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Video Technology-mediated Literacy Practices in American Sign Language (ASL) : A Study of an Innovative ASL/ English Bilingual Approach to Deaf Education

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Video Technology-mediated Literacy Practices in American Sign Language (ASL):  
A Study of an Innovative ASL/English Bilingual Approach to Deaf Education

A dissertation submitted in partial satisfaction of the requirements for the degree  
Doctor of Education

in

Teaching and Learning

by

Alexander Zernovoj

Committee in Charge:

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2015

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The Dissertation of Alexander Zernovoj is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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Chair

University of California, San Diego

2015

## **Dedication**

This dissertation is dedicated to my wife Amy. Thank you for your endless support and patience, and for your editing prowess and feedback. A special thanks to my daughters Karly and Shelby who kept me grounded with endless hours of fun and laughter.

## **Epigraph**

Camera is our pen, video is our paper.

*Jevon Whetter, ASL Teacher/Filmmaker*

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- Zernovoj, A. (2005, February). *Language and culture of deaf people*. Invited presentation presented at the seminar of the UCSD Chancellor's Undergraduate Diversity Leadership Institute, University of California, San Diego, La Jolla.
- Zernovoj, A., & Kassel, A. (2004, October). *Comprehensible input at home and school*. Invited presentation presented at the workshop series of the Deaf Community Services of San Diego, Inc., San Diego, CA.
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## **Abstract of the Dissertation**

Video Technology-mediated Literacy Practices in American Sign Language (ASL):  
A Study of an Innovative ASL/English Bilingual Approach to Deaf Education

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Helping all students achieve literacy is viewed by many as a fundamental – perhaps, the most fundamental – goal of education in the United States. Achieving literacy, specifically for Deaf bilingual students, has been an ongoing main focus of deaf education. There is a trend toward the use of video technology as a learning tool for Deaf bilingual students’ American Sign Language (ASL) language and literacy development (Humphries, 2013).

The purpose of this mixed methods study was to investigate the ASL literacy practices in which Deaf bilingual high school students engage in three different types of ASL literacy skills during video viewing and discussion of ASL videotexts in their

language arts classes. The study is based on the theoretical underpinning focusing on the nature of Deaf bilingual students' multiliteracies (New London Group, 2000) and the relationship between their ASL and English literacy skills (Cummins, 2006). The study included 18 Deaf bilingual high school students and their two language arts teachers. The Deaf bilingual students' ASL and English assessment scores were collected, and their video viewing and discussion activities were videorecorded over two periods of observation. The videorecordings were transcribed and coded to discover patterns of Deaf students engaging in functional, cultural and critical literacy skills. Correlation and regression analyses were employed to find the relationship between the students' ASL and English literacy skills as well as the relationship between their literacy skills and their average percentages of utterances for each type of ASL literacy.

The first finding was Deaf students' ASL and English proficiencies appear to dictate the nature, complexities and patterns of their ASL literacy-related utterances. The second finding was contexts appear to influence the nature and patterns of Deaf students' ASL literacy-related utterances. The third finding was that there is a statistically significant relationship between the Deaf students' ASL and English test scores, and also between these test scores and their proportional percentages of different types of ASL literacy-related utterances observed in their classes. These findings suggest that the ASL video viewing and discussion activities create opportunities for the Deaf bilingual students to develop and use their ASL literacy skills.

## Chapter 1: Introduction

### 1.1. Background and Significance

Helping all students, especially Deaf<sup>1</sup> bilingual students, achieve literacy is viewed by many as a fundamental – perhaps, the most fundamental – goal of education in the United States and elsewhere. While it is a common practice to see many schools and programs that serve Deaf students allocating more school time to language arts (i.e., reading and writing) than any other subject, there is a trend toward the use of modern video technology as a learning tool for the American Sign Language (ASL) language and literacy development of Deaf bilingual students (Humphries, 2013).

This technology had matured to the point where the wide availability of videodiscs and digital videos, especially downloadable online videos, made it possible for Deaf bilingual students to use ASL as a foundation for English literacy. For example, with the videodiscs and digital videos, Deaf bilingual students could quickly scan through to any part of multimodal literary or informational videotext produced in signed language (for example, ASL) and study, understand, use, and analyze this videotext in similar ways as they already do for printed English literary or informational text. An ASL videotext is described here as the video medium through

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<sup>1</sup> This paper follows the convention used by Humphries (2013), who states: “The capitalized ‘Deaf’ follows the convention of distinguishing a signed-language-using community of people who do not hear (Deaf people) from all non-signing people who do not hear (deaf people)” (p.7). However, in the discussion of literature and studies reviewed here, I mainly used the terms scholars wrote, so readers can discern who is using the terms.

which a signer uses ASL to communicate ideas, experiences, opinions and/or information. The ASL videotext may also contain a combination of secondary visual images to support the ASL content, such as still or moving pictures, text, graphics, and sounds.

Numerous studies that have described and documented examples of Deaf bilingual students developing ASL and English literacy skills under a variety of contexts in their bilingual language arts classes (e.g., Harris, 2010; Humphries & MacDougall, 1999; Padden & Ramsey, 1998; Ramsey & Padden, 1998; Ricasa, 2010; Schick & Gale, 1995; Wolter, 2006). Additionally, countless publications have mentioned the use of ASL videotexts as a valuable tool in developing language and literacy skills in Deaf bilingual students (e.g., Snoddon, 2010; Snoddon, Small, & Cripps, 2004). Only a few research studies have been done on the benefits of using video technology for Deaf bilingual students' ASL language and literacy development (Beal-Alvarez & Easterbrooks, 2013; Golos, 2010a, 2010b; Golos & Moses, 2011, 2013a; Snoddon, 2010; Zernovoj, 2009). The number of studies on technology-mediated ASL language and literacy development is limited and focused only on Deaf preschool and elementary students. The growing trend of helping Deaf bilingual students fully realize their ability to use ASL to view and compose multimodal texts through video technology provides a strong impetus for investigating the technology-mediated ASL language and literacy development of Deaf bilingual students.

The present study explored, documented, analyzed and reported on a situation and context little known in the literature on ASL literacy development. This is a study

of ASL literacy practices within the context of Deaf bilingual high school students' language arts classes where ASL is the focus of instruction. This study investigated the patterns and frequencies of Deaf bilingual students engaging in functional, cultural and critical ASL literacy skills during viewing and discussion of multimodal ASL videotexts. This study is significant in three ways: (1) It filled a gap in the research by studying the ASL literacy practices of older (high school) Deaf students; (2) It documented instances of Deaf students using ASL literacy skills, and surveyed and reported the patterns of Deaf high school students' ASL literacy use in their language arts classes; and (3) Its findings have potential to help inform current understanding and practices of technology-mediated ASL literacy development and use.

The Chapter II: Literature Review section presents literature review of three interrelated areas: the bilingual approach to deaf education, perspectives on ASL literacy, and research on video technology mediation of ASL literacy development and uses. Next, the Chapter III: Research Methodology section outlines research questions and design, theoretical framework, positionality, research participants, setting, data collection, analysis and limitations. The Chapter IV: Findings of the Study analyzes and presents data in tabular, graphical and textual form based on the present study's research questions. Finally, the Chapter V: Conclusion presents a summary of findings, proposed theories based on the literature review and the findings of the present study, implications for practice, and recommendations for future research.



## **Chapter 2: Literature Review**

In order to provide an inclusive review of literature related to technology-mediated ASL literacy development and practices of Deaf bilingual students who (along with their teachers) use video technology to view and analyze multimodal videotext, there are three areas of literature from which to review. The first review focuses on theory and research on the ASL/English bilingual model in deaf education. Next, the second one covers historical and contemporary views on ASL literacy, informed by different theoretical perspectives on what constitutes literacy. The third and last review provides a synthesis of the studies on Deaf bilinguals' technology-mediated literacy development and use.

### **2.1. Bilingual Model in Deaf Education**

The following review discusses the current empirical and theoretical knowledge of the bilingual model in deaf education. This review outlines the theories promoted by those who advocate for bilingual education for Deaf children. This review also presents a summary of research on the application of these theories in deaf education.

The synthesis of this review is limited to the theoretical discussions of Cummins's linguistic interdependence hypothesis and threshold hypothesis, and some of the empirical studies grounded in Cummins's theories. This limitation is based on the rationale that many, if not most, practitioners and researchers use the linguistic interdependence hypothesis in presenting a rationale for their bilingual model in deaf

education. The late 1990s was when the first relevant research studies appear that support the applicability of Cummins' theories to bilingual education for Deaf children, and they are covered here. Few studies over the past few years are also included here as instances of how Cummins' theories are applied in deaf education. In short, the findings from these research studies presented here support or present instances of the theoretical foundations for the bilingual model in deaf education. However, there are some people (e.g., Mayer & Wells, 1996, 1997) who attempt to argue that these theories do not apply to deaf education even though there are no empirical studies that complicate or contradict these theories that will be discussed later below.

### ***2.1.1. Classic Theoretical Underpinning of the Bilingual Model in Deaf Education***

The education of deaf children in the United States originally started with a bilingual model of deaf education in the early 1800s, but was soon replaced by a traditional "deficit" model of deaf education in the latter part of the 1800s (Lane, 1984; Lane, Hoffmeister, & Bahan, 1996). This "deficit" model was constructed as a written (and, in some cases, spoken) English only, deficit-based pedagogy that disregarded and excluded ASL as the language of instruction (Humphries, 2013; Lane, 1999). This was the model that was the norm in American deaf education for over a hundred years, even though the idea of an ASL/English bilingual approach was the mode of deaf education that had always been preferred and advocated for by Deaf people since the early 1800s (Bailes, 2001; Nover, 2000). It was not until the 1970s

when the bilingual model of educating Deaf students made a strong return in the field of deaf education (Humphries, 2008). After over a century of the deficit model, most of the deaf high school graduates still are unable to score proficient or advanced on the standardized tests for English-language arts (California Department of Education, 2007). They also score well below their hearing peers and read between third and fourth grades level when they graduate from high school (Commission on Education of the Deaf, 1988; Gallaudet Research Institute, 1996; Qi & Mitchell, 2011; Traxler, 2000).

The body of knowledge concerning signed languages and sign language acquisition emerged in the late 1960s and has been growing at a rapid rate validating sign languages as legitimate languages (Fromkin, 1991). This knowledge affected a rapid change in the consciousness and view of Deaf people as a bilingual people of cultural and linguistic minority (Bauman, Nelson, & Rose, 2006; Humphries, 2008; Nelson, 1995; Padden & Humphries, 1988; Parasnis, 1996; Tucker, 2006).

In the 1970s, well into the 1980s, scholarly discussions emerged, in response to the deaf high school graduates' dismal academic performance under the historic "deficit" model, circulating opinions and theories for the promotion of bilingual education for deaf children (e.g., Cokely, 1978; Coye, Humphries, & Martin, 1978; Curry & Curry, 1978; Kannapell, 1974; Quigley & Paul, 1984; Reagan, 1985; Stevens, 1980; Strong, 1988; Woodward, 1978). These discussions argue that the bilingual education is a good fit for Deaf children because the culminating evidence from research (even in its infancy) of sign languages has shown that ASL is a natural

language and the fact that ASL is the language shared by many Deaf students. These discussions culminated in few scholarly publications beginning in the later part of the 1980s, including a influential paper by Johnson, Liddell and Erting (1989). The Johnson et al. (1989) paper was one of the first widely read publications that criticized the English monolingualism form of the “deficit” model in deaf education, by contending that these dismal academic results represent a failure of the historic “deficit” model. This criticism laid the groundwork for a shift in North American deaf education from a traditional deficit model to a sociocultural view of Deaf children as bilingual sign language users.

During the 1990s, professionals working with Deaf children began to adopt a bilingual model in deaf education, introducing ASL into classrooms, schools, and homes as a primary language of instruction (e.g., Bosso & Kuntze, 1991; Gallimore, 2000; Philip, 1990; Reynolds & Titus, 1990, 1991; Strong, 1995; Vincent & Bello, 1991). They all based their justifications for adoption of a bilingual model based on the research into the bilingual development of hearing children. The current theoretical model draws on Cummins’s linguistic interdependence hypothesis (Cummins, 1979, 1981, 1991, 2005; Cummins et al., 1984) and proposes that the most appropriate route to bilingualism for Deaf children involves using their well-developed skills in sign language (ASL) as a basis for developing literacy skills in a second language (English) (Cummins, 2006). Cummins demonstrated through his review of decades’ worth of empirical data with spoken language population (i.e. bilingual hearing learners) that

competence in a second language is a function of proficiency in the native language (Cummins, 2005; Cummins et al., 1984).

As deaf education undergoes a paradigmatic shift from the “deficit” English-only model to the bilingual model, several researchers (e.g., Mayer & Wells, 1996, 1997) challenged the applicability of the linguistic interdependence hypothesis in the ASL/English context. Mayer and Wells argued (without any empirical evidence) that based on this interdependence hypothesis, the transfer of literacy skills from ASL to English cannot occur because Deaf learners’ first language (ASL) has no written form. Therefore, they cannot acquire literacy skills in their first language that they would need to transfer to the written form of a second language (English).

Cummins (2006) himself addresses Mayer and Wells’ argument regarding the relationship between ASL and English by saying that, “ASL clearly constitutes an appropriate language for early conceptual development for those children who have, or are provided with access to a signing community” (2006, p. 7). Additionally, Cummins clearly states that his interdependence hypothesis does not refer simply to developing skills such as decoding written text, but “a deeper conceptual and linguistic proficiency that is strongly related to the development of literacy in the majority language” (2005, p. 4).

Although the Cummins’s linguistic interdependence hypothesis is the most frequently cited theory for both supporting and rejecting the bilingual model in deaf education, Cummins originally introduced the threshold hypothesis to go along with his linguistic interdependence hypothesis (Cummins, 1979, 1981). It supported his

data on the strong correlation between native language proficiency and acquiring second language (English) literacy skills. Specifically, Cummins used this hypothesis to be able to account for variation in educational outcomes among bilingual students in his data. The threshold hypothesis posits that there are threshold levels of linguistic competence in both languages that a bilingual child must attain to positively influence his cognitive and academic functioning. While this threshold hypothesis is rarely, if ever, discussed or used as a theoretical construct for the bilingual model in deaf education, it has a lot of relevance for the practitioners and researchers of this model. This explains why many times, many Deaf children learning both ASL and English at the same time do not necessarily demonstrate an interdependence effect (often due to the lack of emphasis in ASL fluency and ASL literacy in their bilingual education). For example, in a given bilingual deaf school or program, there often are a wide variety of Deaf children with different language backgrounds. There will be Deaf children who may not have sufficient access to sign language (ASL) as well as spoken language (English) at home before they enter school, and, at the same time, there may be Deaf children who have had a consistent exposure to a sign language at home before they entered school. This contributes to variation in the data of their ASL proficiency and English literacy skills.

Challenging Mayer and Wells' and other skeptics' argument against the applicability of linguistic interdependence to the bilingual model in deaf education, numerous researchers have investigated the correlation between ASL and English literacy acquisition, and reported documenting for the first time significant positive

relationships between students' ASL proficiency and their English literacy (i.e. reading and writing) skills (e.g., Hoffmeister, de Villiers, Engen, & Topol, 1997; Padden & Ramsey, 1998; Prinz & Strong, 1998; Singleton, Supalla, Litchfield, & Schley, 1998). These pioneer correlation studies, to this day, have been consistently cited in the relevant literature supporting the use of this model. From that point on, further studies consistently add support to this model (Harris, 2010; Kuntze, 2004; Ricasa, 2010; Singleton, Morgan, DiGello, Wiles, & Rivers, 2004). Mounting evidence from these studies consistently found significant positive relationships between students' ASL proficiency and English literacy skills, which imply the transfer of conceptual knowledge and metacognitive and metalinguistic skills developed in ASL to English. These empirical studies findings offer support for Cummins' interdependence hypothesis as well as justification for the bilingual model in deaf education. These studies will be discussed further in the following section.

### ***2.1.2. Research on the Applicability of the Bilingual Model in Deaf Education***

During the 1990s, several empirical studies (e.g., Hoffmeister et al., 1997; Padden & Ramsey, 1998; Prinz & Strong, 1998; Singleton et al., 1998) were carried out for the first time to investigate the relationship between Deaf students' proficiency in ASL and their English literacy skills, and each study found a positive correlation between students' ASL proficiency and English literacy skills.

Prinz and Strong (1998) (see also Prinz et al., 1996; Strong & Prinz, 1997, 2000) presented findings that support Cummins' model of linguistic interdependence.

Over the course of their study, they examined ASL proficiency and English literacy skills among different groups of one hundred fifty-five (n=155) eight- to fifteen-year-old students attending a school for the deaf in California; forty students had deaf mothers. The inclusion of the students with deaf mothers ensured that a sufficient number of students had native-like skills in ASL. The inclusion of these students provides a crucial test of the hypothesis that ASL proficiency levels are related to English literacy skills, because these students would be expected to have developed ASL in a typical fashion as hearing students with their native spoken language.

To assess the relationship between ASL proficiency and English literacy skills, Prinz and Strong conducted a study using their ASL and English test batteries of literacy skills. ASL production subtests included classifier production test and sign narrative. ASL comprehension was evaluated using ASL story comprehension test, classifier comprehension test, time marker test and map marker test. English literacy subtests included English vocabulary, sentence and paragraph comprehension, and productive vocabulary (using synonyms and antonyms) all from the Woodcock-Johnson Psychoeducational Battery (WJ-R). Additionally, these English subtests included English syntax skills assessment from the Test of Written Language (TOWL), and a written narrative based on the pictures from a wordless children's storybook (the same stimulus utilized in the ASL narrative subtest). All the ASL tests and English tests were each converted to single ASL and English composite scores. The relation between ASL proficiency and English literacy skills was ascertained through analysis of covariance (ANCOVA) to see how strong the relationship between



ASL and English composite scores and how much they change together. They also took into consideration a variety of factors such as children's age, IQ scores, level of hearing loss, home language(s) and parental hearing status. Their quantitative analyses showed a clear, consistent and statistically significant relationship between ASL skill level and English literacy for the entire sample. Additionally, this study produced three key findings: (a) ASL proficiency is related to English literacy; (b) deaf students with deaf mothers outperform deaf students with hearing mothers in both ASL proficiency and English literacy; and (c) within the two higher levels of ASL proficiency, deaf students with deaf mothers performed no better in English literacy than deaf students with hearing mothers. Prinz and Strong summarize the implications of their findings as follows: "The implication of this research is straightforward and powerful: Deaf children's learning of English appears to benefit from the acquisition of even a moderate fluency in ASL" (Strong & Prinz, 1997, p. 37).

Hoffmeister, de Villiers, Engen and Topol (1997) (see also Hoffmeister, 2000) measured students' ASL proficiency and English literacy skills in a study among fifty (n=50) eight- to sixteen-year-old deaf students from four schools for the deaf; two were residential schools for the deaf and two were day programs. Fourteen of these fifty students had deaf mothers. The inclusion of students with deaf parents, as in the Prinz and Strong (1998) study, provided a crucial control that ensured that some students acquired ASL from birth.

Hoffmeister et al. (1997) used Stanford Achievement Test (SAT-HI) normed for deaf children to measure reading comprehension, and the Rhode Island Test of

Language Structure (RITLS) and Sentence Elicitation Task (SET) to measure sentence comprehension and production, respectively. They also measured ASL skills with video-based word knowledge tasks: ASL synonyms, antonyms, and plurals-quantifiers. The authors explored the relationship between ASL proficiency and English literacy through three statistical analyses: the Pearson product-moment correlations and step-wise regression analysis, and statistical comparison of students with more or less exposure to ASL on the ASL comprehension subtests. Through their analyses, they found that there was a significant correlation between the students' performance on ASL measures and reading performance. Hoffmeister et al. concludes that the data from their "present study demonstrates that mastery of higher level skills in both ASL and English facilitates the development of good reading skills in English" (Hoffmeister et al., 1997, p. 316). Their findings correlate with the findings from the Prinz and Strong (1998) study.

Padden and Ramsey (1998, 2000) administered the ASL proficiency and English literacy skills tests to thirty-one deaf children from grades four to eight, including a fourth grade self-contained class for deaf children in a public elementary school that used only English-based signing ( $n = 7$ ), a fourth grade class in an ASL/English bilingual residential school for the deaf ( $n = 10$ ), a seventh/eighth grade self-contained class for deaf children in a public middle school that used only English-based signing ( $n = 6$ ), and a seventh grade class in an ASL/English bilingual residential school for the deaf ( $n = 8$ ). To assess the relationship between ASL proficiency and English literacy skills, Padden and Ramsey used ASL proficiency

tests to measure skill in ASL morphology and syntax (i.e. Verb Agreement Production and Sentence Order Comprehension) and memory for ASL sentences. A fingerspelling test and an initialized signs test measured ability to recognize English counterparts of ASL fingerspelled words and initialized signs. SAT-HI reading comprehension subtest scores were used to measure students' reading abilities.

Consistent with the above studies, Padden and Ramsey (1998, 2000) found significant correlations between ASL proficiency and English literacy skills (i.e. reading skill). In their study, "What emerges is an interrelationship between a set of language skills, specifically fingerspelling, initialized signs, reading, and competence in remembering ASL sentences as well as knowledge of ASL morphology and syntax. Students who perform best on tests of ASL and fingerspelling also perform well on a measure of reading comprehension" (Padden & Ramsey, 1998, p. 44).

Singleton, Supalla, Litchfield and Schley (1998) investigated the relationship between ASL proficiency and English literacy skills over three years among fifty-three six to twelve year-old deaf students in one of three different settings: an ASL/English bilingual residential school (n = 26 students); a residential school whose teachers use English-based signing with spoken English and students have considerable exposure to ASL outside of the classroom (n = 11 students); and self-contained classrooms in public schools whose teachers use English-based signing with spoken English (n=16 students) and students had virtually no contact with ASL.

Singleton et al. (1998) assessed ASL proficiency using the American Sign Language Proficiency Assessment (ASL-PA). In ASL-PA, each student's ASL

production is examined under three situations: conversation through peer interaction; interview with an adult; and storytelling. The authors did not indicate which tool they used for English in this study. They summarized their findings as follows: “Our preliminary results indicate that after age 9, high ASL-fluent deaf children of hearing parents were outperforming their less ASL-fluent peers on several English writing tasks” (1998, p. 25).

Kuntze (2004) investigated whether or not ASL literacy acquisition is predictive of printed English literacy acquisition in a study among a diverse population of deaf middle school students in grades 6-8 at an ASL/English bilingual residential school (n=91). These students came from different educational placement histories and linguistic environments. Thirty-five percent of them had deaf mothers or parents. The findings from his batteries of ASL and printed English comprehension and vocabulary language and literacy tests for ninety-one deaf middle-school student, Kuntze found that for these students: the levels of ASL passage comprehension had significant predictive power of English passage comprehension; knowledge of ASL underlies English vocabulary knowledge; and the ability to make inferences in ASL correlated with their ability to make inferences in printed English. Kuntze’s finding suggests that developing the cognitive/academic or literacy-related proficiency through ASL can be later applied to and support English literacy. Kuntze used his findings to argue that bilingual deaf students need to have cognitively challenging discourse in ASL to help develop metalinguistic and metacognitive skills that facilitate second language learning. While this study provided the empirical evidence that points

to the importance of ASL proficiency and literacy skills as bridge to English literacy skills, Kuntze noted before the findings of his study can have an effect on the education of deaf students, qualitative inquiries are needed for further theoretical grounding from his study to provide “thick descriptions” showing instances of how literacy skills in ASL help with the development of English literacy skills.

Harris (2010) and Ricasa (2010) provided some qualitative inquiries documenting instances of acquiring and developing ASL proficiency and English literacy skills by individual deaf children in ASL/English bilingual deaf classrooms. They focused on deaf preschool literacy-rich classrooms to see how developmental ASL instances (i.e. linguistic interactions in ASL) provide the foundation for the development of English literacy skills.

Harris (2010) conducted a mixed methods case study of extended discourse between two deaf preschool teachers and twelve deaf three and four year old students. Data collection consisted of documentation of naturalistic classroom contexts and teacher interviews. Frequencies of particular aspects of extended discourse in recorded classroom contexts provided the data for quantitative analyses. The findings of Harris study revealed that the teachers “recognized a variety of communicative acts as opportunities to extend the children's knowledge, involved them actively in extended discourse, and engaged them in literate thought” (2010, p. vi). In short, Harris argued that ASL competence is significantly associated with frequency of extended discourse.

Ricasa (2010) carried out a descriptive case study (naturalistic study) of extended discourse and pedagogical practices between one deaf preschool child of

deaf parents and her teachers (n = 5) in preschool classrooms where ASL and printed English were the languages of instruction over a period of two-and-a-half years. This study also investigated how this child's participation in extended discourse developed during the two-and-a-half years that she attended preschool. Videorecorded classroom interactions during this period were observed, described, and analyzed. In her study, she found that the same types of extended discourse found in face-to-face interactions in English (e.g., Dickinson & Tabors, 2001; Hart & Risley, 1995) were also found in extended discourse in ASL. What makes this finding so important is current studies, especially those done by Dickinson and Tabors (2001) and Hart and Risley (1995), on language and literacy show that the kind of discourse, amount of discourse directed at the child, and the quality of discourse are significantly related to the hearing students' later literacy development, and this is also true for the deaf students in Ricasa's study.

The Hoffmeister et al., Padden and Ramsey, Prinz and Strong, and Singleton et al. studies reviewed above all investigated and found positive relationship between ASL proficiency and English literacy skills. Since then, additional studies have shown a significant correlation between ASL proficiency and English literacy skills (e.g., Chamberlain & Mayberry, 2008; Freel et al., 2011; Goldin-Meadow & Mayberry, 2001; Hermans, Knoors, Ormel, & Verhoeven, 2008; Kuntze, 2004; Mayberry, Lock, & Kazmi, 2002; Morford & Mayberry, 2000; Singleton et al., 2004). Even more significantly, these studies all used different tools to assess deaf students' ASL knowledge and proficiency as well as English literacy skills (Singleton & Supalla, 2003). This shows that the similar findings across these studies are a highly

generalizable and reproducible phenomenon. These findings are supported by Israelite, Ewoldt and Hoffmeister's (1992) review of older research studies, showing high English literacy skills in deaf children who acquire ASL earlier than those who acquire ASL later in life. Moreover, these findings are also supported by a more recent literature review by Chamberlain and Mayberry (2000) covering the same 1990s empirical studies reviewed here as well as numerous studies dating as far back as 1916 that measure deaf students' English literacy skills.

### *2.1.3. Summary*

The convergence of research evidence from the empirical studies discussed above reveals a positive correlation between ASL proficiency and English literacy skills. This convergence also shows that Cummins's (1981) interdependence hypothesis applies equally to the relationship between sign language and print. It also justifies the usefulness of the bilingual model of deaf education. As evident in the Harris and Ricasa studies that found and documented instances of cognitive-challenging developmental ASL discourse, which provide the foundation for the development of English literacy skills, these hypotheses do have broad applicability in the bilingual model in deaf education.

Of all of the researchers in the aforementioned empirical investigations of the relationship between ASL literacy skills and English literacy skills, Padden and Ramsey were the only researchers who made no mention of either 'ASL literacy' or 'English literacy' because they view literacy as a set of social practices that operate on both group and individual levels (Padden & Ramsey, 1993; Ramsey & Padden, 1998).

Although Hoffmeister et al., Prinz and Strong, and Singleton et al. used ‘English literacy’ generally referring to reading and writing skills in their studies, Hoffmeister was the only researcher to explicitly name (once) and define ASL literacy in his writing as a concept in relation to ASL proficiency. “Literacy, as defined here, includes not only reading skills but also skills required to become a literate user of American Sign Language (ASL). Literacy skills in ASL have only recently begun to be identified” (Hoffmeister, 2000, p. 143). In addition to Hoffmeister, Singleton also explicitly named ‘ASL literacy’ once, but did not define it. Instead, she gave an example of it: “ASL literacy skills (e.g., narratives, story-telling, etc.)” (Singleton et al., 1998, p. 26). Aside from these two mentions of ‘ASL literacy’, the phrase ‘ASL literacy’ were not explicitly used in their report of these empirical studies, their use of certain phrasings, such as ‘ASL ability’, ‘ASL competence’, ‘ASL fluency’, ‘ASL knowledge’, ‘ASL proficiency’ and ‘ASL skills’, clearly imply that they all are referring to ‘ASL literacy’. Interestingly, even though Prinz and Strong used ‘English literacy’ to refer to reading and writing and never used ‘ASL literacy’ to refer to ASL-related skills in their publications, the actual name of their study was “the ASL Literacy Project” (Prinz & Strong, 1998). A review of theoretical discussions on ASL literacy is covered further in the following section.

## **2.2. Perspectives on ASL Literacy**

Since there is strong empirical evidence that literacy transfers across languages (see previous section), this section reviews and discusses the conceptualizations, definitions and types of ‘literacy’, in relation to ASL literacy.



### ***2.2.1. Distinction between Language and Literacy***

Larsen-Freeman (2003) proposes that, “Language is a dynamic process of pattern formation by which humans use linguistic forms to make meaning in context-appropriate ways” (p.142). Larsen-Freeman consulted the literature of about 100 years on the definition of language. Some of the definitions she identified and paraphrased in her review include: (1) language is a means of cultural transmission; (2) language is a set of rules through which humans can create and understand novel utterances; (3) language is a vehicle for communicating meaning and messages; (4) language is a medium through which one can learn other things; and (5) language is holistic and is therefore best understood as it is manifest in discourse or whole texts. *The American Heritage® Dictionary of the English Language* (5th ed.) defines ‘language’ as: (a.) “communication of thoughts and feelings through a system of arbitrary signals, such as voice sounds, gestures, or written symbols;” (b.) “such a system including its rules for combining its components, such as words;” (c.) “such a system used by a nation, people, or other distinct community; often contrasted with dialect.”

Language is clearly a vehicle of communication. It allows people to communicate with and be understood by their children and their grandchildren. It allows people to learn, communicate their thoughts, and negotiate agreements with other people. Larsen-Freeman (2003) argued that the definition of language one holds influences beliefs on everything from research to classroom practices. For present purposes, it is sufficient to view language as the vehicle or avenue in which a system of symbols and signs is used to construct and communicate ideas between and among

individuals. To help us understand how language differs from, but is related to, 'literacy,' Ouane and Glanz provide useful distinction between language and literacy:

Literacy is not something which is to be delivered but something to be employed for learners in order to explore their own language and the world on their own terms, which allow them to create and engage in the diverse worlds of literacy.

Although literacy is different from language it exists and is acquired only in a given language. Literacy acquisition is language acquisition but literacy is not necessary language learning. Language learning is different from learning through a language (2005, p. 2).

Simply put, language is a medium or rule-governed system for the process of developing literacy, while literacy involves having an understanding and mastery of practices in given language.

### ***2.2.2. Conceptualizations and Definitions of Literacy***

Literacy has meant different things during different historical and social contexts (Baker, Pearson, & Rozendal, 2010; Blake & Blake, 2002; Olson & Torrance, 2009; Roberts, 1995; Street, 2006). Hundreds of definitions of 'literacy' have been advanced in scholarly discussions since mid-twentieth century and yet there remains no single correct, widely agreed-upon definition of what literacy means (Roberts, 1995). Roberts adds that while "the sheer number and variety of definitions is staggering in magnitude and, from one perspective, thoroughly confusing: literacy, it seems, can mean whatever people want it to mean," but adds that "From another point of view, however, the diversity of definitions is testimony to the complex character of literacy and is thus something to be celebrated" (1995, pp. 419–420). With these diverse definitions of 'literacy,' Street (1995, 2001) said that it is helpful to think of

them as positions on a continuum of definitions. On one end of that continuum are those that view and define literacy as an autonomous set of cognitive skills that can be applied across all contexts, and on the other end are those that define literacy as a set of practices situated in social, cultural, historical and political contexts.

Historically, traditional perspectives on literacy (that still linger in many education circles today) were grounded on a psychological approach to literacy. This approach viewed literacy as a cognitive phenomenon in which people can acquire, learn and develop a set of cognitive skills through levels of mastery and experiences. This meant that, for many years, literacy has meant the ability to read and write print-based texts (for a review of traditional perspective of literacy as reading and writing, see Guzzetti, 2002; Langer, 1991; Olson & Torrance, 2009; Roberts, 1995; Tozer, Violas, & Senese, 2006; United Nations Educational, Scientific and Cultural Organization, 2006). This is the psychological perspective that still persists in North American schools where literacy learning and academic achievement are closely tied to learning to read and write in English (e.g., No Child Left Behind Act of 2001 and Common Core State Standards).

It was not until the 1970s and into the 1980s when sociocultural perspectives emerged, as a result of the increasing awareness and need for studies on the linguistic and cultural diversity within Western society (e.g., Gee, 1989; Hiebert, 1991; Scollon & Scollon, 1981; Scribner & Cole, 1981; Street, 1984; Wertsch, 1985). These sociocultural perspectives opposed a psychological approach to literacy, and, instead, viewed literacy as a sociocultural phenomenon in which people can learn a set of

social practices situated within specific contexts. With this change, numerous researchers have begun to locate and examine the literacy practices within their social contexts (Luke & Freebody, 1997). Langer exemplifies this sociocultural viewpoint of literacy as a social practice by defining literacy as “the ability to think and reason like a literate person, *within a particular society*” (1991, p. 11). With his definition of literacy, Langer argues that, “It is the culturally appropriate way of thinking, not the act of reading or writing, that is most important in the development of literacy. Literacy thinking manifests itself in different ways in oral and written language in different societies” (1991, p. 13).

Barton and Hamilton (2000) outlined six propositions about the nature of literacy:

- Literacy is best understood as a set of social practices; these can be inferred from events which are mediated by written texts.
- There are different literacies associated with different domains of life.
- Literacy practices are patterned by social institutions and power relationships, and some literacies are more dominant, visible and influential than others.
- Literacy practices are purposeful and embedded in broader social goals and cultural practices.
- Literacy is historically situated.
- Literacy practices change and new ones are frequently acquired through processes of informal learning and sense making (Barton & Hamilton, 2000, p. 8).

Like Barton and Hamilton, Street (1984, 1995) sees these situated literacy practices as something that evolves and are created and locatable in their sociocultural contexts.

Scollon and Scollon (1981) also locate literacy practices within their sociocultural

contexts. For instance, in their study of the Athabaskan Native Americans living in Northern Canada and Alaska, Scollon and Scollon (1981) found these Native Americans view essays (a form that is highly valued in school-based literacy practices) very differently than do many others. Rather than communicating through the essayist format, these Athabaskians prefer to communicate their knowledge only in familiar circumstances with people who are already known. Essay writing involves presenting and communicating information to an unknown audience, which violates a cultural literacy norm for Athabaskians.

Since literacy is a social phenomenon (in which many social and cultural practices incorporate literacy differently), socioculturally oriented scholars agreed that there are many different “literacies” (e.g., American Sign Language (ASL) literacy, English literacy, academic literacy, caption literacy, critical literacy, cultural literacy, digital literacy, functional literacy, multimedia literacy, performance literacy, script literacy, and visual literacy) for people to learn and master. It was not until the advent of Internet and advances in new technologies that led more scholars to re-conceptualize literacy as “multiliteracies” (New London Group, 1996, 2000). The Internet and advances in new technologies permanently altered our literate lives by bringing an immense scale of change to literacy practices by transforming texts into multimedia and multimodal mediums (Gee, 2003; Kress, 2003; Lankshear & Knobel, 2006; Messaris, 2001) as well as requiring new literacy skills in different contexts, purposes, and uses (Coiro, Knobel, Lankshear, & Leu, 2008; Leu, O’Byrne, Zawilinski, McVerry, & Everett-Cacopardo, 2009; Street, 2003).

More specifically, because these technological advances have forever changed literacy practices, Street (2003) now sees 'old' sociocultural perspective on 'literacy' as a social practice being replaced and transformed into 'new literacies' as new social practices, while the New London Group (1996, 2000) sees literacy as differentiating into 'multiliteracies'. Additionally, both Kress (2003) and Lankshear and Knobel (2006) extend New London Group's multiliteracies view by seeing new literacies not only as new social practices, but also as social practices that are becoming more and more multimodal with different modes of producing and consuming texts. Lanham (1995) embodies this new sociocultural perspective re-conceptualizing literacies when he wrote that "the word 'literacy,' meaning the ability to read and write, has gradually extended its grasp in the digital age until it has come to mean the ability to understand information, however it is presented."

### ***2.2.3. Arguments for ASL Literacy***

At the time when many socioculturally oriented scholars began to view 'literacy' differently than from the traditional psychological perspective, the concept of ASL literacy as a set of skills separate from reading and writing began to circulate in the Deaf community in the 1980s and later in publications in the 1990s. This circulation occurred at the time when North American deaf education transitioned to from a traditional deficit model to a sociocultural view of Deaf children as bilingual sign language users (see previous section). There also was a growing awareness that literacy is not equivalent to reading and writing skills (e.g., Bosso & Kuntze, 1991; Kuntze, 1998; Ramsey & Padden, 1998; Thumann-Prezioso, 2005) as well as the idea

that there are literacy skills that are specific to each language, including literacy skills that are specific to ASL (i.e. ASL literacy).

With this emerging perspective on literacy being so much more than just reading and writing, numerous scholars have used “ASL literacy” but did not elaborate on what it was (e.g., Harris, 2010; Kuntze, 2004; Ricasa, 2010). Aside from these scholars, there are some who have fleetingly named “ASL literacy” as competence and skill more encompassing than only reading and writing skills, but did not go into further detail about it (e.g., Moores, 2006). There are also those who used “ASL literacy” in reference to the ASL skills that can be taught, developed and increased through ASL literature and school curricula without defining what it is (e.g., Peters, 1996; Sandford, 2006; Small & Mason, 2008; Strong, 1995; Warshaw, 2013). “ASL literacy” was also used by some to describe simply as an ability to “sign and read ASL” (e.g., Thumann-Prezioso, 2005) or as an ability to perform and “read” ASL text through videos (e.g., Rose, 2006). Others briefly named “ASL literacy” as knowledge and skills that are required to become a literate user of ASL (Amann, 2005; Ashton et al., 2013; Gallimore, 2000; Hoffmeister, 2000; Lane et al., 1996; Schley, 1994; Singleton et al., 1998). Still others viewed “ASL literacy” simply as a social practice (e.g., Ramsey & Padden, 1998; Snoddon, 2010). In support of her view of ASL as a social practice, Snoddon (2010) wrote that not only “ASL texts and the various ways of reading them are the collective and historical invention of Deaf, ASL-using people,” but also that “Deaf learners of ASL also learn to interpret texts in ways that reflect the reading conventions of the Deaf community and its social settings” (p.198).

Since a more detailed discussion and definition for “ASL literacy” was not offered in these writings, so it became apparent to many that a clearer explanation of ASL literacy was needed. Few scholars tried to address this by publishing their writings to assert there is such a thing as ASL literacy and attempted to fully conceptualize or define what ASL literacy actually is (e.g., Christie & Wilkins, 1997; Czubek, 2006; Gibson, 2000; Kuntze, 2008; Paul, 2006).

Christie and Wilkins (1997) argued that there are three distinct components of literacy – functional, cultural and critical literacies. All three are part of what constitutes ASL literacy and are important for Deaf students to develop and master in order for them to become highly literate in ASL as well as to succeed in school. These three literacies will be defined and discussed later below. Christie and Wilkins then made important distinctions between these three components of ASL literacy: “Functional literacy involves basic language skills that enable a person to use ASL to communicate effectively in the DEAF-WORLD. Cultural literacy refers to the values, heritage, and shared experiences necessary to understand and interpret the relationships of ASL literary works to our lives as Deaf people. Critical literacy relates to the use of literature as a means of empowerment and an ideological awareness of the DEAF-WORLD in relation to other worlds” (1997, pp. 57–58).

