The Impact of Language Acquisition and Language Learning On Learning Process:

A Meta-Synthesis

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Abstract

This meta-synthesis explores the correlation between language acquisition and learning. Children who are bilingual have advantages and disadvantages to how they learn. When research first started on this idea, common opinion was that it was a disadvantage to be bilingual. However, as research has progressed more advantages than disadvantages of being bilingual have been found. Furthermore, new ways children can learn language have appeared. Options can include but are not limited to parents and guardians, an immersion program, and/or a dual/multi-language program. An important factor of language acquisition is for children to be fluent in one language before they learn a second language. Children that do not have a firm grasp of their first language combine two language patterns and create a different language. The combining of languages causes them to have challenges throughout their education.

1. Introduction

When infants are born they are comparable to sponges. They soak in all of the information that they can. The research on infant sensory input, performed by Dr. Andrew Meltzoff, explored infants reacting to sensory input in their immediate environment. At a conference, Dr. Andrew Meltzoff mentioned that infants are learners right out of the womb (2015). An experiment was conducted with a child that was 19 hours old. Dr. Meltzoff made different facial expressions to the infant and waited to see how the child would respond. He found that the infant would eventually copy his facial expression (Kuhl, 2015). He was able to demonstrate that infants react to sensory input, or learning, from birth. Dr. Pat Kuhl also elaborated about this, and stated babies are "citizens of the world" (2015) capable of understanding all the different patterns that each language has, which adults tend to have difficulties with. Much of the research states there is, in fact, a critical period for young children to acquire a language; and they all agree that this time falls between ages of 6 months to 8 months since children have not yet made neuron connections in the brain.

Language acquisition and language learning are two different approaches. Language acquisition is the subconscious process of understanding a language without direct grammatical teachings. This is mainly done through conversations and social interactions with a child without them knowing they are learning. On the other hand, language learning is the approach with more direct instruction regarding the way that language works, and includes a more grammatical focus. A child, before school age, tends to acquire a language through social interactions and conversations. By entering school, a child then learns language through direct, grammatical lessons and the lessons on the composition of languages and its syntax.

By the time a babies is 6 months to 8 months, they are creating connections in the part of the brain that deals with speech. The brain processes language in two different specific sites, Broca's area and Wernicke's area. The Broca's area of the brain is responsible for speech pronunciation (Brocas Area, 2017). Speech comprehension is processed in the Wernicke's area of the brain is the; essentially the understanding of the speech comes from here (Cherry, 2017). The only way infants can learn a language is from human interaction. They create neuron connections through human interactions that are crucial to acquiring language. Through human interaction, various statistics of each language are created (Kuhl, 2011). Every time a mother or father speaks to their infant, the Broca's and Wernicke's areas are engaged, and figure out a way to respond to what the infant is hearing (Kuhl, 2015). Infants can hear subtle and distinct sounds in different languages, and we know this because they react to the sensory input. They often can hear sounds that adults can't distinguish because the neuron connections have not yet been established.

As young children grow, they begin to understand not only the structure of language, but also the meaning of the words. They start to comprehend what is being said, what to do with the information, and how to respond back. This normally happens around 18-20 months of age (Werker & Byers-Heinlein, 2008, p.149). Patterns continue to develop in the brain as they get older, and as they practice and use their speech. According to Dr. Kuhl, young children acquiring a language is more likely to speak the language that is spoken by their mother. She also adds that if the first language is not frequently used, the child will not retain it unless both parents continue to speak in two languages so that the child hears the distinct sounds of multiple languages (2006). If children are spoken to in just one language, they will no longer be able to easily create those essential neural connections. Because multiple languages are no longer given to the young

child, they lose the ability to see the patterns in multiple languages (Friedmann & Rusou, 2006, p. 29).

When a child is exposed to two different languages at the same time it creates connections in the brain that see those two languages as combined. By taking two different language patterns, pronunciations and cultures, infants can create a new, broken language. However, that new broken language can hinder fluency in their first language as they have a hard time differentiating between the two languages. This differs from Dr. Kuhl's theories with one parent speaking one language and the other parent speaking another language to the child will help them distinguish the two languages.

