught by the same instructor, that the instructor’s signed discourse contained both sign and gesture and that they regularly demonstrated and encouraged gesture use in their teaching and in their interactions with students. The instructors’ signed discourse was also relatively the same across different sections of the same class, and I assumed it would be so for the implicit and explicit instruction groups in this study.

5.7.3 Data Collection

I visited both ASL classrooms during the last week of classes, after students had completed their last signed assessment of the semester. This was the only time I saw the students in person. During this visit, a post-hoc explanation of the interventions and the study were provided. I sought consent from the students (see Appendix A) to use the signed assessments they had completed over the semester as data for this study. Students were able to ask questions about all aspects of the study and were assured that whether they chose to participate or not would have no bearing on their grade in the class; the instructor would have no idea who chose to participate or not.

During this visit, students were also asked to fill out the questionnaire on gesture that was described in section 5.5.2.2. (Appendix C). Students could consent to having both their questionnaire responses and their signed assessment video data used, or either, or none. The teacher and I both left the room and a student representative distributed questionnaires and consent forms, then collected all items and sealed them in an envelope. Forms and questionnaires were held by the head of the department until after the semester was completed and final grades had been approved and distributed to
students. Only then did I retrieve the envelopes and gather the videos of the signed assessments from the course instructor for analysis.

5.7.4 Mitigation Strategies for Classroom Research Problems

There are a number of problems that can plague classroom research. As outlined by Dörnyei (2012), classroom researchers need to deal with (among other things) a fluid student body, dynamic interactions with teachers and students, technical difficulties, and alteration to the class that might occur because of the researcher’s presence. Having worked in the research context for several years prior to beginning this study, I was able to mitigate some of these issues through planning. I approached classroom teachers who might participate in the study well ahead of time, and I set up the interventions in a way that would be the least amount of work for them. The popularity of the ASL program meant that there was no shortage of potential participants. Attrition can be a problem in a university class, but in this research context I knew that the classes would be large enough that if students dropped out, I was still likely to have a group of at least 20 per class.

However, students in a classroom are not there for the researcher’s use—they are there to learn, get credits, fulfill degree requirements and they have their own agendas that do not necessarily match that of the researcher (Pica, 2005). Knowing the content and outcomes of both the class and program, I designed the gesture intervention and review videos to fit alongside and complement the regular classroom work. In other words, I tried to make the gesture intervention and the review videos as much as possible part of the learning process.
Using videos rather than in-person interventions allowed me to remove myself from the classroom and maintain the strength and reliability of the data. I did not intrude on the events that occurred in the classroom or during the assessments. The coursework and assessments continued as they normally would have had I not been involved. I did not mark any student work or have any direct interaction with the students until the end of the semester.

5.8 Analysis

Gullberg (2010) notes that gesture is not easy to capture. While pervasive, gestures “are not as persistent as words or reaction times: not all participants gesture (for all items) and the same individual does not gesture all the time” (p. 87). It is up to the researcher to carefully select appropriate elicitation and analysis methods, and this is not always easy to do successfully.

5.8.1 Signed Assessment Video Data Analysis

The students’ signed assessments (video data) underwent a three-step process of analysis. The process was extensive, and so to make the explanation clearer, this section is divided into several sub-sections. I begin with a brief overview of the video analysis process. Then I provide an explanation of how Kendon’s (2004) gesture phrasing (Chapter Four, section 4.1.2) and Sandler’s (1993) sonority cycle (Chapter Two, section 2.5.6) was applied to the analysis of the video data. In the third, fourth, and fifth subsections I explain how the analysis process was completed using three separate pieces of software: Elan (6.2); Microsoft Excel for Microsoft 365 (2110), and IBM SPSS Statistics for Windows, (27).
5.8.1.1 Overview. Signed assessment video data analysis happened in three steps. First annotations (codes), transcriptions, gesture counts, and time stamps were added to each video using ELAN (6.2). ELAN is an annotation tool for audio and video designed by the Max Planck Institute for Psycholinguistics. It allows the researcher to create text annotations on multiple tiers that can be hierarchically interconnected and time-aligned to the media. The interface allows the researcher to see the media, tiers, and annotations all at once, providing a visualization of the annotations that have been added. These can then be exported as text or in XML format for further analysis in other software.

Signed assessment review, segmentation, and annotation was the most labor-intensive part of the analysis process. It required watching each signed assessment multiple times while building and rebuilding the codes and annotations until no more new information emerged. Going back to the definition of gesture explained in section 5.1.2 (above), what I was looking for in the signed assessment videos were deliberate expressive movements produced by any single or combination of body parts that were not signs that had been taught to the participant by the instructor. These could be representational or pragmatic gestures, and could present as sign-linked gestures, emblems, pantomime, or diectic gestures. I went into the coding process knowing what I was looking for in theory, but not completely sure how it would manifest in the participants’ signing. Because of this, the codes used as annotations in ELAN only fully developed after watching several signed assessments.

Over the first few rounds of signed assessment viewing, I made preliminary notes outside of ELAN describing what I saw the participants doing: the gestures they were using; the pacing of their signing; signs that were being produced incorrectly; body parts
that were engaged; movements that were not gesture—anything that seemed important. Once I had a clear idea of what I was looking for, I created and refined a set of codes that I used in the annotations. I set up three independent tiers, each with a separate line on the video timeline: Gesture, Body parts, and ASL transcription (Figure 5.2). What I ended up using to examine gesture was much like an assessment tool or a rubric. I had a list of criteria for gestures, a specific way of timing them, and labels for the gestural features that I wanted to focus on. I then systematically examined each signed assessment for those criteria.

I explained my codes, analysis process, definition of gesture, and definition of sign to a second coder who was also a fluent signer. Essentially, I trained the second coder like a rater, and they analyzed gestures using the same criterion-referenced tool that I was using. They provided a check by examining three two-minute clips; one clip from each of the three different signed assessments. The second coder was not familiar with ELAN, so they performed their work by viewing the clips and making manually recorded lists. For each of the clips, the second coder analyzed the students’ signing for the same things that I had: number of sentences, gestures, and signs; body parts used in gesture production; and any sign errors. They timed the gesture and sentence durations using the same process I used (described in section 5.7.1.3, below). The second coder tested and confirmed my impressions of what I was seeing in the signed assessments, and because we were both working from the same criteria, we reached 100% agreement on the analysis of the three video clips.

The ASL transcription tier was first used in segmentation mode to divide the signed discourse into sentences and pauses. I did this so that I could calculate a total
Figure 5.2

An Example of Annotations, Tiers, and Transcriptions Placed on the Signed Assessment Video Timeline in ELAN (6.2).
active discourse time (signing time plus gesture time minus pauses) and sentence run times for each participant for each signed assessment. I did not transcribe every sentence, but I did transcribe any sentence where gesture was used.

For the actual transcription, I switched to transcription mode. I used an ASL gloss (a typed approximation of what was signed using English words) description for the signed portion and a written description in lower-case letters between backslashes to describe the gestures. Separate gestures that occurred in a string (one after another) were indicated by commas. For each sentence (whether it was transcribed or not) I tallied the total number of signs or signs + gestures that were produced and added that number at the beginning of the transcription.

Once the collected annotations, transcriptions, gesture counts, and time stamps had been completed in ELAN for all signed assessment videos, the information was exported in plain text format. The plain text was put into Microsoft Excel for Microsoft 365 (build version 2110) for cleaning and preliminary analysis (Figure 5.3). This step allowed me to see where any data was missing; for example, if I had added a time span for a gesture phrase but had not added an annotation for the type of gesture used. I was also able to pivot and view the data in different ways, which was helpful in noting trends, skews, or tendencies in the assembled data.

In the third step, the cleaned data from Excel was input into IBM SPSS Statistics for Windows (27) for statistical analysis. Descriptive statistics were run to collect ranges for measures such as number of gestures and total signing time. t-tests were used to look for significant differences by comparing means between the implicit and explicit instruction groups across several measures, paired assessment-wise.
5.8.1.2 Revisiting Gesture Theory to Inform the Analytical Framework.

Whereas Kendon works with two modalities, I was working with one; I looked at the use of gesture within sign language, not how gestures integrate with speech. For gesture analysis I adopted Kendon’s description and terminology for gesture units and phases (Chapter Four, section 4.1.2). However, when annotating the participants’ signed assessment videos, I timed the entire gesture unit (preparation, stroke, post-stroke hold, and recovery) as part of their gesture production.

In my analysis, the gesture began when the articulator began to change location from neutral or from the end of a previous sign/gesture and ended when the articulator returned to neutral or began to change location in preparation for a subsequent sign. In this way, when examining gesture, I timed the entire gesture run (if several gestures are used in a row) but segmented the gesture run to note the time spent on each individual
gesture. The gestures used by the signer were coded as single (one gesture used alone or flanked by signs), repeated (a single gesture performed more than once), or strings (several different gestures produced in sequence). I did this so that I could more accurately determine how much time was spent gesturing and how much was spent signing.

Since both signs and gestures are produced in the same modality, I needed to time sign production in a similar way. For analysis, I timed signs using a loosely adapted version of Sandler’s (1986) phonological model which she built into her sonority cycle (1993) (explained in Chapter Two). In Sandler’s (1993) sonority cycle, the onset and offset of a sign begins at a particular location. In calculating how much time a participant spent in total sign production, I included the time spent moving the signing articulators (usually the hands) from one location or position to another.

For calculating the onset and offset time of specific sentence I timed the entire run of the signs used. This included the time spent moving from neutral space or from a previous sign to the first sign, and well as the time spent moving between the locations of signs in the sentence (from one sign to the next). In other words, I timed the entire run of the sentence, from the time the signer’s hands begin moving in preparation for the first sign, until (a) the movement of the last sign ceases (if the last sign has only internal movement), (b) the ending location of the last sign is reached or (c) the hands return to neutral/start position.
5.8.1.3 Process of Analysis in Elan (video coding software). Analyzing the signed assessments involved making decisions on how to sort and classify what the participants were doing. Below I describe the process of how I classified signs, how affirmation and negations were handled, how I sorted and classified gestures, and what was not included in the analysis.

5.8.1.3.1 Classifying Signs. There were several times when it was difficult to determine if what was produced was a sign or a gesture. In these cases, I first contacted the class instructor to see if they had taught a sign in a way that was not familiar to me. If not, I had to decide how to classify what was produced and apply that classification consistently. An example of this arose when I noticed that several participants were rubbing their thumb and fingers together to mean MONEY. The instructor had taught the class a more standard sign for MONEY, as well as BUY and PAY-TO. The finger rub gesture was demonstrated (not explicitly taught) as meaning “expensive” or “lots of money”. But since participants were using the sign MONEY and this gesture interchangeably, I counted both as signs.