Gibson (2000) (as well as Small & Cripps, 2004; Snoddon, 2010) shared the same view as Christie and Wilkin’s in an identification of three components of ASL literacy. Gibson (2000) gave a definite example of what functional, cultural and critical literacies look like in ASL. This example came from one of her teachers giving



a lesson on an ASL poem, “#S-N-O-W”, to her school’s nursery and junior kindergarten students.

This poem opens with students lying on the floor, with their hands using the open “5” handshape (indicating that it is snowing) in the air. Then they fingerspell the letters slowly one by one (S-N-O-W) starting from the top towards to the floor, using different directions, handshapes, movements and actions of the snow in ASL. When they finger spell using the “W” handshape, they throw their hands right into their faces. This indicates that the snow flops right into their faces. Those students who did this activity demonstrated proficiency and eloquently in using their language creatively beyond **functional literacy skills in ASL**.

Not only did those students fingerspell the word SNOW, but they also did so in artistic ways by using different movements, directions, handshapes and actions of the snow. This poem uses particular art forms found in the Deaf cultural context. The students apply **cultural literacy** in their poem. This poem reflects the symbolism of Deaf Spirit, as it is arranged in a visual form that follows ASL principles.

In terms of **ASL critical literacy**, we can see that there is a particular pattern of movement and action in the poem. If we ask students to analyze what movement this poem, #S-N-O-W particularly reflects, it will exhibit that that the movement for four different handshapes is the same. It follows the principles and structures of an ASL poem. (Gibson, 2000, pp. 10–11)

Gibson not only offered an example for each component of ASL literacy, but she also argued that ASL literacy includes particular skills other than reading and writing, and also that there are knowledge and skills exclusive to literate users of ASL. In doing so, Gibson (2000, p. 10) offered a detailed definition of ASL literacy:

**ASL Literacy** is defined as a measure of:

- The ability to understand and express American Sign Language eloquently;
- Acquisition of knowledge of content areas including Deaf history, ASL literature, different Deaf cultures, Deaf traditions, Deaf politics, controversial or current issues (Deaf education,

- ASL Literacy, Deaf Community and underemployment) and trends;
- Having extensive knowledge, and experience associated with Deaf culture;
  - To feel empowered to connect with the world, take control of one's own life, and contribute to the Deaf community as well as to a changing society.

Gibson's example and definition of ASL literacy clearly shows that literacy is so much more than just reading and writing. It is also a social practice with some skills that are unique to each language. This is consistent with the scholarly study and discussion of social co-construction of ASL knowledge and skills among Deaf people that can easily be found in countless published articles and studies. For example, West and Sutton-Spence (2012) and Wolter (2006) both showed that as Deaf people learned together as a literacy community of ASL users, the processes of viewing, discussing and creating ASL poetry and stories can lead to increases in their linguistic and aesthetic capacities and knowledge.

Yet, there were some scholars (e.g., Nover, Christensen, & Cheng, 1998) who still equated literacy with reading and writing and questioned whether there is ASL literacy because it has no written form. Czubek (2006) addressed these viewpoints by offering up his theoretical writing that explored the concept of "ASL literacy" as well as asserted that there is such thing as "ASL literacy" through the lens of the New Literacy Studies (NLS) perspective. Through his exploration and assertion, he made numerous important points: Deaf bilingual students are multi-literate having a set of skills that are specific to ASL in conjunction with the set of English literacy skills that they also have; that Deaf people fully realize their ability to use ASL to compose

multimodal texts through the use of video technology; and that literacies include both written and signed languages.

Paul (2006), in response to Czubek's (2006) perspective on ASL literacy and also writing from the NLS perspective, agreed that there is such thing as "ASL literacy." However, he also noted that there are two different forms of literacies: "tool literacies" and "literacies of representation." "Tool literacies refer to the general proliferation of new technological tools in society," while "Literacies of representation address the need to analyze information and to understand how meaning is created" (Paul, 2006, p. 383). Based these two forms of literacies, Paul not only asserted that "ASL literacy" is a form of "literacies of representation," but he also proposed to re-conceptualize literacy as "a form of 'captured' verbal interaction," which applies to ASL literacy (Paul, 2006).

Kuntze (2008), like Czubek and Paul, did not offer an in-depth definition of ASL literacy, but did offer a conceptualization of "ASL literacy" by calling on us to rethink what constitutes literacy. In doing so, he showed examples of how deaf children acquire "the properties of literate" (i.e. deaf children's inference-making skills, which was discussed in Kuntze's (2004) early study reviewed earlier here) to make point that literacy is more complex than reading and writing, that it cut across different modes of communication, and that it involves more than accessing the information, but also thinking about given information. In making his case for other literacy skills beyond reading and writing, Kuntze wrote that, "Various tools of communication may share some of the same literacy skills, but some of those skills

may be particular to a given modality or a given mix of analogic and digital representations of meaning. Literacy concerns a kind of dimension in communication that is a product of various cognitive processes such as a logical reasoning about the content and planning on how to get it across to others” (Kuntze, 2008, p. 155).

To the best of the researcher’s knowledge and search of literature in this area, only one literature review has been completed on the conceptualization of ASL literacy. Byrne’s literature review (2012, 2013) summarized the historical and current perspectives on ASL literacy and generated a new (comprehensive) definition of ASL literacy. He reviewed ten sources of definitions of ASL literacy, all of which are also discussed, to a varying extent here (i.e. Ashton et al., 2013 (the draft 2011 version was cited by Bryne in his review); Christie & Wilkins, 1997; Czubek, 2006; Gallimore, 2000; Gibson, 2000; Hoffmeister, 2000; Kuntze, 2008; Lane et al., 1996; Paul, 2006; Snoddon, 2010). In his review, Byrne noted that although there have been no studies that have defined and described the characteristics of ASL literacy, he argued that the literature covered in his review is an evidence of scholarly acknowledgement of the existence of ASL literacy. Based on his review and using key conceptualizations from it, Byrne proposed a new comprehensive definition of ASL literacy as the following:

ASL literacy is defined as the ability to use the linguistic structure of ASL for deciphering, organizing, and communicating information, ideas, and thoughts effectively and eloquently in a variety of contexts. It involves the ability to decode, cogitate, reason, assess, and evaluate ASL informational texts, ASL literary works, and ASL media at the social and academic levels. An individual has the ability to construct and present ASL informational texts, ASL literary works, and ASL media imaginatively and eloquently. ASL literacy includes the ability to acquire extensive knowledge and experience associated with ASL culture, ASL history, ASL literature, ASL media, education, sign

language cultures, and other relevant topics. It provides an individual with the ability to effectively lead one's life, to actively contribute to the ASL community and communities at large, and to effectively navigate global society. Full ownership of ASL language, ASL cultural space, and ASL cultural identity is crucial for the development and application of ASL literacy skills. (Byrne, 2013, pp. 26–27)

Byrne's comprehensive definition of ASL literacy is consistent with the others' proposed definition of ASL literacy, and it is also more encompassing than the other definitions. It is clear that that ASL literacy consists of a multitude of language-based skills that Deaf bilingual students need to be able to have and use in different contexts, purposes, and uses. A closer look at the characteristics of ASL literacy reveals that they appear to be collapsible into three components of higher order cognitive and communicative knowledge and skills: functional, cultural and critical ASL literacies. These components of ASL literacy and how Byrne's definition fit within these components are reviewed and discussed in the following section.

The literature reviewed here that uses and discusses the term "ASL literacy" essentially argues that, in this time and age of multiliteracies, it is time to move beyond the traditional associations between literacy and written language. Deaf students acquire and develop their skills to think about information and respond to it thoughtfully in ASL, a language with no written form, in the same ways as others through their spoken and written languages (Czubek, 2006; Kuntze, 2008; Paul, 2006).

#### ***2.2.4. Three Components of ASL Literacy***

As definitions of literacy continue to expand and change, particularly in response to multiliteracies that new technologies entail, there are some similarities between more inclusive definitions and frameworks of literacies that numerous

scholars have attempted to formulate. The definitions and frameworks of literacies reviewed here are limited to literacies that are domain-general. Excluded from the focus of this study are domain-specific literacies, such as computer literacy, media literacy, visual literacy, and second-language literacy. They form part of the different literature about computers, media and second languages, respectively, which is not within the scope of this study. Students may need scaffolding to develop and use their domain-specific literacies skills. The following frameworks and perspectives discussed below focus on functional, cultural and critical literacies. These are domain-general literacies because everybody either is or is not functionally literate, culturally literate, or critically literate in all sociocultural contexts.

McLaren (1988) observed and named three general categories of literacy – functional, cultural and critical – that have emerged to describe a range of behaviors associated with what it means to be literate today. McLaren said that it is these three categorical positions that “characterize the politics and pedagogy of literacy” amid the standardized testing and education reform efforts in the United States (1988, p. 213). He based these categories on the work of Freire and Macedo (1987) who advanced a framework for identifying literacy, which included functional, cultural and critical literacies. McLaren’s (1988) categorization of literacies is the one that Christie and Wilkins (1997) used to describe three different components of ASL literacy. Other scholars shared similar view as McLaren’s in their proposed definitions or frameworks for different types of literacy and they are:

- The Four Literacy Resources Model (Freebody, 1992; Freebody & Luke, 1990; Luke & Freebody, 1999)
- The Three Dimensions of Literacy Model (Green, 1988, 1999, 2012)
- The Three Categories of Literacy Framework (Cummins & Sayers, 1997; Knoblauch, 1990; McLaren, 1988; Scribner, 1984; Williams & Snipper, 1990)
- The Four Categories of Literacy Framework (Tozer et al., 2006)

Knoblauch (1990), Scribner (1984), and William and Snipper (1990) all share similar views as McLaren's (1988) in being that there are three broad categories of domain-general literacy – functional, cultural and critical literacies. Williams and Snipper (1990) contend that literacy is shaped by historical and social factors and they believe that the term literacy is used to mean three different broad categories describing a range of behaviors: functional literacy, cultural literacy, and critical literacy. In addition to these three literacies, Tozer et al. (2006) added that there is a fourth category – conventional literacy – which they said is the simplest definition that appears in most dictionaries: “the ability to read and write.”

Freebody (1992; Freebody & Luke, 1990) argued that literacy is made up of four “resources” that enable literate people to be a: (a.) “code-breaker” decoding the code of texts, (b.) “text-participant” engaging in the meaning system of texts, (c.) “text-user” using texts functionally, and (d.) “text-analyst” critically analyzing and transforming texts. Luke and Freebody (1999) view that effective literacy practice involves being able to draw from and put these resources to work in given contexts.

Similar to Freebody and Luke's framework, Green (1988, 1999, 2012) conceptualized literacy as a social practice with three overlapping, intersecting and interdependent dimensions: the operational, the cultural and the critical. The

operational, cultural and critical dimensions involve using language competently in given literacy tasks, applying cultural knowledge or experience to understand and use texts in given contexts to make meaning, and interrogating and transforming texts, respectively. To Green, it is these dimensions that overlap and interact with each other bringing together language, meaning and context for the literate users. There is no one dimension that has any priority over the others; therefore, Green (2012) argued that all three dimensions needed be taken into account simultaneously while considering literacy practices.

Below is a table of literacy frameworks showing how they relate to one another. Even though these frameworks and perspectives do not exactly mirror each other, Table 2.1 reveals some similarity among them. They all share the same assumption that literate people need to be able to: decode the text, make meaning from the text, and interrogate the text. In the literature, these skills are often associated with their respective type of literacy. Decoding the text is often associated with functional literacy. Text meaning making is connected to cultural literacy. Critical literacy accompanies interrogating the text. All of these literacies are reviewed and discussed later below. McLaren (1988) and Tozer et al. (2006) both noted that these are the perspectives that reflect the literacy practices most common in schools across the United States.

While numerous scholars have distinguished a variety of forms of literacy and many of them share the view that there are three categories of literacy, Christie and Wilkins (1997) and others (e.g., Gibson, 2000; Small & Cripps, 2004; Snoddon, 2010)



all applied this view to ASL literacy as having three components – functional, cultural and critical. For the present purposes, it is sufficient to focus on these three domain-general, schooled literacies here (which are reflected in many language arts curricula across North America, especially in Gibson’s ASL language arts curriculum for the Deaf bilingual students in her Canadian school).

*Table 2.1: Literacy Frameworks and Perspectives*

<b>The Four Literacy Resources Model</b> (Freebody, 1992; Freebody & Luke, 1990; Luke & Freebody, 1999)	<b>The Three Dimensions of Literacy Model</b> (Green, 1988, 1999, 2012)	<b>The Three Categories of Literacy</b> (Cummins & Sayers, 1997; Knoblauch, 1990; McLaren, 1988; Scribner, 1984; Williams & Snipper, 1990)	<b>The Four Categories of Literacy</b> (Tozer et al., 2006)
Code-breaker	Operational	Functional	Conventional Functional
Text-participant Text-user	Cultural	Cultural	Cultural
Text-analyst	Critical	Critical	Critical

#### *2.2.4.1. Functional Literacy*

Functional literacy refers primarily to the mastery of the basic skills necessary for a person to decode texts (McLaren, 1988; Verhoeven, Elbro, & Reitsma, 2002).

The person decoding the text has to make sense of it just enough to be able to understand what the text is saying. This requires competence in the language of a given text, such as print/visual advertisements, street signs, the front page of a newspaper, or restaurant menus. Verhoeven (1997) views functional literacy as a set

of communicative competencies necessary to function effectively in one's everyday life, and these competencies are grammatical competence, discourse competence, (de)coding competence, strategic competence and sociolinguistic competence.

#### 2.2.4.2. *Cultural Literacy*

Cultural literacy refers to the mastery of a broad range of features (and background or “world knowledge”) that accompany functional literacy to be able to make meaning from texts (Hirsch, Kett, & Trefil, 2002; House, Emmer, & Lawrence, 1991; McLaren, 1988). It is an ability to use one's own knowledge of culture, content, context and text features to make meaning of given texts. This includes familiarity with particular ‘linguistic traditions’ or ‘bodies of knowledge’ from a cultural group. Hirsch (2009; Hirsch, Kett, & Trefil, 1987) defines cultural literacy as literacy knowledge and skills that fall between the specialized and the generalized. This shared background knowledge of literate culture includes “knowledge of selected works of literature and historical information necessary for informed participation in the political and cultural life of the nation” (McLaren, 1988, p. 213). To Schweizer, cultural literacy “indicates belonging, and it signals the circulation of knowledge within tightly knit coteries” (2009, p. 54). “This shared information is the foundation of our public discourse. It allows us to comprehend our daily newspapers and news reports, to understand our peers and leaders, and even to share our jokes. Cultural literacy is the context of what we say and read” (Hirsch et al., 2002, p. x). Numerous studies have been done showing the existence as well as the positive effects of cultural literacy on academic achievement (Kosmoski, 1989; Kosmoski, Gay, & Vockell,

1990; Pentony, 1996, 1997). These studies evidently show that cultural literacy does exist and is measurable, and that cultural literacy is an essential element for successful language learning.

#### 2.2.4.3. *Critical Literacy*

Critical literacy refers to the mastery of the ability to interrogate and challenge the text to consider its assumptions, its values and its historical, political, sociocultural and economic contexts (Freire & Macedo, 1987; Luke, 1997; McLaren, 1988). This includes interrogating any text to locate and question whose interests are represented and served in a given text. Freire views critical literacy as the ability to “perceive critically *the way they exist* in the world *with which* and *in which* they find themselves” (2000, p. 83). Shor defines critical literacy as “Habits of thought, reading, writing, and speaking which go beneath surface meaning, first impressions, dominant myths, official pronouncements, traditional clichés, received wisdom, and mere opinions, to understand the deep meaning, root causes, social context, ideology, and personal consequences of any action, event, object, process, organization, experience, text, subject matter, policy, mass media, or discourse ” (1992, p. 129). Studies have shown that critical literacy plays a fundamental role in increased levels of student engagement, achievement, and critical consciousness (Markovich, 2013; McLaren, 2003; Morrell, 2009).

**Table 2.2:** *Byrne’s definition and characteristics of ASL literacy reorganized into the three components of ASL literacies – Functional, cultural and critical ASL literacies*

<b>Literacy component</b>	<b>Byrne’s characteristics of ASL literacy</b>
Functional ASL Literacy	<ul style="list-style-type: none"> <li>• The ability to use the linguistic structure of ASL for deciphering, organizing, and communicating information, ideas, and thoughts effectively and eloquently in a variety of contexts.</li> <li>• The ability to effectively lead one’s life, to actively contribute to the ASL community and communities at large, and to effectively navigate global society.</li> </ul>
Cultural ASL Literacy	<ul style="list-style-type: none"> <li>• The ability to acquire extensive knowledge and experience associated with ASL culture, ASL history, ASL literature, ASL media, education, sign language cultures, and other relevant topics.</li> <li>• The ability to construct and present ASL informational texts, ASL literary works, and ASL media imaginatively and eloquently.</li> <li>• Full ownership of ASL language, ASL cultural space, and ASL cultural identity is crucial for the development and application of ASL literacy skills.</li> </ul>
Critical ASL Literacy	<ul style="list-style-type: none"> <li>• The ability to decode, cogitate, reason, assess, and evaluate ASL informational texts, ASL literary works, and ASL media at the social and academic levels.</li> </ul>

Byrne’s (2013) proposed definition and characteristics of ASL literacy, which was reviewed earlier in this section, are revisited and analyzed here through the lens of the three categories of literacies. Table 2.2 presents a match between each of the components of literacy and some of the Byrne’s characteristics of ASL literacy.

### **2.2.5. Summary**

To this day, the definition of ASL literacy still has not yet been fully established or widely agreed upon. The main reason for this lack of establishment is the scholarly discussions and publications about ASL literacy as a literacy form by itself is scarce compared to the published discussions on the relationship between ASL proficiency and English literacy skills reviewed earlier above. That is why there are few theoretical writings (e.g., Christie & Wilkins, 1997; Czubek, 2006; Kuntze, 2008; Paul, 2006) that attempt to remedy this lack of established definition and why there are few recent empirical studies (Golos, 2010a, 2010b; Snoddon, 2010) that focus on ASL literacy acquisition and pedagogy in ASL/English bilingual instruction for Deaf students. They include the studies that focus on ASL literacy development mediated by interactive video technology. These studies are discussed in the following section.

### **2.3. Video Technology Mediation of ASL Literacy Development and Uses**

At the time when many educators of Deaf children were starting to embrace an ASL/English bilingual model in deaf education, video technology had emerged and begun to transform texts into multimedia and multimodal mediums. Specifically, it was the advent and increasing availability of videodisc and interactive computer-supported video technologies that truly transformed the literacy practices of Deaf people. These video technologies made it possible for the Deaf people to record and disseminate ASL videotexts for everyone to view, study and discuss, and to use it as a pathway to English literacy as part of ASL/English bilingual practices. For example, as an ASL/English bilingual practice, ASL videorecording is equivalent to printed

English writing. Some used ASL videotexts for bi-literacy development and metalinguistic awareness of two languages (e.g., Mahshie, 1995; Schley, 1994; Strong, 1988). Others used ASL videotexts to provide access to printed English text (Andrews, Ferguson, Roberts, & Hodges, 1997). Still others used videorecorded stories in ASL as a precursor to creating English compositions (e.g., Coye et al., 1978; Quigley & Paul, 1984).

However, with the introduction of interactive videodisc and subsequent advances in video technology, many educators were now able to use this technology to create interactive multimodal texts that simultaneously use signed ASL videotexts and printed English text to help Deaf bilinguals develop their English skills (Copra, 1990; Hanson & Padden, 1988).

### ***2.3.1. Research on the Use of Video Technology for Deaf Bilingual Instruction***

The studies reviewed here are limited to the studies that focus on video technology-mediated bilingual/bicultural approaches that use ASL videotexts (specifically those that come in the form of interactive videodiscs or digital videos on any form of computers and related devices) in a variety of different ways to enhance language learning and literacy development.

#### ***2.3.1.1. The Hanson and Padden Study***

Hanson and Padden (1988, 1989, 1990, 1992, 1994) (see also Copra, 1990, for a teacher's account of this study) made the first attempt to use videodiscs and computer technology to combine ASL and English together (or, as they called it,

“computerized bilingual approach”) to further deaf bilingual students’ language learning and literacy development. In this study, Hanson and Padden developed and field-tested interactive computer videodisc system, called “HandsOn,” to see whether this system would help promote acquisition of printed English while concurrently reinforcing ASL proficiency. This system used bilingual videodiscs that present ASL and English versions of stories on a computer system. These videodiscs allow students to go back and forth between both ASL and printed English versions of the same stories, with translations between the two languages happening at the sentence level. These videodiscs also can present a list of printed English vocabulary words from a given story with the ability to view an ASL definition of any one of these words, read/view and answer questions about a story in English or ASL. These videodiscs and program were first field-tested with K-12 deaf bilingual students at a residential school for the deaf in California with about 50% of students having deaf parents and whose native language is ASL. Later, it was tested at a second residential school for the deaf in New York. Through their study, Hanson and Padden found that the Deaf bilingual students took advantage of ASL videotexts to learn English, and they also performed better at answering comprehension questions using the “HandsOn” system than answering questions in the paper and pencil version of the test. They also found that these students wrote longer, more complex English sentences when captioning ASL videotexts than they normally wrote for classroom English assignments.

### *2.3.1.2. The Hansen and Mouny Study*

Hansen, Mouny and Baird (Hansen & Mouny, 1998; 1994) developed and field-tested a project using interactive video technology to aid in a bilingual approach to improving English reading comprehension and test-taking skills of deaf middle and high school students. This one allowed the students to access stories and questions in both ASL and English and a sign language dictionary of English words. This project was field-tested in a study with eleven 7-to-17-year-old deaf students (n=11) at a day school for the deaf in the middle Atlantic region of the United States. Only one of these eleven students had deaf parents. Two reading comprehension sets of reading passage and few multiple-choice questions from the National Assessment of Educational Progress (NAEP) were used for this study. The ASL versions were produced to accompany these sets. For this study, the students were asked to first read and retell the printed English version of the reading passage (without access to the questions), and then were given access to interactive videodisc system that present ASL and English versions of passages with questions. Through their testing, Hansen and Mouny (1998) found that the students who had access to both ASL and English versions performed significantly better on the tests than those with no ASL access. They concluded that working with ASL texts using interactive video technology were beneficial for the students and had the potential to help students in improving their English literacy skills. Their findings were comparable to the findings from the Hanson and Padden (1994) study.



### *2.3.1.3. The Cannon, Fredrick and Easterbrooks Study*

Cannon, Fredrick and Easterbrooks (2010) used video technology as a bilingual approach to provide viewings of English stories translated and presented in ASL on the videodiscs. In their study, participants included four deaf or hard of hearing students in a fifth-grade class at a residential school for the deaf in the southeastern region of the United States. Cannon et al. used DVDs of printed English-based math expository stories signed in ASL from Newbridge Educational Publishing. The DVDs consisted of signers narrating math expository stories in ASL with the pictures and printed English text of the math expository book in the background. Students were given pre- and post-assessments on three sets of five vocabulary words from ASL videotext DVDs (five vocabulary words from each DVD) before and after viewing each ASL videotext. The independent variables were the preteaching component and the ASL videotext DVDs viewed, and the dependent variable was the number of target English vocabulary words correctly expressed through ASL. Consistent with the findings in the studies discussed above (i.e. Hansen & Mounty, 1998; Hanson & Padden, 1994), Cannon et al. (2010) found that deaf or hard of hearing students were able to increase their vocabulary skills when provided with opportunity for using video technology for viewings of ASL videotexts.

### *2.3.1.4. The Golos Study*

Golos (2006, 2010a, 2010b) investigated the degree to which each deaf preschool child exhibits literacy-related behaviors by attending to and engaging in viewing of an ASL videotext, and determined whether these viewings led to an

increase in students' language and literacy skills. Golos' study was done within the context of the bilingual approach to deaf education, as were all of the previous studies reviewed earlier. Her mixed methods study included twenty-five (n=25) three- to six-year-old deaf preschool children from four different schools. The schools that the students came from were one ASL/English bilingual residential school for the deaf in the Midwest (n=10) and three different self-contained day programs in Colorado that subscribed to a Total Communication philosophy (n=15). There were a variety of levels of ASL fluency among these deaf preschool children. Eight of ten children, who attended a residential school, had deaf parents and were exposed to ASL since birth, while the rest, including those in self-contained programs all had hearing parents. Few of the others were primarily oral students with minimal exposure to ASL. Golos put together this group of deaf preschool participants because she hoped that this would represent the variable language background of the deaf student population.

Golos developed an instructional ASL videotext based on her review of the research to help develop targeted literacy skills and vocabulary in the viewer(s), and used it with the students in her study. She incorporated attention and engagement techniques (e.g., making sure content is comparable to viewer's real life situations; and built-in opportunities for repetition and reinforcement of targeted literacy skills and vocabulary) and language techniques (e.g., chaining and fingerspelling). Students viewed this ASL videotext in small groups at their respective school three times within one week without any teacher mediation. During these viewing sessions, Golos observed and videorecorded each session with the students watching the ASL

videotext and conversing among themselves. Videorecorded sessions were transcribed and coded for literacy-related behaviors and conversations related to the videotext.

Through her descriptive analyses, Golos found that deaf preschool students frequently engaged in literacy-related behaviors throughout ASL video viewings and increased significantly across repeated viewings over time. Another finding from her analyses was, under certain video viewing circumstances, the students with a high-level of ASL proficiency exhibited more engagement and literacy-like behaviors than others with a lower level of ASL proficiency. This is consistent with the findings from the studies discussed earlier that showed a positive correlation between ASL proficiency and English literacy skills (see the Bilingual Model in Deaf Education section), and that the students with more highly developed language would have more literacy skills than the others. Golos summarized the implication of her findings as follows: “Regardless of their age or signing background each one of these children individually found their own way to connect with the video and many of these connections were literacy related” (2006, pp. 130–131).

To measure the extent of deaf preschool students’ learning from viewing an ASL videotext, Golos created and administered Peter’s Picture Assessment Tool (PPAT) that consisted of pretest and posttest of words that were incorporated in the video she developed to measure students’ targeted vocabulary gain after multiple viewings of an ASL videotext. The differences in students’ pre- and post-test vocabulary scores were measured through both paired t-test (to find differences in scores on the pre/posttests) and regression analyses (to find relationships between

ages, engaged literacy-related behaviors and posttest gains). The findings from these tests showed that the overall increase from pretest to posttest was 20 percent among the 25 students. With these findings, Golos (Golos, 2006, 2010a, 2010b) concluded that through the utilization of video technology, deaf students do engage in and can learn from multiple viewings of an ASL videotext and, also, their engagement behaviors increase over time.

#### *2.3.1.5. The Golos and Moses Studies*

In a follow up to the Golos study, Golos and Moses (2011) explored how the deaf preschool children' literacy-based behaviors differed with or without teacher facilitation during video viewing in a study among three teachers and nine deaf preschool children (n=9). These teachers and preschoolers came from two different self-contained day programs for the deaf in the western region of the United States. Two teachers used a Total Communication approach, and the third teacher principally used an oral approach with minimal sign support. All of the preschoolers have hearing parents.

For this study, Golos and Moses used the same ASL videotexts that Golos used in her previous study and developed an interactive guide for teachers to mediate their students' viewing experience. This guide was designed for the teachers to help promote viewing engagement, promote connections between ASL and English print, vocabulary development and story comprehension. The teachers were then given a two-hour training session on how to mediate video viewing sessions. Before and immediately after three days of video viewing, the students were given the same

receptive vocabulary pre- and post-test used in an earlier study. All viewing sessions with the students and their teachers mediating their viewing experience were videorecorded, transcribed and coded in the same manner as in the previous study for literacy-related behaviors as well as conversations related to the video. Descriptive analyses and paired t-test analyses were applied to the coded data, and a paired t-test was also applied to find differences between students' pre- and post-test scores, all in the same manner as Golos did in her previous study. To explore the differences in literacy-based behaviors with and without teacher mediation, the descriptive statistics and independent t-tests from this study and Golos' 2006 study were compared.

Through their analyses, Golos and Moses (2011) found that deaf preschool children, who had their teachers mediating their viewing, were more engaged and showed literacy-related behaviors more frequently than the others without teacher mediation. Golos and Moses (2011) conclude that although Golos' (2006, 2010a, 2010b) previous studies show that deaf children can engage in literacy-related behaviors during unmediated viewing of an ASL videotext regardless of their ASL skills, teacher mediation had a more positive impact (than unmediated viewings) on deaf children' language learning and literacy development.

Golos and Moses (2013b) followed up on their 2011 study with two additional studies and were able to replicate the results similar to their 2011 study. Their follow-up studies involved thirty-one 3-to-6-year-old deaf children doing unmediated viewing (n=31) and seven deaf children (n=7) with their two teachers mediating their viewing, respectively. In the study that involved thirty-one deaf children, Golos and Moses

(2013a) investigated whether deaf children gain specific language and literacy skills targeted in given ASL videotexts. These children were in preschool programs for the deaf that use ASL to some extent, and were in either a residential, self-contained or day program setting around the United States and Canada. There was a diverse backgrounds among all deaf children in communication and language use at home. For example, of 21 deaf children's parents who provided information on their child's home language and communication style: ASL was used at two children's homes; a combination of ASL and spoken English at 19 homes; and spoken English was used at two homes.

Golos and Moses administered to the deaf children a pretest assessment prior to video viewings and a posttest assessment on two occasions after video viewings. Pretest assessment included American Sign Language Receptive Skills Test (ASLRST) to measure children's baseline ASL receptive skills and expanded PPAT to measure children's learning knowledge of both vocabulary words and story elements targeted in the videos used in this study. Posttest assessment consisted of just PPAT for the students to complete the second time. Golos and Moses analyzed pretest and posttest PPAT scores across baseline ASL receptive skills through a split-plot ANOVA. This analyses produced two key findings: (a) on average, students' scores increased on the PPAT from pretest to posttest showing that they learned key vocabulary words, and also learned story elements of the videotexts they viewed; and (b) students with higher baseline ASL skills performed better on the PPAT than students with lower baseline skills. Golos and Moses summarize the implications of

their findings as follows: “To the best of our knowledge, the present study is the first to show evidence of media having a positive effect on aspects of preschool deaf children’s literacy skills other than vocabulary” (Golos & Moses, 2013a, p. 421).

In Golos and Moses’ review of all of the studies discussed above that Golos did alone and with Moses, they noted the following: “What has been particularly interesting is that the deaf preschoolers, from across the studies, who viewed the videos demonstrated the literacy-related viewing behaviors and an increase in targeted literacy outcomes regardless of their degree of hearing loss, use of amplification (i.e., hearing aids, cochlear implants), or past exposure to ASL (some of whom had little to no previous exposure)” (2013b, p. 130). Golos and Moses (2015) followed on these studies with a study that looked at how effectively video viewing could be incorporated into daily classroom activities using the supplemental activities and materials they developed for the study. Their 2015 study involved seven deaf preschool students and their teacher using the supplemental activities the researchers developed for the study. They used the PPAT assessment tool they developed in an earlier study to collect pretest and posttest scores before and after the supplemental activities, respectively. They also developed a close-ended survey for the teacher to give feedback on the supplemental materials. An analysis of the pretest and posttest scores showed that the students’ average PPAT vocabulary scores increased from  $M = 9.00$  to  $M = 11.17$ . Also, the teacher’s ratings of the use of these activities and materials were mostly positive. Like before, these findings showed that the students benefited from the video viewing and supplemental activities, and that it is possible to

build video viewing and supplemental activities into everyday language arts curriculum for Deaf bilingual students.

#### *2.3.1.6. The Mueller and Hurtig Study*

Mueller and Hurtig (Mueller, 2008; 2010) conducted a single-subject design research study assessing the impact of technology-enhanced shared reading in four two-to-five-year-old deaf and hard-of-hearing children “exposed to some form of sign language” (i.e. ASL, Signed English, or contact sign) (n=4) with their respective hearing mother in a home setting. For this study, each participant was given 25 interactive multimedia electronic children’s books on a touch screen tablet PC. Each electronic book contained embedded interactive videos of a signing narrator that tells a story, comments on the story, asks the viewer questions, and gives response-contingent feedback. Printed words in the electronic books were also linked to a video clip of Signed English sign. Mueller and Hurtig opted to use Signed English signs for clickable English words based on their rationale that there is no distinct one-to-one correspondence between ASL and English.

Mueller and Hurtig (2010) measured the effects of the signing narrator embedded in the e-books in an A-B-A-B-A, single-subject, withdrawal design. The element that was withdrawn was the presence of the signing narrator. Deaf children were given five new e-books every week for a total of 25 different e-books over five weeks of study. Each week alternated between phase A (five new e-books without a signing narrator) and phase B (five new e-books with a signing narrator) for five weeks. Each child was given a different combination of five of the seven e-books in



each phase to ensure that the effect observed was the result of the signing narrator in the e-books and not resulting from effects of a given e-book or story. Mueller and Hurtig assessed the extent of deaf preschool children's learning from technology-enhanced e-books through a pretest and a posttest of a set of forty sign vocabulary items chosen from the Carolina Picture Vocabulary Test (CPVT), which is normed for signing deaf children. These students were not allowed to do any form of independent reading throughout the study period of technology-enhanced shared reading.

In their study, Mueller and Hurtig (2010) found that whenever there are signing narrators present in their e-books, the deaf preschool children spent more time in shared reading activities and learning new vocabulary as well as other book-related concepts. They also found that these deaf children increased their sign language skills through repeated interaction with signing e-books by clicking on the text on the touchscreen tablet PC screen to display the corresponding sign.

#### *2.3.1.7. The Beal-Alvarez and Easterbrooks Study*

Beal-Alvarez and Easterbrooks (Beal-Alvarez, 2012; 2013) explored the effects of teacher facilitating deaf students' repeated viewings of ASL videotext stories on these students' ASL classifiers (a subcategory of vocabulary that is unique to ASL and other sign languages) during narrative retells. This study included ten (n=10) second- to fourth-grade deaf students at an urban day school for the deaf in a major metropolitan area. Two students had deaf parents, and there was a diverse backgrounds among all students in communication and language use at home: ASL

was used at five students' home; Signed English was used at one student's home; and no sign language was used at the four remaining students' home.

Beal-Avarez and Easterbrooks used a multiple-baseline-across-participants design in their quantitative study to analyze deaf students' vocabulary development over six weeks of viewings and four weeks after the last viewing. For baseline assessments, Beal-Alvarez and Easterbrooks used the following: Peabody Picture Vocabulary Test (PPVT-4) for receptive vocabulary test; Expressive One-Word Picture Vocabulary Test (EOW-PVT) for expressive vocabulary test; ASL Receptive Skills Test (ASLRST) for receptive ASL; wordless picture books for student-generated narratives; and Ozcaliskan Motion Stimuli (OMS) for expressive ASL (specifically, classifier production). The narrative retell took about five minutes per student and students engaged in a total of eighteen retells across six stories, and these retells were videorecorded, transcribed, coded and analyzed for classifier productions. The independent variable was teacher-mediated repeated viewing of ASL videotext stories for three consecutive days (5-10 minutes per day). The dependent variable was accurate classifier production during student narrative retells of these ASL stories.

Consistent with other studies reviewed above (that is Golos & Moses, 2011, 2013a; Golos, 2006; Mueller & Hurtig, 2010), Beal-Alvarez and Easterbrooks (2013) found that repeated viewings of ASL videotext stories with teacher mediation as well as narrative retells of ASL models presented on these videotexts can help deaf students improve their ASL classifier production. Specifically, they found that after deaf

students' repeated viewings with teacher mediation, these students were able to transfer their classifier production skills to their narrative retells in natural settings.

#### *2.3.1.8. The Snoddon Study*

Snoddon (2006, 2010) explored the role of video technology in supporting Deaf students' ASL literacy skills by looking at several ways that have had positive influence on the Deaf elementary students' development of their ASL videotexts (or, as she put it, "identity texts") at a Canadian school for the deaf. Snoddon only mentioned participants' use of the video cameras, but did not specify their use of other forms of video technology. However, her description of the participants' use of video technology (i.e., drafting, editing and reviewing videotexts) clearly implied that the computers were used to produce and edit digital videos. The participants included 18 second, third and fifth grade students, their three respective teachers in separate classrooms and two visiting ASL storytellers. The data collected in this ethnographic study were in the form of observations, field notes and video recordings of three classrooms over a period of three weeks. During the initial part of a three-week period, the ASL storytellers visited each classroom. The participating teachers videorecorded and reviewed the storytellers' visits with the students before the students proceeded with their own story creation. During the latter part of three weeks, the students used video technology to create, share and review videotext stories with the rest of their class. After reviewing their videotexts with their class, the students revised their videotexts and presented their final versions to the class. The researcher tried to video record the dynamics of each classroom; the effects of the ASL storytellers' visits and

the content of their stories; student and teacher conversations and the development of individual student's stories on video.

Snoddon's (2010) study showed that successful learning outcomes in this study were contingent on not only the access, but also the use of video technology to foster collaborative critical inquiry. She also found that the conditions created by this study – the actual and videorecorded visit of ASL storytellers, teacher-facilitated discussions of identity and stories, and teachers' guidance of students through the ASL signing process of creating a story – served to positively influence Deaf bilingual students' linguistic and cultural identity development and underscored the video technology's role in the language and literacy skills development process. These factors also fostered students' identity involvement and cognitive engagement in their own stories.

### ***2.3.2. Summary***

The studies reviewed above all investigated and found that deaf and hard of hearing students, regardless of their language background and signing skills, benefit from the use of video technology to facilitate their language learning and literacy development. With access to ASL versions in addition to English text through interactive video technology, Deaf bilingual students performed better at answering questions and writing English texts than reading English-only texts (Hansen & Mouny, 1998; Hanson & Padden, 1994). Through interactive viewings of ASL videotexts with built-in target vocabulary words, Deaf bilingual students increased their vocabulary knowledge and skills (Beal-Alvarez & Easterbrooks, 2013; Cannon et al., 2010; Golos, 2006, 2010b; Golos & Moses, 2011; Mueller & Hurtig, 2010). They

also developed their literacy knowledge and skills other than vocabulary (Golos & Moses, 2013a, 2015). Video technology-facilitated viewing and discussion of ASL videotexts with ASL language models played a role in the Deaf bilingual students' language and literacy skills development process, and also influenced their linguistic and cultural identities (Snoddon, 2010).

All of the researchers in the aforementioned studies grounded their work within the theoretical framework of the bilingual approach to deaf education. Of these researchers, Snoddon (2010) and Golos and Moses (2013a) were the only ones to also ground their studies within the multiliteracies framework. Snoddon utilized this framework to look at how Deaf bilingual students learned to become multi-literate by acquiring ASL and English literacy skills, and learning video recording and editing skills to compose multimodal ASL videotexts. After numerous studies, Golos and Moses expanded the framework of their research by situating their most recent study reviewed here within the multiliteracies framework. They argued the following:

Educational materials developed in ASL for the deaf population should build upon deaf learners' linguistic (e.g., ASL) and cultural (e.g., Deaf) backgrounds as well as employ multiple modes of communication (e.g., pictures, ASL, print, gesture) and research-based visual strategies. All of these considerations can be incorporated into technological formats (e.g., DVDs). Multiple modes of communication in captured format should not only grab children's attention but also should include content at an appropriate level so that they can connect with, understand, and learn from what they see. An expanded view of literacy, which incorporates multiple modes of literacy, aims to meet the needs of the individual learner (New London Group, 1996), in this case the deaf learner, and specifically deaf learners whose parents support exposure to ASL. (Golos & Moses, 2013a, pp. 413–414)

Clearly, it will be useful to situate the video-technology-related studies within the framework of multiliteracies because it opens up a new realm of possibilities for research on how video technology allows Deaf bilingual students to use their multiple modes of communication as well as visual strategies to develop their language and literacy skills.