This dilemma has given rise to the term "English Language Learners." The so-coined phrase describes students that are "unable to communicate fluently or learn effectively in English, who often come from non-English speaking homes and backgrounds, and who typically require specialization or modifications instruction in both English language and in their academic courses" (Glossary of Education Reform). English Language Learners are often exposed to multiple languages, and can easily form broken language patterns. If not fluent in their first language before they learn the second language, the two language patterns are mixed. As schools are taught primarily in English, an inadequate understanding of the rules, functions, patterns, and pronunciations hinders the English Language Learner. Once a child enters school, it's crucial to answer the following questions: How well does the student know their first language? Where are they at in learning the first language? Based on those answers, teachers and schools can help children learn a second language.

1.2. Author's beliefs and experiences

I have worked in the lower Yukon-Kuskokwim region of Alaska in rural communities for the past 5 years both as a general education teacher (3 years) and a special education teacher (2 years). A majority of these communities are almost exclusively Yup'ik Alaska Natives whose native language is Yugton, with many of the people having at least some knowledge of both Yugton and English. Many of the community members and students do not speak one language fluently over the next. They use a combination of both language patterns to communicate. Many of the students are classified as English Language Learners (ELL) who are not being taught by certified ELL teachers.

When I first became a teacher in a dual language community, I had a hard time understanding why many of my students spoke a form of broken English. For example, they left out key components of sentences (e.g. Asking to go to the bathroom is asked, "Can I bathroom?"), changed the word order and sentence structures. They also had general difficulties learning and transferring academic English into their everyday life. However, over time I learned the patterns of Yugton and how different the two languages are from each other.

The Yugton language is noticeably different from English. They have different pronunciations, parts of speech, and different language patterns. Yugton's language pattern is formed by concepts and lacks many parts of speech (e.g. prepositions) that English has. Adding to the difficulty is the various tongue, cheek and throat muscles used when speaking. English uses the whole mouth while Yugton use the whole mouth and the back of the throat to make guttural sounds.

The current village that I live in has about 750 people. Most of the population is able to speak some Yugton, while other families are fluent in Yugton. A growing concern in the village

is a decreasing proportion of fluent Yugton speakers, and an increasing proportion of fluent English speakers.

To combat the decrease of Yugton fluency many of the schools in the Lower Kuskokwim School District (LKSD) have adopted programs to become "Dual Language" schools. Dual language schools test students when they first come to school. They are tested to see which language is their dominant language, and then they are supposed to be taught in that language. In our school, we have one teacher who teaches Yugton reading, writing and social studies for students and one teacher who teaches English reading, writing and math.

According to Yup'ik Proficiency Test (YPT) and World-class Instructional Design and Assessment (WIDA) testing, a majority of students are fluent neither in Yugton nor in English. They speak a mixture of both. I believe the mixture is due to the early exposure of both languages at home. I have noticed that when students are not fluent in at least one language it hinders their academic learning. They struggle with the academic English because they have never been exposed to it. As they continue in school, they not only fall behind in their English speaking skills, they also fall behind academically because they don't understand the language that is being taught to them.

Through my experiences as a teacher in rural Alaska I am led to ask and research the following questions:

1. How do infants acquire language, and how does that acquisition impact their learning for the rest of their lives?

2. How are students impacted by not being fluent in their first language vs. students who are fluent in their first language before they learn a second language?

3. What is the education system doing to help students who are not fluent in their first

    language before they learn the second language? Does learning a new language and

    academic content provide students with what they really need to know?

4. What is the cognitive impact on students who speak more than one language? What are

    the advantages and disadvantages cognitively?

1.3. Purpose of this meta-synthesis

This meta-synthesis had multiple purposes. One purpose was to look at how language

acquisition affects the brain and how a child uses the acquired language. The second purpose was

to look at language proficiency in two languages and how that impacts learning. The third

purpose was to see how cognitive development is affected when a child is bilingual. The fourth

purpose was to see how dual/multi-language programs impact the learning process. The final

process is focusing on the Native American language and how it impacts the academic

achievement in rural Alaska.

2. Methods

2.1. Selection criteria

The 44 journal articles included in this meta-synthesis met the following selection criteria.

1. The articles explored issues related to Bilinguals and cognitive development.

2. The articles explored issues related to language acquisition and learning.

3. The articles explored issues related to ELL and language dominance.

4. The articles explored issues related to Bilingual education programs.

5. The articles explored issues related language patterns and academic achievement.

6. The articles explored issues related to Indian English and education.

7. The articles were published between 1983 and 2017.

2.2. Search procedures

Database searches and ancestral searches were conducted to locate articles for this meta-synthesis.