Some signs that are produced incorrectly can look like gestures. The sign MAYBE is one example of a sign where there were several incorrect versions produced by participants. For example, some participants produced the sign with the palms facing down rather than up, or with a wrist twist instead of an up-and-down movement. In one specific participant case, their sign for MAYBE looked like a gesture at first but on further watching it became clear from the context—and the placement of the sign in the sentence—that they were signing MAYBE with largely incorrect parameters. These incorrectly produced signs were counted as signs.
### 5.8.1.3.2 Handling Affirmation and Negation

YES and NO (affirming or negating) were classified as signs, not gesture. They had been taught both as stand-alone signs, and as modifiers to negate a sign. Negations were not included in the total number of signs per sentence if: a) the sign itself was already a negative sign (NOT-LIKE + simultaneous head shake) or b) they were used grammatically to negate a verb or noun simultaneously to the sign being produced (not-GO-TO; not-my-FRIEND). These were counted at a single sign unit. Negations did contribute to the total sign count when they were used as sign for NO or NONE separately from another sign (head shake NO followed by COMMUNICATION). Similarly, affirmations were counted if they were used as a sign for YES or YEAH (nodding YEAH followed by FINISH, or LIKE followed by nodding to mean “Yeah, I’m finished”, or “I like it, yes”) but not when it occurred as an affirmation produced simultaneously with a noun or verb sign (yes-GO-TO). There are a myriad of other ways that negations and affirmations could have been handled, labelled, or counted, but this was not the focus of my research. I classified and counted them in a way that made it easy for me to be consistent in the count and label that I was applying to their use.

### 5.8.1.3.3 Sorting and Classifying Gesture

In the gesture tier and the body parts tier I created controlled vocabularies that acted as codes and that I used to mark up the annotation. The code creation and development was experimental and arose out of the patterns observed in the data during repeated viewings. It was not clear at the outset which observations would be important. I tried to cover as many as I could, and then narrowed them down later. For example, in the gesture tier I set up codes for single (a single gesture), single repeated (one gesture with a repeated movement), or string (a
string of several separate gestures). This allowed me to count how often participants were using single gestures compared to how often they used strings in more elaborate gesture performances. As my research progressed, I found that looking at participant use of gesture strings compared to single gestures would have involved taking the study in a different direction—one more focused on the semantics and placement of gesture within a sentence.

In the body parts tier, I created codes for the different body parts or body part combinations that were used: whole body, hands arms and face, upper body, hands and arms, legs, head, face, and face and head. In the body parts tier the annotation indicated the exact onset and offset time of each gesture—either as a single gesture or several gestures in a row. This gave me the precise amount of time that each participant spent gesturing. The onset and offset of gestures was entirely informed by Kendon’s (2004) description of gestural phrases, as described above in section 5.8.1.2.

Facial expressions were only coded and counted as gestures if they occurred alongside another physical gesture or if they were distinct enough to express meaning on their own, but not if they were solely used to modify the tone of a co-occurring sign. For example, MORNING TIME-9 /face scrunched up with a head wobble/ (meaning around that time) is not coded as a facial expression gesture, though it does provide a modification on the meaning of the sign. The facial expressions are coded as gestures only if they occur individually as stand-alone units.

Faces that co-occurred with a sign were often wobbles, ‘ish’ or ‘sort of’ faces, or an expression of tone (happy, sad). Emmorey (1999) notes that co-occurring gestures tend to be of this type. In this study, the faces of the first-year signers were often difficult to
Figure 5.4

*ASL sign THINK Compared to a Possible Gesture for Think*

![ASL sign THINK Compared to a Possible Gesture for Think](image)

parse because they showed so much of their uncertainty on their faces. Their pauses or thinking presented themselves as a co-occurring facial gestures. These expressions do carry meaning to the viewer, but they were not the primary focus of my dissertation; I was interested in the creative gestures that act in place of, in alternation with, or as an alternative to a sign. An example of a facial expression that would be coded as a stand-alone gesture would be if a student were to replace the sign THINK with a gesture of /eyes and head tilted upwards and to the side with index finger on chin/ (Figure 5.4).

Figure 5.5 shows a recreation of a student’s use of signs and gestures. In the assessment, the student was signing to their partner, describing a conversation between two characters. The student shifted their body to the left, taking on the role of the first character. They signed “…COME-BACK-TO AMERICA” (images 1.1-1.3). The student then dropped their hands to a non-signing position, arms relaxed, and hands clasped lightly in front of their body (image 1.4). They shifted their body to the right, taking on the role of the second character, while keeping their hands in the same position.
Figure 5.5

Gesture Sequence Example

(image 5). The student then produced two gestures in sequence. The first was a facial gesture /downturned mouth with eyebrow raise and eye shift/ (image 6), followed by a /face partner and turn palms up with downturned mouth/ gesture (image 7). During the first gesture the second character looked appraisingly toward the first character, considering what they had just expressed. With the second gesture, the signer turned to their partner and performed a gesture of acceptance that, in context, was similar to “alright”. At the end of the second gesture, the student’s hands moved again to a (non-signing, non-gesturing) position with both hands touching lightly and positioned in front of their body (image 8).

In this example explained above, the first gesture was timed as beginning just after the student shifted to the right—at the point when they began moving their head, eyebrows, and eyes (image 1.6). The end of the first gesture and the beginning of the second gesture were at the same point, which was after the student completed the eye
movement and began to turn to face their partner, moving their hands from in front of their body into the /palms up/ position. The second gesture ended when the student’s hands returned to the position in front of their body and their face resumed a neutral expression (image 8). These two gestures were coded and timed as individual gestures, and also as a gesture sequence.

5.8.1.3.4 What Was Not Included. There were several body movements I did not count as either sign or gesture: facial expressions that were just breaking eye-contact, mouthing “ummm”, or mouthing in general. I did not count small, repeated hand or body movements that accompanied the “ummm” face or mouthing. Sometimes these appear to be gestures (such as a back-and-forth rocking of the body or fluttering of the fingers) until the frequency made it clear that they were not adding to the discourse. These did not appear to be an attempt to communicate specific information but rather a way of filling space or keeping the flow going. Again, these are important features that transmit meaning to the recipient, but they are not the focus of my research.

For all participants and all assessments, I excluded the time that participants spent introducing themselves. All participants had a practiced script that they were required to perform at the start of every signed assessment. This script included fingerspelling their first and last name, the instructor’s full name and sign name, stating that they were studying ASL at university, providing the course code for their specific class, and telling the viewer what their major and minor were. This opening script is used across all first-year ASL classes with very slight variations. It serves two purposes: 1. It contains all the information that a student needs to be able to sign in order to introduce themselves at Deaf social events 2. Because this script is practiced ahead of time it allows the students
to ease into their signed assessments and get started with something familiar and well-practiced. I excluded this from my research because it is specifically scripted and rehearsed and therefore gives no opportunity for spontaneous language or gesture use.

5.8.1.4 Process of Export and Cleaning in Excel. All annotations that were created and entered onto the signed assessment video timeline in Elan were exported as plain text files with associated time indicators (time stamps) and then copied into Excel. Exporting directly from Elan into SPSS was not possible because SPSS requires the user to set up variables (features) before data can be entered into cells. SPSS uses the term variable/s to define data analysis categories, which is associated with quantitative research. I have used the term feature/s or features of interest to roughly correspond to variables from a qualitative perspective. The purpose of the study was qualitative: to explore, describe, and understand student gesture use.

Putting the data into Excel allowed me to view the coded data in spreadsheet form to better make sense of it. I was able to scan for gaps, sort the data, decide on column labels (which would become feature labels in SPSS), and perform some data organization that made subsequent input into SPSS simpler. For example, in Excel I was able to set up calculations that took the total signing time of each participant, the total gesture time, and calculate the total percent of each signed assessment that participants spent signing. I was able to pivot the data and look at it from different angles, viewing gestures by participant, by assessment number, or both at once. This made it easier to understand what I was looking at and allowed me to efficiently set up my variables (features) in SPSS and then enter data that had already been cleaned and checked for completeness.
5.8.1.5 Process of Statistical Analysis in SPSS. Clean data from Excel was put into SPSS. Independent samples t-tests, run on different features and different data, were used to compare the implicit and explicit instruction groups by signed assessment.

5.8.2 Questionnaire data analysis

I collected and transcribed the handwritten questionnaire responses as they were written. The questionnaire data was then qualitatively coded over several rounds. In-vivo coding (Saldaña, 2016) was applied first. The participants’ own words or terms were used as codes (Strauss, 1987) so that the participants’ voices were prioritized. For example, in response to item one: What are gestures? a participant wrote that gestures are “Physical movements to describe something like an animal or sport”. The code *Physical movements* was selected from the participant’s own words.

The in-vivo codes were descriptive, and lead to categories which were arrived at based on the premise of concept coding. The newly formed categories (collections of in-vivo codes) were named by using a word or phrase that represented a broader idea (Saldaña, 2016) that was expressed in the initial in-vivo codes. For example, the in-vivo codes of *physical movement, an action, a motion, and hand, body, or facial expression* were grouped together into a category and given the label of *Gestures are movement*. In concept coding, the concept that is used is “a word or short phrase that symbolically represents a suggested meaning broader than a single action or item” or “an idea rather than an object or observable behaviour” (Saldaña, 2016, p. 119). The label of *theme* was not used in the analysis. The theme is a feature of the construct of interest; the questionnaire items (*What is a gesture?; Is there a difference between a sign and a*}
gesture?) are themselves themes that contribute to mapping the construct or theory of gesture use in hearing adult ASL students in an FL course.

A second coder was provided blind (unlabelled) copies of the transcribed questionnaire responses. The responses were paired by question, and the second coder did not know which set of responses came from which group of participants. I met with the second coder at two points during the qualitative analysis process. We both coded the data independently using in-vivo coding, then met to compare and discuss codes. We returned to separately coding the data, going back over the in-vivo coding and then grouping and developing those codes into categories through concept coding. We met a second time once the in-vivo codes had been grouped into categories to discuss accuracy and thoroughness. There was a disagreement on the relevance/prevalence of one in-vivo code at the first meeting, and after discussion that code (Signs are professional) was removed. At the second meeting there were two minor disagreements over the name/phrasing used for the concepts. These were discussed until we reached consensus that the wording of the categories was an accurate representation of the in-vivo codes.