More research on the video technology-mediated ASL language learning and literacy development of deaf studies must be done not only within the context of ASL/English bilingual literacy practices, but also multiliteracies. Back in the 1990s when Singleton et al. (1998) did a study on the relationship between ASL literacy skills and English literacy skills, they wrote that video technology should be a crucial component of the bilingual approach to educating Deaf students, but noted that there is a “great need for future research in this area – both in terms of research and development of instructional techniques” (pp.26-27). This great need continues to exist as few studies, specifically those reviewed above, have only recently been done.

## **Chapter 3: Research Methodology**

The goal of this ethnographic mixed methods study was to add to current research by exploring and reporting on the patterns of ASL literacy practices in two teachers' language arts classes for Deaf bilingual students at two different educational settings, a residential school for the deaf and a charter public school. According to Anderson-Levitt (2006), ethnography is a qualitative approach to the study of people and the cultural processes through which people make meaning. In order to cognize literacy practices, literacy events need to be observed not only across places and time, but also how people engage in literacy events, and with whom, needs to be examined (Barton & Hamilton, 2000). The contexts within which these patterns develop are described here. Specifically, this study investigated the patterns of literacy practices in which Deaf bilingual students engage in functional, cultural and critical ASL literacy skills during viewing and discussion of multimodal ASL videotexts, and the frequency in which these behaviors occurred.

This chapter outlines the mixed methods research methods for this study. Next, the research questions and design, data collection and data analysis and reduction procedures are detailed. Finally, the limitations of the present study and how they are addressed are discussed.

### **3.1. Mixed Methods Research Questions and Design**

This study was designed to explore the overarching question: What can be learned from Deaf bilingual high school students and their language arts teachers

participating in the video technology-mediated ASL literacy events, in which they view, understand, analyze, make sense of, and/or discuss multimodal videotexts chiefly produced in their signed language?

To answer this overarching question, the research design was guided by the following sub-questions:

- What are the patterns of Deaf bilingual high school students' functional, cultural and critical ASL literacies used during the video technology-mediated viewing and discussion activities in their bilingual language arts classes?
- What contexts trigger Deaf bilingual high school students' use of each (functional, cultural, critical) type of ASL literacy skills during the video technology-mediated viewing and discussion activities?
- What role do ASL and English skills play in the patterns of each (functional, cultural, critical) type of ASL literacy use?

I opted for a mixed methods approach that combines videorecorded observations with quantitative analysis of student demographic and assessment data from the schools. Multiple types of data were collected and analyzed accordingly to produce findings that address the present study's research questions.

The primary data collected and analyzed to answer the above questions was videorecordings of classroom observations of ASL literacy practices in several language arts classes for Deaf bilingual students at two different schools. Such videorecordings are necessary in order to record the use of sign language and other forms of visual communication. During the video recordings, another data source in the form of handwritten notes was used to add context to the videorecorded observations. Handwritten field notes were made during the observations, which



consisted of two things: researcher-observer's self-reflective comments during the observations, and written records of the un-videorecorded behaviors and comments of the students and teachers right before, during and after the actual videorecordings. Field notes were used in this study to ensure accurate contextualization and textualization of the videorecorded classroom activities (Tobin & Davidson, 1990).

The videorecorded observations were immediately transcribed for the data analysis. Before proceeding with the data analysis following the data collection, a set of categories or codes was prepared for the top-down coding of transcribed observation data (see Table 3.3 for a coding scheme for ASL literacies). A code is "most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data" (Saldaña, 2009, p. 3). The data analysis that followed consists of coding transcribed observation data. Coding the data makes it easier to search the data, make comparisons, and to identify and investigate any patterns (Gibbs & Taylor, 2005). Through the coding, the original transcribed data was reduced into coded chunks, which were then qualitatively as well as quantitatively analyzed further to find and make meaning of the patterns of ASL literacy practices in data in relation to the research questions.

Transcriptions were analyzed via context analysis, discourse analysis, and conversation analyses and coded for patterns of ASL literacies use in order to answer parts of the research questions. Coded data were analyzed statistically to provide

answers to other aspects. These answers were then combined to a thorough answer to the research question(s) (Lieber & Weisner, 2010).

### **3.2. Theoretical Framework**

The study was grounded in both the bilingual approach to deaf education (Cummins, 2006; Humphries, 2013) and the multiliteracies or New Literacy Studies (NLS) perspectives (Kress, 2003; Lankshear & Knobel, 2006; New London Group, 1996, 2000; Street, 2003). In line with these perspectives, this study is based on the following ideas that: (a) literacy is a social practice (Barton & Hamilton, 2000); (b) literacy practices are always influenced and transformed by modern technology ; (c) Deaf bilinguals are multi-literate, rather than just reading and writing, because they have literacy skills in two languages of different modality – ASL and English (Czubek, 2006); and (d) there are three fundamental categories of domain-general literacy: functional, cultural and critical literacies (Christie & Wilkins, 1997; McLaren, 1988).

Each of these perspectives discussed above provide a foundation for this study. Both the bilingual approach to deaf education and the multiliteracies (NLS) perspectives inform the research design. In data analysis, ASL literacy practices at the utterance level are the basic units of analysis in this study. Literacy practices are conceptualized here as the ways that people use their knowledge, values and skills with particular texts. In other words, rather than emphasizing literacy as a skill to be possessed, this study focuses on what literate people actual do with texts produced in

signed language. These practices are realized in literacy events, in concrete occasions where texts of any sort are used and interactions around the texts are identifiable.

Literacy events are observable occurrences among participants in which they use literacy practices to make sense of a given text of any form (Barton & Hamilton, 2000; Heath, 1982). Literacy events differ from literacy practices in that literacy events are observable while literacy practices are not. Literacy events can be directly observed because we can see what people are doing with texts, while literacy practices cannot be directly observed. They are related to unobservable beliefs, views, assumptions, attitudes and power structure. Therefore, practices are inferred. The literacy events in this study are the bilingual language arts classroom activities where multimodal videotexts chiefly produced in ASL is the focus of attention. Specifically, in these ASL literacy events, Deaf bilingual students and their teachers collaboratively construct meaning by viewing an ASL videotext and reflecting on and discussing various viewpoints and interpretations in order to arrive at new understandings of a given videotext. The perspective on the three literacies provides a structure and way for looking for a pattern of specific types of ASL literacy in the literacy events in given language arts classes.

### **3.3. Positionality**

All research studies are representative of the position and standpoint of the researcher. Being mindful of one's position and standpoint, the researcher must acknowledge the context of the research as well as understand how the researcher-researched relationships influence research and interpretation (Glesne, 2010; Mertens,

2010). An account of my background, beliefs and preconceptions as the researcher is reported here. The steps I took to ensure the validity and reliability of research procedures and findings of my study are also reported here.

Researchers in the field of language and literacy acquisition with Deaf bilingual students are predominately hearing, and these researchers are the ones who control the topics of study. They also are the ones who interpret their findings often from a theoretical framework that does not draw on a sociocultural perspective of Deaf people as bilingual sign language users (Harris, Holmes, & Mertens, 2009; Singleton, Jones, & Hanumantha, 2014). Although my study is situated within a Deaf-friendly sociocultural framework, drawing on the perspectives of bilingual approach to deaf education and multiliteracies (NLS), I nevertheless consulted literature on the best practices in research on Deaf bilingual people (e.g., Harris et al., 2009; Singleton, Martin, & Morgan, 2015; Wilson & Winiarczyk, 2014). Consulting literature helped ensure that my research design is ethical as well as Deaf-friendly. Taking these steps ensures that my study helps take into account the cultural and language norms of Deaf bilingual students, thus strengthening the study's validity.

My personal experience as a Deaf bilingual user of ASL and English, my past experience as a student in the deaf education system, as well as my professional interest in the field of bilingual education have potentials to shape my interpretation of the data collected. I am presently a teacher of Deaf bilingual students in the San Diego Unified School District. Prior to that, I worked for over four years as an ASL-English Bilingual Language Arts Teacher/Researcher and another four years as the K-12

ASL/Bilingual Curriculum Specialist at two different ASL/English bilingual residential schools for the deaf. In addition to my professional experience, I have extensive knowledge in using and implementing educational technologies in the classroom. I received a M.A. in Teaching & Learning: Bilingual Education (ASL/English) from UC San Diego. When I returned to UC San Diego for the doctoral program in Teaching & Learning, I made both the bilingual model in deaf education and technology-mediated bilingual language learning and literacy development specialties of mine. Anstey and Bull (2006) argued that that teaching practices of literacy needs to be regularly evaluated and adapted to keep up with evolving technology, multiliteracies, language and literacy; this is the view that I have of the ASL literacy practices.

Because of my background, I made every effort to be cognizant of the fact that I have a strong positive view toward deaf bilingual education and technology-mediated bilingual language learning and literacy development. Being a complete observer in the bilingual language arts classroom sessions where multimodal ASL videotexts are the focus of attention. While it was not the goal of the present study to evaluate the quality of ASL literacy teaching and learning activities, I observed ASL literacy events that unfold during their classroom sessions and looked for patterns in the literacy events that may help us understand how Deaf bilingual high school students and their language arts teachers participate and use their ASL literacy skills in the video technology-mediated ASL literacy events. Additionally, my knowledge and experience in educating Deaf students as well as in using video technology as a

learning tool for ASL language and literacy development aided observation as well as analysis and interpretation of videorecorded observations in the present study.

In addition to being mindful of my position and standpoint as the researcher in the study, I employed peer review and member checks to ensure credibility of my study. Three doctoral student peers and a faculty supervisor reviewed my data collection and reduction procedures and samplings of my transcripts and codings. They posed questions and shared their views about my research design and procedures and about the dependability and confirmability of my findings. Their questions and views helped me confront my own views as the researcher in my study, and also guide the next steps in my study (Mertens, 2010). I also discussed my research design and findings with other Deaf researchers and Deaf experts in the field throughout every step of the study to help verify its validity as well as add to the credibility of my study. The Deaf researchers and Deaf experts, two of whom are members of my dissertation committee, provided feedback and input reflecting their unique sociocultural perspective as members of a Deaf bilingual community (Harris et al., 2009; Singleton et al., 2015). I also invited my Deaf teacher participants to review and validate transcripts of their respective classes. Singleton et al. (2015) argued that “sign language research that is with rather than on Deaf will both be superior in scientific terms and will achieve more societal impact” (p.8).

### **3.4. Sampling Procedures**

Because of my particular interest in collecting data from a specific group of students and teachers, I used a purposeful sampling approach to establish criterion for

my participants to help me identify individual cases that met the criteria (Mertens, 2010). The criterion established for this study was: high school language arts teachers who use ASL videotexts as tools to develop literacy skills in Deaf bilingual students. A purposeful sampling approach is ideal for research that tends to have a theoretical approach to it and requires a sampling of specific groups, settings, and individuals where (and for whom) the processes being studied are most likely to occur (Mertens, 2010). The purposeful sampling approach used in this study consisted of a variety of criterion, opportunistic and convenience samplings.

Maxwell (2012) identified five goals of purposeful selection he believes are most important. These are (a) achieving representativeness or typicality of the settings, individuals or activities, (b) adequately capturing the heterogeneity in the population, (c) methodically selecting individuals or cases that are crucial for testing the theories, (d) establishing particular comparisons to illuminate the reasons for differences between settings or individuals, and (e) selecting groups or participants with whom you can establish the most constructive relationships, ones that will help answer research questions. The third goal was relevant to this study. There are few deaf bilingual language arts classes with activities where multimodal videotexts chiefly produced in ASL are the focus of attention. We stand to learn from such studies that focus on the Deaf bilingual high school students and their language arts teachers participating in the video technology-mediated ASL literacy events, in which they view, understand, analyze, make sense of, and/or discuss multimodal videotexts chiefly produced in their signed language.

Guided by the principle of purposeful sampling, a search was initiated for a school site with a deaf bilingual language arts classroom that not only met the criterion established for this study, but also was receptive to working with a researcher. The four school sites were selected for this study for their potential teacher participants who have expertise in using ASL videotexts for literacy development, such as vocabulary development and story comprehension and analysis skills. After recruiting teachers and students based on the criteria for the study, the final sample included two Deaf language arts teachers and 18 Deaf bilingual high school students from two different school sites. The third and fourth school sites were excluded from the study due to insufficient time to recruit student participants in the study and collect data.

For my first school site, a potential Deaf teacher participant was recommended to me for her expertise in teaching language to Deaf students as well as her experiences using ASL videotexts. I emailed her inviting her to participate in my study. At the second school site, I inquired with a high school principal and key school staff members to identify a potential teacher participant at their site. Through my discussion with them, a Deaf teacher was recommended to me for participation in my study. I emailed her inviting her to participate in my study. When the potential teacher participants agreed to meet with me, a time was set up to individually meet with each teacher. At these meetings, I presented and explained the present study to them and answered their questions in ASL.

Once the two teacher recruits agreed to participate in the study, I made arrangements to coordinate and schedule an observation of a three-session sequence in



each of the teacher's two language arts classes. Prior to each observation, I met the teachers and their students in their classroom to introduce myself, explain the aims of the study and answer questions. I also went through the letters and permission forms (see Appendices III to VIII) line by line with the teachers and their students to ensure that they received all of the information they needed in ASL to make a voluntary and informed decision. Completed consent forms were collected from the teachers to be videorecorded (see Appendices V and VIII). Written permission forms were obtained from each of students' parents for the adolescent to participate as research subjects, assent forms from each student, and adult consent forms from each teacher prior to being observed (see Appendices VI, VII, and VIII).

### **3.5. Participants and Context of the Study**

The present study was conducted in two high school language arts classrooms for Deaf bilingual students. Two full-time high school Deaf teachers (one from each school site) and their two classes of Deaf bilingual students were recruited for this study. Teachers and students were selected based on their use of ASL videotexts for language and literacy development. The teacher participants were selected based on their willingness to participate, one from each site up to a total of two teachers. At each school site, each of the teacher's two language arts classes had a range between three to six students (which is the norm in deaf education) as potential participants of this study. The Deaf bilingual students in the two schools were members of various ethnic groups, although they share a common language and culture (i.e. ASL and Deaf

culture). None of the student participants had additional disabilities besides hearing loss.

### **3.6. Data Collection**

Three main types of data were collected and analyzed to answer the present study's research questions, and they were: (1) direct classroom observations; (2) school records containing student demographic and assessment data; and (3) data generated by coding transcribed videorecordings. Table 3.1 highlights the data collection and triangulation methods that were used to answer each research question.

#### ***3.6.1. Direct Classroom Observations***

Classroom observations were carried out in the four classes (two for each of the two teachers chosen for the study), and observations did not interrupt normal teaching in all of the classes observed for the study. At each school site, I was in one of the teacher's classroom during two periods for three consecutive days.

As strictly a non-participant observer at the school sites, my observations were focused on the teacher, the students and their sessions where multimodal ASL videotexts is the focus of attention. During these sessions, videorecordings and field notes were taken of classroom events, activities, teacher-talk, student-talk and teacher-student interactions. Classroom artifacts were collected through observations to triangulate observation data and document observable ASL literacy practices, such as ASL videotexts and links to websites shown in the language arts sessions. Literature was consulted for guidelines for the optional settings, conditions, and techniques for quality videorecording in order to capture and analyze sign language communications

on camera (e.g., Derry, 2007; Erickson, 2006; Perniss, 2015). During the videorecording, a single video camera was setup to capture as much as possible of what the teachers and students are doing and saying during their language arts sessions. During the entire videorecording, the video camera captured a continuous widescreen shot of them with no panning or zooming. Timestamps were indicated on the field notes for each session to help align to the video for future transcription and analysis. Following the recommendations of Schensul, Schensul and LeCompte (1999), field notes contained rich descriptions of literacy activities, participants, participants' unattributed behaviors, and the environmental setting.

Students of parents who did not consent and students who did not assent to videorecording were seated outside of the view of the video camera in an arrangement designed by their teacher. Students placed outside the view still participated fully in their regular activities. Prior to each observation, I informed everyone in the classroom that I would be observing the language arts classes they were in. If any objections arised during the observation, then I would stop the observation.

Videorecorded classroom activities were transcribed using a transcription software called InqScribe (Version 2.2) (<https://www.inqscribe.com>). Pseudonyms were used in the transcriptions and at all times in this study. As the researcher/observer, I was the only person transcribing the interview data to gain deeper analysis and understanding of data as well as to ensure transmission of contextual information (Lapadat & Lindsay, 1998; Tilley, 2003a, 2003b; Tilley & Powick, 2002). For example, an ASL sign that constitutes of an extended index finger

pointing outward from the signer can be interpreted as a singular pronoun for a person (“he” or “she”) or a thing (“it”); and only I would have a better idea as an observer than a hired transcriber of which pronoun the sign is referring to. Every effort and care was made to minimize the influence of his interpretive and theoretical [views] on the transcription process (Lapadat & Lindsay, 1998; Tilley, 2003a).

I developed the transcription conventions based on the Jefferson transcription conventions (Duranti, 1997; Sacks, Schegloff, & Jefferson, 1978) as well as a system for representing ASL in written symbol form from Signing Naturally (Smith, Lentz, & Mikos, 1988, 2008). This allowed me to produce a transcript that would appear how the ASL conversation looked in person, and also to be useful for the analysis of conversational turns and utterances. To minimize interpretation of the observation data when transcribing, I also incorporated sign language transcription conventions (see Appendix I) from a group of sign language linguists who developed the conventions explicitly for this reason (Chen Pichler, Hochgesang, Lillo-Martin, & Müller de Quadros, 2010). Chen Pichler et al. (2010) developed sign language transcription conventions to ensure that transcripts capture sufficient detail useful for answering a variety of research questions. In addition, these conventions help establish consistent practices for data collection and transcription, while minimizing the influence of the transcriber’s interpretive and theoretical views on the transcription process.

When the transcripts of the observations were completed, I offered the Deaf teacher participants an opportunity to review and validate the observation transcripts of their language arts sessions. This helped ensure that the translations in my

transcripts were complete and accurate before coding. The teacher participant from the charter public school accepted the offer to review the observation transcripts of her classes. She was familiar with the transcription conventions for reading and writing ASL due to her background in ASL linguistic studies and experience teaching ASL at numerous colleges. This lent more validity to her review of my transcripts. She reviewed and approved her transcripts with no suggestions for improvement.

While collecting and going over the naturalistic observation video and document data, I stayed conscious of the influence of my knowledge, beliefs, and experiences on data reduction and analysis. For instance, when I transcribed the observation data, I would be mindful of the fact that transcription is undeniably theoretically based (Lapadat & Lindsay, 1998) because researchers are undeniably guided by their theories when they collect, transcribe, reduce, analyze and interpret their data. This theoretical influence is also true for the coding process (Erickson, 2004).

For reliability, all sources of data collected during the study in an effort to investigate the patterns of ASL literacy events were triangulated to enhance the credibility of the observations, interpretations and conclusions drawn from its investigation to the greatest possible degree (LeCompte & Schensul, 1999b; Mertens, 2010; Yin, 2013). In other words, rather than relying on just one source (the video data), information from the videorecorded observations, field notes, and classroom artifacts were compared and contrasted (i.e. cross-checked for accuracy of findings).

Table 3.1 presents a crosswalk of the data collection and triangulation methods and data sources used for each of the research questions.

**Table 3.1: Research Questions and Data Collection and Triangulation Methods**

	What are the patterns of Deaf bilingual high school students' functional, cultural and critical ASL literacies used during the video technology-mediated viewing and discussion activities in their bilingual language arts classes?	What contexts trigger Deaf bilingual high school students' use of each (functional, cultural, critical) type of ASL literacy skills during the video technology-mediated viewing and discussion activities?	What role do ASL and English skills play in the patterns of each (functional, cultural, critical) type of ASL literacy use?
Field notes & classroom artifacts	X	X	X
Videorecorded observations	X	X	
Coded data from the transcripts	X	X	X
Student demographic & assessment data from the schools			X

### 3.6.2. School Records

At each of three schools, I collected consent from each school to allow me to collect relevant school documents and records containing student demographics information related to the age at the time of observation, gender, ethnicity, grade level, language environment at home, and level of communication at home (see Table 3.2 for

definition of each communication level). I identified the ASL and English language proficiency assessments were used in each school site, and collected the student participants' scores on these assessments. I collected every bit of data from different assessments to create redundancy in language assessment data, which helped me to get a better picture of students' language proficiencies in ASL and English. They served as background information of the participants for the study. Hardcopies were converted to electronic format and stored on my computer.

**Table 3.2:** *School-reported student levels of communicative access to family*

Parent hearing status	Level of communication	Definition of each communication level
hearing	1	Communication is restricted to emergency or basic information.
hearing	2	Duration of communication is often short and is usually limited to basic or superficial content.
hearing	3	Communication is fairly adequate; however, at times the subject is left out and it is difficult to adequately discuss some topics.
hearing	4	The subject has full communicative access to parents or family members at any time and the student does not feel communication is constrained.
deaf	4	The subject has full communicative access to parents or family members at any time and the student does not feel communication is constrained.

Definition of each communicative level adapted from Kuntze (2004)

### 3.7. Pilot Testing of a Codebook

To establish the reliability and viability of the coding scheme developed for the present study, a pilot study was done which included four Deaf bilingual high school

students. My coding scheme was reviewed by the Deaf experts in the field in addition to my graduate department faculty and doctoral student peers for feedback. Feedback was taken into account to clarify and define the codes in the coding scheme. I observed and videorecorded five minutes of these students viewing and discussing an ASL poem with their language arts teacher. I transcribed and coded the videorecording of students' ASL talk to identify each (functional, cultural, critical) type of ASL literacy skills that was evident in their utterances. Results from the pilot study showed that the functional, cultural and critical ASL literacy skills were observable in students' ASL talk.

During my pilot coding, I noticed that there were incomplete utterances, interruptions, hesitations (e.g., um) and fillers (e.g., you know) that were either difficult to code or not codeable. Even though incomplete utterances, interruptions, hesitations and fillers are normal and part of natural conversation where speaker and listener often spontaneously change roles at the end of each utterance, I developed a rule for coding utterances: Every utterance that represent a complete idea or thought, and also has a subject and a predicate/verb, was codeable. An utterance could be something a speaker made to oneself, another person (e.g., a peer or teacher), or in response to any given context. A speaker's utterance may also consist of one idea or multiple ideas depending on how many ideas were included in one segment of utterance before the speaker and listener change roles. An incomplete sentence that is not codeable does not have a complete idea or express complete thought and may also be missing a subject or a predicate/verb.



Another thing I noticed in my pilot coding is it was possible for an utterance to include more than one type of ASL literacy. Even though it might seem that multiple coding could inflate the total amount of ASL literacy-related utterances, each type of ASL literacy was distinct enough to code for each identifiable type of ASL literacy. Additionally, I developed another rule for coding utterances: every utterance can be coded multiple times up to three different possible types of ASL literacies. This allowed for the coded data to be comprehensive, consistent and reliable, based on the theoretical underpinnings of multiliteracies. This rule afforded us more reliable coded data than what would be obtained from picking one type of ASL literacy for each coding of any particular utterance based on personal theories and hunches.

### **3.8. Data Reduction and Analysis**

Analysis reduced data to a story that I can tell; interpretation tells readers what that story means (LeCompte & Schensul, 1999a). Analysis also organized the big piles of accumulated data into smaller piles of summarized data. This process enabled me to discover patterns in the data and link them to the research questions.

Each transcription was broken down into utterances, in which an utterance represented a complete idea or contribution to the conversation. When I coded the transcript, I made sure to keep in mind that researchers “do not approach sites or data as blank slates, but are influenced by our prior theoretical readings and life experiences” (Sipe & Ghiso, 2004). This means that the theoretical influences also extend to the data itself. Data does not simply appear by itself. We construct and build data ourselves. Not only that, it is important to keep in mind that all coding is a

“judgment call” – how and what the researcher code opens up possibilities and obscures other potential alternatives for what coded data may look like (Sipe & Ghiso, 2004). Specifically, being mindful of these facts, I meticulously adhered to specific codes and linked them to present research questions and the theoretical underpinnings behind these questions. Doing so helped me pinpoint more of the coded data that matches the present study’s research questions and the theories behind them.

A top-down approach to data coding and analysis was used to ensure that the coding process was based on the research questions, which this study is based on, and the theories used in this study (Erickson, 2004). We “don’t discover our data under a tree; we construct it. In a similar way, we don’t discover conceptual categories in our data; we build them” (Lather, 1997, cited in Sipe & Ghiso, 2004, p. 474). My coding scheme was derived from the literature review of prior research and from the theoretical basis of the research (LeCompte & Schensul, 1999a). These codes were developed to identify each (functional, cultural, critical) type of ASL literacy skill that was evident in students’ talk (see Appendix II for more details on the codes and their operational definitions). This helped link research questions as well as conceptual interests directly to the data (Miles, Huberman, & Saldaña, 2014). The codes were allowed to evolve to account for additional ASL literacy practices identified in videotaped classroom observations. Thus, coding took place top down and bottom up until patterns of ASL literacy practices emerged because of the frequency in which they occurred in congruence with my prior hypotheses (LeCompte & Schensul,

1999a, p. 99). Literature review informed the coding scheme for this study and was designed to uncover the patterns.

Table 3.3 presents a description of the ASL literacies coding scheme as well as examples for the different codes from the classroom observation transcripts. In order to use the coding scheme effectively for discovering and coding data for every utterance that is ASL literacy-related, it was helpful to think within the context of multiliteracies framework in which Kress (2003) defined a text as “any instance of communication in any mode or in any combination of modes” (p.48). Kress added that, “Text is the result of social action, and so the centrality of text means that literacy is always seen as a matter of social action and social forces” (Kress, 2003, p. 85).

With these codes, Dedoose (<http://www.dedoose.com>), a web application for the analysis of mixed methods research data, was used to manage, excerpt, code, analyze and present the transcribed data and video data to find patterns of student ASL literacy-related behaviors and conversations related to the videotext. Dedoose also allowed for the integration of the qualitative data and coding with participant demographics and assessment scores. The transcribed data was coded within the multiliteracies (NLS) framework. Through the NLS framework, it was helpful to view a text as “any instance of communication in any mode or in any combination of modes” (Kress, 2003, p. 48). “Text is the result of social action, and so the centrality of text means that literacy is always seen as a matter of social action and social forces” (Kress, 2003, p. 85). Additionally, a combination of content analysis, context analysis, discourse analysis, and conversation analysis were used to analyze the videotaped

classroom observations. This process helps ensure descriptive, interpretive and evaluative validity of the researcher’s quantitatively analyzed data (Eisenhart, 2006).

**Table 3.3: Coding Scheme for ASL Literacies**

<b>Code</b>	<b>Description</b>	<b>Example</b>
Functional Literacy	<p>A type of literacy skill or practice that involves mastery of the basic skills necessary for a person to decode texts. This includes, at minimum, the ability to:</p> <ul style="list-style-type: none"> <li>• Recognize and produce the typical grammatical structures of a language and to use them effectively in communication</li> <li>• Understand and construct expressions of thoughts or texts</li> <li>• Read situation and use language with the proper social meaning for the communication situation</li> <li>• Use verbal and nonverbal communication strategies to get ideas across</li> <li>• Encode and decode text enough to understand what it is saying</li> </ul>	<p>“I think bad things happened to the students who get lousy grades. They get sent to the superintendent house and something happened to them there.”</p> <p>“He had an appointment with an old man.”</p>
Cultural Literacy	<p>A type of literacy skill or practice that involves mastery of a broad range of background knowledge to make meaning of texts. This includes, at minimum, the ability to:</p> <ul style="list-style-type: none"> <li>• Share background knowledge of body of information inherent to one’s culture and upbringing</li> <li>• Know particular linguistic traditions or bodies of knowledge from a cultural group</li> <li>• Apply one’s knowledge of culture, history, content, context and text features to make meaning of a given text</li> <li>• Make connections to self, other, the world and/or other texts</li> <li>• Acknowledge that culture impacts one’s and others’ behavior, beliefs and language use</li> </ul>	<p>“Hey, all of this discussion let me to remember this movie FS(Shrek). That movie made me laugh so hard.”</p> <p>“I know what language she is using. That is LSM (Lengua de Señas Mexicana, or Mexican Sign Language).”</p>

*Table 3.3: Coding Scheme for ASL Literacies, Continued*

Critical Literacy	<p>A type of literacy skill or practice that involves mastery of the ability to interrogate and challenge the text to consider its assumptions, its values, and its historical, political, sociocultural and economic contexts. This includes, at minimum, the ability to:</p> <ul style="list-style-type: none"> <li>• Engage in a social critique and commentary that questions the existing social structures and envisions social transformation</li> <li>• Perceive critically the way they exist in the world with which and in which they find themselves</li> <li>• Understand the deep meaning, ideologies, beliefs and power relations of a given historical and social context or text</li> <li>• Question whose interests or views are represented and served and whose views are silenced in a given context or text</li> <li>• Use language so that words reveal the deep meaning of anything under discussion</li> </ul>	<p>“It is all about FS(stereotype). Women are often labeled fragile and weak.”</p> <p>“We know that during interpreting, my interpreters talk most of the time and they do not sign when I am busy writing notes. Some will go as far as to say what they are talking about is personal. That is so unnecessary.”</p>
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I initially considered using ELAN (EUDICO Linguistic Annotator, <http://tla.mpi.nl/tools/tla-tools/elan/>) (Crasborn, 2015; Crasborn & Sloetjes, 2008) software to transcribe, annotate, code and analyze video data all in one place. ELAN is also a widely used annotation tool in sign language research because of its flexibility and functionality for almost any purpose in sign language transcription. ELAN can simultaneously display multiple parent and dependent tiers on a timeline that is linked to one or more videos, with all tiers based on user-definitions as well as user’s specific annotation needs (Perniss, 2015). I finally settled on the InqScribe and Dedoose

softwares for transcription and coding purposes, respectively, because the theoretical framework and research design of my study dictated that I need only full conversation transcripts to investigate at the utterance-level as well as conversational level of analyses. InqScribe offered more economical ways of transcribing video data that was sufficient for the present study. However, I retained and adapted ELAN transcription conventions for my transcribing to establish consistent practices for my data collection and transcription, and to allow others to “read” my data with ease. It also afforded myself the ability to import and integrate transcribed data and videos into ELAN for future research and analysis.

To ensure reliability of the coding, I included multiple views in the coding process by enlisting the help of three doctoral student peers and a faculty supervisor to collaboratively code first 25 minutes of a randomly selected transcript in one session. This accounted for about ten percent of the total observation minutes in the present study. We calibrated our coding by reviewing the coding scheme together and then used it to code the transcript together. The differences between this collaborative coding and my own coding were checked for interrater reliability. This resulted in very high agreement between the original and reliability codings. All differences were straightforwardly resolved through discussion to reach 100 percent agreement. For additional reliability and validity measures, I randomly selected a transcript and re-coded 132 utterances in first 30 minutes of the transcript, which accounted for about 10 percent of the total observation minutes in the study. After re-coding, I checked for the differences between initial coding and re-coding for intrarater reliability. Interrater

agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. The percent agreements were 100%, 98% and 99% for functional, cultural and critical ASL literacies, respectively.

After I completed coding all of my transcripts and checked all of my codes, the same doctoral students and a faculty supervisor reviewed and discussed samplings of my coded data from the transcripts to ensure that there is consensus for every single code applied to each line in the sample.

### **3.9. Language Assessments and Quantitative Analysis**

Results of the coding along with the students' ASL and English assessment scores as well as demographic information were entered into an Excel spreadsheet. For the language assessment scores, each column in the Excel spreadsheet corresponded to scores from each type of ASL or English language assessment used by at least one of the schools participating in the study. I looked for where the assessment data converges in the spreadsheet to identify the tests that were used in all of the schools participating in the study, and exclude the tests that were not used at all of the schools. Through this process, the American Sign Language Receptive Skills Test (ASL-RST) and the Basic Reading Inventory (BRI) were identified as the two test instruments used at both schools, and included for the statistical analyses. The spreadsheet data were then input into the PSPP, a free program for statistical analysis of sampled data, to obtain descriptive and analytical statistics.

The ASL-RST (Enns, Zimmer, Boudreault, Rabu, & Broszeit, 2013) is a standardized sign language assessment tool that measures general ASL receptive

skills, or their understanding of ASL grammar in phrases and sentences. The ASL grammatical structures assessed in the ASL-RST include the following: number/distribution, negation, noun/verb distinction, spatial verbs (location and action), size and shape specifiers, handling classifiers, role shift, and conditional clauses. The ASL-RST test consists of 42 test phrases and sentences on a video, which makes it easy and straightforward to administer, and also allows for consistency across administrations. After playing a video of each ASL phrase or sentence, the student responds by pointing to the most appropriate picture from a choice of four that appears on the video screen. The only responsibility the rater has when administering the ASL-RST is to record the students' responses to each item on a prepared scoring sheet, which ensures the reliability of the ASL-RST data provided by the schools participating in the study.

The BRI (Johns, 2012) is a variation of the informal reading inventories (IRIs) mainly designed to evaluate a number of different aspects of students' reading performance. BRI consists of graded word lists and passages ranging from preprimer to middle school and high school levels. Students' reading levels are determined based on their verbal answers to comprehension and recall questions after reading each leveled passage. BRI is one of the few IRIs that reported interrater reliability, which ensured that the difference between a student's true score and scores obtained by different raters at different times is minimal. This ensures the reliability of the BRI reading and vocabulary data collected from the schools. As an added measure to enhance reliability of the BRI data collected from each school site, I used correlational



analysis to determine the strength of the relationship between the BRI data and other English assessment-related data. For the residential school site in this study, the data from the Measures of Academic Progress (MAP) reading and vocabulary assessments (Northwest Evaluation Association, 2015) was used for the correlation test. The MAP is an online standardized adaptive multiple-choice assessment that is used in grades 3-12 for reading, language, math, and science. For the nine Deaf bilingual residential school students, their BRI reading and vocabulary test scores correlated with MAP reading and vocabulary scores,  $r(7) = .94, p < .001$ , and ASL-RST test scores,  $r(7) = .87, p = .002$ , respectively. This showed the reliability of the BRI data collected from the residential school. For the mainstream school, there was insufficient English data collected from other English assessment tools through the school, and, therefore, no correlation test was done to enhance its reliability for this school.

### **3.10. Limitations of the Study**

There were several limitations to the present study. The first limitation was the small sample size of the study, which is a norm for many studies that involve Deaf children and adolescent students. A second limitation was the number of classroom observations – two-session observation in each of two classes per teacher. In order to minimize limitations, and obtain a realistic overview of teachers' classroom activities, two different teachers and their students were observed at two different school sites.

## **Chapter 4: Findings of the Study**

### **4.1. Introduction**

In this study, I explored the following overarching question: What can be learned from Deaf bilingual high school students and their language arts teachers participating in the video technology-mediated ASL literacy events, in which they view, understand, analyze, make sense of, and/or discuss multimodal videotexts chiefly produced in their signed language?

To explore the overarching question of this study, this chapter presents an analysis of the patterns of literacy practices in which Deaf bilingual high school students engage in ASL literacy skills during viewing and discussion of multimodal ASL videotexts. It begins with a contextualization of these ASL literacy-related utterances by considering the demographics of Deaf bilingual high school student participants as well as their teachers; the characteristics of the school sites participating in the study; and evidence of ASL literacy-related student utterances in their language arts classes.

Following this discussion, the remainder of the chapter is organized to present the findings of the study in relation to the three research sub-questions that guided it.

The first research sub-question was:

What are the patterns of Deaf bilingual high school students' functional, cultural and critical ASL literacies used during the video technology-mediated viewing and discussion activities in their bilingual language arts classes?

The section that deals with the findings related to this research sub-question is more extensive than the sections related to other sub-questions, since it concerns the central idea of the study, which is the ASL literacy practices in Deaf bilinguals' high school language arts classes. In answering this sub-question, the results from ASL literacy-related coding during the data analysis described in chapter 3 will be presented. The focus will be on what each type of ASL literacy enabled the Deaf bilingual high school students to say in terms of literacies use, and on the content of ASL literacy-related utterances each category represents.

The second research sub-question was:

What contexts trigger Deaf bilingual high school students' use of each (functional, cultural, critical) type of ASL literacy skills during the video technology-mediated viewing and discussion activities?

The section that deals with this research sub-question presents contexts for ASL literacies use of Deaf bilingual high school students. It sketches the ways in which Deaf students use each types of ASL literacy skills in response to what they see and perceive around them, such as utterances from the other students and teachers, thus providing evidence for literacy as a social practice. The section also provides evidence for the ways in which the type of ASL videotexts (in terms of genre and specific content) appear to influence the nature of discussion and response during viewings and discussions of given ASL videotexts.

The third research sub-question was:

What role do ASL and English skills play in the patterns of each (functional, cultural, critical) type of ASL literacy use?

The section that deals with this research sub-question contains a discussion of the relationship between ASL and English skills, and how these skills relate to a person's ability to use certain types of ASL literacy skills.

## **4.2. A Context for ASL Literacy Practices**

### ***4.2.1. School Settings***

Data collection was done in two different schools and program that subscribe to ASL/English bilingual approach to deaf education. These school sites are in the same state in the western region of the United States.

The first school site was a public charter high school with a deaf program. This site is a college preparatory school in a low income, high immigrant suburban area in a major metropolitan city in the southwest of the United States. This school's student population represents the cultural, ethnic, and economic diversity of its surrounding community. Based on the school's recent School Accountability Report Card (SARC), there are approximately 2,400 students being served by approximately 200 staff members at this school, and 44% of the students are Hispanic or Latino. 18% and 21% of the students are Black or African American and White, respectively. 53% of the students are socio-economically disadvantaged. Students with disabilities, including deaf and hard of hearing students, constitute 9% of the student population. Average class sizes vary from 20 to 25, by grade level and subject area taught. At the time of this study, there were 18 Deaf bilingual students at the charter high school. The public

charter school's diverse student population is also reflected in the Deaf students' self-contained classroom.

The second school site was a residential school for the deaf in a suburban community, with a close driving distance to a large western metropolitan area. The residential school for the deaf had nearly 500 students located in a suburban city about 55 miles east of a major metropolitan city. This school serves 3-to-21-year-old Deaf students from the southern region of a western state of the United States. The school's most recent SARC in 2009-2010 shows a range of diversity at their school. 58% of the students are Hispanic or Latino. 25% and 11% of the student population is White and African American, respectively. Average class sizes vary from 6 to 8, by grade level and subject area taught.

#### ***4.2.2. Bilingual Language Arts Teachers of the Deaf***

Two teacher participants agreed to participate in the study. Each of the teacher participants in the observed classrooms was Deaf and a fluent user of ASL. Their backgrounds were described here beginning with the public charter high school teacher.

The first teacher participant was a Caucasian Deaf woman in her fifth year at the public charter high school. She was in her fourteenth year of teaching Deaf students at the time of the study. She previously taught high school language arts for seven years at a residential school for the deaf and she taught deaf pre-lingual preschoolers in a mainstream setting for a year. At the present school site, she has taught a variety of subjects in addition to language arts to the Deaf bilingual high

school students. She attended public school and subsequently attended California State University, Northridge, for her bachelor's and master's degrees in Liberal Studies with a minor in Deaf Studies and Special Education with an emphasis in Deaf Education, respectively. She also has several years of experience teaching ASL at numerous colleges.