2.2.1 Database searches

In the autumn of 2018, I conducted systematic searches in two main databases: Education Research Information Center database (ERIC, Ebscohost), and Journal Storage (JSTOR, Ebscohost) using these specific search terms:

1. ("Language Acquisition") and ("Learning")

2. ("Education Fluent") and ("Child Language")

3. ("Bilingual Education") and (" ELL") and ("Language Dominance")

4. ("ELL") and ("Early Education") and ("Fluent")

5. ("Second Language Learning") and ("Bilingual")

6. ("Academic Achievement") and ("Native Americans")

7. ("Academic Achievement") and ("Language Gap")

8. ("Reservation English") and ("Learning")

9. ("Indian English") and ("Learning")

10. ("Language Patterns") and ("Cognitive development")

11. ("Cognitive development") and ("Language Acquisition")

12. ("Bilingual Education Programs") and ("Language proficiency")

The multitude of searches produced 44 articles that met the search criteria (Ahler, 2007; Al-Shujariri, Buba, &Ya'u 2015; Bloch, Kaiser, Kuenzli, Zappatore, Haller, Franceschini, Luedi, Radue, & Nitsch, 2008; Brocas Area, 2017; Brown, Hammond, & Onikama, 1997; Carjuzaa & Ruff, 2016; Carlson & Meltzoff, 2008; Cherry, 2017; Clark, 2000; Cohen, 2015; Cromdal, 1999;

Crow & O'Leary, 2015; Cummins, 1983; Demmert, 1993; Diaz, 1983; Diaz, 1985; Education

Reform, 2013; Fishman, 1996; Hansen, Morales, Macizo, Dunabeitia, Saldana, Carreiras,

Fuentes, & Bajo, 2017; Hardy, Kempert, & Saalbach, 2011; Hart & Risely, 1995; Hinton, 2003;

Ianco-Worrall, 1972; Johnson, Avineri, & Johnson, 2016; Kassler, 1984; Kuhl, 2011; Kuhl &

Meltzoff, 2015; Li & Edwards, 2010; Maxwell-Jolly, 2011; Molyneux, Scull & Aliani, 2015;

Niehaus & Adelson, 2014; Ortiz, Robertson, Wilkinson, Liu, McGhee, & Kushner, 2011;

Partnership, G.S. 2013; Paul & Gramly, 1986; Pelham & Abrams, 2013; Sharp, 1994; Some-

Guiebre, 2015; St. Charles & Constanino, 2000; Stephan, 2012; Sunasiku, Kasanda, & Smit,

2015; Tharp & Yamauchi, 2014; Titone, 1978; Umansky & Reardon, 2014; Wells, 1986).

2.2.2 Ancestral searches

An ancestral search includes reviewing the reference list of previously published works to

locate one's topic of interest (Welch, Brownell, & Sheridan, 1999). I conducted ancestral

searches of the reference list of the articles obtained through my previous received articles.

These ancestral searches produced seven additional articles that met the search criteria

(Carlson& Meltzoff, 2008; Cromdal, 1999; Diaz, 1983; Hart & Risley, 1995; Ianco-Worrall,

1972; Li & Edwards, 2010; Wells, 1986).

2.3. Coding procedures

I used a coding procedure to categorize the information accessible in each of the 44

articles. The coding was created based on: (a) publication type, (b) research design, (c)

participants, (d) data sources, and (e) findings of the studies.

2.3.1. Publication type

Each journal article was evaluated and classified according to publication type (e.g. research study, informational, literary review, Opinion Piece/Position Paper, guide). *Research studies* use systematic methods to gather and analyze quantitative and/or qualitative data. *Informational articles* take data from previous studies, and analyze and compile it into a brochure or packet that is easy to understand. *Literary review* articles summarize relevant literature on a specific topic and find important themes from the literature. *Opinion Piece/Position Paper* expresses the author's opinion or state a specific position directed towards a specific issue, mainly based off of the author's experiences or philosophical ideas. *Guides* endorse specific strategies and/or explain how to implement specific programs, curricula and policies (Table 1).

2.3.2. Research design

Quantitative researchers collect structured and statistical data, and then analyze the data. *Qualitative* researchers gather their data through identifying the motives behind people's attitudes in telling their own stories. *Mixed Method* uses a combination of the qualitative and quantitative to do a study (Table 2).