5.9 Chapter Summary

This chapter has outlined the definitions, methodology, research site, participants, materials and instruments, data collection procedures and the data analysis procedures used in this study. A mixed methods approach was used to examine the impact of gestural interventions on new adult, hearing ASL learners. This study addressed a gap in ASL teaching research where adult ASL learning is under-researched and gesture use is rarely examined. The study relied on a MM approach that was quantitization-dominant and used
signed assessment video data analysis to explore student gesture use. Student
questionnaire responses were coded and used to provide additional insight into how
learners understood and described gesture in ASL, as well as to improve data validity
through triangulation. This study used the results from both the quantitized signed
assessments and qualitatively analysed gesture questionnaires to address the two research
questions: Does direct, explicit instruction 1) increase the number of communicative
gestures produced by students? and 2) result in students who could better articulate the
uses, functions, and placements of gesture in ASL? The results of the analysis suggested
that students who were given explicit instruction about gesture in ASL had a deeper
understanding of the role that gesture plays in sign language and used significantly more
gestures in their own signed discourse. These results will be described and discussed in
the next chapter.
6. Chapter Six: Results and Discussion

Having provided background information on ASL (Chapter Two), a review of the literature and theories relevant to this study (Chapters Three and Four), and explained the purpose, research questions, and methodological approach of this study (Chapter Five), the findings are now presented and discussed. To recap, the research questions that guided this study were: 1) If beginner, adult ASL/FL students are given explicit instruction on the uses of gesture in ASL, does it (over time) increase the number of communicative gestures in their signing compared to a group who are given implicit instruction? 2) Does explicit instruction in gesture result in students who can better articulate the uses, functions, and placements of gesture in ASL, compared to a group given implicit instruction?

I used pragmatic, mixed methods approach within a qualitative research design because it allowed me to explore the research questions in ways that traditional paradigmatic research approaches would not. As noted in Chapter Five, data were gathered from two sources: signed assessment videos and a questionnaire. Signed assessments that were completed by students in both the implicit and explicit instruction groups over the 12-week were collected and analyzed. The analysis examined the assessments for total signing time, number of signs used, total gesture time, number of individual gestures used, number of sentences, and average sentence run time. The groups were compared using independent samples t-tests on four features across each assessment. At the end of the semester, both groups completed a questionnaire on gesture, and the responses were coded and themed. This process looked for differences in the groups’ understanding and ability to discuss gesture.
Signed assessments and questionnaires were collected at the same time but were analyzed sequentially. In this chapter, the results are presented in the order in which the analysis took place. The quantitized analysis of the assessments is presented first, followed by the results of the questionnaire coding. After the separate presentations the findings from both the assessment data and the questionnaires are considered together in relation to the research questions.

6.1 Signed Assessment Results

In the following three subsections, the results from the analyses of assessments one, two, and three are displayed in table format. The desired significance level for results was set at 0.01, where the probability of observing the value by chance was less than 0.01. The effect size for significant results was calculated using Cohen’s d. Effect size a measure of the magnitude of the experimental effect. Cohen’s d presents the difference between groups in terms of units of standard deviation. Cohen’s d values are interpreted as .2=small; .5=moderate; .8=large (Cumming & Calin-Jageman, 2018). A larger effect size means that there is a stronger relationship between the two variables. No separate pre-test was conducted. Comparability of gesture use between the two groups was established using the results of assessment one.

Each subsection begins with a short introduction to the assessment topic, the timing of the assessment, and what lessons students had been working on in class prior to the assessment. In language learning, students can vary widely in their overall performance in a course, and on a specific assessment. For transparency, the ranges (shown as minimum and maximum that students achieved) for the features of interest are
presented in the first table. The second table shows the independent samples $t$-test results for total signing time, number of signs, number of gestures, and total gesture time.

6.1.1 Assessment One

Leading up to the first assessment, students had learned signs for different family members, signs for colours, practiced fingerspelling names, and practiced describing people. For the first assessment, students were asked to describe their family using a list. Every student had four minutes of time in which to describe their family. The material did not have to be true. This assessment was weighted at 24% of the students’ final grade. The implicit instruction group completed this assessment on January 30th, while the explicit instruction group completed this assessment on February 1st.

For assessment one (Table 6.2) there was only one feature (Signing time) where the two groups showed a difference that approached significance ($p=.038$). Signing time is a difficult metric to interpret because signers produce signs at different rates. One signer may sign quickly, another at a medium pace, and a third slowly. However, total signing time can indicate more language being used, and it is useful to consider it alongside other metrics such as number of sentences and number of signs.

The lack of a significant difference between the groups on the first signed assessment on any of the remaining features shows that, at the start of the semester, the groups performed no differently on the features of interest. They used similar numbers of gestures and signs and spent a similar amount of time gesturing and signing.
Table 6.1

*Implicit and Explicit Instruction Group Ranges for Measured Features, Assessment One*

<table>
<thead>
<tr>
<th></th>
<th>Implicit (N=25)</th>
<th>Explicit (N=26)</th>
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<tbody>
<tr>
<td>Total signing time (seconds)</td>
<td>78.2–173.1</td>
<td>98.5–165.3</td>
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<tr>
<td>Number of signs</td>
<td>29–131</td>
<td>45–410</td>
</tr>
<tr>
<td>Number of sentences</td>
<td>14–30</td>
<td>19–29</td>
</tr>
<tr>
<td>Average sentence runtime (seconds)</td>
<td>3.6–7.5</td>
<td>4.5–7.0</td>
</tr>
<tr>
<td>Total gesture time (seconds)</td>
<td>1.69–39.78</td>
<td>4.87–37.42</td>
</tr>
<tr>
<td>Number of gestures</td>
<td>1–27</td>
<td>3–26</td>
</tr>
</tbody>
</table>

Table 6.2

*Implicit and Explicit Instruction Group Ranges for Measured Features, Assessment One*

<table>
<thead>
<tr>
<th></th>
<th>Implicit</th>
<th>Explicit</th>
<th>t-test</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Mean</td>
</tr>
<tr>
<td>Signing time (seconds)</td>
<td>121.376</td>
<td>24.39539</td>
<td>134.2346</td>
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<tr>
<td>Number of signs</td>
<td>57.8400</td>
<td>20.98746</td>
<td>73.3846</td>
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<tr>
<td>Number of gestures</td>
<td>12.7200</td>
<td>6.288835</td>
<td>12.5000</td>
</tr>
<tr>
<td>Total gesture time (seconds)</td>
<td>19.1701</td>
<td>6.288835</td>
<td>12.5000</td>
</tr>
</tbody>
</table>
6.1.2 Assessment Two

Prior to assessment two, both classes had focused on time signs, weather signs, describing activities, and putting signs into basic ASL sentence order by placing time indicators at the start of a sentence. For assessment two, students were instructed to describe what they do during a typical day or explain their daily routine using different times of day. This assessment was weight at 24% of the students’ final grade. The implicit instruction group completed this assessment on March 8th, the explicit instruction group on March 9th. Students were given four and a half minutes to describe their day.

There was no significant difference found in any of the features compared on assessment two (Table 6.4). However, the ranges (from low to high) for Total signing time, Number of signs, and Number of sentences were greater in the explicit instruction group. Those ranges suggest that there were poorer students, and stronger students, in the explicit instruction group.

6.1.3 Assessment Three

Assessment three was the final assessment in both classes and was set up differently than the previous two. Leading up to the assessment, students had learned signs related to Deaf culture and history, practiced acting in character, and practiced telling stories. They had also seen two lectures (in ASL) on the founding of the American School for the Deaf. This was not part of my study. Rather, it was one of the history and culture topics mandated by the ASL program. Attendance at these two lectures was compulsory for students to be able to take part in the final assessment.
Table 6.3

*Implicit and Explicit Instruction Ranges for Measured Features, Assessment Two*

<table>
<thead>
<tr>
<th></th>
<th>Implicit (N=25)</th>
<th>Explicit (N=26)</th>
</tr>
</thead>
<tbody>
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<td>Total signing time (seconds)</td>
<td>119.00–202.60</td>
<td>88.70–206.10</td>
</tr>
<tr>
<td>Number of signs</td>
<td>44–92</td>
<td>37–104</td>
</tr>
<tr>
<td>Number of sentences</td>
<td>21–34</td>
<td>16–38</td>
</tr>
<tr>
<td>Average sentence runtime (seconds)</td>
<td>5.10–8.90</td>
<td>4.80–8.00</td>
</tr>
<tr>
<td>Total gesture time (seconds)</td>
<td>4.24–59.87</td>
<td>6.13–48.13</td>
</tr>
<tr>
<td>Number of gestures</td>
<td>3–35</td>
<td>3–27</td>
</tr>
</tbody>
</table>

Table 6.4

*T-test Results Comparing Implicit and Explicit Instruction Conditions for Assessment Two*

<table>
<thead>
<tr>
<th></th>
<th>Implicit</th>
<th>Explicit</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Mean</td>
</tr>
<tr>
<td>Signing time (seconds)</td>
<td>172.14</td>
<td>24.36916</td>
<td>176.65</td>
</tr>
<tr>
<td>Number of signs</td>
<td>67.0800</td>
<td>12.57948</td>
<td>70.4231</td>
</tr>
<tr>
<td>Number of gestures</td>
<td>16.0000</td>
<td>8.84590</td>
<td>15.8846</td>
</tr>
<tr>
<td>Total gesture time (seconds)</td>
<td>25.7126</td>
<td>13.74224</td>
<td>25.4419</td>
</tr>
</tbody>
</table>
### Table 6.5

**Implicit and Explicit Instruction Group Ranges for Measured Features and Topic Choices, Assessment Three**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Implicit (N=25)</th>
<th>Explicit (N=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total signing time (seconds)</td>
<td>102.40–219.40</td>
<td>113.70–228.50</td>
</tr>
<tr>
<td>Number of signs</td>
<td>49–116</td>
<td>62–132</td>
</tr>
<tr>
<td>Number of sentences</td>
<td>14–38</td>
<td>19–41</td>
</tr>
<tr>
<td>Average sentence runtime (seconds)</td>
<td>5.10–10.00</td>
<td>5.6–8.2</td>
</tr>
<tr>
<td>Total gesture time (seconds)</td>
<td>0.00–9.7</td>
<td>.90–39.26</td>
</tr>
<tr>
<td>Number of gestures</td>
<td>0–10</td>
<td>1–19</td>
</tr>
<tr>
<td>Topic choice 1 (number of students)</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Topic choice 2 (number of students)</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Topic choice 3 (number of students)</td>
<td>12</td>
<td>7</td>
</tr>
</tbody>
</table>

### Table 6.6

**T-test Results Comparing Implicit and Explicit Instruction Conditions for Assessment Three**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Implicit Mean</th>
<th>Implicit Standard Deviation</th>
<th>Explicit Mean</th>
<th>Explicit Standard Deviation</th>
<th>t-test</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signing time (seconds)</td>
<td>172.38</td>
<td>29.03759</td>
<td>200.46</td>
<td>26.65882</td>
<td>p=.001</td>
<td>1.008</td>
</tr>
<tr>
<td>Number of signs</td>
<td>81.2800</td>
<td>19.18446</td>
<td>104.0000</td>
<td>20.31354</td>
<td>p=.000</td>
<td>1.149</td>
</tr>
<tr>
<td>Number of gestures</td>
<td>3.1600</td>
<td>2.82371</td>
<td>6.8846</td>
<td>4.89348</td>
<td>p=.002</td>
<td>0.928</td>
</tr>
<tr>
<td>Total gesture time (seconds)</td>
<td>3.5760</td>
<td>2.91479</td>
<td>8.4808</td>
<td>7.62225</td>
<td>p=.004</td>
<td>0.844</td>
</tr>
</tbody>
</table>
On the day of the third signed assessment, students arrived at the language lab and were given three topic options to choose from, all of which related to the history lectures:

2. Who was T.H. Gallaudet and what role did he play in Deaf history? Explain.
3. T.H. Gallaudet visited two deaf/Deaf establishments in Europe. What were they, where were they, and how were they different? How did Gallaudet react to them?