The second teacher participant was a Caucasian Deaf woman in her first year of teaching high school bilingual language arts classes at the residential school for the deaf. She student taught at the residential school in the year preceding this study. Her educational background included a state residential school for the deaf, known for its bilingual/bicultural deaf education program, and subsequently attending Gallaudet University for her bachelor's degree in History. She earned her master's degree in Teaching and Learning: Bilingual Education (ASL-English) from the University of California, San Diego.

#### ***4.2.3. Deaf Bilingual High School Students***

The student participants in the present study were Deaf high school students who use ASL as their primary mode of communication. There were a total of 18 Deaf high school students. Table 4.1 showed that the number of student participants is fairly distributed among the classes that were used for the present study.

***Table 4.1: Deaf Student Population by Class Membership***

Class	Frequency
Mainstream Class #1	4
Mainstream Class #2	5
Residential Class #1	3
Residential Class #2	6

**Table 4.2: Individual Deaf Student Participant Characteristics**

Student Pseudonym	Age at Time of Study	Gender	Ethnicity	Parents' Hearing Status	Language Environment at Home	Level of Communication at Home <sup>Ω</sup>	School	
							Setting	Grade
Hayden	20;5	M	Other	HoH	Iraqi Arabic <sup>Φ</sup>	3	Self-contained	12+
Hannah	21;0	F	Other	DoH	ISL/HBSL	4	Self-contained	12+
Haley	17;6	F	Other	DoH	ISL/HBSL	4	Self-contained	11
Jamie	18;0	F	White	HoH	ASL	4	Self-contained	11
Ahmad	15;9	M	Other	DoH	Iraqi Arabic <sup>Φ</sup>	1	Self-contained	9
Enid	17;3	F	Other	DoH	Iraqi Arabic <sup>Φ</sup>	2	Self-contained	9
Francisco	17;3	M	Other	DoH	Iraqi Arabic <sup>Φ</sup>	2	Self-contained	9
Elizabeth	16;1	F	Hispanic	HoH	English	3	Self-contained	9
Sonny	17;8	M	Black	DoH	ASL	3	Self-contained	11
Jasmine	15;7	F	Hispanic	DoD	ASL	4	Residential	9
Miranda	15;3	F	Hispanic	DoH	ASL	4	Residential	9
Jacqueline	15;5	F	White	DoD	ASL	4	Residential	9
Edgar	17;4	M	Hispanic	DoH	English	2	Residential	10
Stephen	16;1	M	Hispanic	DoH	English	1	Residential	10
Armando	15;8	M	Hispanic	DoH	Spanish	1	Residential	10
Angela	19;5	F	Hispanic	DoH	Spanish	1	Residential	10
Edwin	16;5	M	Black	DoD	ASL	4	Residential	10
Ana	16;4	F	White	DoH	English	2	Residential	10

*Note:* DoD = Deaf children with Deaf parents; DoH = Deaf children with hearing parents; HoH = Hard-of-Hearing children with hearing parents; ISL = Iraqi Sign Language; HBSL = Home-based Sign Language

Φ: The spoken Iraqi Arabic language in this case is Chaldean, a language of Catholic minority originating in the Middle East found in northern Iraq and its surrounding area of neighboring countries (Iran, Syria and Turkey).

Ω: Denotes levels of communicative access between student and family (in this case, certain family members that provide the least restrictive access to communication with their student). See Table 3.2 for a definition of each communication level.

+: Super senior in high school

Nine students attended a self-contained program for deaf students at a public charter high school. Nine students were in the residential school for the deaf in the western region of the United States. Table 4.2 showed individual student participant characteristics.

The present study was done in two different teachers' high school classrooms from two different schools to ensure variability across the range of Deaf high school students of different linguistic and educational backgrounds as well as family backgrounds. Deaf high school students included in this study have a range of language abilities and backgrounds. Some high school students have had full access to ASL from birth while others have had limited exposure to ASL. Additionally, few of these students have one or more deaf parents.

Demographic information from 18 high school Deaf bilingual student participants in Tables 4.3 and 4.4 showed great variability across the range of their different linguistic and educational backgrounds as well as family backgrounds. The student participants were representative of the general deaf student population.

**Table 4.3:** *Deaf Student Ethnicity and Language Environment at Home*

Ethnicity	N	Deaf parent(s)	Hearing parents	ASL	English	Other sign language	Other spoken language
Hispanic	7	1	6	2	3	0	2
African American	2	1	1	2	0	0	0
White	3	1	2	2	1	0	0
Other	6	0	6	0	0	2	4



*Table 4.4: Student Participant Variable Percentages*

Variable ( <i>n</i> = 18)	Frequency
Gender	
Male	10
Female	8
Ethnicity	
Hispanic	7
African American	2
White	3
Other	6
Hearing Status	
Deaf	15
Hard-of-Hearing	3
Parental Hearing Status	
Deaf	3
Hearing	15
Language Environment at Home	
ASL	6
Spoken English	4
Other sign language	2
Other spoken language	6
Level of Communication at Home	
Restricted	4
Basic	4
Adequate	3
Full	7
School Placement	
Mainstream	9
Residential	9
Grade Level	
9 <sup>th</sup> Grade	7
10 <sup>th</sup> Grade	6
11 <sup>th</sup> Grade	3
12 <sup>th</sup> Grade	2

#### ***4.2.4. Frequencies of ASL Video Viewings and a List of ASL Videotexts***

##### ***Viewed in the Classes***

In a different context, Table 4.5 showed that the students in Mainstream Class #1 and Mainstream Class #2 had multiple video viewings while the students in Residential Class #1 and Residential Class #2 viewed their videos once. In Mainstream Class #1, a video was viewed five times and once on the first day and second day of observation, respectively. As for the Mainstream Class #2, a video was viewed multiple times on each of the two observation days. In that class, a video was viewed nine times on the first day while another video was viewed two times on the second day. This was not the case for Residential Class #1 and Residential Class #2. A video was viewed once on each day of the two-day observation in both of these classes.

***Table 4.5: Number of Initial and Subsequent ASL Video Viewings in Each Class***

	Viewings	
	Day 1	Day 2
Mainstream Class #1	5	1
Mainstream Class #2	9	2
Residential Class #1	1	1
Residential Class #2	1	1

Table 4.6 presents a list of ASL videotexts that the students viewed in their classes. This list showed a wide variety of signers and genres showing that the subject of classroom discussions does depend on the context and context of the ASL videotexts being viewed. For example, on the first day of observation in Mainstream

Class #1, the students viewed the “Appointment at Noon” video and discussed who they thought was the skeletal figure in a tattered black robe with hood in the end of the ASL videotext. They also discussed what they thought the moral (“People don’t take the time; time takes people.”) of the story meant to them. On the next day, Mainstream Class #1 viewed and connected the “Uncoding the Ethics” to their personal experiences with interpreters.

**Table 4.6:** *List of ASL Videotexts Viewed in Each Class*

Class	Signer and Video Title	Day
Mainstream Class #1	Ben Jarashow’s (2011) “Appointment at Noon”	1
Mainstream Class #1	Freda Norman’s (1996) “Uncoding the Ethics”	2
Mainstream Class #2	Manny Hernandez’s (2006) “Durassic Park”	1
Mainstream Class #2	Cinnie MacDougall’s (1996) “Which Room Was It?”	2
Residential Class #1	Patrick Graybill’s (1986) “The Mystery of the Superintendent’s House”	1
Residential Class #1	DawnSignPress’s (2006) “The Lives of Deaf Mexicans”	2
Residential Class #2	Billy Seago’s (1987) “The Greedy Cat”	1
Residential Class #2	Chuck Baird’s (1999) “Old Henry”	2

In Residential Class #2, the students viewed the “The Greedy Cat” video and discussed the moral of the story in that video. In their discussion, they cited Disney movies, such as “Cinderella,” “Snow White and the Seven Dwarfs,” and “Frozen,” and compared and contrasted the morals of these Disney movies to the moral of “The Greedy Cat.” On the next day, they watched the “Old Henry” video and discussed the problems of social prejudice, conformity to social norms, and their own personal experiences.

### 4.3. Analysis of Research Sub-Question 1 Findings

*Research Sub-Question 1:* What are the patterns of Deaf bilingual high school students' functional, cultural and critical ASL literacies used during the video technology-mediated viewing and discussion activities in their bilingual language arts classes?

In order to answer the first sub-question about the patterns of different types of ASL literacy use among the Deaf bilingual high school students, the Deaf bilingual students' utterances were counted and analyzed in two days of observations in their language arts classes. The students' utterances in the videorecordings from the observation period was transcribed, counted and coded using the ASL literacy-related coding scheme described in the research methodology chapter. The number of student utterances was described in each day as well as overall of the two observation days as an utterance proportion percentages, in order to get a measure of the frequency of student utterances.

The student utterances were then coded for each type (functional, cultural, critical) of the ASL literacies. The average percentages of specific types of ASL literacy-related utterances were calculated using the total frequencies of coding for each type of ASL literacy-related utterances as the numerators and the total numbers of utterances as the denominators. These calculations helped account for the differences in time length of different observation periods, thus allowing for direct comparisons of the coding data from different observation periods.

### 4.3.1. Frequencies for Proportional Total Utterances

All identifiable student utterances were recorded and counted from the transcriptions of the ASL video viewings and discussions. Table 4.7 presents the duration of each observation in minutes as well as the total frequency of utterances counted for each student during these observations.

**Table 4.7:** Minutes of Classroom Observation and Total Utterances in Each Class, Days 1 and 2

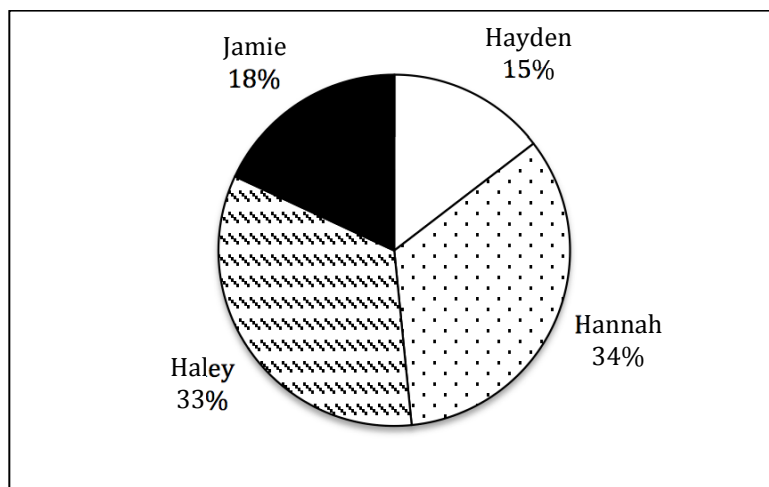
	Minutes			Utterances		
	Day 1	Day 2	Total	Day 1	Day 2	Total
Mainstream Class #1	29	30	59	184	132	316
Mainstream Class #2	39	24	63	371	133	504
Residential Class #1	37	33	70	153	69	222
Residential Class #2	42	31	73	98	100	198
All Classes	147	118	265	806	434	1240

Altogether, there were 1,240 utterances for all students in their classes over two days of observations. The proportion percentages of utterances were calculated for each student using the student's total frequencies of utterances as the numerators and the total number of the utterances from all students in the respective student's classroom as the denominator. These calculations helped accurately portray the proportion of each student's utterances in relation to other students' utterances in that student's class. The total frequencies and proportion percentages of utterances for each student are presented in the Table 4.8.

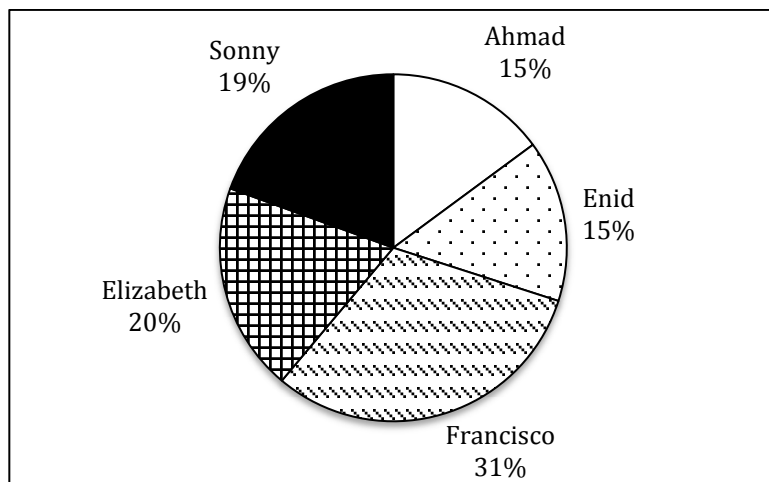
**Table 4.8:** Individual Student Utterance Count and Proportion Percentages

Student Pseudonym	Class	Day 1		Day 2		Total Utterances	
		Count	%	Count	%	Count	%
Hayden	1	25	14	21	16	46	15
Hannah	1	57	31	50	38	107	34
Haley	1	69	38	37	28	106	34
Jamie	1	33	18	24	18	57	18
Ahmad	2	45	12	30	23	75	15
Enid	2	41	11	35	26	76	15
Francisco	2	131	35	26	20	157	31
Elizabeth	2	82	22	16	12	98	19
Sonny	2	72	19	26	20	98	19
Jasmine	3	62	41	35	51	97	44
Miranda	3	46	30	17	25	63	28
Jacqueline	3	45	29	17	25	62	28
Edgar	4	23	24	14	14	37	19
Stephen	4	20	20	27	27	47	24
Armando	4	14	14	3	3	17	9
Angela	4	13	13	12	12	25	13
Edwin	4	10	10	34	34	44	22
Ana	4	18	18	10	10	28	14

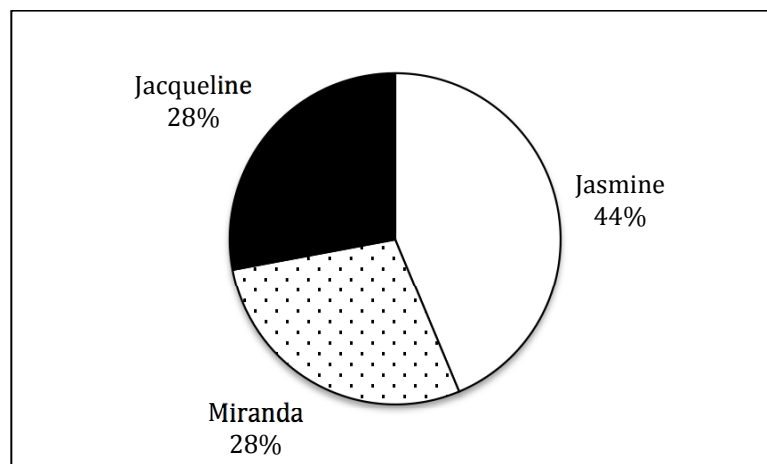
Figures 4.1-4.4 below present visualization of the average proportion percentages of individual student utterances, as listed in Table 4.8, to show how much each student contribute to the ASL video viewings and discussions in their classes over the course of 2-day observation.



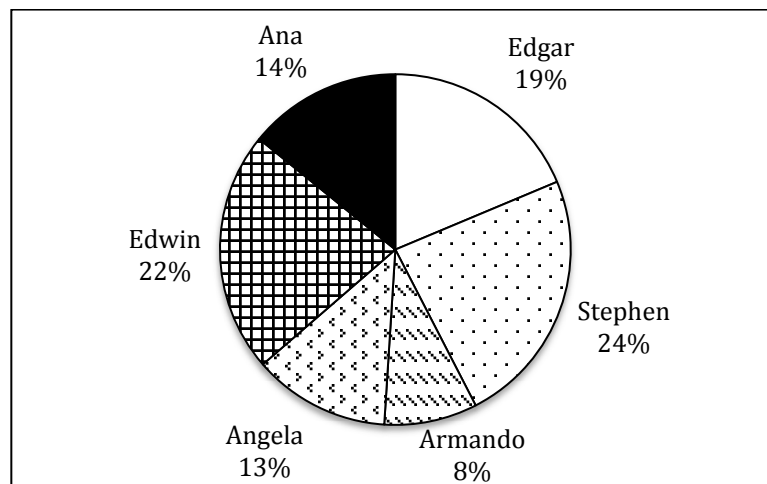
**Figure 4.1:** Average Proportional Percentages of Student Utterances in Mainstream Class #1 over Two Days of Observation.



**Figure 4.2:** Average Proportional Percentages of Student Utterances in Mainstream Class #2 over Two Days of Observation.



**Figure 4.3:** Average Proportional Percentages of Student Utterances in Residential Class #1 over Two Days of Observation.



**Figure 4.4:** Average Proportional Percentages of Student Utterances in Residential Class #2 over Two Days of Observation.



### 4.3.2. Frequencies for Each Type of ASL Literacy-related Utterances

All identifiable student utterances were then coded and counted for three different types of ASL literacy use during each video viewing for each student: functional ASL literacy, cultural ASL literacy, and critical ASL literacy (see Table 4.9).

**Table 4.9:** Individual Student ASL Literacy-related Utterances, Days 1 and 2

Student Pseudonym	Utterance		Functional Literacy		Cultural Literacy		Critical Literacy	
	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2
Hayden	25	21	24	19	7	6	0	2
Hannah	57	50	56	49	19	25	3	17
Haley	69	37	66	34	27	22	8	15
Jamie	33	24	33	23	12	12	1	4
Ahmad	45	30	38	24	1	6	0	0
Enid	41	35	32	28	0	3	0	0
Francisco	131	26	69	18	4	2	0	0
Elizabeth	82	16	74	16	6	4	1	0
Sonny	72	26	70	22	12	8	2	0
Jasmine	62	35	62	35	38	23	19	19
Miranda	46	17	45	16	27	10	12	7
Jacqueline	45	17	43	16	28	10	12	8
Edgar	23	14	22	10	12	5	3	0
Stephen	20	27	19	26	6	16	1	4
Armando	14	3	12	2	2	1	0	0
Angela	13	12	13	12	7	5	1	0
Edwin	10	34	10	33	6	26	1	15
Ana	18	10	17	10	8	6	1	2

For each student, the number of coded ASL literacy-related utterances was counted in each day of the two-day observations as well as a sum of both days.

Interestingly, after analyzing and coding every single utterance for at least one type of the ASL literacies, there were few utterances that were not coded for at least one kind of ASL literacies because they were either incomplete or did not show any evidence listed in the criteria for functional literacy. Although all of the utterances that constituted a form of functional ASL literacy may also be coded for either cultural or critical ASL literacy or both, every single utterance that was coded for cultural ASL literacy was also coded for functional ASL literacy. Moreover, every single utterance that was coded for critical ASL literacy was also coded for both functional and cultural ASL literacies.

An average percentage was calculated for each type of ASL literacy-related utterances for each day as well as overall in order to get a better measure of the frequency of different type of ASL literacy-related utterance for each student. Finally, the excerpts from the student utterances were presented here as examples for each type of ASL literacy use, to provide a better picture of the patterns of different types of ASL literacy use among the Deaf bilingual high school students.

Table 4.10 focuses on the individual percentages of literacy-related utterance over total utterances on each day of two observations. The descriptive statistics for the total number of ASL-literacy related utterances over each day of the two-day observations were provided in Tables 4.11 and 4.12.

**Table 4.10:** *Individual Percentages of Student ASL Utterances that are ASL Literacy-related, Days 1 and 2*

Student Pseudonym	Functional Literacy		Cultural Literacy		Critical Literacy	
	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2
Hayden	96	91	28	29	0	10
Hannah	98	98	33	50	5	34
Haley	96	92	39	60	12	41
Jamie	100	96	36	50	3	17
Ahmad	84	80	2	20	0	0
Enid	78	80	0	9	0	0
Francisco	53	69	3	8	0	0
Elizabeth	90	100	7	25	1	0
Sonny	97	85	17	31	3	0
Jasmine	100	100	61	66	31	54
Miranda	98	94	59	59	26	41
Jacqueline	96	94	62	59	27	47
Edgar	96	71	52	36	13	0
Stephen	95	96	30	59	5	15
Armando	86	67	14	33	0	0
Angela	100	100	54	42	8	0
Edwin	100	97	60	77	10	44
Ana	94	100	44	60	6	20

As Table 4.10 indicates, the highest percent for functional ASL literacy-related utterance over first day of observation was 100% for Jamie, Jasmine, Angela and Edwin. The lowest was 53% for Francisco. The highest percent for cultural ASL literacy-related utterance for first day was 62% for Jacqueline while the lowest percent was 0% for Enid. The highest first-day percent for critical ASL literacy-related utterance was 31% for Jasmine while the lowest was 0% for Hayden, Ahmad, Enid, Francisco and Armando.

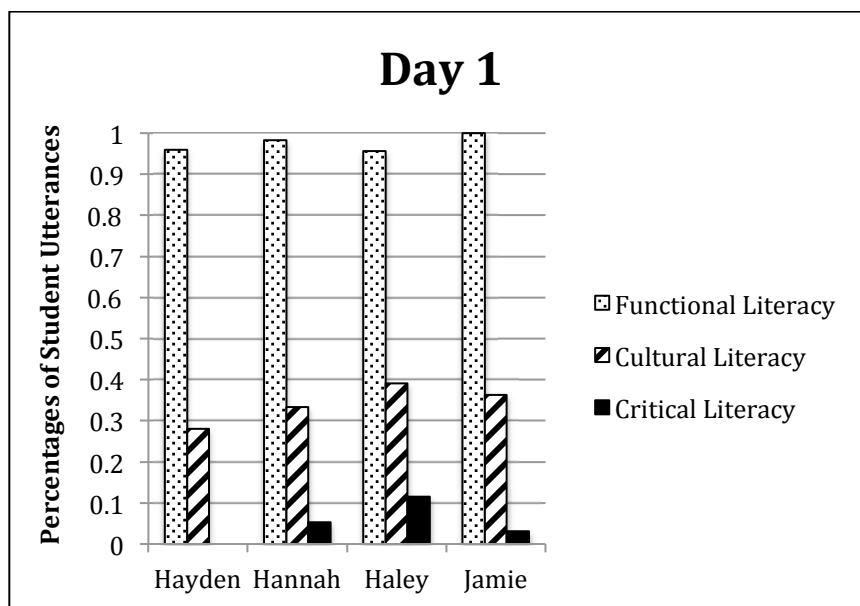
As for the second day of observation, the range of percentages is similar to those in the first day. The highest percent for functional ASL literacy-related utterance for second day was 100% for Elizabeth, Jasmine, Angela and Ana while the lowest percent was 67% for Armando. The highest percent for cultural ASL literacy-related utterance was 77% for Edwin while the lowest was 8% for Francisco. The highest percent for critical ASL literacy-related utterance was 54% for Jasmine, which she also attained the highest percentage for this type of literacy on the first day, while the lowest was 0% for eight students (Ahmad, Enid, Francisco, Elizabeth, Sonny, Edgar, Armando and Angela).

**Table 4.11:** *Descriptive Statistics for Observable Student ASL Literacy-related Utterances, Day 1*

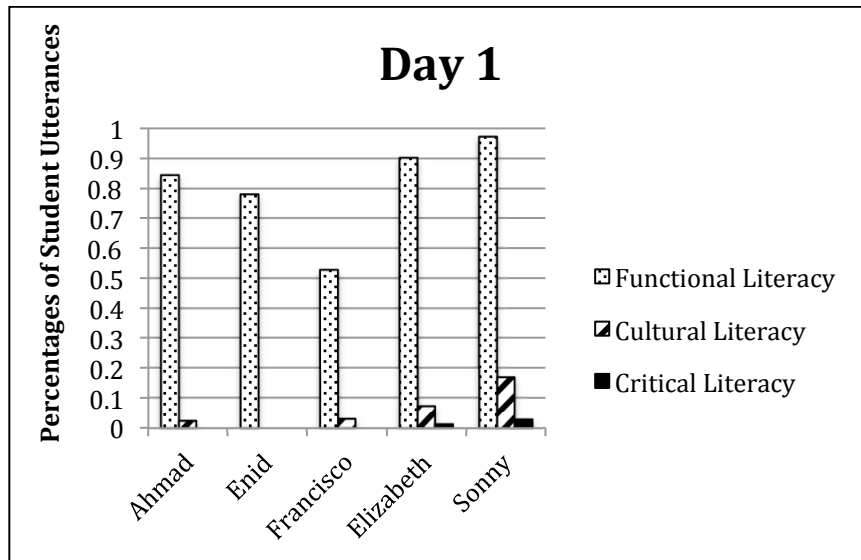
Variable	N	Mean	Std Dev	Variance	Range	Minimum	Maximum
Utterance	18	44.78	30.78	947.71	121	10	131
Utterance Proportion %	18	0.22	0.1	0.01	0.3	0.1	0.41
Functional Literacy	18	39.17	22.25	494.97	64	10	74
Functional Literacy %	18	0.92	0.12	0.01	0.47	0.53	1
Cultural Literacy	18	12.33	10.93	119.53	38	0	38
Cultural Literacy %	18	0.34	0.22	0.05	0.62	0	0.62
Critical Literacy	18	3.61	5.46	29.78	19	0	19
Critical Literacy %	18	0.08	0.1	0.01	0.31	0	0.31

**Table 4.12: Descriptive Statistics for Observable Student ASL Literacy-related Utterances, Day 2**

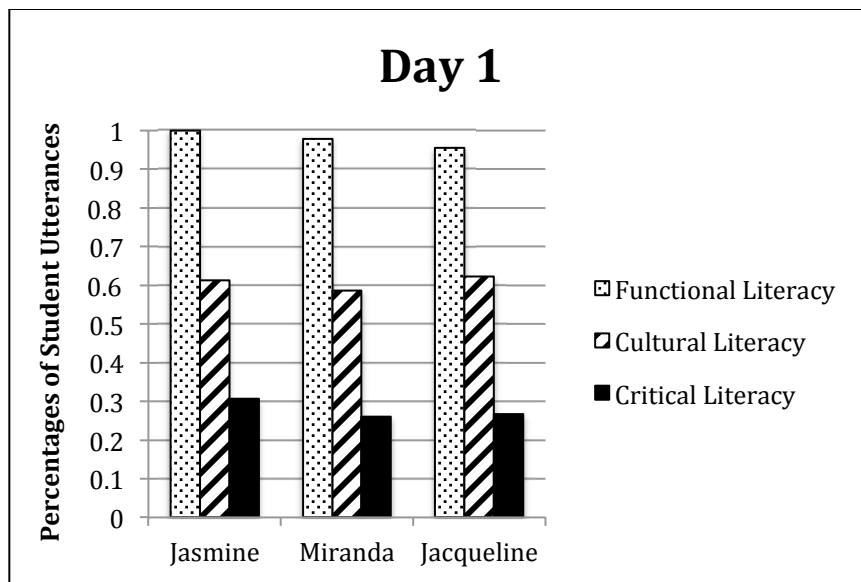
Variable	N	Mean	Std Dev	Variance	Range	Minimum	Maximum
Utterance	18	24.11	11.61	134.81	47	3	50
Utterance Proportion %	18	0.22	0.11	0.01	0.48	0.03	0.51
Functional Literacy	18	21.83	11.22	125.91	47	2	49
Functional Literacy %	18	0.89	0.11	0.01	0.33	0.67	1
Cultural Literacy	18	10.56	8.26	68.26	25	1	26
Cultural Literacy %	18	0.43	0.2	0.04	0.69	0.08	0.76
Critical Literacy	18	5.17	6.74	45.44	19	0	19
Critical Literacy %	18	0.18	0.2	0.04	0.54	0	0.54



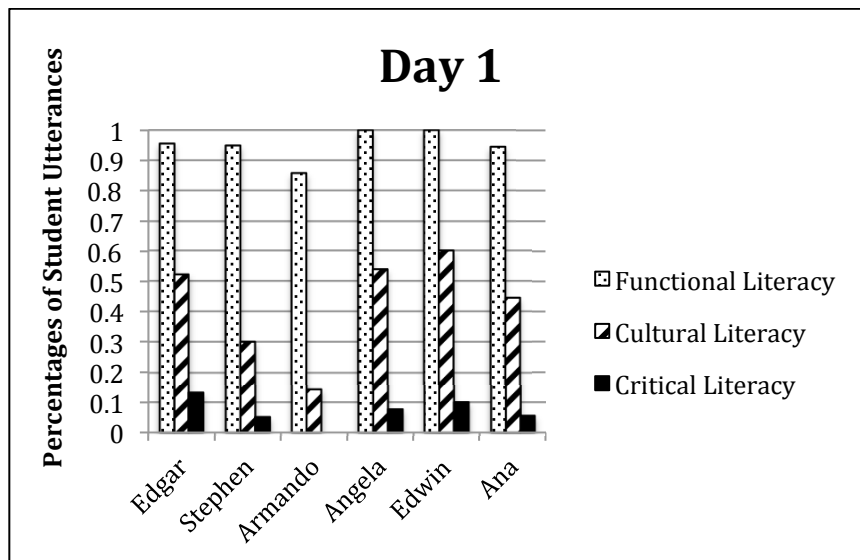
**Figure 4.5: Percentages of ASL Literacy-related Utterances in Mainstream Class #1, Day 1.**



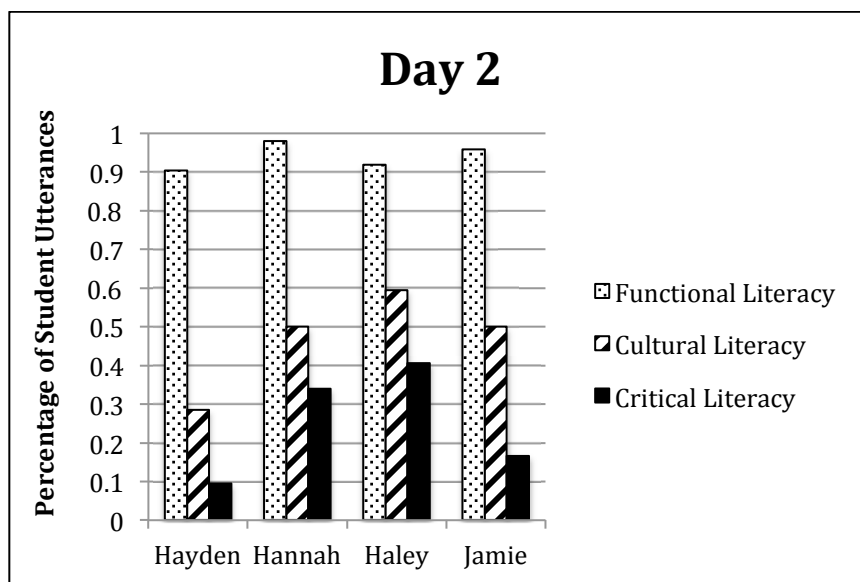
*Figure 4.6: Percentages of ASL Literacy-related Utterances in Mainstream Class #2, Day 1.*



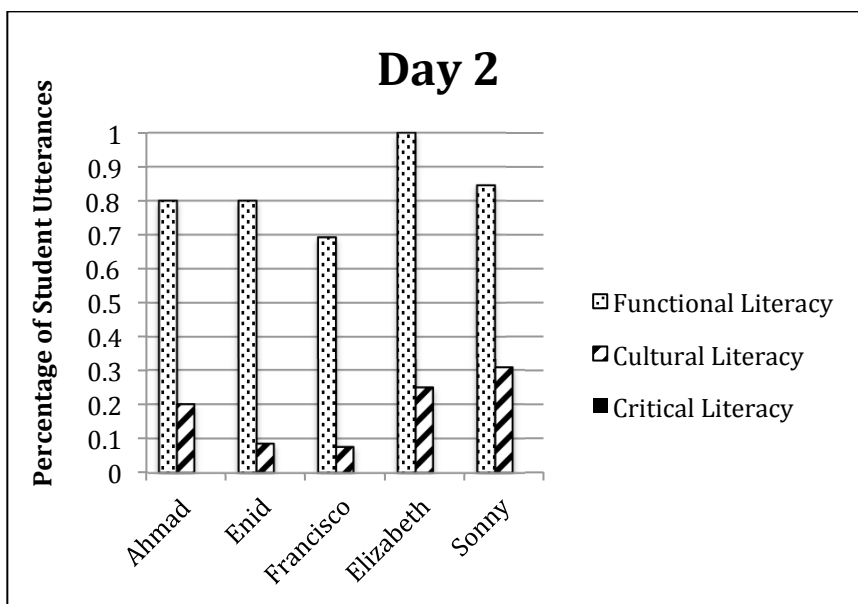
*Figure 4.7: Percentages of ASL Literacy-related Utterances in Residential Class #1, Day 1.*



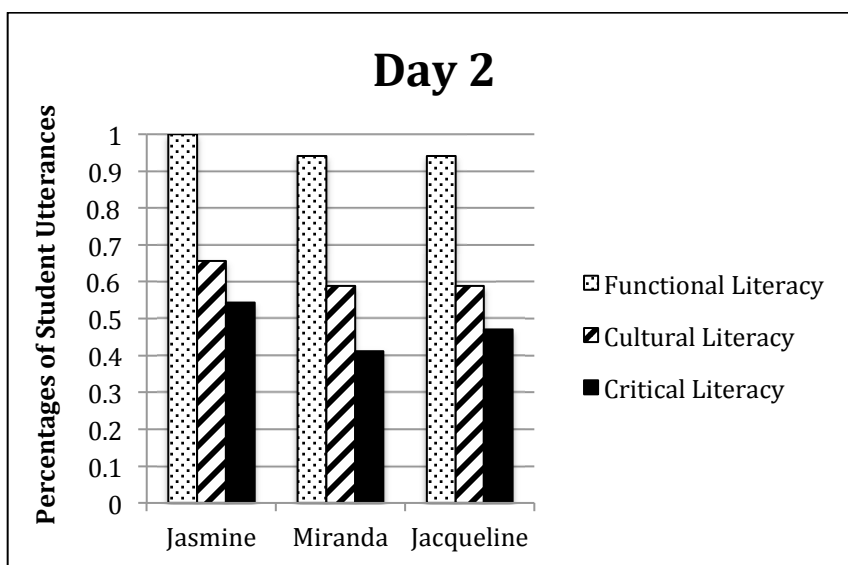
*Figure 4.8: Percentages of ASL Literacy-related Utterances in Residential Class #2, Day 1.*



*Figure 4.9: Percentages of ASL Literacy-related Utterances in Mainstream Class #1, Day 2.*

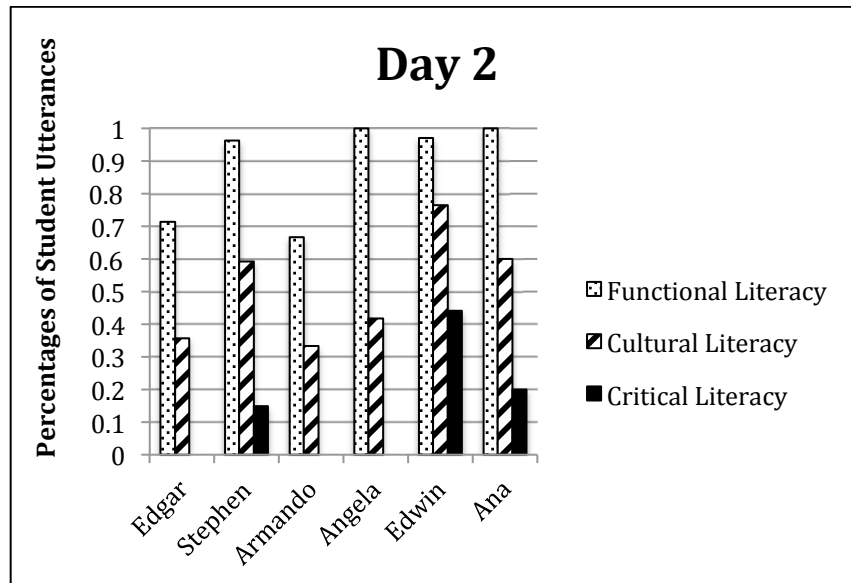


*Figure 4.10: Percentages of ASL Literacy-related Utterances in Mainstream Class #2, Day 2.*



*Figure 4.11: Percentages of ASL Literacy-related Utterances in Residential Class #1, Day 2.*





**Figure 4.12:** Percentages of ASL Literacy-related Utterances in Residential Class #2, Day 2.

As Figures 4.5-4.12 display, the numbers of certain students' literacy-related utterances not only vary across the student participants, but also decrease from functional to cultural to critical through both days of observation.

Because of the variations in the contexts in which the students' ASL video viewing and discussion across two days of observation, the total frequencies of coding for each category of ASL literacy for the first and second days of observation in Table 4.9 were totaled and calculated for the average percentages of ASL literacy-related utterance over total utterances. This helped account for the variations in the contexts and stabilize the average percentages for each type of ASL literacy-related utterances for each student over a span of few days. Table 4.13 presents the totals and percentages for all students. Table 4.14 presents individual total frequencies and

percentages for each of the students. The descriptive statistics for total number ASL-literacy related utterances over two days of observation was provided in Table 4.15.

The first pattern that emerged was the average percentages of literacy-related utterance by class. Figures 4.13-4.16 displays these percentages for the four classes.