2.3.3. Participants, data sources, and findings

I identified the participants in each study (e.g., preschool students who were bilingual, bilingual students, bilingual programs, Native American learning, bilingualism and academic achievement). I also analyzed data sources used in each study (e.g., observations, interviews, focus groups, surveys, standardized test). Finally I summarized the findings of each study (Table 2).

2.4. Data analysis

I used a modified version of the Stevick-Colaizzi-Keen method previously employed by Duke (2011) and Duke and Ward (2009) to analyze the 44 articles in this meta-synthesis. I first identified significant statements within each article. For this meta-synthesis, I defined significant statement as statements that addressed issues related to: (a) brain development and language; (b) young children and home language; (c) bilingualism and its impact on cognitive development; (d) Native American language; (e) English language learners (ELL) in the mainstream classroom; (f) dual/multi-language programs. I then generated a list of non-repetitive, verbatim significant statements with paraphrased formulated meanings. These paraphrased formulated meanings represented my interpretation and understanding on significant statement. Finally, I grouped all the formulated meanings into theme clusters (emergent themes) that produced the essence and content of the entire body of literature for this meta-synthesis.

3. Results

3.1. Publication type

I discovered 44 articles that met my selection criteria. The publication type of each article is acknowledged in Table 1. Eighteen of the 44 articles (40.9%) included in this meta-synthesis were research studies (Ahler, 2007; Al-Shujariri, Buba, &Ya'u 2015; Bloch, Kaiser, Kuenzli, Zappatore, Haller, Franceschini, Luedi, Radue, & Nitsch, 2008; Carlson & Meltzoff, 2008; Cromdal, 1999; Diaz, 1985; Hansen, Morales, Macizo, Dunabeitia, Saldana, Carreiras, Fuentes, & Bajo, 2017; Hardy, Kempert, & Saalbach, 2011; Hart & Risley, 1995; Ianco-Worrall, 1972; Molyneux, Scull & Aliani, 2015; Niehaus & Adelson, 2014; Ortiz, Robertson, Wilkinson, Liu, McGhee, & Kushner, 2011; Pelham & Abrams, 2013; Some-Guiebre, 2015; Stephan, 2012; Sunasiku, Kasanda, & Smit, 2015; Umansky & Reardon, 2014). Ten of the 44 (22.7%) articles were informational (Brocas Area, 2017; Cherry, 2017; Clark,

2000; Education Reform, 2013; Kuhl, 2011; Kuhl & Meltzoff, 2015; Maxwell-Jolly, 2011; Partnership, G.S. 2013; St. Charles & Constanino, 2000; Wells, 1986). Seven of the 44 articles (15.9%) were literary review articles (Brown, Hammond, & Onikama, 1997; Carjuzaa & Ruff, 2016; Cummins, 1983; Diaz, 1983; Johnson, Avineri, & Johnson, 2016; Tharp & Yamauchi, 2014; Titone, 1978). Eight of the 44 articles (18.1%) were Opinion Piece/Position Papers (Cohen, 2015; Demmert, 1993; Fishman, 1996; Hinton, 2003; Kassler, 1984; Li & Edwards, 2010; Paul & Gramly, 1986; Sharp, 1994).

Table 1

Author(s) & Year of Publication	Publication Type
Ahler, 2007	Research Study
Al-Shujariri, Buba &Ya'u 2015	Research Study
Bloch, Kaiser, Kuenzli, Zappatore, Haller, Franceschini, Luedi, Radue & Nitsch, 2008	Research Study
Brocas Area, 2017	Informational
Brown, Hammond & Onikama, 1997	Literary Review
Carjuzaa & Ruff, 2016	Literary Review
Carlson & Meltzoff, 2008	Research Study
Cherry, 2017	Informational
Clark, 2000	Informational
Cohen, 2015	Opinion Piece/Position Paper
Cromdal, 1999	Research Study
Crow & O'Leary, 2015	Guide
Cummins, 1983	Literary Review
Demmert, 1993	Opinion Piece/Position Paper
Diaz, 1983	Literary Review