Students had 30 minutes to consider and prepare their responses. The instructor provided a choice of topics, and more time for preparation, because all the topics centered on information given in the Deaf history lecture. This meant the topics were more constrained (less open-ended) than in the previous two assessments. After the 30 minutes of preparation, students then had four and half minutes to respond to their selected topic.

This assessment was weighted at 15% of the students’ final grade. The implicit group completed this assessment on April 5th, the explicit instruction group on April 6th.

The third assessment showed a significant difference between the two groups on all four features. Students in the explicit instruction group spent significantly more time engaged in signing and in gesturing and used more signs and more gestures than the implicit group. The effect size for the significant results (calculated using Cohen’s d) indicates a strong standardized effect for the given population.

6.2 Signed Assessment Discussion

For all signed assessments, the gestures that students produced were embedded in communicative events. At the end of the 12 weeks, the implicit instruction group
demonstrated the gestural resources that new signers draw on without explicit gesture instruction, while the explicit instruction group demonstrated the changes that can happen with focused gestural instruction. The results of the quantitied analysis of the signed assessments suggested that, given appropriate input, learners can begin—even at very early stages of ASL learning—to integrate more gestures into their sign language discourse.

The increase in gesture use did not happen immediately. Comparisons on assessments one and two showed no areas of significant difference between the two groups. Signing time for assessment one approached, but did not reach, the significance level set for this study. Nevertheless, because it showed a result that was vastly different than the other three features, signing time should be examined.

The first signed assessment can be difficult for students in the program. They do not know what to expect, how fast to sign, or how much information to give. For most, it is their first time in the language lab and their first time signing in front of a camera. Since there are no significant differences between the two groups on any of the other features examined for assessments one and two, and because the results approached, but did not reach, significance, this is more likely to be a fluke in the data rather than a meaningful difference. There are many reasons why one group would have spent more time signing than the other which have nothing to do with the gesture intervention videos. Rather, the lack of a significant difference between the groups on the first signed assessment on any of the other measures shows that, at the start of the semester, the groups were using similar numbers of gesture and spending a similar amount of time gesturing.
In contrast, on assessment three, the explicit instruction group showed a significant difference on every measure. Assessment three took place on one of the last days of class. By this point in time, both groups had viewed all of the videos (either review or gesture intervention) that had been released to their classes. The explicit instruction group used more individual gestures \((p=.002)\) and spent more time gesturing \((p=.004)\). They also spent more total time engaged in signing \((p=.001)\) and used more signs \((p=.000)\). This points toward the possibility that there was a buildup of gestural knowledge, and a slow change in gesture use that occurred over the course of the twelve weeks that the students were enrolled in the ASL class.

The third assessment was also weighted the lowest of the three assessments: 24% each for the first two assessments compared to 15% for the third. When a final assessment contributes heavily toward the total grade, students may put more effort into studying, resulting in a better performance on the final assessment than on previous ones. In this case, the third signed assessment was the lowest weighted and provided no extra grade incentive that might encourage students to study or prepare more than they had for the first two.

The robustness of these results is encouraging, especially given that the information on gesture that the explicit instruction group was exposed to represented such a small part of their overall learning time. The results are significant, but I want to address two factors that may have impacted them: the nature of the topic used for the third assessment, and the overall time participants spent signing.
6.2.1 Addressing assessment topic complications

Assessment three was a departure from the first two assessments in terms of the constraints and lead-up to the topic, so it is necessary to examine the possible implications this might have had on the results. For the first two signed assessments, the students were presented with an open-ended topic to respond to. The instructor purposely kept the topics broad so that all students would be able to respond in a way that was personal to them. Sometimes there were specific skills that needed to be demonstrated, such as using a list or referring to at least three different times of day, but the topic itself remained broad.

As noted in section 6.1.3, the third assessment was different. Leading up to the third signed assessment, the instructor presented two lectures (in ASL) on the founding of the American School for the Deaf and the impact that had on deaf education and the linguistic development of ASL. The lecture was produced live by the instructor both times it was presented to the students, and attendance was mandatory. There were slight variations in the presentations, but the content was the same both times. For their third and final assessment, students were given a choice of topic to which they could respond, and all topics related to the lecture material. This meant that, on the third signed assessment, students were responding to slightly different topics that all centered around the same theme.

Since the students had seen this material presented by their instructor, it might seem plausible that the students’ assessment discourse would have been more likely to match what they had seen their instructor do. If that were the case, I would expect that the students’ gesture use (and beyond that, even their sentence length, and signing time)
would be equal. But it was on the third assessment that the groups demonstrated important, meaningful, and statistically significant differences, with students in the explicit instruction group using more gesture, spending more time gesturing, and signing for a longer time. They also produced significantly longer sentences. As noted above in Table 6.2, there was a split within each group of the number of students that responded to each question. The differences between the groups was not due to topic choice (i.e., all of the implicit group chose topic 1, while all of the explicit instruction group chose topic 2).

6.2.2 Addressing signing time complications

Further, Table 6.6. (above) shows that the explicit instruction participants spent more time signing on assessment three, so it is possible that the higher number of gestures—and higher amount of time spent gesturing—occurred simply because that group spent more time overall engaged in signing. To investigate this, I examined the time each group spent gesturing as a percent of their overall time spent signing. The explicit instruction group spent a significantly greater proportion of their time gesturing than did the implicit group (p=<0.01). In other words, when examining the amount of time each groups spent using gesture and controlling for total time spent signing, the explicit instruction group spent significantly more of their total discourse time using gesture.

6.3 Gesture Questionnaire Results and Discussion

The results of the qualitative analysis of the responses to the gesture questionnaires are presented, compared, and discussed below. The results are first presented and discussed item by item, followed by a holistic discussion that looks across the responses to the four items. Item five is not included in the analysis. Item five asked
participants to write down any additional thoughts, questions, or comments on their experience with ASL and gesture. Only two participants responded to the prompt (one writing “Nothing more to say” and the other writing “Thank-you!”) so these responses were not analyzed.

The results of the qualitative analysis that was performed on questions one to four are presented in Tables 6.7 to 6.14. Following the analytical approach described in section 5.8.2, the tables are organized to show category, in-vivo codes, and verbatim examples. This approach helped to highlight and clarify the most prominent differences between the two groups’ understanding of gesture. Each of the items on the questionnaire is considered separately before discussed in relation to the research questions that guided the research reported in this dissertation.

The label of theme is not used in this presentation. The theme is a feature of the construct of interest; the items (What is a gesture?; Is there a difference between a sign and a gesture?) are themes that contribute to mapping the construct or theory of gesture use in hearing adult ASL students in the FL course.
### 6.3.1 Questionnaire Item One: What is a Gesture?

#### Table 6.7

**Item One: What is a Gesture? Implicit Group**

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo codes</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestures are movement</td>
<td>Hand, body, or facial expression</td>
<td><em>Physical movements to describe something like an animal or sport.</em></td>
</tr>
<tr>
<td></td>
<td>An action</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A motion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical movement</td>
<td></td>
</tr>
<tr>
<td>Gestures are used for description</td>
<td>Demonstrate</td>
<td><em>Gesture can more specifically describe what a person is doing.</em></td>
</tr>
<tr>
<td></td>
<td>Give details</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Describe something</td>
<td></td>
</tr>
<tr>
<td>Gestures result from a lack of sign</td>
<td>When you don’t know a sign</td>
<td><em>If you don’t know the sign for something, you gesture the best you can.</em></td>
</tr>
<tr>
<td></td>
<td>Exact sign not known</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Without signs</td>
<td></td>
</tr>
</tbody>
</table>
Table 6.8

*Item One: What is a Gesture? Explicit Instruction Group*

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo codes</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestures are movement</td>
<td>Motions that are not signs</td>
<td>A movement done by face or body or hands that is not sign language but used to describe and build on language.</td>
</tr>
<tr>
<td></td>
<td>Face and body movement</td>
<td></td>
</tr>
<tr>
<td>Gesture adds detail</td>
<td>More depth</td>
<td>Gesture enriches the language through movement.</td>
</tr>
<tr>
<td></td>
<td>Enhances signing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personalizes signing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gives character to conversation</td>
<td></td>
</tr>
<tr>
<td>Gestures have specific uses</td>
<td>Code suspension</td>
<td>You suspend your signs to gesture something to make it more descriptive and then return to signing.</td>
</tr>
<tr>
<td></td>
<td>In place of a sign</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supports signing</td>
<td></td>
</tr>
</tbody>
</table>

For questionnaire item one (*What is a gesture?*) students in the implicit instruction group described the physicality of gesture. They equated gesture with physical movement, specifically facial expressions and hand movements. When explaining what a gesture is, student responses were frequently vague. In the respondents’ own words, gestures are “*Something done with your hands and body*”, or “*A motion to describe something*”. These responses may indicate that the implicit group participants have a sense that gesture is different from sign in some way but lack the vocabulary to explain how. They also equated gesture use with a lack of sign; or described gesture as something that is used when they don’t know a sign or when the concept/word does not have a sign.
One participant wrote that gestures are “Using actions to describe something we don’t know the sign for”.

The explicit instruction group also described gesture as a movement that is not a sign itself but added that gesture supports signing. They responded that gesture enhances and personalizes signing and adds more depth to communication. There is a strong connection between the parts and the whole in the explicit instruction group responses, for example “[A gesture is] a movement that is done by face or body or hands that is not sign language but used to describe and build on language”. The explicit instruction group also discussed the function and placement of gestures within a sentence; two responders in the explicit instruction group specifically use the term ‘suspension’ or ‘code suspension’, which is a direct lift of terminology from the gesture intervention videos. One participant wrote, “You suspend your signs to gesture something to make it more descriptive and then return to signing”.