**Table 4.13:** Total Count and Percentage of ASL Literacy-related Utterances for All Students, Days 1 and 2

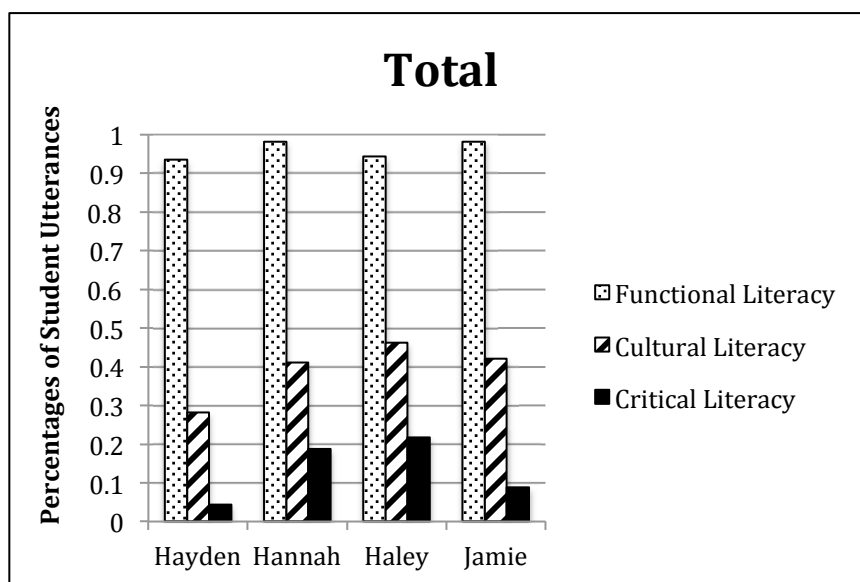
	Utterance	Functional Literacy	Cultural Literacy	Critical Literacy
Frequency	1240	1098	412	158
Percentage	100%	89%	33%	13%

**Table 4.14:** Individual Student ASL Literacy-related Utterance Total Frequencies and Average Percentages, Days 1 and 2

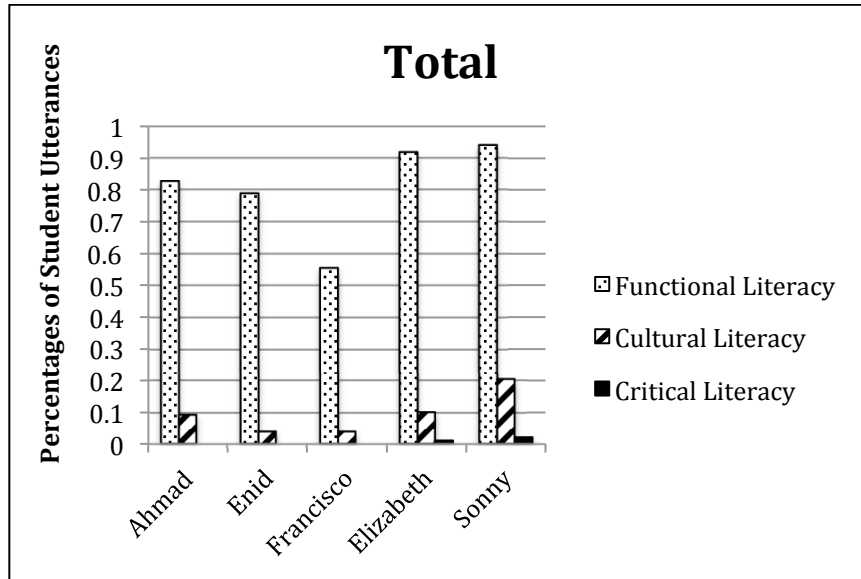
Student Pseudonym	Total Utterance	Functional Literacy		Cultural Literacy		Critical Literacy	
		Utterance	%	Utterance	%	Utterance	%
Hayden	46	43	94	13	28	2	4
Hannah	107	105	98	44	41	20	19
Haley	106	100	94	49	46	23	22
Jamie	57	56	98	24	42	5	9
Ahmad	75	62	83	7	9	0	0
Enid	76	60	79	3	4	0	0
Francisco	157	87	55	6	4	0	0
Elizabeth	98	90	92	10	10	1	1
Sonny	98	92	94	20	20	2	2
Jasmine	97	97	100	61	63	38	39
Miranda	63	61	97	37	59	19	30
Jacqueline	62	59	95	38	61	20	32
Edgar	37	32	87	17	46	3	8
Stephen	47	45	96	22	47	5	11
Armando	17	14	82	3	18	0	0
Angela	25	25	100	12	48	1	4
Edwin	44	43	98	32	73	16	36
Ana	28	27	96	14	50	3	11

**Table 4.15:** Descriptive Statistics for Total Observable Student ASL Literacy-related Utterances, Days 1 and 2

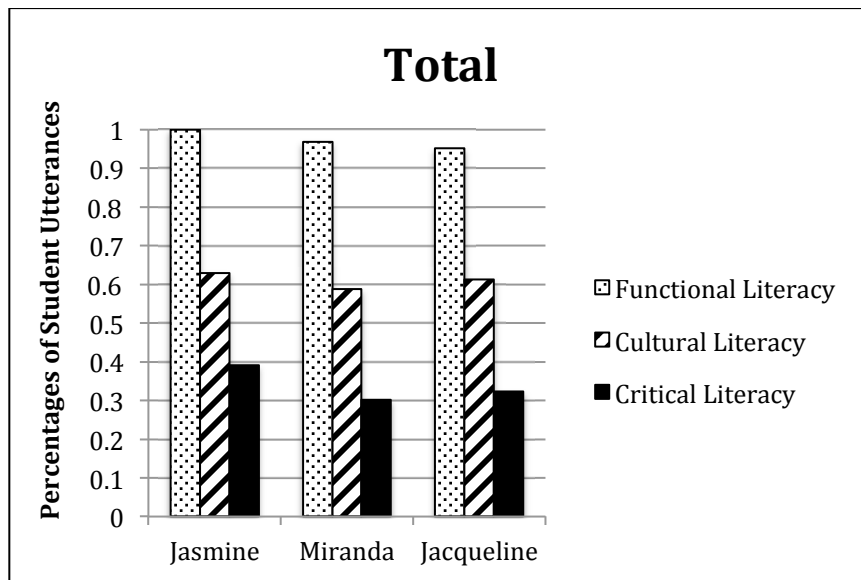
Variable	N	Mean	Std Dev	Variance	Range	Minimum	Maximum
Utterance	18	68.89	36.23	1312.93	140	17	157
Utterance Proportion %	18	0.22	0.09	0.01	0.35	0.09	0.44
Functional Literacy	18	61	28.35	804	91	14	105
Functional Literacy %	18	0.91	0.11	0.01	0.45	0.55	1
Cultural Literacy	18	22.89	17.02	289.75	58	3	61
Cultural Literacy %	18	0.37	0.22	0.05	0.69	0.04	0.73
Critical Literacy	18	8.78	11.06	122.42	38	0	38
Critical Literacy %	18	0.13	0.14	0.02	0.39	0	0.39



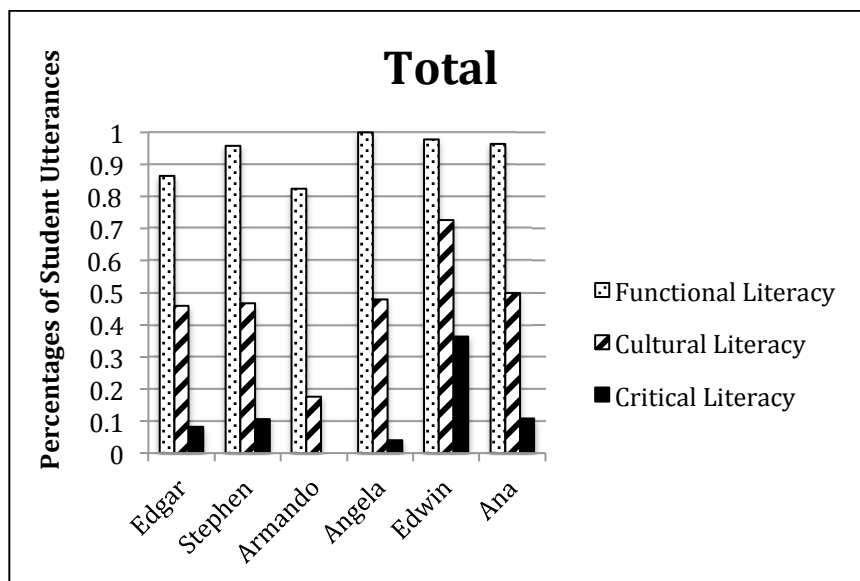
**Figure 4.13:** Average Percentages of ASL Literacy-related Utterances in Mainstream Class #1 over Two Days of Observation.



**Figure 4.14:** Average Percentages of ASL Literacy-related Utterances in Mainstream Class #2 over Two Days of Observation.



**Figure 4.15:** Average Percentages of ASL Literacy-related Utterances in Residential Class #1 over Two Days of Observation.



**Figure 4.16:** Average Percentages of ASL Literacy-related Utterances in Residential Class #2 over Two Days of Observation.

#### 4.3.3. Excerpts from Different Types of ASL Literacy-related Utterances

For a clearer analysis of the patterns of functional, cultural and critical ASL literacies use among the Deaf bilingual high school students, the patterns were investigated to determine whether they vary by students' language test scores. For this analysis, the students' ASL-RST test scores (see Table 4.26) were divided into three quartiles: those in the top 25% (top quartile) of the test scores, those in the middle quartile of test scores, and those in the bottom 25% (bottom quartile) of the test scores. To calculate the top and bottom quartiles, I used the QUARTILE function in Excel. In the top quartile, there were five students (n=5) who scored higher than 102.5 on the ASL-RST test. Furthermore, there were seven students (n=7) in the bottom quartile with scores lower than or equal to 97. To allow for a clear comparative qualitative

picture of the patterns of different types of ASL literacy use among the Deaf bilingual high school students with different language test scores, only the excerpts from the top and bottom quartiles are presented here side by side for each category of ASL literacy use.

Below are the following excerpts from my transcriptions of the videorecorded observations corresponding to their different types of ASL literacy-related utterances. These excerpts help illustrate the extent to which these utterances are literacy-related that exhibited not only the basic language skills necessary to decode and encode texts effectively, but also cultural knowledge and repertoire to make meaning of texts as well as the ability to critically interrogate and challenge texts in a variety of different contexts and conditions.

#### ***4.3.4. Examples of the Functional ASL Literacy-related Utterances***

There were 1,098 instances of utterances that constitute functional ASL literacy (see Table 4.13). The students who scored in the bottom quartile of the ASL-RST test scores accounted for 35% (383) of the 1,098 utterances, while the students who scored in the top quartile accounted for 37% (404) of these utterances (see Table 4.16). The percentages for the bottom and top quartiles of ASL-RST test scores for cultural and critical ASL literacy-related utterances are reported in the following sections. Based on these percentages, there was no difference in the percentage proportions between the students in the bottom quartile and the students in the top quartile.

The following Tables 4.17 and 4.18 are some examples of utterances that constitute functional ASL literacy from the students who scored in the bottom quartile and in the top quartile of the ASL-RST test scores, respectively.

**Table 4.16:** *Proportion of Total ASL Literacy-related Utterances for the Students Who Scored in the Bottom- and Top-Quartile of ASL-RST Test Scores*

	Participant quartile	
	Bottom 25%	Top 25%
Functional	35%	37%
Cultural	14%	54%
Critical	4%	74%

**Table 4.17:** *Examples of Functional ASL Literacy-related Utterances from the Students in the Bottom Quartile of the ASL-RST Test Scores*

Student	Utterances
Ahmad	<ul style="list-style-type: none"> <li>• The man and his son went camping. He asked, “Do you mind if we go camping?” The man said, “Yes.” So they drove IX(far-out) to camping.</li> <li>• What is the place called camping?</li> <li>• No, hearing. IX(Enid) She's wrong.</li> <li>• Look. ((points at the outside)) It is lunchtime.</li> <li>• ((thinking)) Tired. They were tired from their eyes hurting.</li> </ul>
Ana	<ul style="list-style-type: none"> <li>• I think bad things happened to the students who get lousy grades. They get sent to the superintendent house and something happened to them there. We don't know what.</li> <li>• ((laughs)) The house is abandoned, old and run down, but someone still lives there. They will check inside the house to find out who lives in the house.</li> <li>• The money was hidden in the Books and now they cant find the money.</li> <li>• It was for the deaf school.</li> <li>• IX(screen) He looked all over the house.</li> </ul>
Armando	<ul style="list-style-type: none"> <li>• Rather than being strict, maybe he should be kind and sweet to the students.</li> <li>• The superintendent killed people.</li> <li>• ((waves for teacher's attention)) Who is this character? NS(T-on-the-forehead)</li> <li>• The money was hidden.</li> <li>• He got the money for the school.</li> </ul>
Elizabeth	<ul style="list-style-type: none"> <li>• I am good at watching and discussing movies.</li> <li>• I was not scared. It was nothing. # g(well)</li> <li>• I think it was about going camping.</li> <li>• No; there was no snow. It is a nice and sunny day. It is a nice day to go out.</li> <li>• g(well) It was dinnertime. There was no kitchen. So he had to go get food to eat. / That.</li> </ul>



**Table 4.17:** *Examples of Functional ASL Literacy-related Utterances from the Students in the Bottom Quartile of the ASL-RST Test Scores, Continued*

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Enid	<ul style="list-style-type: none"> <li>• Yes. It has (2h)BPCL:5(open-and-close-large-sharp-teeth) and BPCL:5(little-hands-dangling-down). It is scary.</li> <li>• ((nods head no)) SCL:3(car-move-forward). Dinosaur followed the car.</li> <li>• I think it was the man's idea to go camping.</li> <li>• I think the weather was fun.</li> <li>• They got married# did a wedding and drove out. I think. ((shrugged her shoulder)) ((looks unsure))</li> <li>• IX(screen) He went in the store for a drink. =</li> </ul>
Francisco	<ul style="list-style-type: none"> <li>• Dinosaur. I missed the dinosaur.</li> <li>• Show a dinosaur picture, please?</li> <li>• (lh)SCL:A(man) IX((lh)SCL:A) This is a man. (rh)SCL:A(dinosaur). IX(rh:SCL:A) This is (2h)BPCL:5(open-and-close-large-sharp-teeth). (rh)SCL:A(dinosaur) chased the (lh)SCL:A(man).</li> <li>• ((waves for teacher's attention)) Is this all made-up? IX(screen) Made-up[+]?</li> <li>• No. Grandpa with a DCL:G(moustache), a TIME and a ICL:O(walking cane). BCL(walking-with-a-cane).</li> <li>• Weekend? I didn't see weekend. I don't know weekend.</li> </ul>
Hayden	<ul style="list-style-type: none"> <li>• I agree with what they said. He was very business-like.</li> <li>• He was a mean man.</li> <li>• He had an appointment with an old man.</li> <li>• The businessman wanted to throw him out of the window.</li> <li>• They will feel silly about the whole thing.</li> </ul>

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**Table 4.18:** *Examples of Functional ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores*

Student	Utterances
Hannah	<ul style="list-style-type: none"> <li>• He was serious about his work. He had his mind on a lot of things to do at work. He never thought about socializing. He was very focused on his things to do for work.</li> <li>• I think what she said is right. I mean time, people don't take. They don't take the time. People /</li> <li>• Right, right. People don't take the time. Time takes people. I think that man will die. I agree with her.</li> <li>• Right, right. I get it but it was hard to analyze all of the descriptions to figure out whom the old man was.</li> <li>• It was really cool, but the ending left me feeling disgusted. Come on.</li> </ul>
Haley	<ul style="list-style-type: none"> <li>• He met with a very old and blind man. The old man told the secretary that he had an appointment with the businessman and that he had something important to tell him.</li> <li>• The old man said, "You." He wanted the fat man. It means that over time he will die.</li> <li>• The man died at that time. It was after the old man became a skeleton. The skeleton sucked the spirit out of the man and disappeared.</li> <li>• Yeah, it was a good video. It was cool.</li> <li>• The interpreter covered up when the Deaf person told the hearing person exactly where the money is. He thought where the hearing person hid the money was a wrong place, so he hid it somewhere else safe. He told the hearing person where was it, but the interpreter covered up what he said.</li> </ul>

**Table 4.18:** *Examples of Functional ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores, Continued*

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Edwin	<ul style="list-style-type: none"> <li>• I think someone died in the house.</li> <li>• NS(P-on-the-hand) is just telling us what happened. He talked about how the money was hidden in the house and now they cannot find the money.</li> <li>• I don't know. Did a lot of schools shut down?</li> <li>• There were 300,000 deaf Mexicans out of 100 million hearing people.</li> <li>• Well, people come to here and we all mix up here. They come here. They like it here.</li> </ul>
Jacqueline	<ul style="list-style-type: none"> <li>• The cat is probably selfish with his personal things. /</li> <li>• I missed what IX(Miranda) she said.</li> <li>• And also the more you work hard (pauses)</li> <li>• IX(screen) That is the one. It mentions "great desire for food"! IX(screen) ((looks at the teacher passing by her to the front))</li> <li>• Hey come on, knock it off. ((picks up a cap from Powerade and assumed a pose to throw the cap at Jasmine and Miranda))</li> </ul>
Jasmine	<ul style="list-style-type: none"> <li>• Yeah, I disagree with the word FS(Greedy). The cat did not hoard things and tell others; "No, no, no. Mine, mine, mine."</li> <li>• Yeah, FS(The Gluttony Cat) because the cat is always hungry and continuously eating. That is not the same as being just greedy.</li> <li>• ((waves for teacher's attention)) But can we say fS(greedy) reader for someone who takes and hogs all the books to himself?</li> <li>• I would think it is FS(gluttony) because the cat ate so much until his stomach hurt so much. That is FS(gluttony).</li> <li>• What do you mean? Can you elaborate more on that?</li> </ul>

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#### ***4.3.5. Examples of the Cultural ASL Literacy-related Utterances***

Although the percentage proportions of the functional ASL literacy-related utterances were similar for the students in bottom quartile and in the top quartile, this was not the case for cultural ASL literacy-related utterances. There were 412 instances of utterances that constitute cultural ASL literacy (see Table 4.13). The students who scored in the bottom quartile of the ASL-RST test scores accounted for 14% (56) of the 412 utterances, while the students who scored in the top quartile accounted for 54% (224) of these utterances (see Table 4.16).

In the Tables 4.19 and 4.20 below are examples of utterances that constitute cultural ASL literacy from the students who scored in the bottom quartile and in the top quartile of the ASL-RST test scores, respectively.

**Table 4.19:** *Examples of Cultural ASL Literacy-related Utterances from the Students in the Bottom Quartile of the ASL-RST Test Scores*

Student	Utterances
Ahmad	<ul style="list-style-type: none"> <li>• Yes, in Iraq, IX(self) have hard times communicating with others who sign differently.</li> <li>• It is funny that IX(woman-on-the-screen) she can rest well because IX(woman) she can hear nothing.</li> <li>• IX(self) hear nothing when there are loud construction going on outside. IX(self) can just watch them.</li> <li>• Being Deaf is better than being hearing.</li> <li>• No. I have never seen it before. I have seen animals at the grassland at the camping.</li> </ul>
Ana	<ul style="list-style-type: none"> <li>• I remember when I took a test; I did not pay attention before so I struggled on the test. I also did not keep track of how much time I had left on the test. The teacher took the test away when the time ran out. I did not finish the test, so I learned my lesson. I started to pay attention in school.</li> <li>• IX(all-of-us) We will build a new school.</li> <li>• Yes, also chips with something on it..</li> <li>• That is LSM (Lengua de Señas Mexicana, or Mexican Sign Language).</li> <li>• We can find them here in some stores and restaurants. IX(here-and-there-and-everywhere)</li> </ul>
Armando	<ul style="list-style-type: none"> <li>• ((waves for the teacher's attention)) FS(CTE). Next to it is the house. IX(outside-in-the-direction-of-the-house)</li> <li>• ((waves for teacher's attention)) FS(Mystery) means look for something odd.</li> <li>• Cool. My nephew has hair like that.</li> </ul>
Enid	<ul style="list-style-type: none"> <li>• They signed?</li> <li>• No, they all sign differently.</li> <li>• Like when IX(self) was a young girl long time ago in Iraq, my older brother and IX(self) were not on the same page with our signs. We missed out on many things both of us were saying. That is the almost same thing.</li> </ul>

**Table 4.19:** *Examples of Cultural ASL Literacy-related Utterances from the Students in the Bottom Quartile of the ASL-RST Test Scores, Continued*

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Elizabeth	<ul style="list-style-type: none"> <li>• Well, dinosaurs are real. I remember seeing it while ago. They were skeletons.</li> <li>• He thinks the movie is real. No, it is not real. He does not know that.</li> <li>• I think he is talking about a dinosaur movie.</li> <li>• = The wife was thirsty so the husband went to a food store in a car. The husband took the keys and left and came back. He didn't know where their room was, so finally he ICL:5(honked-twice-the-car-horn). All of the hearing people heard the horn and turned on their light. LCL:O-5(lights-go-on)[+++] in every room. There was one room that was still dark with lights out LCL:O(lights-still-off). The wife was in that room.</li> <li>• So some from the west coast take it slow and easy?</li> </ul>
Francisco	<ul style="list-style-type: none"> <li>• Yesterday, you asked questions[+], yesterday.</li> <li>• IX(screen) was like# meaning I saw a picture, yesterday. (2h)DCL:5(giant-gnawing-teeth) (2h)BPCL:5(open-and-close-large-sharp-teeth)</li> <li>• Yes, I already did. Long, long time ago.</li> <li>• g(hmm) I saw giraffes grabbing and eating leaves from the tree. They were in a cage with ICL:F(bars). (2h)BPCL:5(open-and-close-large-sharp-teeth).</li> <li>• It is like what IX(you) said about the accents.</li> </ul>
Hayden	<ul style="list-style-type: none"> <li>• ((raises hand)) And also it helps when they have an official ID identifying himself or herself as an interpreter. You know?</li> <li>• They will learn is that stress is bad for you.</li> <li>• Maybe you can visit my class tomorrow and watch my two interpreters' signs. Just kidding...</li> <li>• Well, we can always keep interpreters out of it, and we can communicate in writings.</li> <li>• All interpreters were great to me. Everything is fine. ((shrugs her shoulders))</li> </ul>

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**Table 4.20:** *Examples of Cultural ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores*

Student	Utterances
Edwin	<ul style="list-style-type: none"> <li>• Everyone has their own culture around the world but they eat food. If they like it, they will eat it from anywhere. //</li> <li>• Deaf people have Deaf culture. Mexican people have it too. It is the same. //</li> <li>• There are no hamburgers in other countries. Italians don't eat hamburgers.</li> <li>• Every culture has different food. Like Italian pizzas, hamburgers and hot dogs.</li> <li>• There are people from the East. Asians who communicate a lot through very few strokes of writing. They write in simple lines like from top to bottom or left to right and then that is it. It is easier for them.</li> </ul>
Haley	<ul style="list-style-type: none"> <li>• It was an old man with fluffy white hair and dull eyes. Was he like a god or something?</li> <li>• Keep in mind that signing abbreviations is different from English.</li> <li>• That is the same as how I feel when others take their time and go on for too long. That is not cool.</li> <li>• What does that mean? Is it like a theme or something?</li> <li>• That was all wrong. That means# ... in Deaf culture, Deaf people do not always mandate interpreters. Sometimes calling for interpreter help can take too long. So rather than doing that, we can communicate in writing. You know?</li> </ul>
Hannah	<ul style="list-style-type: none"> <li>• Yes, all of this can be applied to the books.</li> <li>• Yes, the video has FS(themes), FS(plot), mood, and tone...</li> <li>• I really liked the story. I remember the first time I watched it while ago, enjoying it. Now, after the second time, I really get the story, making it a lot more interesting. I get its metaphors and its hidden messages. It was an interesting story.</li> <li>• That reminds me of me helping guide NS(Haley) through high school.</li> <li>• Right, there is no right in what we were doing with the hearing people. It really is the same thing.</li> </ul>

**Table 4.20:** *Examples of Cultural ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores, Continued*

Jacqueline	<ul style="list-style-type: none"> <li>• The movies tend to get more boring after few FS(sequels).</li> <li>• The FS(moral) of that movie is don't marry the first boy you meet on the first day!</li> <li>• That cat is disgustingly pigged out on food. Another thing that bothered me is the man's skin color. FS(ewww). He had a lot of make-up on his face.</li> <li>• Fine, another moral will be don't try to insult and escalate things with fat people?</li> <li>• The FS(moral) is don't disappear in the middle of party.</li> </ul>
Jasmine	<ul style="list-style-type: none"> <li>• All Disney movies have a FS(moral).</li> <li>• FS(Kan)? ((this is an ASL sign for the Kansas state)). This video is from FS(KSD)? ((Looks at others))</li> <li>• That is FS(Chuck Baird)!</li> <li>• The point that comes up in my mind is being different FS(is okay). FS(Being different is okay).</li> <li>• That is right! Look at how love is often represented in the Disney movies. Sometimes they can give the wrong idea of love, but behind these movies, they can either have a FS(moral) or a cautionary tale, like don't stay out at a party too late.</li> <li>• I remember that part where they kissed in the back seats of a car that took off. I remember that part. I miss that movie.</li> </ul>



#### ***4.3.6. Examples of the Critical ASL Literacy-related Utterances***

While there was a sizable difference in the percentage proportions for the cultural ASL literacy-related utterances for the students in the bottom quartile and in the top quartile, the differences were more pronounced between the students in these two quartiles for their critical ASL literacy-related utterances. There were 158 instances of utterances that constitute critical ASL literacy (see Table 4.13). The students who scored in the bottom quartile of the ASL-RST test scores accounted for only 4% (6) of the 158 utterances, while the students who scored in the top quartile accounted for 74% (117) of these utterances (see Table 4.16).

Tables 4.21 and 4.22 contain examples of utterances that constitute critical ASL literacy from the students who scored in the bottom quartile and in the top quartile of the ASL-RST test scores, respectively. Since there were only six instances of utterances from the bottom quartile that constitute critical ASL literacy, all of these utterances are presented here. As for examples of the critical ASL literacy-related utterances, few excerpts are selected and presented here for examples of the utterances from the students who scored in the top quartile of the ASL-RST test scores.

**Table 4.21:** *Examples of Critical ASL Literacy-related Utterances from the Students in the Bottom Quartile of the ASL-RST Test Scores*

Student	Utterances
Ana	<ul style="list-style-type: none"> <li>• Students need more learning and more work.</li> <li>• I think it is hard for Mexicans. I think it is hard to adapt to reading English.</li> <li>• If the Mexican deaf person was born in Mexico and learned LSM (Lengua de Señas Mexicana, or Mexican Sign Language) and move to America, the person will struggle because of the communication barrier. Language is different. English is different. The person will eventually get used to it.</li> </ul>
Elizabeth	<ul style="list-style-type: none"> <li>• g(hey) That is not fair; not fair; not fair.</li> </ul>
Hayden	<ul style="list-style-type: none"> <li>• Because Deaf people want to learn and know about that story. They need to know that some interpreters can either lie or cover up in interpreting. That is what I think.</li> <li>• I think they will be the same because some Deaf people may think the video is funny unless they were already robbed of their money. Interpreters can just so easily cover up many things.</li> </ul>

**Table 4.22:** *Examples of Critical ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores*

Student	Utterances
Edwin	<ul style="list-style-type: none"> <li>• I understand bowing to important people, but to teachers? Should they bow to the teachers? Why should they bow to everyone?</li> <li>• No. US always bogus, stealing other countries' dances to make their dance.</li> <li>• They can eat whatever they want at home. If they like it, that is fine. If they don't, they do not have to eat it.</li> <li>• Indians can be and act like Indians. That is fine for them.</li> <li>• That will be too weird (for me to bow to you).</li> </ul>
Haley	<ul style="list-style-type: none"> <li>• Yeah, the secretary probably felt frustrated because she was at the mercy of her boss. She had to follow his boss's directives and schedule. She had to schedule people like the old man in his boss's schedule and had hard time making it work.</li> <li>• You did a good job catching the quote – “People don't take the time. Time takes people.” - and figuring out what the quote means. It helped give me an idea, made connection to the video, and I was able to respond. I understand now.</li> <li>• I think another reason for telling the story is maybe we Deaf people need to be aware that some interpreters may not always be honest and that it can happen. We must not be oblivious to what the interpreters are saying or signing. We must watch them interpret. When they are dragging on in their interpreting, we must check why.</li> <li>• I think it depends on each person. If a hearing person is fully immersed into Deaf culture, they may feel disgusted by what they see in the video. If a hearing person knows nothing about Deaf culture, they may think it is a funny video. See the difference? It depends on whom.</li> <li>• If the interpreter cannot follow and understand what I am saying, why is the interpreter there to interpret for me in the first place? Maybe they can follow hard of hearing people, but they can't work with ASL and Deaf people. That means they can't interpret for us.</li> </ul>

**Table 4.22:** *Examples of Critical ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores, Continued*

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- Hannah
- Yeah, and really. In my history class, my teacher often puts off printing his PowerPoint slides to give to me. I always feel frustrated and stressed for time to study and keep up with others in my class. Others are able to write notes and keep up with the teacher. I often have to wait two days before the teacher gives me a copy of his PowerPoint slides. I am like, really? Seriously? It is really frustrating but the most important thing is I have to think positive.
  - He was honest the whole time. I thought the interpreter will tell the hearing person exactly what the Deaf person said, but the interpreter chose to cover up what he said. That can be one negative thing about having interpreters. Interpreters can lead hearing people to think negatively of Deaf people when that is not the case. Sometimes it is not always good for us to have interpreters.
  - We know that during interpreting, my interpreters talk most of the time and they do not sign when I am busy writing notes. Some will go as far as to say what they are talking about is personal. That is so unnecessary. That happens often. I feel like come on.
  - It probably simply is a matter of interpreters who are intimately knowledgeable about Deaf culture and like to make money. Some interpreters are fully immersed in Deaf culture and value helping each other. It varies on individual basis. It is hard to pick out the best interpreter.
  - When hearing people want to become interpreters and apply for interpreting jobs, they need to remember that they are not there to cover up. They must sign for and say exactly what the Deaf people are saying. I think that story can be applied to them. They can learn from it.
-

**Table 4.22:** *Examples of Critical ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores, Continued*

Jacqueline	<ul style="list-style-type: none"> <li>• The problem with that is if FS(Cinderella) did rebel against the stepmother in the movie. It could teach children that it is okay to rebel against their mothers.</li> <li>• That is the problem with the FS(social) peer pressure. Fat people get picked on with the words like FS(chubby) and so on. So they don't like how they look and how the society sees them, so they start to hide their looks.</li> <li>• I think... okay, fine... it is the same thing as if there were poor people in one area, and being poor is the norm for the people in the area, and one person happens to buy a big house. People will react to that. They will think something is wrong with that person. They will think he is bigheaded and a show-off. On the other hand, if everyone in the area were rich and had big homes, if one person had a humble home, people will react to that. They will think what's up with that person and think that person had no pride or something.</li> <li>• That is because when hearing people look at Deaf people, they panic and think Deaf people need help. When Deaf people live in the hearing world, the hearing people are just clueless and have no idea other things that we have other than just being Deaf. They often try to intervene and help us. Come on, I am just Deaf. I was naturally born Deaf and for them to try change me. There is a plus and a minus side to it. You know?</li> <li>• ((signs discreetly to Jasmine)) My god. The man is repetitive. IX(screen) He is so annoying.</li> </ul>
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**Table 4.22:** *Examples of Critical ASL Literacy-related Utterances from the Students in the Top Quartile of the ASL-RST Test Scores, Continued*

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Jasmine	<ul style="list-style-type: none"> <li>• That just reminds me. What about the NS(Snow White) movie? She slept with the 6 weird FS(guys). ... There were seven guys? Whoa. That is even worse. What kind of message do you think it is sending to our children? You know what I mean?</li> <li>• IX(self) I was one of them who watched and enjoyed the FS(Cinderella) and other movies. I did not realize they were full of hidden meanings and messages until I was older. I just thought these movies were just good stories... like FS(Cinderella). Back to FS(Cinderella). If the person worked hard, the person will end up happy. Things will not end up well for the people who teased and tortured others. Like I said, it is all about FS(karma). That was the person's fault.</li> <li>• It is all about FS(stereotype). Women are often labeled fragile and weak.</li> <li>• ((Raises hand)) Because they don't look like the kind people we encounter often. People are used to the norm and the routine. Like we go to school, we graduate from school, and we go to college. Routine stuff. If someone doesn't do any of that or is different from the norm, people will notice and look at that person for being different. People will react to that person, like maybe feel pity for that person.</li> <li>• That is the same with cochlear implants. People react to Deaf people and think how we are different. Some get cochlear implants just to conform.</li> </ul>
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#### ***4.3.7. Summary of the Research Sub-Question 1 Findings***

The student utterances were readily obtainable from the transcriptions of the ASL video viewings and discussions and code-able for different types of ASL literacy-related utterances. The frequencies of proportional total utterances were calculated and presented here to portray the proportion of each student's utterances in relation to other students' utterances in that student's class. After coding and analyses of the student utterances for ASL literacy-related utterances, the proportional percentages for each utterance as well as the frequencies and the percentages for each type (functional, cultural, critical) of ASL literacy-related utterances varied somewhat over time for each student. Regardless of these variations, the frequencies as well as the percentages decline across three types of ASL literacy, dropping from the means of 91% for functional ASL literacy to 37% for cultural ASL literacy to 13% for critical ASL literacy (see the third column of Table 4.15 for the means).

The differences found in the proportional total percentages of utterances, and in the percentages of total utterances for each type of ASL literacy for each student across the two days of observation were most likely due to variations in the contexts in which the Deaf bilingual students' ASL video viewing and discussion took place.

Interestingly, after coding for the functional, cultural and critical ASL literacies, the data from the coding showed that not these three types of ASL literacy are just interconnected, overlapping each other at the same level, they are also tiered into different levels of language use. Functional ASL literacy appeared to form the foundation for all forms of ASL literacies, underlying the other two types (cultural and

critical) of ASL literacy. Additionally, functional and cultural ASL literacies seemed to be the precursors to critical ASL literacy. This finding appears to be in line with a review of literature on different types of literacies covered in the previous chapter, but also offers a new take on the nature of these literacies. Functional literacy is a precursor for cultural literacy because if we are not a functional user of a given language, we cannot use the language to gain access to the cultural knowledge. As for the critical literacy, functional and cultural literacies are both precursors for critical literacy because we must be a functional user of language to critically interrogate with language, and we also must know as well as understand given sociocultural contexts and influences to comprehend with a critical edge.

The patterns in Deaf bilingual students' utterances and the average percentages of their literacy-related utterances discussed above suggest that the proportions and complexity of different types of ASL literacy skills tend to increase as the levels of ASL and English proficiency test scores increase for the Deaf bilingual high school students. The excerpts presented here for each type of ASL literacy-related utterances from the students who scored in the bottom quartile and the top quartile of the ASL-RST scores clearly exemplify the complexity of the students' ASL literacy-related utterances, showing that the patterns and complexity of their utterances are influenced by the level of students' ASL proficiencies. In other words, these excerpts show that the students' patterns of different types of ASL literacy-related utterances become more complex as students become more proficient in their dual languages.



Together, these findings and excerpts from a variety of analyses of the coded ASL literacy-related data show evidences of Deaf bilingual high school students engaging in different types (functional, cultural, critical) of ASL literacy skills during viewing and discussion of multimodal ASL videotexts in an academic ASL-English bilingual language learning environment. These findings and excerpts also show evidences of Deaf bilingual students' language proficiencies playing a role in the patterns of their ASL literacies use. However, these findings provide little information about the contexts in which the Deaf bilingual high school students were using at least one of the ASL literacies, as evident in their utterances. The subsequent (second) research sub-question was formulated, investigated and reported below on these contexts.

In summary, the findings of the first research sub-question suggest that for this sample of Deaf bilingual high school students, their dual language proficiencies appear to dictate the nature, complexities, and patterns of their ASL literacy-related utterances in a variety of contexts.

#### **4.4. Analysis of Research Sub-Question 2 Findings**

*Research Sub-Question 2: What contexts shape specific patterns of Deaf bilingual high school students' use of certain (functional, cultural, critical) types of ASL literacy skills during the video technology-mediated viewing and discussion activities?*

In order to answer the second sub-question about what contexts shape the patterns of different types of ASL literacy use among the Deaf bilingual high school

students, the identifiable student ASL literacy-related utterances were coded for context surrounding each utterance.

#### ***4.4.1. Frequencies for Each Type of ASL Literacy-related Utterances in Response to a Given Context***

One of the patterns that emerged was the percentages of utterances in response to a given context for each (functional, cultural, critical) of the domain-general ASL literacies. Table 4.23 presents the frequencies and percentages of utterances in response to the given context. As shown in the fifth column of Table 4.23, the most common context of student functional ASL literacy-related utterances were utterances made in response to teacher questions, accounting for 46% of these utterances. The second and third most common contexts were utterances made by the students in response to teacher comments (24% of the utterances) and student utterances (comments and questions) (21% of the utterances), respectively.

The trend of commonality in the top three contexts of functional ASL literacy related utterances was the same for the utterances that constituted cultural ASL literacy (see sixth column of Table 4.23). The most common of the contextual utterances was 35% of the utterances made by the students/ in response to the teacher questions. The next common context was the utterances made in response to teacher comments, which constituted 33% of the student utterances. The third one was 21% of the student utterances made in response to other students' utterances. As for the critical ASL literacy-related utterances, the last column of Table 4.23 indicated that the top two most common context flipped, having higher frequency in the number of

student utterances made in response to teacher comments (40%) than the number of utterances that the students made in response to teacher questions (25%). The third one was still the same for the student utterances made in response to other students' utterances (19%).

**Table 4.23:** Total Count and Average Percentages for Each Type of Student ASL Literacy-related Utterances in Response to a Given Context

Utterances	Total functional ASL literacy-related utterances			Percentages of given utterances to total utterances		
	Functional	Cultural	Critical	Functional	Cultural	Critical
Response to teacher questions	510	142	39	<b>46</b>	<b>35</b>	<b>25</b>
Response to teacher comments	263	135	63	<b>24</b>	<b>33</b>	<b>40</b>
Response to student utterances	227	88	30	21	21	19
Self-initiated utterances (comment or question)	35	24	14	3	6	9
Response to present video viewed	43	18	7	4	4	4
Response to present situation	20	5	5	2	1	3
Total utterances	1098	412	158	100	100	100

In addition to the top three contexts for student utterances, the bottom three student utterances, specifically those made to present situations, present video viewed and self-initiated utterances were small from a low of 1% to a high of 9%.

The student utterances in response to teacher utterances were most common for the top two contexts, particularly those made in response to a teacher comment and a teacher question, respectively.

#### ***4.4.2. Examples of the ASL Literacy-related Utterances in Response to Teacher Questions***

Below are few examples of the most common context for student utterances, that is student utterances made in response to teacher questions. In this example, the teacher discusses the message of an ASL-translated literary video that her class just viewed in class, asking her students numerous questions that require student analysis and thought.

Teacher; What is the FS(moral) behind this story? Why does the real world not accept people like him? Why do some people feel bothered by people like him for being different? Interesting. You know that makes me wonder. Why do we, as humans, I mean in general, humans, FS(humans), feel threatened by someone who is different from us? Why is that? You know what I mean?

Jasmine; ((Raises hand)) Because they don't look like the kind people we encounter often. People are used to the norm and the routine. Like we go to school, we graduate from school, and we go to college. Routine stuff. If someone doesn't do any of that or is different from the norm, people will notice and look at that person for being different. People will react to that person, like maybe feel pity for that person.

Teacher; Why do we care about that?

Jasmine; It is just the way it is.

This example clearly showed Jasmine immediately answering the questions her teacher just prompted to the students in her class. The teacher followed up with another question, which Jasmine also answered. Another example of a student response to a teacher question is below, in which the teacher engaged her class in critiquing an ASL literary video and discussing how different people will react to the story differently.

Teacher; How do you think that the hearing person will feel about the video?

Hayden; They will feel silly about the whole thing.

((Hannah raises her hand))

Haley; I think it depends on each individual. If a hearing person is fully immersed into Deaf culture, they may feel disgusted by what they see in the video. If a hearing person knows nothing about Deaf culture, they may think it is a funny video. See the difference? It depends on whom.

In this example, the teacher had her students answer questions that required them to consider the sociocultural contexts of the videotext they just viewed. In this case, Hayden and Haley took turns in answering the teacher meanwhile Hannah raised her hand to offer her own answer. Below is a third and final example of a student response to a teacher question, and, in this example, the teacher is her students questions about the meaning of a word.

((Teacher picks up a black dry erase marker and uses it to write and underline 'mystery,' and then draw an outline of house underneath 'mystery.' Teacher then puts a question mark '?' in middle of the house.))

Teacher; IX(house-and-then-the-word-'mystery') What does the word mystery mean?

Armando; ((waves for teacher's attention)) FS(Mystery) means look for something odd.

Teacher; Search for something?

Armando; Yes, search for something. I think.

Teacher; IX(all-of-you) What do you think?

Stephen; It is kind of like FS(Scooby-Doo).

In this example, the teacher was preparing her students to watch a segment of an old ASL videotext, in which Patrick Graybill was the narrator, from a sign language board game released in the 1980s called, "The Mystery of the Superintendent's House." She asked her students to tell her what they think the word "mystery" meant. Armando directly answered the teacher's initial question. The teacher followed up with few more questions, which Armando again answered and then Stephen answered.

#### ***4.4.3. Examples of the ASL Literacy-related Utterances in Response to Teacher Comments***

In addition to the examples for the most common context for student utterances, below are two examples of the second most common context, that is student utterances made in response to teacher' comments. In this example, the class made a connection between an ASL literary videotext they just viewed and a well-known Disney movie and compared the themes and morals between the two stories.

Teacher; I see, when IX(self) I watch that movie, one thing that popped up in my head when IX(self) I watch the movie, why didn't she fight for her freedom? In the movie, we see NS(Cinderella) putting up with the abuse. The movie may send a wrong message to the girls that it is okay to be treated that way. Although these movies may be fictional and while they exist in a world of fantasy, they still teach real lessons to our children.

Jacqueline; The problem with that is if FS(Cinderella) did rebel against the stepmother in the movie. It could teach children that it is okay to rebel against their mothers.

In this example, the teacher shared her thoughts and comments about the second story, and Jacqueline jumped in and responded to the teacher's comments with her own comments. Similarly, in another example from another teacher's class, the teacher made a point to tell the students that an ASL literary video they viewed had a metaphor, just like in many of the English literary books they read.

Teacher; It had a metaphor. That is the same exact thing as what we discussed about the metaphors in English class, right?

Jamie / Hannah / Haley ((simultaneously)); Yes.

Teacher; English literature has the same metaphors as in the ASL literature. IX(screen)

Haley; That is why I need to practice viewing and analyzing the videos to figure out what it means, what signs are used, what are the hidden meanings. /

In this example, when the teacher commented on how there are so much similarity between ASL videotexts and English print texts, in that they both can have metaphors, Haley responded, acknowledging what the teacher has said, to say that is why she needs to work on her ability to critically analyze the ASL videotexts in the same way she does with English readings.

#### ***4.4.4. Examples of the ASL Literacy-related Utterances in Response to Other Students' Utterances***

The third of most common context for student utterances was in response to other students' utterances. Below is an example of a student responding to another student's comments.

Jamie; We need to be aware that the interpreters may be adding made-up information in their interpreting. We need to check for that and make sure that they keep it concise and to the point and not drag on.

Haley; Keep in mind that signing abbreviations is different from English.

Jamie; I know that. Changing ASL content to English is different from changing English content to ASL. Sometimes the interpreter adds more to ASL. You get what I mean?

In this example, Jamie talked about a common communication and language issue with sign language interpreters not interpreting everything (e.g., censoring or missing information) the Deaf people say. Haley jumped in to respond to Jamie's comment to add that ASL and English are different languages, thus adding a linguistic layer to the sign language interpreter issue. Jamie then responded to Haley's response with her own comment. In another example, a student added to another student's comment by calling it as she saw it.

Miranda; Do not take revenge on people. It solves nothing. Also if you try to tell off people, it can backfire on you.

Jasmine; Yes, and just let FS(karma) take care of itself. FS(Karma) always takes care of it for everyone. Don't get revenge or get yourself in the middle of anything.

In this example, after Miranda talked about how revenge can caused more problems rather than fix them, Jasmine responded adding to Miranda's comment by saying that revenge is pointless because of karma and then talked about karma and how it affects all of us all the time.



***4.4.5. Examples of the ASL Literacy-related Utterances in Response to the Video Being Viewed***

In addition to the three most common contexts for student utterances presented above, one of the three least common contexts were the video being viewed, in which the students responded to what they just viewed on the screen. An example of student utterances in response to the video they just viewed is below, in which the students just started viewing an ASL videotext that features a prominent ASL storyteller.

VIDEO; Screen fades out of the black screen to show a picture of front of school building. The picture of the front of the school faded to a white screen that says “Produced by Kansas School for the Deaf” in English black color words.

Jasmine; FS(Kan)? ((this is an ASL sign for the Kansas state)). This video is from FS(KSD)? ((Looks at others))

((Students stare in awe.)) ((Screen changed to show “Visual Storyreading in American Sign Language by Chuck Baird” in English black color words.))

Miranda; IX(screen) Hey, I know that person.

Jasmine; That is FS(Chuck Baird)!

Jacqueline; Hey! IX(Screen) ((looks at others))

Miranda; IX(screen) So sad. That person recently died from FS(cancer). ((fingerspells to self)) FS(cancer)[++].

In this example, as soon as the ASL storyteller’s name appeared on the video screen, all students verbally responded to the name they had just read on the screen few seconds before the storyteller appeared on-screen at the beginning of the video. Also, below is another of example of student utterances made in response the present video

viewed. In this example, few students immediately responded to the video with their comments as soon as ASL literary video they viewed ended with a supernatural scene.

VIDEO; Ben continues, "... as the head banged against the desk, bouncing. The clock on the wall read 2 minutes before noon." Screen fades to black.

Haley; It is still 2 minutes before noon.

((Hannah nods head yes.))

Jamie; ((laughs)) That was awesome.

((Teacher turns on the light.))

Hannah; I remember seeing this video once before. I saw it before. I remember that man g(thin-face) sitting and turning into a skeleton with a hood# a black hooded robe. # DCL:flattened-O(hood-over-the-head)

In this example, when the ASL videotext ended, the students were stunned by what they had seen and started talking to each other about the video.

#### ***4.4.6. Examples of the ASL Literacy-related Utterances in Response to the Present Situation***

Another one of the three least common contexts for student utterances was the students' responses to what they had seen happening in front of their eyes. Below are two examples of the students responding to a present situation as it plays out in front of them. In the first example, the teacher challenged her students to correctly fingerspell the off-kilter title of an ASL narrative that the storyteller fingerspelled at the beginning of the video, and one student's action drew attention and comments from the other students.

Francisco; ((pulls out an iPhone from his pocket)) show(iPhone)  
g(record-slow) =

Teacher; e(sit-down)

Francisco; = ((sits down)) I'm serious.

Sonny; g(oh) No[++] You will seriously do that? ((laughs))

Elizabeth; g(hey) That is not fair; not fair; not fair.

Francisco; ((puts away his iPhone)) Slow[\_] g(hmm)

In this example, Francisco attempted to get an edge over his classmates by using his iPhone to record and replay, at a slower speed, the storyteller's off-kilter fingerspelling of the title of his ASL story. The students swiftly responded with disapproval comments. In another example from another class, a student's head blocked view of another student's gaze watching another student talk in the middle of their classroom discussion.

Jacqueline; Right, money can buy happiness.

((Jasmine rests her head on hand.))

Miranda; Excuse me, I can't see her.

((Jasmine raises her head.))

In this example, Jasmine was sitting at her desk in-between Jacqueline and Miranda. Jacqueline was in the middle of making a comment when Jasmine moved her head forward to rest her head hand, thus unintentionally blocking Miranda's gaze watching Jacqueline talk. As soon as that happened, Miranda addressed the situation by making a comment to Jasmine to have her move head back.

#### ***4.4.7. Examples of the Self-initiated ASL Literacy-related Utterances***

Finally, the third and final of three least common contexts for student utterances is the self-initiated comments and questions that is not in response to the

utterances made by others (i.e., teachers and students), to a video they just watched, or to a situation that just played out in front of the students. In this example, the teacher and students discussed different cultures, foods and experiences.

Stephen; ((waves for the teacher's attention)) Like this is a burrito. You can add french fries in it and eat it, too.

Teacher; Right, we come up and adapt many foods in any ways we want.

Ana; If the Mexican deaf person was born in Mexico and learned LSM (Lengua de Señas Mexicana, or Mexican Sign Language) and moved to America, the person will struggle because of the communication barrier. Language is different. English is different. The person will eventually get used to it.

In this example, they were talking about how people like to adapt and eat foods from other countries and cultures, when Ana self-initiated with a new utterance that was not food-related. She did not respond to what Stephen and Teacher had just said or added to the food topic. She just started talking about the deaf Mexicans' communication and language barriers and struggles in the United States. In another example, a student makes a comment to other students that did have anything to do with what anyone just said or what were happening in the class.

Teacher; ((waves for the students' attention)) Okay, fine. Let me pull up the definition for the word FS(greedy). We look at it and can discuss whether the word definition fit the title.

((Teacher walks to the computer.))

Jacqueline; Hey, all of this discussion let me to remember this movie FS(Shrek). That one movie made me laugh so hard.

Jasmine; ((smiles)) That one with the (2h)DCL:1(antennas). That movie is cute!

In this example, the class compared and discussed the vocabulary definitions for 'greedy' and 'gluttony' for at least five minutes before the teacher went to her desktop computer to pull up the English definitions for 'greedy'. As soon as the teacher went to her computer, Jacqueline made a random comment in response to no one or anything to talk about an animated film, Shrek. This was at least five minutes after the class finished talking about the morals and messages of the ASL literary videotexts, English literary texts and few Disney movies.

#### ***4.4.8. Frequencies and Average Percentages of Teacher Utterances in Relation to the Student Utterances***

The students' utterances were coded for a variety of contexts surrounding the utterances that the students made. The frequencies as well as proportional percentages total utterances for each context were calculated and presented here to show that the students' use of specific types of ASL literacies were socially situated. The context as well as students' use of specific ASL literacy-skills depends on the content and context of ASL video viewing in their class. In addition to these two contexts, the number of percentages based on given contexts based on the coding of students' utterances was calculated. After coding for the context behind the type and kind of student utterances, the findings for research sub-question 2 showed that of all the student utterances, the utterances made in response to teacher comments and questions were two of the most common contexts of all the utterances. The findings also showed that the context should be viewed as consisting more than just the student and teacher comments and questions. For example, the additional contexts for the ASL literacies

use included length and content of ASL videotexts, number of initial and subsequent ASL video viewings, situations that transpire, and ratio of teacher utterances to student utterances. The last few columns of Table 4.24 present the frequencies of teacher utterance in relation to the frequencies of student utterances, presented alongside for comparative purposes. The proportion percentages of utterances were calculated for each teacher using the teacher's total frequencies of utterances as the numerators and the total number of the utterances from the teacher and the students in the teacher's classroom combined together as the denominator. This procedure was repeated for the proportion percentages of all students' utterances in relation to the total number of teacher and student utterances. These calculations allow for finding the ratio between the teacher utterances and the student utterances. The proportion percentages of utterances for the students and teacher are presented in Table 4.25.

**Table 4.24:** *Total Student and Teacher Utterances (Comments and Questions) in Each Class*

	Student Utterances			Teacher Utterances		
	Day 1	Day 2	Total	Day 1	Day 2	Total
Mainstream Class #1	184	132	316	101	64	165
Mainstream Class #2	371	133	504	228	116	344
Residential Class #1	153	69	222	90	39	129
Residential Class #2	98	100	198	106	81	187
All Classes	806	434	1240	525	300	825

Table 4.25 showed that the Mainstream Class #1 and Residential Class #1 had lower ratio of teacher utterances to student utterances than the Mainstream Class #2 and Residential Class #2. In other words, Mainstream Class #2 and Residential Class #2 had higher percentages of teacher utterances than in Mainstream Class #1 and Residential Class #1 (see Table 4.25). A closer analysis of the student language test scores data in Table 4.28 showed the students in Mainstream Class #1 and Residential Class #1 had four out of five students who scored in the top quartile of ASL-RST scores, while Mainstream Class #2 and Residential Class #2 had six out of seven students who scored in the bottom quartile of ASL-RST scores. Also, I used the AVERAGE function in Excel to find the means of ASL-RST scores for each class to further distinguish these classes from each other. Mainstream Class #1 and Residential Class #1 had the means of 101.3 and 104.3 on the ASL-RST, respectively. Compared to Mainstream Class #1 and Residential Class #1, Mainstream Class #2 and Residential Class #2 had lower averages, with the means of 96 and 98.7 on the ASL-RST. This shows that the more proficient the students are in their sign language, the more likely they are to utter a comment or question. This means that they were more likely to make more utterances in class increasing their percentage of utterances, thus influencing the ratio of teacher utterances to student utterances in class. Conversely, the less proficient the students are in ASL, the less likely they are to utter a comment or question, thus enabling others (the more proficient peers and, especially, their teacher) make more utterances in the classroom dialogue.

**Table 4.25: Proportion of Student and Teacher Utterances (Comments and Questions) in Each Class**

	Total Utterances	Student Utterances	% Student	Teacher Utterances	% Teacher
Mainstream Class #1 (ASL-RST Mean = 101.3)	481	316	<b>66</b>	165	<b>34</b>
Mainstream Class #2 (ASL-RST Mean = 96)	848	504	59	344	41
Residential Class #1 (ASL-RST Mean = 104.3)	351	222	<b>63</b>	129	<b>37</b>
Residential Class #2 (ASL-RST Mean = 98.7)	385	198	51	187	49

#### **4.4.9. Summary of the Research Sub-Question 2 Findings**

The student ASL literacy-related utterances were coded for context surrounding each utterance. Through coding, the frequencies of these utterances were obtained and then used in calculation for the proportional percentages for each context in each type (functional, cultural, critical) of ASL literacy-related utterances. Examples were presented for each context. Analyses of the percentages for each context showed that the two most common contexts for all type of students' ASL literacy-related utterances were responses to teacher questions and responses to teacher comments. These findings and excerpts show that, for the Deaf bilingual high school students, the students' use of specific types of ASL literacy-related skills as well as all of their utterances are essentially socially situated. The context as well as students' use of specific type of ASL literacy depends on the content and context of ASL video viewing in their class.

Since the students' utterances made in response to teacher comments and questions were the two most common contexts of all utterances, a subsequent analysis



was done to study these contexts. Analyses of this context showed that the students' ASL proficiencies appeared to dictate the ratio of teacher utterances to student utterances in each class. In other words, these analyses showed that the more proficient the students were, they were more likely to make more utterances in class, thus reducing the frequency of their teachers' utterances.

Together, these findings and excerpts of the student ASL literacy-related utterances based on any given context showed evidences of students' ASL literacy-related utterances are based on the present contexts, of which six are identified in the study. The six contexts the students make utterances in response to were teacher comments, teacher questions, student utterances, present situation that just occurred in front of the students, present video viewed and self-initiated utterances.

In summary, these findings and excerpts showed that the context should be viewed as consisting more than just the student and teacher comments and questions. For example, the additional contexts for the ASL literacies use included length and content of ASL videotexts, number of initial and subsequent ASL video viewings, situations that transpire, and ratio of teacher utterances to student utterances.

#### **4.5. Analysis of Research Sub-Question 3 Findings**

*Research Sub-Question 3: What role do ASL and English skills play in the patterns of each (functional, cultural, critical) type of ASL literacy use?*

In order to answer the question about the relation between Deaf bilingual high school students' ASL proficiencies as well as English language proficiencies and the patterns of functional, cultural and critical ASL literacies use, correlation and multiple

linear regression analyses were performed. These analyses evaluated the relation the student ASL and English test scores with respect to students' average percentages of identifiable ASL-related utterances. With the goal of analyzing the relationship between these variables, individual student ASL-RST and BRI reading as well as vocabulary scores were collected (see Table 4.26).

**Table 4.26:** *Individual Student Language Test Scores*

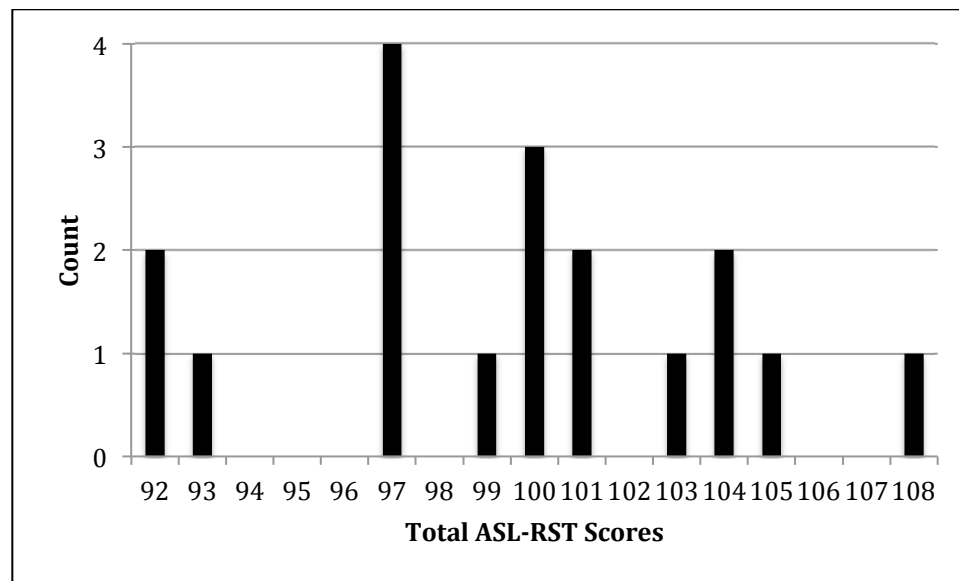
Student Pseudonym	BRI Vocabulary	BRI Reading	ASL-RST
Hayden	3	6	97
Hannah	6	7	103
Haley	7	7	104
Jamie	4	6	101
Ahmad	0	1.5	93
Enid	0	0	97
Francisco	0	0	92
Elizabeth	3	3	97
Sonny	6	7	101
Jasmine	7	8	108
Miranda	6	7	100
Jacqueline	7	8	105
Edgar	1	1	100
Stephen	0	1	100
Armando	0	1	92
Angela	0	1	99
Edwin	2	2	104
Ana	0	1	97

The means, modes, standard deviations, variances, ranges, minimums and maximums for these language test scores are presented in Table 4.27. Figures 4.17, 4.18 and 4.19 show the bar graph of the language proficiency test scores distribution for ASL and

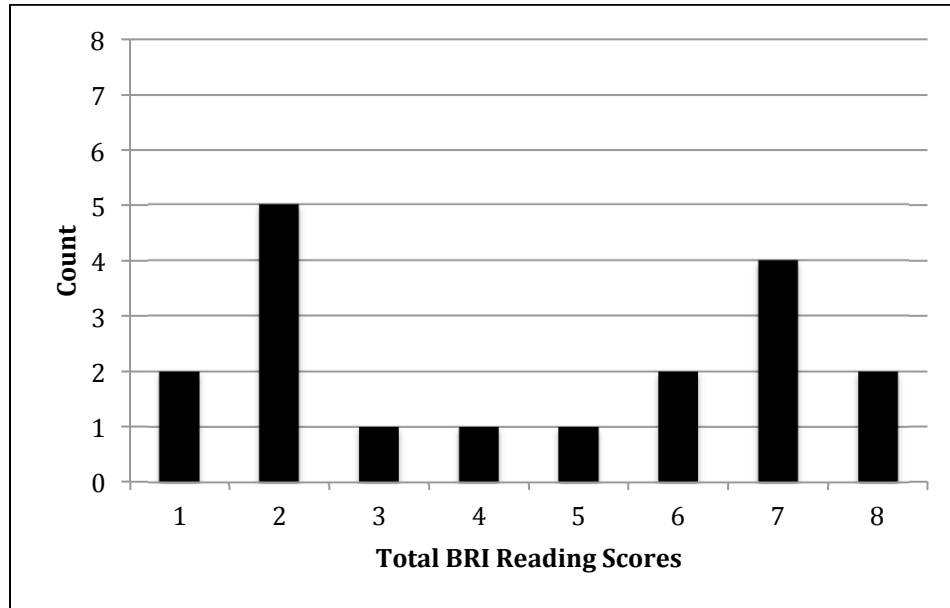
English. The average percentages of ASL literacy-related utterances are presented in Table 4.12. The data in Tables 4.26 and 4.27 were collected and put in an Excel spreadsheet. The Excel spreadsheet was then imported into PSPP for statistical analyses.

**Table 4.27: Descriptive Statistics for Student Language Test Scores**

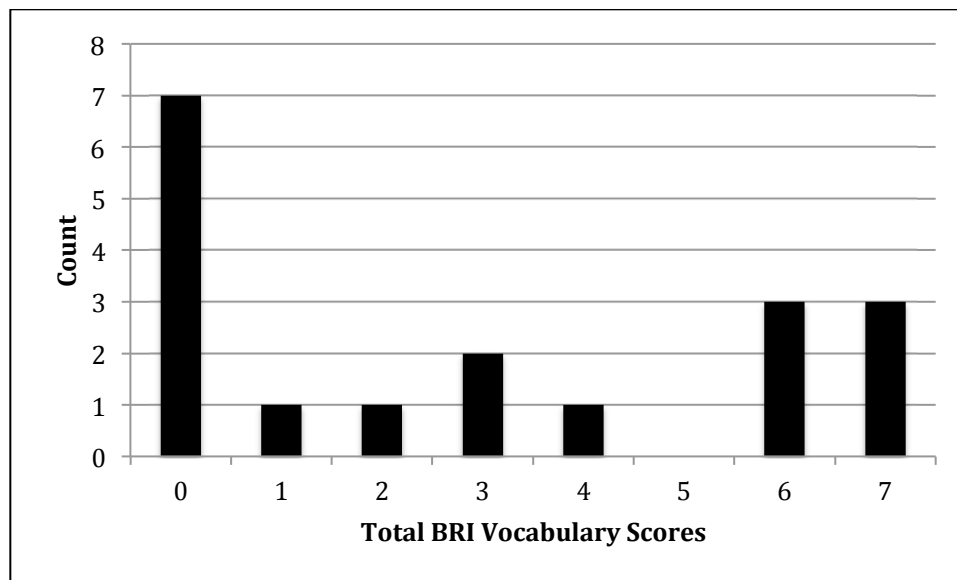
Variable	N	Mean	Mode	Std Dev	Variance	Range	Minimum	Maximum
BRI Vocabulary	18	2.89	0.00	2.91	8.46	7	0	7
BRI Reading	18	3.75	1.00	3.1	9.6	8	0	8
ASL-RST	18	99.44	97.00	4.48	20.03	16	92	108



**Figure 4.17: Bar Graphs of Total ASL-RST Scores.**



*Figure 4.18: Bar Graphs of Total BRI Reading Scores.*



*Figure 4.19: Bar Graphs of Total BRI Vocabulary Scores.*

#### 4.5.1. Relation Between ASL and English Language Proficiencies

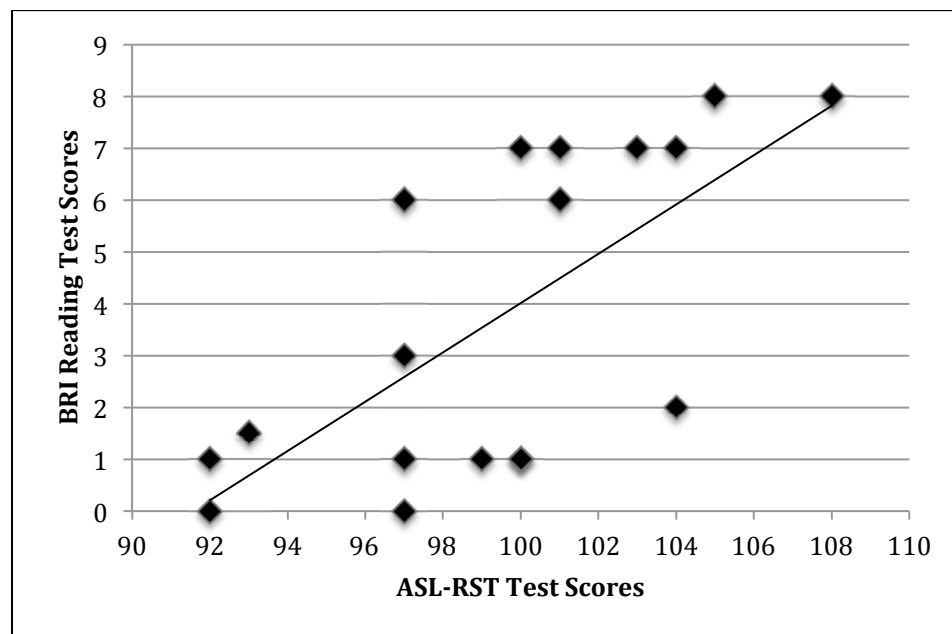
A bivariate correlation was first run between individual ASL and English proficiency test scores in PSPP to examine the relationship between these language proficiency test scores before exploring the relationship between the test scores and the patterns of certain types of ASL literacies use in classes. Through this test, statistically significant correlations existed between ASL and English language proficiencies. In Table 4.28, the correlations between ASL test scores and English test scores are reported.

**Table 4.28:** Correlations Between Student ASL and English Language Test Scores

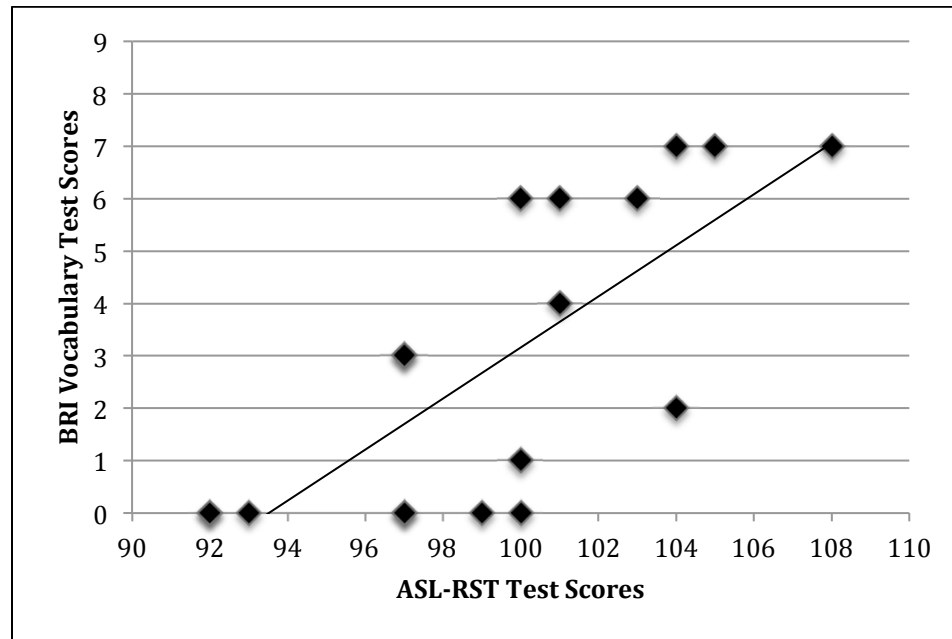
	BRI Vocabulary	BRI Reading	ASL-RST
BRI Vocabulary	1		
BRI Reading	.97 *	1	
ASL-RST	.75 *	.69 *	1
* $p < .01$			

The correlations among student language test scores in Table 4.28 are significant. BRI vocabulary test scores correlated with both BRI reading test scores,  $r(16) = .97, p < .01$ , and ASL-RST test scores,  $r(16) = .75, p < .01$ . Also, ASL-RST test scores correlated with BRI reading test scores,  $r(16) = .69, p < .01$ . These findings are consistent with the literature review of correlational research in ASL and English reviewed in chapter 2 that has demonstrated a significant relationship between sign language skills and reading skills. Figures 4.20 and 4.21 below present the scatterplot visualization between student ASL and English proficiency test scores. Figure 4.20

shows a scatterplot with a linear trendline for BRI reading test scores on ASL-RST test scores. Figure 4.21 is another scatterplot with a linear trendline for BRI vocabulary test scores on ASL-RST Test Scores. These graphs show the nature of the correlation and interaction between the ASL and English proficiency test scores. ASL-RST test scores clearly have some effect on both BRI reading test scores and BRI vocabulary test scores. The higher students score on the ASL-RST test, the higher they tend to score on the reading and vocabulary portions of the BRI test. Thus, the BRI reading scores as well as vocabulary test scores and the ASL-RST scores were considered in the regression analyses described below.



**Figure 4.20:** Scatterplot of BRI Reading Test Scores on ASL-RST Test Scores.



*Figure 4.21: Scatterplot of BRI Vocabulary Test Scores on ASL-RST Test Scores.*

#### ***4.5.2. Relation Between ASL as well as English Language Proficiencies and the Deaf Bilinguals' Patterns of Functional, Cultural and Critical ASL Literacies Use***

To determine what role ASL and English skills play in the patterns of each (functional, cultural, critical) type of ASL literacies use, the bivariate correlations between the student language test scores and the average percentages of different types of ASL literacy-related utterances were obtained (see Table 4.29).

Through the bivariate correlation test, statistically significant correlations exist between ASL and English language proficiency test scores as well as between language proficiency test scores and total utterance proportions as well as average percentages of various kinds of ASL literacy-related utterances. Bivariate correlations

show that ASL-RST correlated with average percentages of all three types (Functional, Cultural and Critical) of identifiable ASL literacy-related utterances. There was a significant positive correlation between the proportion of total student utterances and the BRI vocabulary scores,  $r(16) = .68, p < .01$ , and reading scores,  $r(16) = .58, p < .05$ , as well as ASL-RST scores,  $r(16) = .64, p < .01$ . Also, the average percentages of functional ASL literacy-related utterances was positively correlated with both BRI vocabulary test scores,  $r(16) = .48, p < .05$ , as well as reading test scores,  $r(16) = .54, p < .05$ , and ASL-RST scores,  $r(16) = .70, p < .01$ .

**Table 4.29:** *Correlations Between Student Language Test Scores, Total Utterance Proportions, and Average Percentages of ASL Literacy-related Utterances*

	BRI Vocabulary	BRI Reading	ASL- RST	Utterance Proportion %	Functional Literacy %	Cultural Literacy %	Critical Literacy %
BRI Vocabulary	1						
BRI Reading	.97 **	1					
ASL-RST Utterance Proportion %	.75 **	.69 **	1				
Functional Literacy %	.68 **	.58 *	.64 **	1			
Cultural Literacy %	.48 *	.54 *	.70 **	.09	1		
Critical Literacy %	.42 †	.41 †	.78 **	.39	.71 **	1	
	.64 **	.58 *	.82 **	.69 **	.52 *	.85 **	1

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$

Correspondingly, there was a positive correlation between the average percentages of cultural ASL literacy-related utterances and these language test scores:

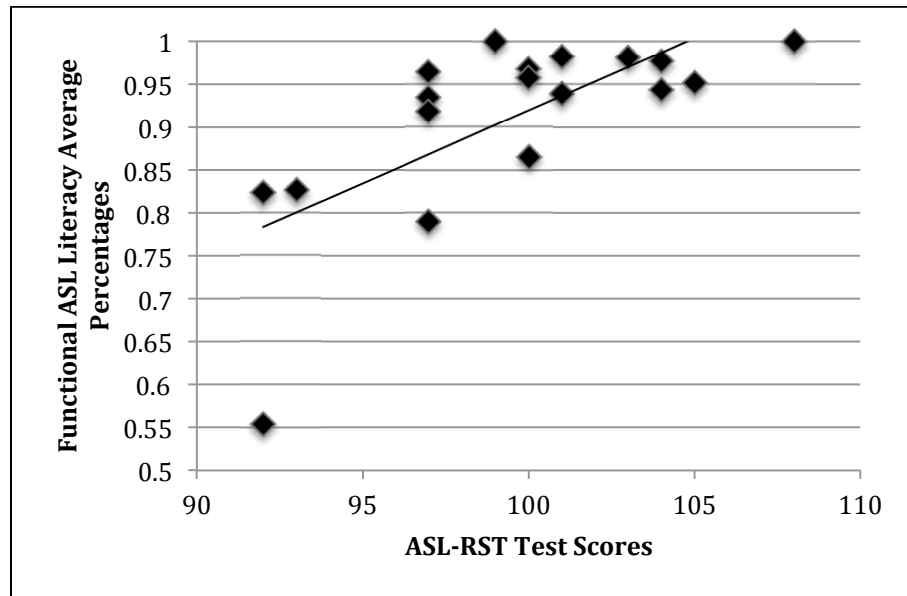


vocabulary test scores,  $r(16) = .42, p < .10$ , reading test scores,  $r(16) = .41, p < .10$ , and ASL-RST scores,  $r(16) = .78, p < .01$ . Finally, there was a strong positive correlation between the average percentages of critical ASL-literacy related utterances and both vocabulary test scores,  $r(16) = .64, p < .01$ , as well as reading test scores,  $r(16) = .58, p < .05$ , and ASL-RST scores,  $r(16) = .82, p < .01$ . These statistically significant positive correlations provide clear quantitative evidence for the link between Deaf bilingual students' ASL and English proficiencies and the depth of their ability to engage in cognitively challenging discourse in ASL. Thus, the total sd proportions as well as the average percentages of different (functional, cultural, critical) ASL literacy-related utterances are included in the regression analyses.

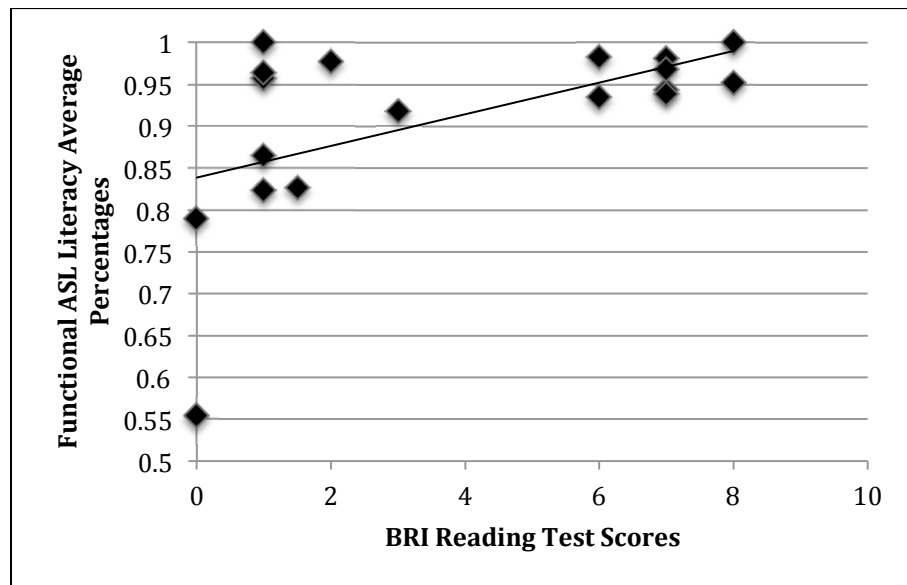
Figures 4.22-4.27 below present the graphic representation of the correlation between student language proficiency test scores and average percentages of identifiable ASL literacy-related utterances. Figures 4.22 and 4.23 show the linear trendlines in the scatterplots of functional ASL literacy average percentages on ASL-RST test scores and BRI reading test scores, respectively. Figures 4.24 and 4.25 next show the linear trendlines in the scatterplots of cultural ASL literacy average percentages on the same ASL and English proficiency test scores. Finally, Figures 4.26 and 4.27 show scatterplots with linear trendlines for critical ASL literacy average percentages on the different test scores.

These graphs show the nature of the correlation and interaction between individual language test scores and average percentages of ASL-literacy utterances. ASL-RST test scores clearly have some effect on the average percentages for

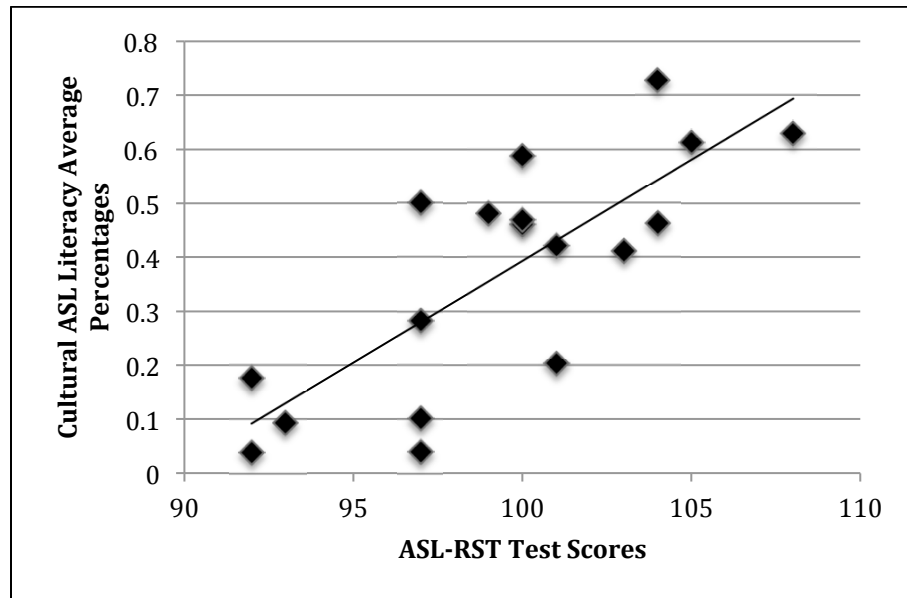
functional ASL literacy, cultural ASL literacy and critical ASL literacy (see Figures 4.22, 4.24 and 4.26). As for the English proficiency test scores, BRI reading test scores also have some effect on functional, cultural and critical literacies (see Figures 4.23, 4.25 and 4.27). The higher score students attain on the ASL-RST Test, the higher percentages of students' utterances will be scored for every type (functional, cultural and critical) of ASL literacy. The same could be said true with BRI reading test scores and average percentages of all three types of ASL literacy-related utterances. This can be attributed to the nature of the correlation and interaction between the ASL and English proficiency test scores (see Table 4.28 and Figures 4.20 and 4.21).



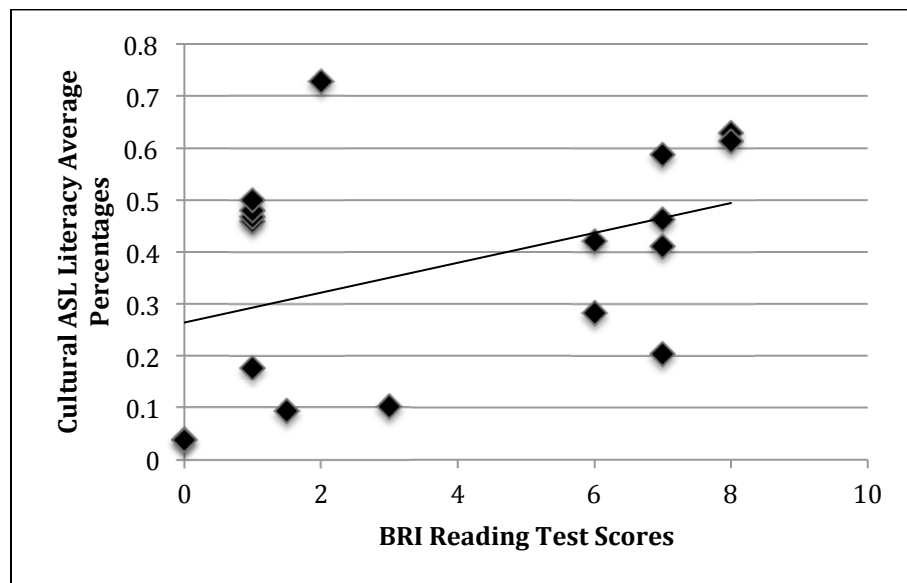
*Figure 4.22: Scatterplot of ASL-RST Test Scores by Total Functional ASL Literacy Percentages.*



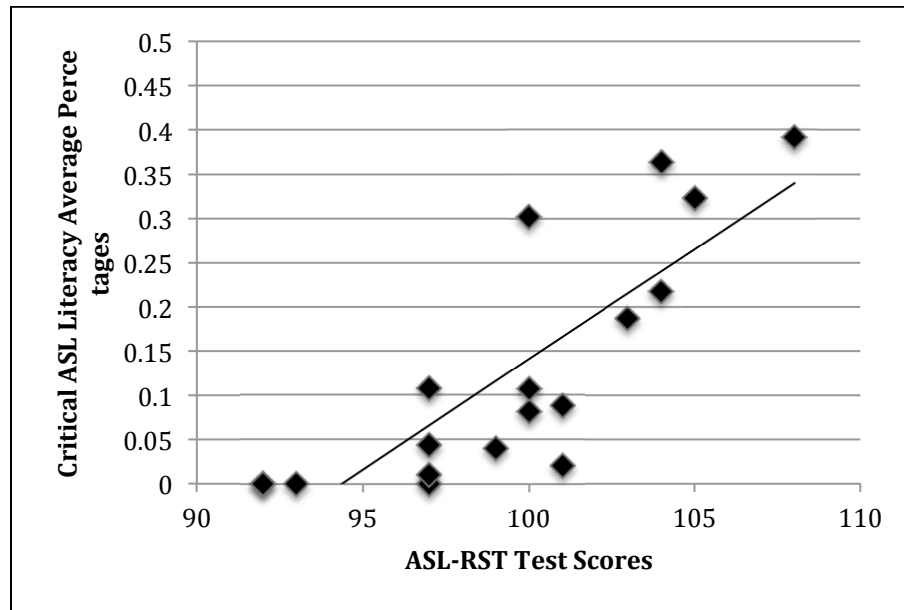
*Figure 4.23: Scatterplot of BRI Reading Test Scores by Total Functional ASL Literacy Percentages.*



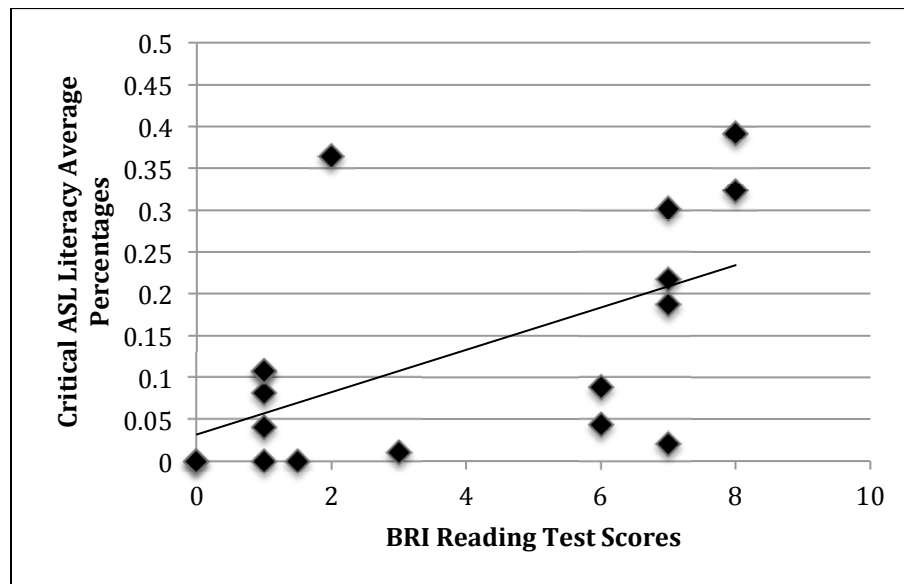
*Figure 4.24: Scatterplot of ASL-RST Test Scores by Total Cultural ASL Literacy Percentages.*



*Figure 4.25: Scatterplot of BRI Reading Test Scores by Total ASL Cultural Literacy Percentages.*



*Figure 4.26: Scatterplot of ASL-RST Test Scores by Total Critical ASL Literacy Percentages.*



*Figure 4.27: Scatterplot of BRI Reading Test Scores by Total Critical ASL Literacy Percentages.*

### 4.5.3. Prediction of English Vocabulary and Reading Test Scores

To model BRI Vocabulary and Reading test scores based on the ASL-RST test scores, multiple linear regression analyses were performed using the PSPP software between vocabulary test scores as well as reading test scores as the dependent variables and ASL-RST scores as the independent variable. The results regarding the prediction of vocabulary and reading test scores based on the ASL-RST test scores are presented in Table 4.30, with the multiple regression correlation coefficients ( $R$  and  $R^2$ ), unstandardized regression coefficient ( $B$ ), the standardized regression coefficient ( $\beta$ ), the  $t$ -value ( $t$ ) and the corresponding significance level ( $p$ -value). ASL-RST scores were significant predictors of the vocabulary test scores,  $\beta = .75$ ,  $t(17) = 4.53$ ,  $p < .001$ , as well as reading test scores,  $\beta = .69$ ,  $t(17) = 3.79$ ,  $p < .01$ .