In an examination of the responses across the two groups, there was a consistency to the responses from the explicit instruction group that did not exist in the implicit group. The explicit instruction participants frequently described gesture as supporting, adding to, or enhancing ASL—and used vocabulary from the gesture intervention videos. For example, one participant wrote that “Gesture enriches the language through movement and facial expression that are sign related”.
### Table 6.9

**Item Two: Are Gestures Important in ASL? Implicit Group**

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo codes</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of gestures for new learners</td>
<td>Good for hearing students</td>
<td>They allow new signers like myself to explain complex things.</td>
</tr>
<tr>
<td></td>
<td>Used when first learning</td>
<td></td>
</tr>
<tr>
<td>Gestures as universal communication</td>
<td>Gestures help communicate</td>
<td>It allows hearing people to guess without knowledge of sign language.</td>
</tr>
<tr>
<td></td>
<td>Understood by everyone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Help get meaning across</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Guessing without knowledge</td>
<td></td>
</tr>
<tr>
<td>Gestures are used when there is an absence/lack of sign</td>
<td>Sign is not known</td>
<td>They make things easy to understand if the sign is not known.</td>
</tr>
<tr>
<td></td>
<td>Signs to do exist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sign is forgotten</td>
<td></td>
</tr>
</tbody>
</table>

### Table 6.10

**Item Two: Are Gestures Important in ASL? Explicit Instruction Group**

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo codes</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gesture as a tool for enrichment</td>
<td>Personalization</td>
<td>I think gestures make a conversation more personalized and engaging.</td>
</tr>
<tr>
<td></td>
<td>Further description</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More details</td>
<td></td>
</tr>
<tr>
<td>Function of gesture in ASL</td>
<td>Open creative possibilities</td>
<td>Without them ASL would be very boring. Signs and gesture work together hand in hand.</td>
</tr>
<tr>
<td></td>
<td>Clarifies communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Works with signs</td>
<td></td>
</tr>
</tbody>
</table>
In the implicit instruction group responses for questionnaire item two (*Are gestures important in ASL?*), there were three categories: *Importance of gesture for new learners; Use of gesture as a communicative aid;* and *Greetings are used when there is an absence/lack of sign*. These categories suggested that the implicit group viewed gesture as something important in the early stages of ASL learning, or something they could use as a tool for communication until their ASL skills improved.

The implicit group described gestures as good for hearing students and new learners and wrote that gesture can fill gaps in ASL knowledge. For example, “As beginning signers we don’t know a lot of signs. Through gesturing we can communicate as we don’t know the sign”. Implicit instruction participants also expressed the idea that gesture is a form of universal communication that takes no prior linguistic knowledge to understand: “*I believe gestures are important in ASL because it [sic] allows people to explain themselves easier in a way that everyone could understand*”.

The explicit instruction group coding resulted in two categories: *Gesture as a tool for enrichment;* and *Function of gesture in ASL*. The explicit instruction group described gesture as adding depth and personalization to signing. Their responses suggested that gestures were not considered as a replacement or stand-in for signs but as something that worked together with signs by clarifying communication and opening up an avenue for increased creative expression: “*I do believe they are important. They enrich the language and allow for further details in a story to be shown in an animated and creative way*”. The explicit instruction group appear to have viewed gesture as an intrinsic part of ASL: “…without them ASL would be very boring. Signs and gesture work together hand in hand*.”
### 6.3.3 Questionnaire Item Three: Is there a Difference Between a Sign and a Gesture?

#### Table 6.11

**Item Three: Is there a Difference Between a Sign and a Gesture? Implicit Group**

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo codes</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestures as movement</td>
<td>Gestures are actions</td>
<td><em>A gesture is a body movement while a sign is basically just a term.</em></td>
</tr>
<tr>
<td></td>
<td>Body movement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of motion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More hand and facial movement</td>
<td></td>
</tr>
<tr>
<td>Gestures as flexible</td>
<td>No set meaning</td>
<td><em>A gesture is subjective and can be different things.</em></td>
</tr>
<tr>
<td></td>
<td>Used for description</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Your own way of communicating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exaggeration of body</td>
<td></td>
</tr>
<tr>
<td></td>
<td>language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subjective</td>
<td></td>
</tr>
<tr>
<td>Signs as standard</td>
<td>Signs are something known</td>
<td><em>A sign is the formal way to say something in ASL.</em></td>
</tr>
<tr>
<td>meaning bearers</td>
<td>Signs are like words</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Signs are specific</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Signs are structured</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Understood by everyone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>who knows the language</td>
<td></td>
</tr>
</tbody>
</table>
Table 6.12

*Item Three: Is there a Difference Between a Sign and a Gesture? Explicit Instruction Group*

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo codes</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign meaning and production regulated</td>
<td>Signs as officially recognized</td>
<td>Signs are more formal and must be signed in a specific way to be correct.</td>
</tr>
<tr>
<td></td>
<td>Signs are used in specific ways</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agreed upon meaning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The official language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be looked up</td>
<td></td>
</tr>
<tr>
<td>Gestures as individual creative expression</td>
<td>Gesture is unique</td>
<td>Gestures are more subjective and up to the discretion of the signer.</td>
</tr>
<tr>
<td></td>
<td>Aids in description</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Different from person to person</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Created in the moment</td>
<td></td>
</tr>
<tr>
<td>Signs and gestures are two parts of a whole</td>
<td>The two work together</td>
<td>Gestures and signs can’t stand alone.</td>
</tr>
<tr>
<td></td>
<td>Signs can be replaced by gesture for creative or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clarity purposes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make sense together</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neither works alone</td>
<td></td>
</tr>
</tbody>
</table>

The implicit instruction group generally considered gesture a descriptive movement or act/action that may require more hand or facial movement. They viewed gestures as subjective—stemming from the individual’s own way of communicating.
Signs, on the other hand, they noted, were the equivalent of words, which have an exact meaning and are recognizable by anyone who knows the language. For example, “A sign is a motion that has a direct meaning to it. It is a universal meaning, meaning you can sign something and everyone knows what it means. A gesture is a motion that has no actual words attached to it”. Many contrasted the idea of gesture as a descriptive movement with the idea of a sign as something that has a specific (learned) meaning: “A sign is the formal way to say something in ASL while a gesture is a less formal way that is unique to each person”. Participants in the implicit group did seem to have a sense that there is a difference between a gesture and a sign but appeared to lack the vocabulary to describe it.

The explicit instruction group described signs as regulated in both meaning and production. Signs, they noted, needed to be produced and used in specific ways; they had agreed-upon meanings that are part of the official language and can be looked up. One participant wrote that “Signs are officially recognized and are the same from person to person”, while another one commented that “Signs are more formal and must be signed in a specific way”. Respondents described gestures as elements that make signing personal and are created in the moment in a way that may be unique to that signer. “Gestures are more personalized. You put more of your personality and who you are in gestures”.

Responses from the explicit instruction group also addressed how gesture and sign work together as partners in the language. Participants went beyond discussing the differences between signs and gestures and took the next step of including information on
how signs and gestures work together: “Signs are used to describe what, gestures tell us how. Gesture and signs can’t stand alone”.

6.3.4 Questionnaire Item Four: How Can Signs and Gestures be Used Together?

Table 6.13

*Item Four: How Can Signs and Gestures be Used Together? Implicit Group*

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo code</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestures are used for description</td>
<td>Detailed stories</td>
<td><em>A sign and gesture can be used together to describe a general topic with specific details.</em></td>
</tr>
<tr>
<td></td>
<td>Specific details</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To describe a sign</td>
<td></td>
</tr>
<tr>
<td>Gestures fill gaps</td>
<td>Explain what signs don’t</td>
<td><em>If someone does not understand the sign, gesture can help.</em></td>
</tr>
<tr>
<td></td>
<td>Used if a sign is not known</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To bolster understanding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used for learning</td>
<td></td>
</tr>
<tr>
<td>Degree of expression</td>
<td>Enhance an action</td>
<td><em>A sign can be used to explain something, a gesture can affect the severity of the action being signed.</em></td>
</tr>
<tr>
<td></td>
<td>Effect severity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Show how much</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add dramatics</td>
<td></td>
</tr>
</tbody>
</table>
Table 6.14

*Item Four: How Can Signs and Gestures be Used Together? Explicit Instruction Group*

<table>
<thead>
<tr>
<th>Category</th>
<th>In-vivo code</th>
<th>Verbatim example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestures are used for description</td>
<td>To describe</td>
<td>“Gesture can be used to enhance the sign used and make the concept more descriptive.”</td>
</tr>
<tr>
<td></td>
<td>Enhance signs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add more</td>
<td></td>
</tr>
<tr>
<td>Signs and gestures work together</td>
<td>Structure and emotion</td>
<td>Signs and gestures can be used together to achieve an elaborate sentence that has both structure and emotion.</td>
</tr>
<tr>
<td></td>
<td>More complex sentences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used in conjunction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used together to extend</td>
<td></td>
</tr>
<tr>
<td></td>
<td>language creatively</td>
<td></td>
</tr>
<tr>
<td>Gestures are subject to linguistic rules</td>
<td>Sign first, then gesture</td>
<td>Signs can be suspended to use a gesture and then you can return to signing all within the same sentence.</td>
</tr>
<tr>
<td></td>
<td>Code suspension</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simultaneous use</td>
<td></td>
</tr>
</tbody>
</table>

There were two categories in the implicit group’s responses to questionnaire item four that were similar to the categories that were evident from item one. The first category, *Gestures are used for description*, is the same labelling that was used for a category in item one. A comparison of the coding of items one and four showed that the implicit group participants described gestures in a near-identical for both items: gestures, they responded, add details and are used to describe things. As one participant wrote, “*They can be used to further describe a sign*”.

A second implicit group category, *Gestures fill gaps*, is like the category of *Gestures result from a lack of sign* in item one. These two categories are similar, but not
the same. The in-vivo codes from item one were grouped into a category that was best expressed as a lack of sign knowledge. In item four the codes coalesced around the idea of gesture as a gap-filler. Participants described how gesture is used when a sign is not known, but they also wrote about how gesture can help support understanding, or how gesture may explain what signs cannot. For example, “*Gestures can fill gaps and help explain things that signs don’t fully depict*”.

The third category, *Degree of expression* arose from responses from the implicit group that described gesture as something that affects the degree of a sign (how much, severity, enhancement). For example, one respondent noted, “*If you’re tired you can sign that and then gesture how tired*”. Another observed, “*A sign can be used to explain something, a gesture can effect the severity of the action being signed*”.