**Table 4.30:** Linear Regression Models of a Student's ASL-RST Test Score Predicting BRI Vocabulary and Reading Test Scores

Model	Variable	R	R <sup>2</sup>	B	Se (B)	$\beta$	$t$	$p$ -value
BRI Vocabulary	Constant	–	–	-45.57	10.70	–	-.426	.001
	ASL-RST	.75	.56	.49	.11	.75	<b>4.53</b>	<b>&lt; .001</b>
BRI Reading	Constant	–	–	-43.57	12.51	–	-3.48	.003
	ASL-RST	.69	.47	.48	.13	.69	<b>3.79</b>	<b>.002</b>

### 4.5.4. Prediction for Every Type of the ASL Literacy-related Utterances

Multiple linear regressions were conducted to predict average percentages of different types of ASL literacy-related utterances using the ASL-RST scores as the independent variable. Table 4.31 summarizes the regression analyses results. Similar

to the prediction of vocabulary and reading test scores, the students' ASL-RST scores were significant predictors of the students' total utterance proportions,  $\beta = .64$ ,  $t(17) = 3.37$ ,  $p < .01$ , as well as their average percentages for all types of ASL literacy-related utterances: functional ASL literacy,  $\beta = .70$ ,  $t(17) = 3.89$ ,  $p = .001$ ; cultural ASL literacy,  $\beta = .78$ ,  $t(17) = 4.92$ ,  $p < .001$ ; and critical ASL literacy,  $\beta = .82$ ,  $t(17) = 5.71$ ,  $p < .001$ .

Similar results were found when multiple linear regression analyses were performed on the same dependent variables based on a different independent variable, the BRI reading test scores (see Table 4.32 for a summary of the regression analyses results). The students' reading test scores were significant predictors of the students' total utterance proportions,  $\beta = .58$ ,  $t(17) = 2.82$ ,  $p = .012$ , as well as their average percentages for all types of ASL literacy-related utterances: functional ASL literacy,  $\beta = .54$ ,  $t(17) = 2.55$ ,  $p = .021$ ; cultural ASL literacy,  $\beta = .41$ ,  $t(17) = 1.80$ ,  $p = .091$ ; and critical ASL literacy,  $\beta = .58$ ,  $t(17) = 2.82$ ,  $p = .012$ .

**Table 4.31:** *Linear Regression Models of a Student's ASL-RST Test Score Predicting Total Utterance Proportions as well as Average Percentages of Different Types of ASL Literacy-related Utterances*

Model	Variable	R	R <sup>2</sup>	B	Se (B)	$\beta$	$t$	$p$ -value
Utterance %	Constant	–	–	-1.09	.39	–	-2.79	.012
	ASL-RST	.64	.41	.01	.00	.64	<b>3.37</b>	<b>.004</b>
Functional %	Constant	–	–	-.78	.43	–	-1.79	.091
	ASL-RST	.70	.49	.02	.00	.70	<b>3.89</b>	<b>.001</b>
Cultural %	Constant	–	–	-3.37	.76	–	-4.43	< .001
	ASL-RST	.78	.60	.04	.01	.78	<b>4.92</b>	<b>&lt; .001</b>
Critical %	Constant	–	–	-2.35	.43	–	-5.41	< .001
	ASL-RST	.82	.67	.02	.00	.82	<b>5.71</b>	<b>&lt; .001</b>

**Table 4.32:** *Linear Regression Models of a Student's BRI Reading Test Score Predicting Average Percentages of Different Types of ASL Literacy-related Utterances*

Model	Variable	R	R <sup>2</sup>	B	Se (B)	$\beta$	<i>t</i>	<i>p</i> -value
Utterance %	Constant	–	–	.16	.03	–	5.44	< .001
	BRI Reading	.58	.33	.02	.01	.58	<b>2.82</b>	<b>.012</b>
Functional %	Constant	–	–	.84	.04	–	23.55	< .001
	BRI Reading	.54	.29	.02	.01	.54	<b>2.55</b>	<b>.021</b>
Cultural %	Constant	–	–	.26	.08	–	3.44	.003
	BRI Reading	.41	.17	.03	.02	.41	<b>1.80</b>	<b>.091</b>
Critical %	Constant	–	–	.03	.04	–	.74	.472
	BRI Reading	.58	.33	.03	.01	.58	<b>2.82</b>	<b>.012</b>

#### **4.5.5. Summary of the Research Sub-Question 3 Findings**

There were positive relations between the ASL and English language test scores as well as the average percentages of different types of ASL literacy-related utterances. The correlation analyses showed that the students' vocabulary test scores as well as the reading test scores were indeed positively correlated with the their ASL-RST scores. Also, the students' total utterance proportions as well as average percentages of different types (functional, cultural, critical) of ASL literacy-related utterances were positively correlated with the students' ASL-RST scores.

The regression analyses also showed that English proficiencies were related to the students' ASL proficiencies. Specifically, the students' ASL-RST scores were positive predictors of their vocabulary and reading test scores. The students' ASL-RST scores were also positive predictors of their total utterance proportions as well as average percentages of different types (functional, cultural, critical) of ASL literacy-



related utterances.

In summary, the findings of the third research sub-question show that for this sample of Deaf bilingual high school students, there is a correlation between their ASL and English test scores, and there also is a correlation between the language test scores and the percentages of different types (functional, cultural, critical) of ASL literacy-related utterances. Students with higher levels of ASL and English proficiency test scores tended to have higher total utterance proportions as well as percentages of ASL literacy-related utterances for any three types of ASL literacy. In other words, these findings suggest that for this sample of Deaf bilingual high school students, there is a linguistic interdependence between their ASL and English proficiencies, and their dual language proficiencies dictate the nature, complexities, and patterns of their ASL literacy-related utterances in a variety of contexts.

## Chapter 5: Conclusion

This study examined American Sign Language (ASL) literacy practices in which Deaf bilingual high school students engaged in three types of ASL literacy skills during viewing and discussion of multimodal ASL videotexts. I first provided the frequencies and percentages for the amount of each (functional, cultural, critical) type of ASL literacy in four language arts classes for the Deaf bilinguals. Specific examples of utterances for each type of ASL literacy were provided, especially for the students in the top and bottom quartiles of ASL proficiency, which illustrated a number of the patterns that emerged from the ASL literacy-related codes. Next, the frequencies and percentages were also provided for each category of the three domain-general ASL literacies. Correlational and predictive statistical analyses were done on the percentages and language assessment data. Together, I present these findings for those patterns in terms of each type of ASL literacy in order to demonstrate the differences in ASL literacies practices across the four classes. Lastly, interesting differences in the patterns of literacy practices among the Deaf bilingual students in which they engaged in functional, cultural and critical ASL literacy skills during ASL video viewing and discussion activities are reported here. These differences were primarily related to the students' ASL proficiencies. Their proficiencies also predicted frequency of for each type of ASL literacy skills. The three major findings are presented next, followed by the implications of these findings and their implications for future research and practice.

First, there is evidence of Deaf bilingual high school students engaging in ASL literacy-related skills during ASL video viewing and discussion activities. The percentage proportions and complexity of different types of ASL literacy skills used in the Deaf bilingual students' utterances during these activities are based on their language proficiencies. Deaf bilingual high school students' dual language proficiencies appear to determine the nature, complexity and patterns of their ASL literacy-related utterances.

Second, despite variations in Deaf bilingual students' language proficiencies, contexts appear to dictate and shape the nature and patterns of Deaf bilingual students' ASL literacy-related utterances. Although students' ASL literacy-related utterances are based on the present contexts that consist of more than just the student and teacher comments and questions (e.g., length and content of ASL videotexts and situations that just transpired during the ASL video viewing and discussion), the two most prevalent contexts that elicited specific student responses are teacher comments and teacher questions.

Third, there are statistically significant relationships between ASL and English test scores, and also between the language tests scores and the proportional percentages of different types of ASL literacy-related utterances observed in the present study. These findings build on the results of previous investigations (that is Beal-Alvarez & Easterbrooks, 2013; Cannon et al., 2010; Golos, 2010a, 2010b; Golos & Moses, 2011; Mueller & Hurtig, 2010; Snoddon, 2010) of using video technology for Deaf bilingual students' ASL language and literacy development. Additionally, the

present study broadens the focus from the aforementioned previous studies on the Deaf preschoolers and elementary school students to include Deaf bilingual high school students and specific domain-general ASL literacies used in natural settings.

## **5.1. Interpretation of the Results**

### ***5.1.1. The Linguistic Interdependence and Threshold Hypotheses tested***

The present study shows statistically significant correlations between ASL and English proficiency assessment scores for Deaf bilingual students. The coding data was also used to show statistically significant correlations between their language proficiencies and the proportional percentages of different types of ASL literacy-related utterances observed in the study. The findings in the study are consistent with the linguistic interdependence hypothesis (Cummins, 1979, 1981, 2006) as well as in line with the previous research reviewed in Chapter 3 showing the more proficient Deaf students are in ASL skills, the more likely they will master the same types of skills in English.

What makes the findings in this study special is it uses naturalistic data along with assessment data. Prinz and Strong (1998) measured deaf students' comprehension of ASL classifiers, narrative stories, time markers and map markers in relation to their English literacy skills. Hoffmeister et al. (1997) explored deaf students' ASL knowledge of synonyms, antonyms and plurals-quantifiers in relation to their English reading skills. Padden and Ramsey (1998) investigated deaf children's ASL proficiency and memory in ASL sentences (particularly in ASL morphology and syntax), fingerspelling and initialized signs in relation to their English literacy skills.

Singleton et al. (1998) assessed deaf students' ASL proficiencies in three strictly controlled assessment settings and situations (i.e. interview, peer interaction and story retelling) in relation to their English proficiencies data. Chamberlain and Mayberry (2000; Mayberry, 1989) measured deaf children's comprehension and memory of ASL stories and sentences in relation to their English skills. Freel et al. (2011) evaluated deaf participants' ability to reproduce ASL sentences in relation to their English comprehension and reading skills. Unlike other correlational studies reviewed here, this study uses naturalistic data (observations of Deaf bilingual students' classroom discourse in natural settings), as opposed to non-naturally occurring experimental data collected in the correlational studies, in conjunction with the students' ASL and English languages assessment data provided by the schools.

The findings in the present study are also in line with Cummins's threshold hypothesis and previous research that supported this hypothesis. Cummins (1979, 1981) used the threshold hypothesis to explain the relationship between the degree of bilingualism and cognition. He posited that positive changes would occur in the bilingual user's language as well as cognitive and academic functioning once the user attained certain levels of linguistic competence in both languages required to cross a level of threshold. Although there are no official criteria for threshold level to measure the Deaf bilingual students' level of language proficiency and cognitive skills, research literature supports the notion that there are threshold levels of linguistic proficiency that bilingual students must achieve to attain higher-order cognitive and language skills.

The students' ASL and English languages assessment data and data on their percentages of different types of ASL literacies in the present study appear to support the idea there are threshold levels that Deaf bilingual students must cross to become highly proficient in two languages. The strong correlation between Deaf bilinguals' ASL literacy skills and English literacy skills (see Table 4.28) supports this hypothesis. Small variations and deviations in the ASL and English assessment scores (see Tables 4.26 and 4.27) also support the hypothesis.

The threshold hypothesis assumes that students need to attain a certain minimum threshold level of second language (English) proficiency before their first language (ASL) literacy skills transfer to their second language (and vice versa) and before their cognitive growth comes into effect. Cummins noted that, "if bilingual children attain only a very low level of proficiency in one or both of their languages, their interaction with the environment through these languages both in terms of input and output, is likely to be impoverished" (1981, p. 38). This is reflected in the findings of the present study. The proportional percentages of different (functional, cultural, critical) types of ASL literacy-related utterances among the Deaf bilingual students provide more evidence that support this notion.

Another evidence is although there was no difference in the percentage proportions of functional ASL literacy-related utterances between the students in the bottom and top quartiles of ASL-RST test scores, the difference in the percentage proportions is significant between these groups for the cultural ASL literacy-related utterances (See Table 4.14). The difference was even more significant between these

groups for the critical ASL literacy-related utterances with the students in the top quartile of ASL-RST test scores accounting for 74% of critical ASL literacy-related utterances, while the students in the bottom quartile accounted for only 4% (see Table 4.14).

Still another evidence is in the complexity of the content of the utterances that Deaf bilingual students made in their classes (see Tables 4.15 – 4.20). Differences in the complexity of the utterances were evident in the content of the utterances made by the students in the top quartile compared to those in the bottom quartile. The Deaf bilingual students in the top quartile generally appeared to have passed the minimum threshold levels before they achieved cognitive growth, thus creating more opportunities for the Deaf bilingual students to become more proficient in critical ASL literacy.

The findings in the present study are in line with recent research supporting the development of language knowledge and skills as prerequisites for the development of higher order analogical reasoning skills in deaf students (Edwards, Figueras, Mellanby, & Langdon, 2011; Musselman, 2000). Kuntze (2004) found in his study that the deaf students' ability to make inferences in ASL correlated with their ability to make inferences in print English. Language has long been considered an important foundation and tool for thinking (Vygotsky, 1986; Wertsch & Stone, 1985).

## **5.2. Three Components of Literacy**

The findings in the study show that functional literacy appears to form the foundation for all of the other domain-general literacies, especially for the cultural and

critical literacies. Literally all of the utterances in the study that were coded for cultural literacy, or critical literacy, were also coded for functional literacy. This makes sense because, as functionally literate users of ASL, Deaf bilinguals can use their sign language to gain access to the cultural knowledge of the bilingual Deaf community. By acquiring the cultural knowledge of their community, they develop cultural literacy, which involves the ability to use background knowledge inherent to their ASL community to make meaning of signed ASL expressions of thoughts or texts. This is supported by research literature that viewed ASL as “an essential medium for the building and processing of world knowledge” (Bailes, 2001, p. 156).

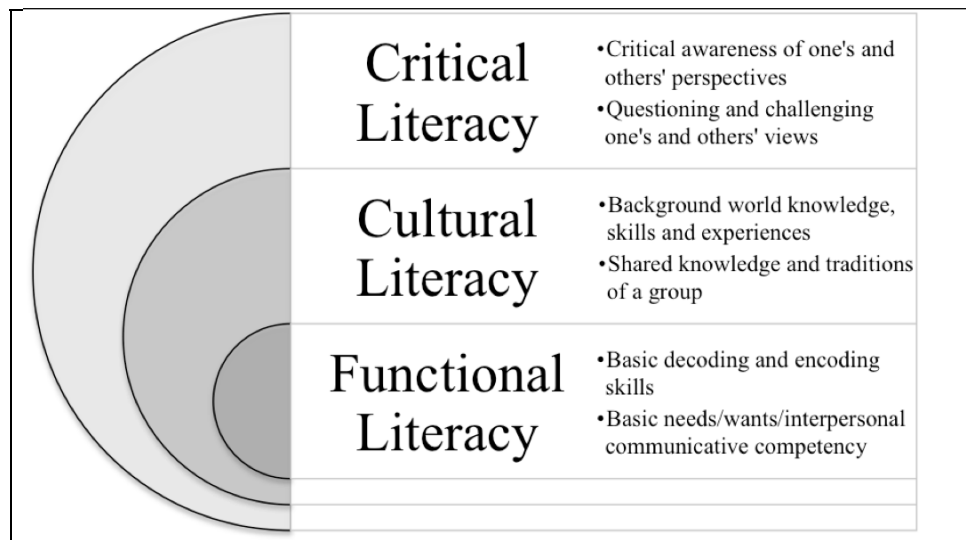
As for the critical literacy, the Deaf bilingual student, who happen to be functionally and literate ASL users with cultural knowledge and skills, they can also use their cultural knowledge to help interrogate and question given texts. Findings that showed all of the utterances that constituted critical literacy were also coded for cultural literacy.

The aforementioned findings in the present study have led to the development of a new model for the three components of literacy (Figure 5.1). Figure 5.1 presents a model of the interconnected domain-general literacies. Each type of the domain-general literacies does not exist independently of each other or overlap each other in varying degrees. These literacies are made up of several different layers that build upon one another and each contain a set of skills that are exclusive to a given literacy. The central core of the circle is the foundation of all literacies: functional literacy. The first layer of the circle encompassing the core is cultural literacy, which builds on



functional literacy skills through prior world knowledge and experience. Critical literacy is the outermost layer of literacies.

With these literacies, individuals can think on many different levels, building on functional literacy. Every literate person starts out at the core, learning functional literacy skills and then builds on it to develop their cultural literacy as they acquire more world knowledge and experiences. The literate person also uses their functional and cultural knowledge and literacy skills to develop their critical literacy.



*Figure 5.1: Model of core domain-general layered (tiered) components of literacy.*

### 5.3. Re-conceptualizing ASL Literacy

ASL literacy is a combination of interconnected, contextual, higher-order cognitive, language knowledge and skills that are specific to ASL. They are needed to think, reason and communicate across a variety of text- and non-text-based literacy practices or situations. ASL literacy is also a social practice that requires a socially

variable set of literacy conventions, embedded within the context of the ASL community's historically created solutions and ways of communicating. As mentioned above, there are three distinct, yet interrelated components of ASL literacy: functional, cultural and critical ASL literacies. Research literature suggests that students use more than one type of literacy to successfully engage in a variety of literacy practices for any particular purpose. ASL literacy can be viewed as just one of the many types of literacy that Deaf bilinguals use in conjunction with other literacies to engage in given ASL literacy-related practices. Czubek (2006) gave an example of Deaf bilinguals being multi-literate when they used ASL, English and technology to compose an ASL-based expository videotext about the Roman Empire. In this example, Deaf bilinguals searched for and viewed ASL videotext sources as the basis of their research. After their research, they used a video camera to present their findings in ASL, and then imported and edited their videorecordings on the computer. There is no doubting the claim by Czubek that Deaf bilinguals are multi-literate due to the fact they have the literacy skills in two languages as well as the skills in other areas. They used their ASL skills to view and produce ASL videotexts. They also used their English skills under a variety of circumstances when they worked with ASL videotexts. They used their English literacy skills to read and embed English-based titles, inserts and subtitles in the ASL videotexts. They also used their English knowledge to search for ASL videotexts labeled in English as well as to label the filename of their ASL videotexts. They used visual and media literacies to make sense and produce multimodal ASL videotexts. They used video-technology and computer literacies to

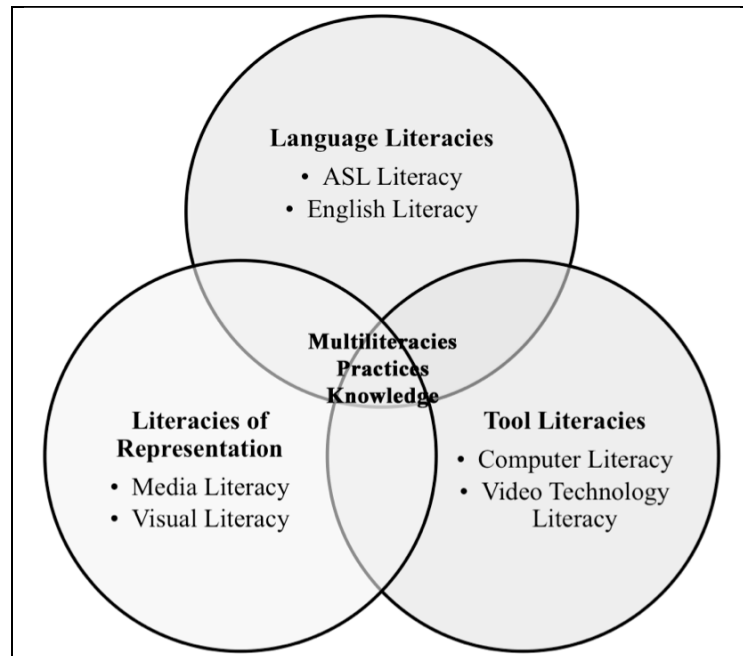
utilize video-based technologies and computers efficiently. They also used English to operate computer hardware and software, such as using a keyboard with English characters to navigate through the English-based menus of the operating system to the video-editing program, and to use the program's features.

It was readily apparent and easy to see Deaf bilingual high school students in the present study as being multi-literate because they used all of the skills described above. There are numerous examples of this presented earlier in the findings chapter. In one instance, there is an excerpt of Deaf bilingual students viewing an ASL videotext and making comments about it. In this excerpt, they were watching an ASL videotext featuring a prominent ASL storyteller. At the beginning of the video, the screen faded in to show a picture of the front of a school building and then faded out again to a white screen that said "Produced by Kansas School for the Deaf" and then "Visual Storyreading in American Sign Language by Chuck Baird" in printed English. The Deaf bilingual students used their visual literacy as well as English literacy skills to attend to and see beyond the video image of the school building and to read and make sense of and comprehend the English titles at the beginning of the video. As soon as an image of Chuck Baird appeared and began to narrate the story in ASL, the Deaf bilingual students used their ASL literacy skills to follow along with Chuck's narration.

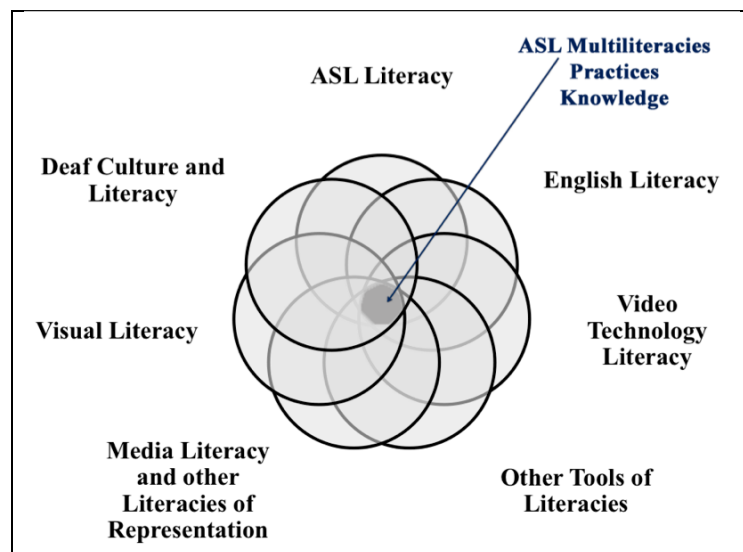
A review of literature and findings from the previous studies as well as the findings in the present study have led to the development of two models (Figures 5.2 and 5.3) that represent the theoretical relationship between multiple literacies that

people bring to bring their literacy practices. Figure 5.2 represents a simplified model of an interplay between language literacies, tool literacies and literacies of representation in the broadest sense. Although language literacies may be considered by some as part of the literacies of representation (Paul, 2006), they nevertheless are in categories separate from each other because, unlike others in literacies of representation, not only are language-based literacies essential for social interactions, they also play a key role in the cognitive development of language users. Tool literacies include readiness in using paper and writing devices, video technologies and digital technologies. Literacies of representation include information, media and visual. This model illustrates the usefulness of viewing literacies that overlap each other because it shows different possible combinations of literacies that a literate user uses based on the contexts of a given situation. Each of the literacies in Figure 5.2 has three components to it as indicated in Figure 5.1. The central core of the overlapping literacies represents an intersection of all the literacy knowledge and skills that a literate user needs to partake in a given literacy practice.

In the case of Deaf bilingual students engaging in the ASL literacy practices of viewing and discussion of ASL videotexts in their language arts classes, Figure 5.3 uses the simplified model (Figure 5.2) as a template and builds on it to represent a complex model capturing many of the essential literacies that the Deaf bilingual students use to view and discuss ASL videotexts. Each type of literacy has different functions and components (mainly, functional, cultural and critical) to it (see Figure 5.1 for visualization of how these components are interconnected to each other).



*Figure 5.2: Simplified model of multiliteracies practices knowledge as the intersection of overlapping literacies.*



*Figure 5.3: Complex model of Deaf bilinguals' ASL literacies practices knowledge as the intersection of overlapping literacies.*

#### **5.4. Implications and Suggestions for Practice and Pedagogy**

The findings from the present study show that Deaf bilingual high school students benefit from their viewing and discussion of multimodal ASL videotexts in their language arts classes where ASL is the focus of instruction. The student participants varied in their linguistic and educational backgrounds as well as family backgrounds, and they benefited from ASL video viewing and discussion activities. These findings have multiple implications for ASL literacies practice and pedagogy, including re-thinking what it means to help Deaf bilingual students develop and use their ASL language and literacy skills.

##### ***5.4.1. Focus on Deaf Bilingual Students' ASL Proficiencies as a Bridge to Multi-literacies Acquisition***

The findings from the present study show evidence of the relationship between Deaf bilingual students' ASL and English language proficiencies. It also shows evidence of their language proficiencies having a strong effect on their ASL literacies use in their language arts classes. There is consensus in research literature that ASL proficiency is a prerequisite for English language proficiency and literacy skills, and there is also a large number of research literature that has advocated the advantages of using interactive ASL instruction to teach English language and literacy skills to Deaf bilingual students as part of languages arts instruction (e.g., Bailes, 2001; Cummins, 2006; Lane et al., 1996; Musselman, 2000). ASL language arts can be viewed as a channel to mastery of English language and literacy skills. ASL language arts can also be viewed as an important tool for developing and strengthening students' critical

thinking skills. English-speaking hearing children typically come to American schools fluent in language due to access to a native language through hearing. They have at least 12 years of English language arts instruction from preschool to high school, developing and deepening their English skills as well as using English as a tool for critical thinking. For Deaf bilingual children, ASL and bilingual language arts functions the same way English language arts does for hearing children. Deaf bilinguals benefit more from the ASL portion of the bilingual language arts curriculum, videos and materials. ASL instruction helps Deaf bilinguals develop their ASL literacy skills, as well as their English literacy skills, to reach the threshold levels for both languages needed to get the cognitive benefits.

Deaf bilinguals require access to competent sign language models for increased language abilities in ASL (Hoffmeister & Caldwell-Harris, 2014; Mayberry et al., 2002; Novogrodsky, Fish, & Hoffmeister, 2014). However, more than 90 percent of deaf children are born to hearing parents who have no prior experience communicating through sign language (Mitchell & Karchmer, 2004), which means it often falls on the educators themselves to take on the role of sign language models or use ASL signed videos to ensure that the Deaf bilinguals have access to proficient language models (Bailes, 2001).

It is this increased ability in ASL that Deaf bilinguals need to develop their English skills as evident by a study by Morford et al. (2014) that showed Deaf bilinguals' reading tasks "may be intricately linked to sign language processing, even though print is intended to represent an entirely different language" (p.267). In another

study, Andrews and Rusher (2010) showed that Deaf bilingual students brought ASL and English dual language resources to support their English vocabulary learning and reading comprehension. Kuntze, Golos and Enns (2014) proposed a working model for facilitating deaf children's acquisition of literacy, based on their review of research findings and theoretical perspectives in literature, many of which also became the basis for the present study. Like the present study, Kuntze et al.'s model of deaf children's literacy acquisition is grounded in not only the multiliteracies perspective (New London Group, 2000), but also the bilingual model in deaf education perspective (Cummins, 2006).

Deaf education teachers must take all of this information into account in designing and implementing their bilingual language arts activities for Deaf bilingual students to develop and use their ASL and English literacy skills. Teachers should incorporate in their activities the use of ASL videotexts as a tool for Deaf bilingual students' language learning and multi-literacies development. Recent research in literature and the findings from the present study show that the Deaf bilingual students develop and use their literacy skills in ASL using ASL videotexts, and it is these skills that transfer to English literacy skills.

#### ***5.4.2. Focus on the Content of ASL Videotexts that Elicit Deaf Bilingual Students' Multiliteracies***

This study shows evidences and instances of using ASL videotexts as a tool for Deaf bilingual students' language learning and ASL literacies development and use. The present study and recent research literature shows that ASL videotexts are an



effective tool for helping Deaf bilingual students who either may not have the necessary skills to learn through English or who would benefit from bilingual learning through multimodal ASL videotexts with English support. ASL videotexts are readily available everywhere for teachers through a variety of physical and digital mediums. The videos feature everything from ASL storytelling and poetry to English-to-ASL translated texts to ASL informational videos (Bauman et al., 2006; Byrne, 2013; Krentz, 2006; Peters, 2000; Rose, 1994).

Before teachers use ASL videotexts, they need to consider the content and features of the particular ASL videotexts, such as literary and textual elements as well as themes, to determine whether these videos will increase their Deaf bilingual students' capacity to decode and make sense of more complex videos. The present study shows that Deaf bilingual students' use of specific ASL literacies depends on the content and context of ASL video viewing. So, the ASL videotexts must have the content at a level that the Deaf bilingual students can understand, relate to and respond to in order for these videos to elicit students' ASL multiliteracies.

#### ***5.4.3. Focus on Deaf Education Teachers' Bilingual Language Teaching Practices***

The findings provide examples of how ASL videotexts can be used a tool for Deaf bilingual students' viewing and discussion activities. It is these ASL videotexts that can be used to contribute to the students' development and higher order use of language, literacies and cognitive skills. The instructional practices used by the teachers were not explicitly analyzed here as teaching strategies. However, lessons are

learned from the present study. Both teacher participants engaged Deaf bilingual students in rich ASL development and used activities, in keeping with recent trends in using ASL videotexts as an instructional tool for ASL language learning and literacy development (e.g., Humphries, 2013). They drew Deaf bilingual students' attention to and taught content and features of language use within multimodal ASL videotexts.

Learning ASL and literacy skills means that Deaf bilingual students are able to use ASL, which, at minimum, requires students' basic proficiencies in ASL. This suggests that ASL and bilingual language arts classes should include opportunities for Deaf bilingual students to engage in classroom discussions in which students work on alleviating their ASL literacy skills, challenge each other's ideas, and influence the direction of the classroom ASL discourse. It would be a great disservice to Deaf bilingual students and their teachers to use ASL videotexts just for the sake of using ASL videotexts. This does not mean just using the modern video technology knowledge and skills to being able to incorporate ASL videotexts in the instructional activities. Deaf education teachers need to move beyond the technical aspects of showing ASL videotexts to consider ways to maximize their Deaf bilingual students' language learning and literacy development through the use of ASL videotexts.

It will also be helpful for the teachers to consult literature for strategies and practices to make the most out of ASL videotext uses in their language arts classes (e.g., Beal-Alvarez & Huston, 2014; Center for ASL/English Bilingual Education and Research, 2008; Czubek, in press; Golos & Moses, 2013b; Snoddon, 2010; Snoddon et

al., 2004; Zernovoj, 2009, 2014). Appendices IX and X are also provided here to help illustrate some ideas of what are included in the ASL video viewing methodologies.

The findings in this study show that student utterances made in response to teacher comments and questions were the two most common contexts of all the student utterances. The findings also show that the students' general language proficiencies have a role in the ratio of teacher utterances to student utterances in class. These findings are supported by large research literature on the conversations between the teacher and students that found that the classroom discourses are dominated by teacher talk, but also that the types and amount of teacher talk are related to students' language and academic proficiencies (e.g., Cazden, 2001; Flanders, 1970).

Research has investigated the patterns of teachers' talk and questioning in supporting classroom discourse. The discourse patterns in a language arts classroom depend on a teacher's purpose for the lesson, especially for the assigned video. Teacher questions create opportunities for Deaf bilingual students to partake in the classroom conversation and increase their talk, but the kind of questions that teachers are asking impact how it affects students' contribution to the classroom discourse.

Discourse is the foundation of literacy. It allows us to express ourselves coherently and to communicate freely. Students must have opportunities to communicate and express themselves, and to participate in more cognitively challenging discourses. It allows them to become more literate user of the language and develop critical thinking skills. We are reminded of Bakhtin's (1981) realization:

“The word in language is half someone else’s. It becomes ‘one’s own’ only when the speaker populates it with his own intention, his own accent, when he appropriates the word, adapting it to his own semantic and expressive intention” (p. 293). In other words, if students are not using words, they are not developing their readiness for academic discourse. The key is to allow students the opportunities to talk with one another, in purposeful ways, using academic language.

### **5.5. Suggestions for Future Research**

The present study investigated Deaf bilingual high school students’ ASL literacy practices at school by looking at their utterances in the ASL videos viewing and discussion activities. All but one of the previous ASL video technology-related studies used either an experimental or interventional research design (i.e. Beal-Alvarez & Easterbrooks, 2013; Cannon et al., 2010; Golos, 2010a, 2010b; Golos & Moses, 2011; Hansen & Mounty, 1998; Hanson & Padden, 1994; Mueller & Hurtig, 2010). The only study that was not experimental or interventional in nature was the Snoddon (2010) study because it employed qualitative action research methods. This mixed-methods study breaks new ground in two ways. Firstly, it observes the Deaf bilingual students in their naturalistic settings to discover the patterns of their engaging in three different types of ASL literacies skills during viewing and discussion of multimodal ASL videotexts. Secondly, it links the students’ ASL and English proficiencies assessment data to the naturalistic observation data of the students’ video technology-mediated ASL literacies practices. Obviously, the findings in the present student require more investigation as numerous new questions emerged during the present

study that opened up multiple possibilities for future research. The following presents some of the possibilities for future research.

#### ***5.5.1. Next Possible Steps for Further Analyses in the Present Study***

Since the sample size of Deaf bilingual high school students is small ( $n = 18$ ), it will be beneficial for us to replicate the study using the same methods with different age groups. This would not only allow for more a larger variability across age groups, but also more thorough statistical analyses to empirically support the results of the present study.

Although differences in the patterns of different types of ASL literacies between groups based on their home language as well as levels of home communication were not a direct question of the research, the data shows that the students who had unrestricted access to communication at home contributed to a big portion of critical ASL literacy-related utterances. It would be interesting to investigate this further, at least by applying the ANOVA analyses to determine correlations between numerous variables such as students' home language, level of communication at home, language proficiencies test score, and proportional percentages for each type of ASL literacy-related utterances.

The transcripts were coded based on the three main categories of ASL literacy: functional, cultural and critical literacies. It would be interesting to add sub-categories to the existing main categories of ASL literacy. These sub-categories can be used to code transcripts to search for new patterns of ASL literacy practices at a finer grained level.

### ***5.5.2. Patterns of ASL Literacies Practice Through Video Production***

There is some literature on how Deaf bilingual students produce ASL videotexts rather than exclusively viewing ASL videotexts (Horn-Marsh & Horn-Marsh, 2009; Wolter, 2006). It would be interesting to apply the same methods of observing and analyzing the patterns of ASL literacy practices of Deaf bilingual high school student's brainstorming and video production, and see how they relate to the patterns of ASL literacy practices of these students' video viewing and discussion activities.

### ***5.5.3. Design and Measure Effectiveness of Implementation of an ASL Curriculum that Uses ASL videotexts to Teach ASL Literacies***

Because research shows that ASL knowledge and literacy skills clearly contribute to knowledge and literacy in English, many Deaf bilingual high school students can benefit from a curriculum that provides opportunities for them to develop and deep their different types (functional, cultural, critical) of ASL literacy skills. However, how much Deaf bilingual students can benefit from a curriculum that focuses on their literacy skills depends on the quality of the curriculum and the skills of the teachers who implement this curriculum. Although there were few studies reviewed in Chapter 3 that developed a curriculum using videos to teach target skills (Cannon et al., 2010; Golos, 2006; Golos & Moses, 2015), there are currently limited curriculum materials incorporating videos to teach target ASL language and literacy skills. It would be interesting to develop an ASL or bilingual language arts curriculum that utilizes ASL videotexts for the purpose of developing and deepening different

types of ASL literacies in Deaf students, and implement it to measure students' language learning and literacy development.

#### ***5.5.4. Patterns of ASL Literacies Practice Through Online Discussion***

There is some research on how modern video communication technologies and the Internet are not only creating new contexts, but also shaping language practices of the Deaf bilinguals (Keating, Edwards, & Mirus, 2008; Keating & Mirus, 2003).

While there is already some research on how the Internet influences literacy practices of hearing readers (Coiro et al., 2008), it will be interesting to study the patterns of ASL literacies through online discussion. For example, such as VoiceThread (<http://voicethread.com>), using the same methods applied in the present study.

VoiceThread is a web application for students to communicate, collaborate and connect online from any computer or web browser. These methods may have to be modified because the new contexts created by the modern video communication technologies and the Internet may have influenced how sign language data is collected, and the kinds of data that can be analyzed (Lucas, Mirus, Palmer, Roessler, & Frost, 2013).

#### ***5.5.5. Patterns of ASL Literacies Practice After Teacher Training***

Data showed that teacher comments and questions were the two most prevalent contexts for student responses. According to research on teacher-mediated video viewing and discussion activities, Deaf students learned more when the teachers interacted with them and supported them during their video viewing and discussion activities (Beal-Alvarez & Easterbrooks, 2013; Golos & Moses, 2011). It would be

interesting to study the patterns of Deaf bilingual students engaging in different types of ASL literacy skills during ASL video viewing and discussion activities after training their teachers to facilitate student ASL video viewing and discussion.

***5.5.6. Role of the Teacher and Their Strategic Use of ASL Videotexts to Promote Deaf Bilingual Children's Development of Their ASL Language and Literacy Skills***

There are numerous studies that identify different strategies that teachers use to help Deaf bilingual students not only develop language and literacy skills, but also make connections between ASL and English (e.g., Humphries & MacDougall, 1999; Padden & Ramsey, 1998). It would be interesting to study and identify the strategies that the teachers used to help Deaf bilingual students develop their language and literacy skills during video viewing and discussion activities.

***5.5.7. Study Interaction of Language Uses and Different Forms of Video Technology***

While there are different ways of watching ASL videotexts from DVD videodiscs to downloadable video formats to computer/tablet ebooks, there are few studies that have explored the feasibility of watching ASL videotexts in a certain form of video technology (e.g., Hanson & Padden, 1989; Mueller & Hurtig, 2010; Stone, 2014). Beal-Alvarez and Cannon (2014) said that students may need instruction and scaffolding in video technology skills to fully access videos, lessons and materials in a given context. The findings in the present study show that the use of video technology with Deaf bilingual students has the potential to help them improve their language and



literacy skills, so it would be interesting to investigate how varying designs and content created for different forms of video technology influence the patterns of ASL literacies use.

#### ***5.5.8. Pointing at the Video Screen for Referential Purposes***

There were multiple instances of Deaf bilingual students and their teacher repeatedly pointing at the video screen when they made references to content or presentation of the ASL videotext, such as a person, an idea or a story. There is some research on pointing gestures in signed languages in different contexts (Barberà & Zwets, 2013). It would be interesting to investigate the pattern of how video viewing and discussion contexts shape the patterns of Deaf bilingual students using their index finger to point at the screen.

#### ***5.5.9. Nature of Fingerspelling in the Patterns of ASL Literacies***

During my data analysis and coding of the student utterances from the transcribed videorecorded observations, I noticed that the fingerspelling appeared to be more prevalent among the students in the top quartile of ASL-RST test scores than those in the bottom quartile of ASL-RST test scores in classes. This is a noteworthy observation since numerous studies showed fingerspelling in ASL to be an important strategy for bridging ASL skills to the acquisition and development of English literacy skills (Chamberlain & Mayberry, 2000; Haptonstall-Nykaza & Schick, 2007; Padden, 2006; Padden & Ramsey, 1998; Ramsey & Padden, 1998). It would be interesting to investigate the pattern of fingerspelling among Deaf bilingual high school students and

how that pattern fits in within the context of ASL literacy practices during ASL video viewing and discussion activities.

#### ***5.5.10. Eye-tracking and Brain-imaging During ASL Video Viewing***

In the present study, there was little movement and talk among the Deaf bilingual high school students when they watched the ASL videotexts, which made it inherently difficult to analyze and code looking for evidence of ASL literacy skills during the video viewing portions of the observations. It would be interesting to use eye-tracking and brain-imaging techniques to assess Deaf bilinguals' eye movement and brain activation during their viewing of ASL videotexts. Eye-tracking is a technique that allows researchers to determine what information a signer is attending to while they are viewing sign language (Tyrone, 2015). Tyrone (2015) noted that it also "can be used to determine how attentional patterns differ with signing skill and language background" (p.98). A recent 3-year longitudinal study found that the joint visual attention and visual gaze skills in signing children (which is critical for language and vocabulary development) is greater than in other children. This has positive implications for sign-exposed children's language acquisition and literacy skills development (Allen, Letteri, Choi, & Dang, 2014). The eye-tracking technique was used to study both language processing (e.g., Lieberman, Borovsky, Hatrak, & Mayberry, 2014) and reading (e.g., Bélanger, Slattery, Mayberry, & Rayner, 2012) in Deaf bilinguals. Eye-tracking technique can help get around the students' limited and lack of movement and utterances during video viewing and may produce some data about what a signer is attending to while they are viewing ASL videotexts.

As for brain-imaging, it is a technique that allows researchers to study how sign language activates the brain. For example, there was a brain-imaging study that found both fingerspelling and sign language signs share areas of brain activation (Waters et al., 2007), which can be used to support fingerspelling as an important strategy for bridging ASL skills to English skills because of the fact that fingerspelling and signs share the same areas of the brain. It would be interesting to see what evidence eye-tracking and brain-imaging data might uncover. It may show ASL videotexts elicit brain activation and responses in Deaf bilinguals that may infer the use of their literacy skills.

## **5.6. Concluding Remarks**

Evidences of ASL literacy-related utterances such as those in the present study suggest that ASL informational and literary videos offer more possibilities for language learning and literacy development for any kind of Deaf bilingual students. ASL videotexts present learning opportunities for Deaf bilingual students who have previously struggled in the development of English literacy. The videos enable them to interact with ASL, their peers and language teachers. ASL videotexts also give Deaf bilingual students the opportunity to work collaboratively with their peers and language arts teachers as they learn to become more literate in both languages. In accordance with the multi-literacies perspective (Lankshear & Knobel, 2006; New London Group, 2000), patterns that emerged in the study may inspire classroom literacy practices that afford opportunities for Deaf bilingual students to develop and deepen their literacy and cognitive skills in both languages. And possibly most

importantly, findings from this study help identify language acquisition and literacy development priorities for those Deaf bilingual students who struggle the most in multiple literacy development contexts.

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## Appendix I: Transcription Conventions

Symbol	Convention	Example
;	Signers' names are separated from their utterances by semicolons (;), followed by a few blank spaces.	Teacher; Do you want to see the video again?  Hannah; Yes, please, I am curious who was the man.
#	A single hatch mark (#) represent a pause attached to previous gloss.	Enid; He went# shopping.
(1.5)	Numbers between parentheses (#) indicate length of pauses within utterance in seconds and tenths of seconds.	Teacher; Today, we will watch a signed video.# (2) It is the same concept as reading a book.
...	Three dots (...) indicate an untimed pause within utterance.	Hannah; Perspectives vary by individuals regardless of being deaf or hearing. I feel# ... that is hard to explain. I don't know.
[[	Double left-hand brackets ([[) indicate the point at which two utterances start up simultaneously.	Teacher; Are the husband and wife both hearing?  Elizabeth; No[+]. [[ Enid; Deaf.
[ ]	A square bracket with blank spaces ([ ]) between turns indicates the point at which overlapping utterances is joined by another signer.	Enid; I think# I don't know. [ ] Teacher; Where?
=	When there is no interval between utterances, they are linked together with equal symbols (=). The equal symbols also can link different parts of a signer's utterance when those	Jamie; He said that people don't take the time / =  Haley; = Yes, that is the one! [ Jamie; = People don't take the time; time takes people.

	parts have been separated by an interruption.	
((information))	Material between double quotes provides extralinguistic information, e.g. about bodily movements.	VIDEO; "People don't take the time; time takes people..."  ((Teacher pauses the video.))  Teacher; What was the quote? IX(screen)[_]
XXX	XXX indicates a sign is not clear. Each unclear sign can be labeled as XXX (there may be more than one unclear sign).	Hannah; When hearing people want to become interpreters and apply for interpreting jobs, they need to remember that they are not there to cover up. They must say exactly what the deaf people are saying. XXX I think that story can be applied to them. They can learn from it.
lh, rh, 2h	lh and rh indicates left hand and right hand, respectively, used to sign. 2h indicates a sign made with both hands, especially signs that are commonly one-handed.	Teacher; Did the (rh)SCL:3(car) follow (lh)SCL:1(man)?  Teacher; Today, we will watch a signed video.# It is the same concept as reading a book. We just finished reading a story. Now you will watch a video of a man signing a story. Just like after reading a story, after you finish watching the story, I will ask you (2h)questions[+] about the story. I may ask you: Who? What? =
[(lh) sign / (rh) sign]	Brackets are used around separate signs made at the same time.	Teacher; Yes, place. There was a cup of coffee that [(lh)ICL:C(cup) / (rh)DCL:5(coffee-surface-rippling)] while the ground shook (2h)DCL:5(ground-shaking). The trees fell forward one by one (2h)LCL:5(trees-falling-forward-and-thudding-on-the-ground-one-by-one). Where were the boys when all of that happened? Where?
FS(fingerspelled-word)	The label FS indicates fingerspelling for a fingerspelled word in parentheses.	Jasmine; Right, we also have to exercise. It increases FS(metabolism). The body FS(metabolism) burns food and helps people lose weight.
NS(proper-name)	The label NS indicates a name sign for a name in parentheses.	Teacher; What is the FS(morale) in NS(Cinderella)?  Jacqueline; The FS(morale) is don't disappear in the middle of party.



[+]	Each plus symbol enclosed in square brackets at the end of sign indicates a repetition of the sign.	Teacher; g(well) But[++] Let us connect that movie to the real world. Just like FS(Cinderella's) mean stepmother, there are mothers who abuse their children in the real world. What do we do about that?
[_]	The underscore symbol enclosed in brackets at the end of sign indicates a held sign.	Ahmad; Man and[_] grandfather[_]? [ ] Teacher; Man and[_]?
/	A single slash (/) at the end of sign represents an interruption by another. A double slash (//) at the end represents a self-interruption.	Haley; I think //  Teacher; Why did the woman tell the story?
[/]	A single slash [/] enclosed in brackets at the end of sign indicates a retraction. A double slash [//] indicates retraction with correction. A triple slash [///] indicates retraction with reformulation.	Teacher; That is part of deaf culture. You know that? You know in the cottages or dorms at the deaf school [//] deaf institution. In the cottages, children in there came together to (2h)GIVE, share and circulate information. Sometimes information can be right, and sometimes information can be wrong. They tend to share information. Yes?
g(meaning-of-gesture)	The label g followed by concise meaning in parentheses indicates a gesture.	Francisco; I saw g(watch-tv) FS(TV).  <u>Common gestures:</u> g(hmm), g(huh), g(oops), g(deaf-applause), g(hey), g(well), g(ow), g(pshaw), g(yes), g(no)
e(meaning-of-emblem)	The label e followed by concise meaning in parentheses indicates an emblem.	Haley; Nothing. e(go-ahead). I am still thinking.  <u>Common emblems:</u> e(come-here), e(go-away), e(no), e(shh), e(stop-it), e(wait-a-minute), e(hold-on), e(stay-there), e(cut-it-out)
show(object)	The label show followed by name of object shown in parentheses indicates showing an object.	Francisco; ((pulls out an iPhone from his pocket)) show(iPhone) g(record-slow) =

m(word-mouthed)	The label m followed by word mouthed in parentheses indicates mouthing.	Enid; m(oh) I see.  Common mouthing: m(no), m(yes), m(what)
IX(referent)	The label IX followed by referent in lowercase letters (except for names) in parentheses indicates pointing to a referent (location, object, or person).	Teacher; Yes, in the very end of video. What happened in the last 1-2 minutes of the video? Do you want to watch again? IX(screen) Yes? IX(Hayden)  Other examples: IX(self), IX(all-of-you), IX(Alex), IX(teacher), IX(dog), IX(book), IX(screen), IX(outside), IX(inside-bag)
POSS(referent)	The label POSS followed by referent in lowercase letters (except for proper names) in parentheses indicates a possessive pronoun.	Teacher; So basically, POSS(man-on-the-screen) his story has the same concept as in the movie.  Other examples: POSS(self), POSS(mother), POSS(Maria)
DCL:handshape (information)	The label DCL followed by handshape used to describe an object or person in parentheses.	Sonny; Dinosaur. It is DCL:5(humungous)
LCL:handshape (information)	The label LCL followed by handshape used to represent an object in a specific place (and sometimes indicating movement).	Teacher; They saw the trees (2h)LCL:5(trees-falling-forward-and-thudding-on-the-ground-one-by-one)?
SCL:handshape (information)	The label SCL followed by handshape used to represent a category of nouns such as vehicle or person.	Sonny; No[+] Dinosaur followed the SCL:3(car). ((raises hand))
BCL(information)	Body classifier sign in which the body “enacts” the verb of the sentence.	Teacher; Oh, okay. What was chasing the man? BCL(man-looks-up-scared) SCL:1(man-run-away-hurriedly)
ICL:handshape (information)	The label ICL, sometimes followed by a handshape, used to represent which	Teacher; Yes, at the museum. They put together the dinosaur bones. ICL:C(putting-together-the-bones). And then they put them on the display for us

	part of the body (usually the hands) manipulates the object.	to see. I thought it was so cool when I saw it. I already saw the dinosaur bones. Did any of you see them at the museum? IX(all-of-you)
BPCL:handshape (information)	The label BPCL followed by handshape used to represent a specific part of the body doing the action.	Francisco; BCL(dinosaur-walking-moving-forward) with BPCL:5(little-hands-dangling-down) and then BPCL:W(dinosaur-claws-walking)
PCL:handshape (information)	The label PCL followed by handshape used to represent either specific number or non-specific number of something.	Angela; ((raises hand)) I think the house is overrun with the PCL:5(hordes-of-rats). Ewww.

### Transcription Resources:

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## Appendix II: ASL Literacies Data Codebook

<b>Variable name</b>	<b>Variable description</b>	<b>Variable values</b>
ID	Student identification number	Numerical integers
NAME	Student name	String
AGE	Age at the time of study	Numerical integers
GENDER	Gender	0 = Female 1 = Male
RACE	Race	1 = Hispanic 2 = Asian 3 = African American 4 = White 5 = Other
HEARING	Student hearing status	1 = Deaf 2 = Hard of Hearing
PARENT	Parental hearing status	1 = At least 1 deaf or hard-of-hearing parent(s) 2 = Hearing parent(s)
COMMUNICATION	Language environment at home	1 = ASL 2 = Spoken English 3 = Other sign language 4 = Other spoken language
CMN_LEVEL	Level of communicative access to family at home	1 = Restricted 2 = Basic 3 = Adequate 4 = Full
SCHTYPE	School placement type	0 = Mainstream 1 = Residential
GRADE	Grade level at the time of study	9 – 12
CLASS	Class identification number	1 = Mainstream class #1 2 = Mainstream class #2 3 = Residential class #1 4 = Residential class #2
TEACHER	Teacher identification number	1 = Mainstream teacher 2 = Residential teacher
BRI-VOCAB	BRI independent vocabulary level	0 – 12
BRI-READ	BRI independent reading level	0 – 12
ASLRST	ASL-RST standard score for age 13+ students	71 – 111
QUARTILE-ASLRST	Quartile level of ASL-RST standard score	1 = Bottom 25% 2 = Middle 50% 3 = Top 25%

UTT-1	Utterance count for day 1	Numerical integers
UTT1_PROP	Proportional percentage of total class utterances for day 1	0 – 1.00
FUNC-LIT1	Functional literacy-related utterance count for day 1	Numerical integers
FUNC-LIT1-PER	Percentage of utterance count that constitute functional literacy for day 1	0 – 1.00
CULT-LIT1	Cultural literacy-related utterance count for day 1	Numerical integers
CULT-LIT1-PER	Percentage of utterance count that constitute cultural literacy for day 1	0 – 1.00
CRIT-LIT1	Critical literacy-related utterance count	Numerical integers
CRIT-LIT1-PER	Percentage of utterance count that constitute critical literacy for day 1	0 – 1.00
UTT-2	Utterance count for day 2	Numerical integers
UTT2_PROP	Proportional percentage of total class utterances for day 2	0 – 1.00
FUNC-LIT2	Functional literacy-related utterance count for day 2	Numerical integers
FUNC-LIT2-PER	Percentage of utterance count that constitute functional literacy for day 2	0 – 1.00
CULT-LIT2	Cultural literacy-related utterance count for day 2	Numerical integers
CULT-LIT2-PER	Percentage of utterance count that constitute cultural literacy for day 2	0 – 1.00
CRIT-LIT2	Critical literacy-related utterance count for day 2	Numerical integers
CRIT-LIT2-PER	Percentage of utterance count that constitute critical literacy for day 2	0 – 1.00
TOTAL-UTT	Total utterance count	Numerical integers
TOTAL-UTT_PROP	Total proportional percentage of total class utterances	0 – 1.00
TOTAL-FUNC-LIT	Total functional literacy-related utterance count	Numerical integers
TOTAL-FUNC-PER	Total percentage of utterance count that constitute functional literacy	0 – 1.00
TOTAL-CULT-LIT	Total cultural literacy-related utterance count	Numerical integers
TOTAL-CULT-PER	Total percentage of utterance count that constitute cultural literacy	0 – 1.00
TOTAL-CRIT-LIT	Total critical literacy-related utterance count	Numerical integers
TOTAL-CRIT-PER	Total percentage of utterance count that constitute critical literacy	0 – 1.00

### **Appendix III: Teacher Recruitment Letter**

Dear Teacher,

My name is Alexander Zernovoj, and I am a doctoral student at the University of California, San Diego (UCSD). I am conducting a research study on how deaf bilingual high school students and their teachers view and discuss ASL videos together in their language arts classes.

I am inviting you to participate in this research study because I believe you can be of great help in this work. Your school recommended you because you have the expertise and experiences in using ASL videos as a learning tool in your classes. I will be carrying out this study as a researcher from UCSD.

Your participation in this study is voluntary. The alternative to participating is simply not to participate. If you choose to participate, you will be compensated with a \$25 Amazon gift card to compensate you for your participation.

If you choose to participate, I would like to work with you to schedule a 3-day observation of your two classes at your school site on days most convenient for you. Your decision to participate in this study will not affect your employment status. Please see the attached consent form for more information about my research study as well as safeguarding your privacy.

If you have any questions at all regarding this project, please contact me at XXX-XXX-XXXX or email me at [azernovoj@ucsd.edu](mailto:azernovoj@ucsd.edu).

If you would like to participate in this research study, please respond to this email or call me at the number listed above. I look forward to your response.

Thank you,

Alexander Zernovoj

## **Appendix IV: Parent Information Letter**

Dear Parent/Guardian,

My name is Alexander Zernovoj, and I am a doctoral student at the University of California, San Diego (UCSD). I am conducting a research study on how deaf bilingual high school students and their teachers view and discuss ASL videos together in their language arts classes.

Your child is invited to participate in this research study because your child's teacher is participating in this study. I will be carrying out this study as a researcher from UCSD.

Your child's participation in this study is voluntary. This is what will happen if you choose for your child to participate in this study:

- Three 35-minute lessons using ASL videos in your child's language arts class will be videotaped. Your child's image may or may not be captured.
- I will take field notes while observing during my videorecording.
- Background information will be collected from your child's school about your child.

No information about your child will be collected or distributed without your knowledge or approval. You and your child's name will never be revealed. If you choose for your child not to participate in this study, it will not impact the school services your child receives in any way. Please see the attached consent form for more information about my research study as well as safeguarding your and your child's privacy.

If you have any questions at all regarding this project, please contact me at XXX-XXX-XXXX or email me at [azernovoj@ucsd.edu](mailto:azernovoj@ucsd.edu).

Thank you,  
Alexander Zernovoj

## **Appendix V: Teacher Consent to Act as a Research Subject Form**

### **UNIVERSITY OF CALIFORNIA, SAN DIEGO TEACHER CONSENT TO ACT AS A RESEARCH SUBJECT**

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Education Studies – University of California, San Diego

#### **Video Technology-mediated Literacy Practices in American Sign Language (ASL): A Study of an Innovative ASL/English Bilingual Approach to Deaf Education**

**Principal Investigator:** Alexander Zernovoj

**The Study:** My name is Alexander Zernovoj, and I am a graduate student in the Education Studies dept. at UC San Diego. I am doing a research study to find out more about how deaf bilingual high school students and their teachers view and discuss ASL videos in their language arts classes.

You have been asked to participate in this study because you have expertise and experience in using ASL videos as a learning tool in your classes. There will be 4 teacher participants and approximately 48 student participants.

**Voluntary Participation:** If you agree to be in this study, you will be asked to give permission to observe and videorecord you teaching three 35-minute lessons using ASL videos in each of your two classes for a total of six lessons. The videorecorded classes will be transcribed and used for the study. Field notes will be taken while observing during the videorecording.

Participation in research is voluntary. The alternative to participation in this study is to choose not participate. Your participation or non-participation will have no bearing on your relationship with the researcher, your employment status, or your job standing at your school site or district.

In compensation for your time, you will receive a \$25 Amazon gift card for participating in this research. There will be no cost to you for participating in this study.

If you decide that you no longer wish to continue in this study, you may contact me at (XXX) XXX – XXXX or [azernovoj@ucsd.edu](mailto:azernovoj@ucsd.edu). You will be contacted within two days for confirmation. As soon as your desire to withdraw is confirmed, your research



data will immediately be destroyed. If you choose to withdraw, there will be no effect on your relationship with the researchers, your employment status, or your job standing at your school site or district.

**Risk:** While every effort is made to reduce risk, there exists the small possibility of a loss of confidentiality in this study. The following actions will be taken to minimize the risk of loss of confidentiality:

- To ensure confidentiality for each participant, all research data (video recordings, field notes, school information, transcriptions, data analysis, and study writing) will be stored on a password-protected computer. A back-up of all digital data will be kept on an encrypted, password-protected hard drive that will be kept locked in a file cabinet. The researcher will be the only person with access to all research data, and passwords.
- Your name will not appear on any videos or transcripts resulting from video recording your teacher's lessons. Your name and identity will remain anonymous, and will not appear in any report of the research. All identifying information will be removed from all documentation of participant information. Pseudonyms will be used for all participants in research data.
- The recorded lessons will only be analyzed and transcribed. The recordings and transcriptions will be kept on a password-protected computer for the duration of the study. You have the option to have the recordings with your image on them destroyed at the conclusion of the study or allow future use for them in presentations of the study. If the videorecordings are ever used in the presentations, the likelihood that you will be recognized is very minimal.
- In order to minimize the risk, research records will be kept confidential to the extent provided by law.

Because this is a research study, there may also be some unknown risks that are currently unforeseeable. You will be informed in writing of any significant new findings.

If you are injured as a direct result of participation in this research, the University of California will provide any medical care you need to treat those injuries. The University will not provide any other form of compensation to you if you are injured. You may call the Human Research Protections Program Office at (858) 657-5100 for more information about this, to inquire about your rights as a research subject or to report research-related problems.

**Benefits:** There is no direct benefit to you from participating this study. The researcher, however, may learn more about how deaf bilingual high school students develop and use their language and literacy through ASL video viewings and discussions with their peers and teachers, and society may benefit from this knowledge in the future.

**Consent:** By signing below, you indicate that the study has been explained to you, you have been given the opportunity to have your questions answered, and that you voluntarily grant your consent, which can be withdrawn at any time.

If you have any questions about this study, I will be happy to answer them. If you have any questions in the future, please contact me at (XXX) XXX – XXXX or [azernovoj@ucsd.edu](mailto:azernovoj@ucsd.edu).

You agree to participate in this research study.

\_\_\_\_\_  
Participant's name (please print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Participant's signature

\_\_\_\_\_  
Researcher's signature

\_\_\_\_\_  
Date

**Appendix VI: Parent Consent for Child to Act as a Research Subject Form**

**UNIVERSITY OF CALIFORNIA, SAN DIEGO  
PARENT CONSENT FOR CHILD TO ACT AS A RESEARCH SUBJECT**

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Education Studies – University of California, San Diego

**Video Technology-mediated Literacy Practices in American Sign Language  
(ASL): A Study of an Innovative ASL/English Bilingual Approach to Deaf Education**

**Principal Investigator:** Alexander Zernovoj

**The Study:** My name is Alexander Zernovoj, and I am a graduate student in the Education Studies dept. at UC San Diego. I am doing a research study to find out more about how deaf bilingual high school students and their teachers view and discuss ASL videos in their language arts classes.

Your child has been identified to participate in this study because he/she is a student in the classroom where the study will be conducted. There will be 4 teacher participants and approximately 48 student participants.

**Voluntary Participation:** Your child will be observed and videorecorded during three 35-minute lessons using ASL videos in your child's class. If you choose for your child to participate in this study, the following will happen:

1. The video camera will be positioned in one location during the recording, so your child's image may or may not be captured. The videorecording is for transcription purposes only.
2. Field notes will be taken while observing during the videorecording.
3. Information from your child's school about his or her hearing level, home language, ethnicity, achievement tests, English reading and vocabulary tests, and ASL tests will be collected. They will serve as background information for the study.

This research is not part of your child's regular school program, is not being conducted by the school, and your child's grade or continued enrollment will not be affected by your decision to allow him/her to participate. This study is approved by your child's school.

Participation in this study is entirely voluntary. You may choose not to have your child participate or to withdraw your child at any time. There will be no compensation for participation in this study. If your child is distracted by being videorecorded, your child will be seated outside the view of the video camera, and your child's information will be deleted from the study.

**Risk:** While every effort is made to reduce risk, there exists the small possibility of a loss of confidentiality in this study. The following actions will be taken to minimize the risk of loss of confidentiality:

- To ensure confidentiality for each participant, all research data (video recordings, field notes, school information, transcriptions, data analysis, and study writing) will be stored on a password-protected computer. A back-up of all digital data will be kept on an encrypted, password-protected hard drive that will be kept locked in a file cabinet. The researcher will be the only person with access to all research data, and passwords.
- Your child's name will not appear on any videos or transcripts resulting from video recording your child's teacher's lessons. Your child's name and identity will remain anonymous, and will not appear in any report of the research. All identifying information will be removed from all documentation of participant information. Pseudonyms will be used for all participants in research data.
- The recorded lessons will only be analyzed and transcribed. The recordings and transcriptions will be kept on a password-protected computer for the duration of the study. You have the option to have the recordings with your child's image on them destroyed at the conclusion of the study or allow future use of them in presentations of the study. If the videorecordings are ever used in the presentations, the likelihood that your child will be recognized is very minimal.
- In order to minimize the risk, research records will be kept confidential to the extent provided by law.

Because this is a research study, there may also be some unknown risks that are currently unforeseeable. You will be informed in writing of any significant new findings.

If you are injured as a direct result of participation in this research, the University of California will provide any medical care you need to treat those injuries. The University will not provide any other form of compensation to you if you are injured. You may call the Human Research Protections Program Office at (858) 657-5100 for

more information about this, to inquire about your rights as a research subject or to report research-related problems.

**Benefits:** There will be no direct benefit to your child for participating in this research study. The researcher, however, may learn more about how the deaf bilingual high school students develop and use their language and literacy through ASL video viewings and discussions with their peers and teachers, and society may benefit from this knowledge in the future.

**Consent:** By signing below you are indicating that you have been given an explanation of this study, and you have been given the opportunity to have your questions answered. Both you and your child need to give consent in order for your child to participate.

If you have other questions or research-related problems, you may contact me at (XXX) XXX – XXXX or [azernovoj@ucsd.edu](mailto:azernovoj@ucsd.edu).

You agree to allow your child to participate and understand that your child may be video recorded.

Name (please print)	Parent/Guardian signature	Date
Witness		Date

**Appendix VII: Adolescent Student Assent to Participate in Research Form**

**UNIVERSITY OF CALIFORNIA, SAN DIEGO  
ADOLESCENT STUDENT ASSENT TO PARTICIPATE IN RESEARCH**

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Education Studies – University of California, San Diego

**Video Technology-mediated Literacy Practices in American Sign Language  
(ASL): A Study of an Innovative ASL/English Bilingual Approach to Deaf Education**

**Principal Investigator:** Alexander Zernovoj

**The Study:** My name is Alexander Zernovoj, and I am a graduate student in the Education Studies dept. at UC San Diego. I am doing a research study to find out more about how deaf bilingual high school students and their teachers view and discuss ASL videos in their language arts classes.

You have been asked to participate in this study because your teacher is using ASL videos, and has volunteered to be in this research study. There will be 4 teacher participants and approximately 48 student participants.

**Voluntary Participation:** You will be observed and videorecord for three 35-minute lessons using ASL videos in your class. If you agree to participate in this study, the following will happen:

1. The video camera will be positioned in one location during the recording, so your image may or may not be captured. The videorecording is for transcription purposes only.
2. Field notes will be taken while observing during the videorecording.
3. Information from your school about your hearing level, home language, ethnicity, achievement tests, English reading and vocabulary tests, and ASL tests will be collected. They will serve as background information for the study.

During the observations, your teacher will be conducting regular lessons using ASL videos. If you do not want to participate in this study, your teacher will seat you outside the view of the camera. If during the lesson you need to move into the camera's view, the camera will be moved so that you are not recorded.

You do not have to agree to participate in this study. You can say yes or you can say no. Your grade or standing in your class will not be affected if you agree to participate or if you do not agree to participate. You may stop your participation at any time. If you are distracted by being videorecorded, you will be seated outside the view of the video camera, and your information will be deleted from the study.

**Risk:** While every effort is made to reduce risk, there exists the small possibility of a loss of confidentiality in this study. The following actions will be taken to minimize the risk of loss of confidentiality:

- To ensure confidentiality for each participant, all research data (video recordings, field notes, school information, transcriptions, data analysis, and study writing) will be stored on a password-protected computer. A back-up of all digital data will be kept on an encrypted, password-protected hard drive that will be kept locked in a file cabinet. The researcher will be the only person with access to all research data, and passwords.
- Your name will not appear on any videos or transcripts resulting from video recording your teacher's lessons. Your name and identity will remain anonymous, and will not appear in any report of the research. All identifying information will be removed from all documentation of participant information. Pseudonyms will be used for all participants in research data.
- The recorded lessons will be analyzed and transcribed. The recordings and transcriptions will be kept on a password-protected computer for the duration of the study. You have the option to have the recordings with your image on them destroyed at the conclusion of the study or allow future use of them in presentations of the study. If the videorecordings are ever used in the presentations, the likelihood that you will be recognized is very minimal.
- In order to minimize the risk, research records will be kept confidential to the extent provided by law.

Because this is a research study, there may also be some unknown risks that are currently unforeseeable. You will be informed in writing of any significant new findings.

If you are injured as a direct result of participation in this research, the University of California will provide any medical care you need to treat those injuries. The University will not provide any other form of compensation to you if you are injured. You may call the Human Research Protections Program Office at (858) 657-5100 for

more information about this, to inquire about your rights as a research subject or to report research-related problems.

You will not be given anything for participating in this study.

**Consent:** By signing below you are indicating that this study has been explained to you and have been given the opportunity to have your questions answered.

You can ask me about anything you do not understand. Your teacher is also in the study, so you can ask your teacher questions for me to answer. You can contact me at (XXX) XXX – XXXX or [azernovoj@ucsd.edu](mailto:azernovoj@ucsd.edu) if you have questions.

**You agree** to participate in the video recordings of your class **if your parents also agree.**

\_\_\_\_\_  
Student name (please print)

\_\_\_\_\_  
Student's signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date



**Appendix VIII: Video Recording Release Consent Form**

**UNIVERSITY OF CALIFORNIA, SAN DIEGO**

**TEACHER VIDEO RECORDING RELEASE CONSENT FORM**

**Video Technology-mediated Literacy Practices in American Sign Language  
(ASL): A Study of an Innovative ASL/English Bilingual Approach to Deaf Education**

**Principal Investigator:** Alexander Zernovoj

As part of this project, video recordings will be made of you during your participation in this research project. Please indicate the uses of these video recordings to which you are willing to consent. This is completely voluntary and up to you. In any use of the video recordings, your name will not be identified.

1. The video recordings can be studied by the research team for use in the research project.

Initials \_\_\_\_\_

2. The video recordings can be used for scientific publications.

Initials \_\_\_\_\_

3. The video recordings can be shown at meetings of scientists in the study of education and educational practice.

Initials \_\_\_\_\_

4. The video recordings can be shown in college classrooms to education students in the study of education and educational practice.

Initials \_\_\_\_\_

5. The video recordings can be shown in public presentations to non-scientific groups.

Initials \_\_\_\_\_

You have the right to request that the recording be stopped or erased during the recording.

You have read the above description and give your consent for the use of video recording as indicated above.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

**If you have any questions, please feel free to contact Alexander Zernovoj at [azernovoj@ucsd.edu](mailto:azernovoj@ucsd.edu) or (XXX) XXX-XXXX.**

## Appendix IX: Four Kinds of ASL Video Viewing

Adapted from Center for ASL/English Bilingual Education and Research. (2008).  
*Signacy framework*. Manuscript in preparation, Gallaudet University, Washington,  
DC.

**Goal:** To develop ASL literacy skills in deaf students 1) by using the viewing skills of comprehending American Sign Language in various visual media, and 2) facilitating attending and signing skills for different purposes.

Four Kinds of ASL Viewing	Values/ Benefits
<p><b>1. Viewing ASL: Variety of genres live or taped</b></p> <p>As a whole class or in small groups, students watch the teacher, a guest speaker or a carefully selected ASL video. The presentations and videos cover a variety of topics from a variety of genres and represent our diverse society and unique cultures. Topics can be chosen to match special events and the live presentations may be videorecorded to be viewed repeatedly or be used or instructional viewing purposes.</p>	<ul style="list-style-type: none"> <li>• Involves students in viewing for enjoyment</li> <li>• Expands students background knowledge</li> <li>• Provides an adult demonstration of fluent ASL signing</li> <li>• Provides the opportunity to view many signed works and a wide variety of genres</li> <li>• Develops a sense of story and story structure</li> <li>• Develops knowledge of ASL syntax</li> <li>• Increases ASL vocabulary</li> <li>• Develops receptive ASL skills</li> <li>• Expands linguistic repertoire</li> <li>• Creates a community of signers through enjoyment and shared knowledge</li> <li>• Makes complex ideas available to deaf students</li> <li>• Promotes ASL development</li> <li>• Establishes known signed stories to use as a basis for expressive signing and other activities</li> </ul>
<p><b>2. Shared Viewing</b></p> <p>Using a video of a signed work as the source (such as from a videodisc, e-book, or the Internet), the teacher involves the children in viewing the video together ensuring students attention by pointing out features of the</p>	<ul style="list-style-type: none"> <li>• Builds sense of story and ability to predict</li> <li>• Demonstrates the processes of viewing extended signed work</li> <li>• Provides the opportunity to view many signed works and a wide variety of genres</li> <li>• Involves students in viewing for an enjoyable and purposeful way</li> <li>• Provides social support from the group</li> <li>• Provides opportunity to participate and behave like a viewer</li> </ul>

<p>signed source. The process includes viewing the same videos several times. The groups can:</p> <ul style="list-style-type: none"> <li>■ Re-view and retell</li> <li>■ View a variety of signed genres, stories, poems, folktales, ABC stories etc</li> <li>■ View and use the content for a signing activities</li> </ul>	<ul style="list-style-type: none"> <li>• Creates body of known signed works that students can use for independent viewing and as resources for signing</li> <li>• Monitors students' turn-taking skills</li> <li>• Exposes students to a variety of sign choices</li> <li>• Allows for the opportunity to share prior experiences</li> <li>• Provides opportunity for practicing re-telling and summarizing skills</li> </ul>
<p><b>3. Guided Viewing</b></p> <p>The teacher works with a small group (or one-on-one) who have similar receptive skills. The teacher selects and introduces new videos and supports children while viewing the tape by stopping to make teaching points, clarification, during and after the viewing.</p>	<ul style="list-style-type: none"> <li>• Provides the opportunity to view many signed stories and a wide variety of genres</li> <li>• Provides opportunity to problem-solve while viewing for meaning</li> <li>• Challenges the viewer and creates context for successful processing on longer signed works.</li> <li>• Provides opportunity to attend to signs in the story</li> <li>• Teacher selection of signed works, guidance, demonstration, and explanation is available to the viewer</li> <li>• Provides context for instruction on predicting and inferring skills, and discussion of ASL structure, sign choices and use.</li> </ul>
<p><b>4. Independent Viewing</b></p> <p>Children view ASL stories on video, storytelling presentation, poetry contests, etc on their own or with partners from a wide range of genres. Videos and presentations should be selected with the child's receptive skills in mind.</p>	<ul style="list-style-type: none"> <li>• Provides opportunity to apply ASL comprehension strategies independently</li> <li>• Provides time to sustain viewing behavior</li> <li>• Challenges the viewer to work on his/her own and to use strategies on a variety of ASL stories</li> <li>• Challenges the viewer to solve signs independently while viewing signed stories well within his/her control</li> <li>• Challenges the viewer to evaluate different registers and genres in ASL</li> <li>• Promotes fluency through re-viewing</li> <li>• Builds confidence through sustained, successful viewing</li> <li>• Provides the opportunity for students to support each other while viewing</li> </ul>

## Appendix X: Guided Viewing Process

Adapted from Zernovoj, A. (2009, June). *Guided viewing action research: Instructional approaches to academic ASL acquisition*. Paper presented at the conference of the Council of American Instructors of the Deaf, Washington, DC.

### Teacher's Role in Guided Viewing

During the video viewing

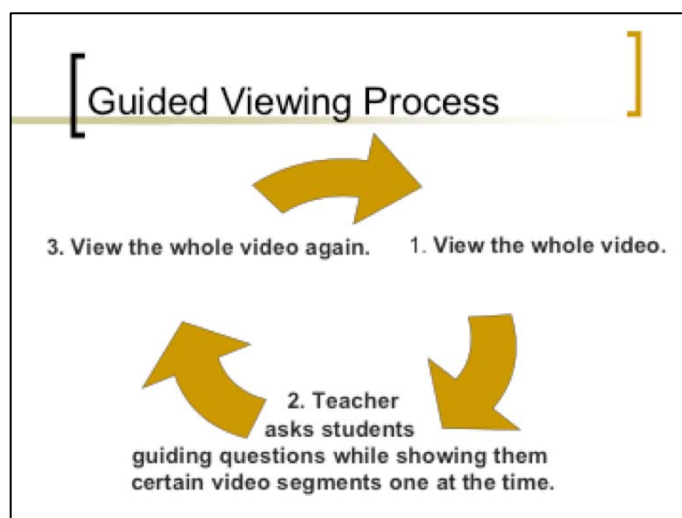
- Serve as a model viewer for the students; views along with the students
- Observe the student viewer's behaviors for evidence of strategy use
- Confirm students' problem-solving attempts and successes

After the video viewing

- Question, discuss and review story content and signs used in the story with the students
- Return to the film for one or two teaching opportunities such as finding evidence or discussing problem solving

### Student's Role in Guided Viewing

- View the whole film
- Request help in problem solving when needed
- Question, discuss and review story content and signs used in the story
- Check predictions and personal reaction to the story or information
- Review the film at points of problem solving with guidance by the teacher



### Detailed Guided Viewing Process

#### Introduce the video:

- Look at the title (and, if available, synopsis), and invite student prediction.
- Focus attention to details of the video that will support the students' reading.
- Model new viewing procession strategies that are the focus for this group.

#### View the video:

- Students view the whole video independently – silently.
- The students are given a purpose for their video viewing.
- The teacher observes and provides support to individuals in the group during the video viewing. The teacher moves from one child to the next focusing on each student's summarization and coach/guide that child whenever necessary. The teacher notes any strategies used.

#### Discuss and revisit the video:

- Students are given an opportunity to talk about what they viewed on the video, discussing what they noticed that was interesting or confusing to them.
- Allow students to make connections to their own experiences and explain their opinions about the content or craft of the video.
- Students should refer to the video to provide evidence from it to back up their interpretations/conclusions.
- Discussions should have a teaching point and reflect the focus for the lesson.

#### Response to the video:

- The response to the video should give students an opportunity to re-engage with it.
- A response should deepen and extend the students' understanding of the video by reviewing, reinterpreting or retelling the video in some way.