Respondents in the explicit instruction group described gesture as a means to add deeper descriptions to signing. When used together, gestures extend signing, making it more complex, creative, and descriptive. One participant wrote that, “*Signs and gesture can be used together to extend the language, they allow the most description*”. However, the explicit instruction group also more directly addressed the question—*How can signs and gesture be used together?*—and explained how signs and gesture are used together as part of the same sentence. For example, “*Gestures can be used with signing by code suspension where the sign language is briefly interrupted and supplemented with gestures before signing is resumed*”. Another respondent wrote, “*You could integrate both signs and gestures into sentence (ex. sign and gesture how you did that action) and you can also sign with one hand and gesture with another*”. Those examples also
demonstrated that the explicit instruction group were again using the vocabulary and referring to the examples that were used in the gesture intervention videos.

6.4 Comparing Across Groups

Combining all of the implicit group coding results and all of the explicit instruction group coding results and then comparing these across the groups provided a higher-level insight into how each group understood gesture. For the implicit instruction group, gestures were those movements used to describe and give details, but participants often commented that gesture use resulted from a lack of sign. This made gestures especially important to students in the implicit group because they believed that gestures act as a universal form of visual communication. Implicit group participants commented that gestures are more flexible than signs; while signs have standard meanings, gestures are the signer’s own personal and subjective way of communicating. For the implicit group, gestures were something that could be used to affect the degree of expression and help fill gaps, improving understanding or providing information that signs did not.

The explicit instruction participants described gestures as body movements that are not signs themselves, but that add depth and enhance signing through personalization. They noted that signs and gestures both have rules for how they are used. Signs have an agreed upon meaning, needed to be produced in a specific way, and could be looked up. While gestures are different from person to person—often being created in the moment of use—they are also rule-governed; gestures are used in particular ways, such as during code suspension. The explicit instruction group noted that signs form the structure of ASL—“the backbone” as one participant called it—but that gestures worked with signs to
extend the possibilities for creative visual communication. The two work and make sense together; neither works alone.

Compared in this manner, there are noticeable differences in the depth of understanding and explanations used by the two groups. The implicit instruction group focused primarily on the mechanics and function of gesture. Several items resulted in categories that were built out of participants’ understanding of gesture as movement and were description oriented. This is not wrong, but it does not reflect the more sophisticated understanding of gesture that was present in the explicit instruction group responses. The explicit instruction group described gesture as an integral part of the visual communication system. They made comments about gesture and signs being two parts of a whole that work together. This is in contrast to the implicit group, for whom gesture was used because they lacked or had not learned the necessary sign.

The questionnaire responses suggested that the students in the explicit instruction group absorbed a great deal of information from the gesture intervention videos. They were able to recall what they had learned and give specific examples from their own learning experiences of how gestures are used in ASL. They also provided more specific and detailed responses to the questionnaire items, integrating the vocabulary from the interventions to talk about gesture in a more sophisticated way. The gesture intervention videos were provided to the class as if they were a regular part of the course content. Students had no need to specially memorize these terms or pay more attention to them compared to any other aspect of the course. This indicates that the gesture intervention videos provided information that the students understood and incorporated into their own developing knowledge of ASL.
6.5 Addressing the Research Questions

This study was guided by two research questions: 1) If beginner, hearing, adult ASL/FL university students are given explicit instruction on the uses of gesture in ASL, does it (over time) increase the number of communicative gestures in their signing compared to a group who receive implicit instruction? 2) Does explicit instruction in gesture result in students who can better articulate the uses, functions, and placements of gesture in ASL, compared to an implicitly instructed group?

The signed assessment analyses and the questionnaire coding each provided different types of evidence that the gesture interventions were impactful. The quantitized results showed that, by the end of the 12-week course, the gesture interventions had significantly increased students’ use of gesture in the discourse they produced for their signed assessments. Not only that, but students in the explicit instruction group also spent more time gesturing, produced longer signed sentences, and spent more time engaged in signing.

When hearing adults begin to learn a sign language, they draw on the gestural resources that are available to them (Janke & Marshall, 2017), but this does not mean that they use those resources in appropriate ways, or that they understand how those resources fit into ASL discourse. The qualitative results of the questionnaire coding suggested that the gesture intervention videos fostered a different understanding of gesture; the gesture intervention videos supplied students in the explicit instruction group with information about gesture that became part of their metalinguistic knowledge. This allowed them to discuss gesture use in ASL in deeper and more sophisticated ways on the questionnaire than the implicit instruction group. It is possible that what this demonstrated is simply
that students learn what they are taught. However, as noted in Chapter Five (section 5.3), the gesture intervention videos comprised just slightly more that 1% of the total time that students spent learning ASL. The questionnaires were distributed to students during an unanticipated visit from the researcher, meaning that the information they provided in their responses was spontaneously retrieved—not something that was learned for a test. This, I argue, is evidence of the depth of the explicit instruction group’s understanding.

Adult ASL students already have experience processing and producing communicative gestures (Ortega & Özyürek, 2013), and there are strong similarities between signers and non-signers use of gesture (Schembri et al., 2005). The analysis of the implicit group data (the quantitized signed assessments and the questionnaires) suggested that, without intervention, students still used gesture in their signed discourse, and were still able to describe gesture and gesture use in ASL. What the implicit group participants might have been demonstrating is the transfer of first-language gestural abilities to the acquisition of ASL (Woll, 2013). However, they used gesture less frequently, and they described it in less depth, than the participants in the explicit instruction group.

The answer to both the research questions is a strong yes. While neither group used gesture with the same frequency that depiction is used by native signers (Thumann, 2010), students who were given direct instruction on gesture used significantly more gestures in their signed discourse. They were also better able to articulate the uses, functions, and placement of gesture in ASL. I disagree somewhat with Taub et al. (2008), who concluded that it may be possible to predict sign language acquisition aptitude by examining gesture as a point of linguistic transfer. I would argue that linguistic transfer
alone means little, because hearing adult ASL students do not arrive in the ASL/FL classroom with the skills needed to become proficient. ASL-specific skill development needs to be systematically addressed in ASL/FL education (Bocher et al., 2006; Mirus et al., 2001). Based on the results of this study, an alternative metric for examining ASL aptitude might be to examine students’ use of gesture after explicit instruction.

I do, however, agree that examining gesture may be useful in developing ASL teaching strategies (Taub et al., 2008). This is what Eastman (1989) did in his book; he began with a gesture-first approach, drawing on hearing students’ existing gestural abilities and highlighting the similarities between how speakers use gesture and how signs are produced. To my knowledge, there are no other books that approach ASL learning in this way.

6.6 Chapter Summary

This chapter presented and discussed the results of both the quantitized and qualitative analyses that were performed in order to examine the research questions. The results showed that, after being presented with five gesture intervention videos (re. gesture in ASL) or five review videos (re. review/practice of course content) over 12 weeks of class, students in the explicit instruction group used more individual gestures, spent more time gesturing, spent more time engaged in signing, and used more signs. Students in the explicit instruction group also had a deeper understanding of the role that gesture plays in ASL and were able to articulate their understanding in questionnaire responses.

Learners of a second language bring existing resources to their learning process. In adult ASL students, one of these resources is a large repertoire of gestures. The
challenge for hearing adults who are learning a sign language lies in learning to use the
gesture skills they already have in linguistically appropriate ways. The results presented
in this chapter showed that, with very little prompting, learners were able step up to the
challenge of incorporating gesture into their ASL discourse. This study was conducted
with a group of users within one specific program, but the results are encouraging. They
indicate that introducing new ASL students to the uses of gesture in ASL can impact both
the students’ production and understanding of gesture.

While the results are promising, the road to the completion of this study was not
always smooth. In the next chapter, I first describe some of the limitations of this study.
Then I reflect on the choice I made to use spoken English (a translanguaging practice) in
the gesture intervention, and the impact that this study had on my teaching. I conclude
this dissertation by offering some final thoughts on possible future research directions.
7. Chapter Seven: Conclusion, Limitations, and Reflections

Based on the results of this study presented in Chapter Six, the gesture interventions had a significant impact on student signing. By the end of the 12-week class, students in the explicit instruction group used more gesture in their signed discourse and were better able to articulate the role of gesture in ASL. In this chapter I discuss the limitations of the study, specifically: the research site; the role of the instructor; the sample size; and the study scope. I then discuss some of my theoretical and pedagogical reflections on the study. Finally, I offer some thoughts on possible future research directions.

7.1 Limitations

Learning contexts, particularly classroom contexts, are comprised of multiple variables that are fluid and difficult to define (Turner & Meyer, 2000). When faced with the constraints, ethical considerations, participants, and data collection and data analysis, many classroom researchers might be tempted to abandon their studies. “The limitations that frustrate investigators” writes Rossiter (2001), are “part and parcel of the classroom context” (p. 36). Rossiter maintains that “what are often perceived as problems by researchers are in fact the daily realities of the contexts in which most teachers practise” (p. 36).

7.1.1 The Research Site

The students who took part in this research were enrolled in a particular program that has its own set of rules and follows certain values and procedures related to teaching generally, and teaching ASL specifically. Then there was the instructor, who brought to the classroom and instructional context their own beliefs, practices, and ways of viewing
teaching and learning. It is difficult to try to study students as a homogenous group because they are not homogenous. The results of this study are specific to the site and the classes to which the gesture interventions were applied.

7.1.2 The Impact of the Classroom Instructor

In this study, I attempted to find a balance between providing the interventions and maintaining some distance between researcher and participants. Once I had handed over the gesture intervention videos and the review videos to the classroom instructor, I had no more control over their use. It was up to the instructor to release the videos on time and to integrate them into their classroom work so that students engaged with the video content. I was lucky that the instructor with whom I worked made sure the students watched the videos, including them as part of the students’ expected work, and kept me updated on what they were doing with the videos. A second instructor who initially agreed to take part in this study did not release some of the interventions on time and failed to release one intervention completely. I was unable to use data from their classes.

7.1.3 Sample Size

For the purposes of this research, as it pertains to the context in which it is was embedded, the number of student participants (two classes of 25 and 26 students each) was acceptable. Those students represented about 1/10th of the total number of students that were enrolled in first year ASL classes during the term that the data was collected. That number becomes far less acceptable if we try to extrapolate the data to apply it to a larger population of learners. To be able to do that and say with any certainty that the results hold true across multiple contexts, would require a much larger study; possibly one that compares results across programs at different universities.
7.1.4 Questionnaire Design

The gesture questionnaire that I distributed to students at the end of the 12 weeks of classes specifically targeted gesture. Asking only about gesture may have skewed the results. After all, one class had a gesture intervention video every two weeks, and this gave them the information they needed to answer the questionnaire questions. In other words, students learn what we teach them. However, this would not account for more gesture use in the students’ signed discourse.

I could have created a different questionnaire—perhaps one where the questions about gesture were mixed into a longer list of questions about ASL learning—but I wanted to keep the questionnaire short. I wanted students to be able to complete the questionnaire quickly so that there was less chance that they would get tired of writing and decide not to bother filling it out (which can happen with long surveys). Using a longer questionnaire with a mix of general and more targeted questions may not have worked, either, because I had to explain the study to students when I visited the class—before they filled out the questionnaire—which means they would already have been primed to focus on gesture use.

7.1.5 Scope

This study used an explicit and implicit instruction group to determine the efficacy of a series of gesture interventions. The results showed that, after 12 weeks of study and exposure to five gesture intervention videos, students in the explicit instruction group incorporated significantly more gesture in their signing. They also had a deeper and more sophisticated understanding of the uses and functions of gesture in ASL. Due to time and resource limitations, the scope of this study was limited. I chose to measure
student gesture output and I explored student understanding of gesture. There was, and is, so much more that could be investigated.

In the study I used abductive reasoning and drew conclusions on the basis of what I observed in the collected data; it is a qualitative study that is suggestive. There are many questions pertaining to comprehension that this study does not address. For example, did students in the explicit instruction group have an easier time processing gesture as language? Did they start to notice gesture use more? I had also initially hoped to be able to present a better picture of the placement of student gesture within signed discourse. Did participants place gesture within signed sentences in the same way that a native signer would? How did they provide clarity and context to their gestures? The reality of dealing with a large amount of raw video data from the signed assessments as a single researcher meant I had to limit what I investigated.

7.2 Theoretical and Pedagogical Reflections

Over the course of this study, I kept personal notes on successes and things that I struggled with. In this section I discuss how my choice to use my voice in the gesture interventions impacted my research, and how the interventions affected my teaching and those students enrolled in my own classes.

7.2.1 Voicing and the No Voice Policy

Tanner and Doré (2019) explored the idea of translanguaging in connection with the No Voice policy in ASL, stating that “For learners, selective use of voicing…may be an asset rather than something that diminishes ASL learning” (p. 286). However, others may view translanguaging practices in ASL as a threat. For example, Snoddon (2017)
examined deaf ASL instructors’ use and promotion of classical ASL varieties as a way to reject what is seen as the intrusion of spoken English linguistic contact. The trans in translinguaging “forces us to grapple with change, with movement, with fluidity, and perhaps with conflict” (Leung & Valdés, 2019, p. 349).

As noted in Chapter One, ASL has become an in-demand language class at colleges and universities across North America. Consequently, ASL is “experiencing ethical and moral growing pains, where increased language recognition and growth is checked by questions of language ownership and language shift through the increased contact between ASL and English” (Tanner & Doré, 2019, p. 285). There are critical reasons for the No Voice policy, especially given the history of marginalization and oppression of ASL. Leung and Valdés (2019), argue that when it comes to language teaching “we need to develop an ongoing research agenda focused on translinguaging that can inform instruction for different groups of students” (p. 365).

7.2.2 Changes to My Teaching

I did not include classes that I was teaching in the final collection of data for this study. I have, however, used the gesture interventions in several of my classes and have kept notes on my observations. What follows are my qualitative interpretations and impressions of what I experienced as an instructor while using the interventions.

In the classes where I used the gesture intervention videos, I noticed that students’ gestures became more systematic and constrained over time. Initially, students produced gesture in similar ways to what McNeill (1985) found in children. For example, McNeil (1985) described how children prefer to show running using their feet rather than hands, and how their gesture space is always centred on themselves, making their gestures
appear as enactments. I have found that this is also common in new sign language learners. When they are asked “What do you think the sign for this might be?”, the actions they subsequently demonstrate tend to be large, centered on themselves, and enacted as whole body or multi-part gestures.

In classes where students viewed the gesture intervention videos, the students quickly became more experienced with both signs and gestures, and their gestures rapidly became smaller. They began to substitute their fingers, hands, and arms as proxies to show actions done by the lower half of the body. They also started to use location references, indexing, and shifting along with gestures to show the actions and movements of non-present people and characters. I noted this happening more quickly and more frequently with students in classes where I used the gesture intervention videos compared to classes where I used the review videos, or no extra materials at all.

I noted that there was a transformation in students’ gesture production as new information became given information. During conversation practice in ASL, students would often incorporate a new gesture. The first time the gesture was used it was performed slowly and precisely. If the gesture was performed again, the production was looser and sloppier. If the gesture was performed several times within the same conversation, it was often pared down to a single movement + handshape. For example, in one class, a student described folding laundry. At first the student signed SHIRT, then gestured holding the shirt up by the corners, putting the shirt down on a flat surface, folding the sleeves in, folding the bottom up, then the top down. On a second demonstration the signer only gestured folding the bottom up and the top down. On a third and subsequent uses, the gesture was just a quick fold from the bottom up. This is
similar to what Gerwing and Bavelas (2004) found when they looked at the accumulation of common ground in gesture (described in Chapter Three).

The gesture interventions also provided a new topic to discuss in class. The students and I would spend time looking at and comparing signs and gestures and creating sentences or scenarios where a signer might prefer to use a gesture over a sign. They came to class with examples of gestures they had seen or thought of that they thought would fit well into an ASL stories. Not every student was interested in gesture use, but as an instructor I felt that the gesture interventions provided a new level of enrichment to the class. The instructor with whom I worked during this dissertation research also reported that the gesture interventions were a positive addition to the class and has since asked to use the gesture intervention videos again, outside of the study.

7.3 Future Directions

The gesture intervention videos used in this study resulted in significant changes to students’ use and understanding of gesture, but there are so many more questions to explore. How might the gestural abilities of the implicit and explicit instruction groups progress as they continue in their ASL studies? Without additional, focused gesture education in future classes, what happens to students’ gesture use? Could a different, more gesture-intensive approach produce stronger results? Future iterations of this study could include testing the interventions in other ASL programs, at different ASL levels, or tracking student gesture development longitudinally. An extension on this study might be the development of a new ASL curriculum that incorporates more gesture into ASL teaching and learning. It would be fascinating to conduct a longer-term study that looks at
creative expression and ASL fluency in students who have been exposed to a more gesture-focused curriculum. This may help, in part, to address the low fluency levels of ASL university graduates found by Beal (2020).

In section 5.8.1.3.3 I described several features that I had initially examined, such as strings of gestures, or the body parts that participants used when performing gestures, that were of interest but beyond the scope of the present study. In future I would hope to continue to investigate these features as their role in ASL acquisition may be important.

This study also has implications for the assessment of gestural resources, or what constitutes effective communication, in other languages. Communication is multimodal, with social semiotics at the centre (Kress, 2010). Gestures, or more specifically visible utterances (Kendon, 2004) are part of an attempt to express meaning and are governed by social conventions (Kendon, 2013). Gesture and sign are two modes that contribute to meaning making in ASL. The process that I followed for the analysis of the signed assessments relied on what was essentially a criterion referenced tool that allowed me to look at the dynamism in signed discourse and pick out one mode: gestures. This method of examining gestures could be used or built on by other researchers who are interested in communication as a multimodal construct.

This study was initially sparked because a gesture I used while signing was not understood by an interpreter. At the time, I regularly used gesture when I signed, but rarely touched on it in my teaching. As a result of this study, instruction and discussions of gesture have become a regular part of how I teach ASL to my hearing students. When speakers use gesture they use similar strategies to signers, and signers regularly use gesture in their signing. As Kendon (2004) put it, gesture and sign are on common
ground. I can no longer imagine trying to instruct students in ASL without bringing gesture into the (spoken or signed) conversation. I hope that other ASL instructors or researchers who are interested in gesture take the results of this study as positive affirmation that the intersection of gesture and ASL is an area worth investigating.
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Appendices

Appendix A
Student Recruitment Documents

Included:
1. Study information for student participants
2. Student participant data collection consent form
3. Student participant gesture questionnaire consent form
Ethics Protocol Clearance ID: Project # 107772

Title of Research Project: Gesture and ASL Acquisition in hearing second language learners.

Date of ethics clearance: October 25th, 2017

Ethics clearance for the collection of data expires: October 31st, 2018

April 10th, 2018

Dear Sir or Madam,

My name is Josée-Anna Tanner, and I am a PhD student in Applied Linguistics and Discourse Studies at Carleton University. I am currently working on a dissertation project under the supervision of Doctor Janna Fox.

I am writing to you to invite you to participate in a research study that is part of my doctoral work. The study focuses on hearing learners who are learning American Sign Language. The aim is to better understand the signing and gestures patterns that learners use and acquire as they proceed through their first year of ASL studies. Specifically, I plan to analyze how students’ signing changes and develops by looking at their completed coursework. This would include any and all video tests, as well as instructor feedback that was given for each test. Student data from across four classes will be analyzed and compared. The results of the course work analysis will be supported (or contrasted) by interview data, where students will be asked to reflect on their ASL learning over the fall semester.

You may participate in this study in one of three ways:

1) By allowing me to collect your course data for use in analysis once the course has ended. This requires only that you consent to allowing me to collect your coursework from your course instructor once the course has completed and all final marks have been submitted. In the case of video data, no part of your actual video image will be used in the final presentation of the study and your participation will remain confidential.

2) Completing a short five-question questionnaire on ASL learning and gesture.

3) If you have given consent for me to use your coursework for analysis, you may also choose to participate in a subsequent one-on-one 30-45 minute interview. The interview will take place next semester (summer 2018). With your permission, I would like to video-record the interview. During the interview you will be asked to reflect on your ASL learning and discuss your learning experiences.
All responses acquired during the interview will be kept confidential. All coursework and interview data will be coded for analysis. Nothing will be attributed to you as an individual, and no record of your name will be kept in relation to your responses. Coded data will be accessible to myself and my supervisor, however, I am the only one who will have access to the raw, un-coded video and audio recordings. Video recordings (your image) will not be used in the final report. All electronic data, including video-recordings, audio-recordings, and written documents will be kept on an encrypted and password protected external hard drive. Any hard copy data will be stored in a locked file cabinet.

You may take part in almost any combination (all three, two, or just one part) of the data collection. However if you have not consented to have your coursework data collected you may not take part in the interview.

If you no longer wish to participate in this study, for any reason, you may withdraw a) from the coursework collection any time before May 10th, 2018 and/or b) from the interview any time up to two weeks (14 days) after the interview has taken place. You may withdraw by contacting me via email or in person. If you withdraw from the project within the stated timelines any data I have received from you will be destroyed. Once the stated timelines have passed, you may no longer withdraw, and any data collected will be kept.

You may withdraw from the questionnaire any time before you hand the questionnaire in for collection. Since the questionnaires are anonymous, once the questionnaire has been submitted withdrawal of your responses is not an option.

Upon completing of the study, if you are interested, I would be happy to provide you with a summary of the main research findings or an e-copy of the final report.

The ethics protocol for this project was reviewed by Carleton University Research Ethics Board, which provided clearance to carry out the research. If you have any ethical concerns with the study, please contact Dr. Andy Adler, Chair, Carleton University Research Ethics Board-A (by phone at 613-520-2600 ext. 2517 or via email at ethics@carleton.ca)

If you would like to participate in this research project, or have any questions or concerns, please feel free to contact me by email, joseanna.tanner@carleton.ca
If you wish you may also contact my supervisors Dr. Janna Fox, through the School of Linguistics and Language Studies by email at janna_fox@carleton.ca

Thank you very much for your consideration.

Sincerely,

Josée-Anna Tanner
Ethics Protocol Clearance ID: Project # 107772

Title of Research Project: Gesture and ASL Acquisition in hearing second language learners.

Date of ethics clearance: October 25th, 2017

Ethics clearance for the collection of data expires: October 31st, 2018

April 10th, 2018

I ____________________________, choose to participate in a study looking at hearing learners who are learning American Sign Language. The aim of the study is to better understand the signing and gestures patterns that learners use and acquire as they proceed through their first year of ASL studies by examining their completed coursework. The researcher for this study is Josée-Anna Tanner in the School of Linguistics and Language Studies at Carleton University. She is working under the supervision of Dr. Janna Fox in the School of Linguistics and Language Studies at Carleton University.

Conditions of participation

My participation in this study will be as follows:
I will allow the researcher to collect all my completed work for this course, once the course is over. Coursework may include video tests, written tests, completed homework, and any comments from my instructor on those items. The researcher will collect my coursework from my class instructor once the course is over. Neither the researcher nor the class instructor will know that I have chosen to take part until after the course is over and all final grades have been submitted and approved by the dean.

All data acquired from the collection of coursework will be kept confidential. Data will be coded for analysis. No responses, work, errors, comments, or anything else taken from my coursework will be attributed to me as an individual, and no record of my name will be kept in relation to my data. Research data will only be accessible to the researcher and her supervisor, however, the raw, un-coded video data (such as ASL tests) will only be accessible by the researcher, to further ensure confidentiality. The raw video-recordings (my image) will not be used in the final report. Once the project is completed, all research data will be kept and will potentially be used for other research projects on the same topic. All electronic data, including video-recordings and written documents will be kept on the researcher’s encrypted, password protected external hard drive computer for four (4) years, until the researcher has completed her PhD. During this time, my data will potentially be used for other research projects on the same or related topics. I understand that all electronic data, including audio-recordings, and written documents for this research project will be kept on a password protected and encrypted hard drive belonging to the researcher. Any hard copy data (written homework and quizzes) will be scanned and entered into the same password protected drive, after which the hard copy will be destroyed by shredding.
If I no longer wish to participate in this study, for any reason, I may withdraw from the coursework collection any time before May 10th, 2018. I may withdraw by contacting the researcher or her supervisor - Dr. Janna Fox - via email or in person. If I withdraw from the project within the stated timelines any data I have supplied to the researcher will be destroyed.

Upon completion of the study, if I am interested, the researcher will provide me with a summary of the main research findings or an e-copy of the final report.

If I have any further questions about this study, I can contact the researcher by email at, joseeanna.tanner@carleton.ca If I wish you may also contact her supervisor, Dr. Janna Fox, through the School of Linguistics and Language Studies by email at: janna_fox@carleton.ca

The ethics protocol for this project was reviewed by Carleton University Research Ethics Board, which provided clearance to carry out the research. Should I have questions or concerns related to my involvement in this research, I may contact: Dr. Andy Adler, Chair, Carleton University Research Ethics Board-A (by phone at 613-520-2600 ext. 2517 or via email at ethics@carleton.ca)

Researcher contact information
Josée-Anna Tanner
School of Linguistics and Language Studies
Carleton University
joseeanna.tanner@carleton.ca

Supervisor contact information
Dr. Janna Fox
School of Linguistics and Language Studies
Carleton University
janna_fox@carleton.ca

I ________________________________, choose to participate in this study by allowing my completed coursework for this class to be collected for analysis.

I would like a copy of the final project. _____Yes _____No

My email address is: ________________________________

_________________________________________  ___________________________
Signature of participant                            Date

_________________________________________  ___________________________
Signature of researcher                            Date
Ethics Protocol Clearance ID: Project # 107772

Title of Research Project: Gesture and ASL Acquisition in hearing second language learners.

Date of ethics clearance: October 25th, 2017

Ethics clearance for the collection of data expires: October 31st, 2018

April 10th, 2018

I ___________________________ volunteer to participate in a study looking at the signs and gestures used by hearing learner of American Sign Language. The aim of the study is to better understand the signing and gestures patterns that learners use and acquire as they proceed through their first year of ASL studies. The researcher for this study is Josée-Anna Tanner in the School of Linguistics and Language Studies at Carleton University. She is working under the supervision of Dr. Janna Fox in the School of Linguistics and Language Studies at Carleton University.

I will be responding to five (5) questions that ask me to reflect on my experience learning ASL in the summer 2018 semester. The questions will take 5-10 minutes to complete. I have the right to decline to answer any questions by answering with N/A or by leaving the question blank. I can end my participation by exiting the questionnaire any time during the response process without consequence. I have the right to email the researcher with questions about the project or my involvement at any time. Since this questionnaire will be anonymous, withdrawal of my answers after the questions have been submitted is not an option.

All responses acquired from these questions will be kept confidential. My data will be coded for analysis. No comments or responses will be attributed to me as an individual, and no record of my name will be kept in relation to my responses. Research data will only be accessible to the researcher and her supervisor, however, the raw question responses and comments will only be accessible to the researcher, to further ensure confidentiality. Once the project is completed, all research data will be kept for four (4) years, until the researcher has completed her PhD. My data will potentially be used for other research projects on the same or related topics. All electronic data, including written documents for this research project will be kept on a password protected, encrypted external hard drive belonging to the researcher.

If I have any further questions about this study I can contact the researcher by email at joseeanna.tanner@carleton.ca If I wish I may also contact her supervisor, Dr. Janna Fox, through the School of Linguistics and Language Studies by email at: janna_fox@carleton.ca

The ethics protocol for this project was reviewed by Carleton University Research Ethics Board, which provided clearance to carry out the research. Should you have questions or concerns related to your involvement in this research, you may contact:
Dr. Andy Adler, Chair, Carleton University Research Ethics Board-A (by phone at 613-520-2600 ext. 2517 or via email at ethics@carleton.ca)

Researcher contact information
Josée-Anna Tanner
School of Linguistics and Language Studies
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Supervisor contact information
Dr. Janna Fox
School of Linguistics and Language Studies
Carleton University
janna_fox@carleton.ca

By completing and returning responses to the questions I am indicating that I have read and understood the information above and I agree to participate.
Appendix B

Transcript Example for Gesture Intervention Video One: What are Gestures?

Note: Words in capital letters are an ASL gloss. Words in capital letters between /   / are gestures.

Gestures are intentional movements performed by different part of the body. This could be your hands, arms, torso, or even your face. But gestures aren’t just any kind of movement. Involuntary movements are not gesture. If you pinch me and flinch away, that’s not a gesture. If I get bad news and my eyes well up with tears, that’s not a gesture. Those are involuntary actions.

Gestures are movements that are intentional, and we use gestures as part of our overall communication system. When we use speech and gesture at the same time, the gestures are part of what we mean to say. In spoken languages gestures are often used as accompaniments to speech. I could say “Oh, it hurts” but without additional context you might not know what it is that’s causing me pain. If I say “Oh, it hurts” while rubbing my temples that gesture is treated as part of what I’m trying to communicate, and you understand that it is my head that hurts.

You might think that since you’re learning American Sign Language (ASL) and since it’s a visual language, then all you need to focus on are the signs. And learning to correctly produce signs is important! But if you only focus on signs and ignore gesture, you’ll be missing out on opportunities to use gesture in ways that can help you make your signing clearer or more personalized. Skilled fluent signers use gesture as well as signs when they communicate to express different types of ideas, or to express their ideas in more personalized or creative ways. Sometimes, even if there is a sign that could be used, a fluent signer will use a gesture instead because it better fits what they are trying to express, or the gesture is more evocative, or simply more visually interesting. For example, imagine that I’m trying to get someone to come over to where I am. I could express this in ASL using the sign COME-TO-HERE. But if I’m annoyed or angry at them for some reason, I might prefer to use this gesture /FINGER CROOKED/ Or if I’m excited and want them to hurry up, I might gesture like this /FLAT HAND PALM UP, BRING TOWARDS SELF/.

Imagine another scenario. You are a parent walking with your two children. IN ASL you could sign MOTHER, CHILDREN 2, WALK. And you’d be understood. But it’s a little bit boring. You could add a pointing gesture to show that there is one child on either side of the parent. Suddenly you’re giving the viewer a clearer picture of the scene. You could then use a gesture to show that the Mother is holding both children’s hands. You could swing your arms, or have to tug one child back. When they come to a road, the Mother might put her arms out to stop the children from hurrying across. She could gesture for them to wait, scold them for not waiting, and then look both ways and finally let them cross. With a few simple additions, your acceptable but dull sentence is now a more descriptive out visual scene – and you haven’t had to learn any new signs! It’s all built on gestures and movements that you already understand and know how to use.
Over the next few days as you practice signing, start thinking of gestures you might be able to add to your signing. Try to become aware of your own gestures and also observe the gestures used by the people around you. If you see a gesture that you think is highly communicative, make a note of it so you can try adding it in to your own gestural and signing repertoire.

Happy signing!
Thanks for watching.
Appendix C
ASL and Gesture Questionnaire

ASL and Gesture Questionnaire
The questions below ask you to reflect on your ASL learning experiences. You can decline to answer any question by writing N/A in the response area or by leaving the question blank. Do not include your name anywhere on this questionnaire.

1. Based what you learned in your ASL 1010 class, how would you describe what a gesture is?

____________________________________________________________________________________

____________________________________________________________________________________

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2. Do you think gestures are important in ASL? Please explain briefly.

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3. From what you learned in your ASL 1010 class, is there a difference between a gesture and a sign? Please explain briefly.

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4. How can signs and gestures be used together? Please explain briefly.

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5. If you have any other thoughts, questions, comments or reflections on your experience with ASL and gesture, please add them below.

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Thank you for your participation!