Diaz, 1985	Research Study
Education Reform, 2013	Informational
Fishman, 1996	Opinion Piece/Position Paper
Hansen, Morales, Macizo, Dunabeitia, Saldana, Carreiras, Fuentes & Bajo, 2017	Research Study
Hardy, Kempert & Saalbach, 2011	Research Study
Hart & Risely, 1995	Research Study
Hinton, 2003	Opinion Piece/Position Paper
Ianco-Worrall, 1972	Research Study
Johnson, Avineri & Johnson, 2016	Literary Review
Kassler, 1984	Opinion Piece/Position Paper
Kuhl, 2011	Informational
Kuhl & Meltzoff, 2015	Informational
Li & Edwards, 2010	Opinion Piece/Position Paper
Maxwell-Jolly, 2011	Informational
Molyneux, Scull & Aliani, 2015	Research Study
Niehaus & Adelson, 2014	Research Study
Ortiz, Robertson, Wilkinson, Liu, McGhee & Kushner, 2011	Research Study
Partnership, G.S. 2013	Informational
Paul & Gramly, 1986	Opinion Piece/Position Paper
Pelham & Abrams, 2013	Research Study
Sharp, 1994	Opinion Piece/Position Paper
Some-Guiebre, 2015	Research Study
St. Charles & Constanino, 2000	Informational
Stephan, 2012	Research Study

Sunasiku, Kasanda & Smit, 2015	Research Study
Tharp & Yamauchi, 2014	Literary Review
Titone, 1978	Literary Review
Umansky & Reardon, 2014	Research Study
Wells, 1986	Informational

3.2. Research design, participants, data sources, and findings of the studies

As I previously stated, I found 18 research studies that met my selection criteria (Ahler, 2007; Al-Shujariri, Buba, &Ya'u 2015; Bloch, Kaiser, Kuenzli, Zappatore, Haller, Franceschini, Luedi, Radue, & Nitsch, 2008; Carlson & Meltzoff, 2008; Cromdal, 1999; Diaz, 1985; Hansen, Morales, Macizo, Dunabeitia, Saldana, Carreiras, Fuentes, & Bajo, 2017; Hardy, Kempert, & Saalbach, 2011; Hart & Risley, 1995; Ianco-Worrall, 1972; Molyneux, Scull & Aliani, 2015; Niehaus & Adelson, 2014; Ortiz, Robertson, Wilkinson, Liu, McGhee, & Kushner, 2011; Pelham & Abrams, 2013; Some-Guiebre, 2015; Stephan, 2012; Sunasiku, Kasanda, & Smit, 2015; Umansky & Reardon, 2014). The research design, participants, data sources and findings are in Table 2.

Table 2

Authors	Research Design	Participants	Data Sources	Findings
Ahler, 2007	Qualitative	30 years of research on Native Language programs in Native American reservations in the Northern Plains.	Participant-Observation, in-depth interview	Bilingual programs are not working in the schools. Due to underfunding, teachers who know the NA language are not properly taught in how to teach the language

				and the cultural differences.
Al-Shujariri, Buba &, Ya'u 2015	Quantitative	10 Nigerians postgraduate students in Malaysia. Group 1: 5 students who are early bilinguals. Group 2: 5 students who are late bilinguals.	6 trials of the Flanker Task: indicate congruent and incongruent by locating it on the keyboard and pressing it.	Postgraduate students who have been speaking two languages longer have a better cognitive control than those who were late learners of a second language.
Bloch, Kaiser, Kuenzli, Zappatore, Haller, Franceschini, Luedi, Radue, & Nitsch, 2008	Mixed Method	44 multilingual subjects proficient in at least three languages	fMRI while telling a narration in a language then retelling the narration in a different language.	There was no major difference in the Broca's and Wernicke's area for one language. With two languages there were various images, from the fMRI images that were done, in the Broca's and Wernicke's area.
Carlson & Meltzoff, 2008	Mixed Method	50 kindergarten students with their parents or legal guardians. 12 Bilinguals students.	Language background questionnaire, playroom session (that was videotaped where they conducted these tasks: Comprehensive Test of Nonverbal Intelligences, Expressive One-Word Picture Vocabulary test (Spanish/English), Dimensional Change Card Sort, Simon Says, Delay of gratification,	The socio-economic status of the student varied on how well the students performed in both languages. It is unable to tell if the high-level of proficiency contributes to brain development.

			Kansas Reflection-Impulsivity Scale, Visually Cued Recall, Statue, Gift Delay, and Attention Network Task	
Cromdal, 1999	Quantitative	40 bilingual and 16 monolinguals in Stockholm.	Tested individually: picture vocabulary, symbol substitution and sentence judgment and correction. Bilingual children received it in Swedish and English, while monolingual just took the Swedish test.	Bilingual children are able to control the substitution task and perform; therefore, have a high control of processing linguistic information.
Diaz, 1985	Quantitative	170 Spanish dominant ages 5-7, Kindergarten/1st grade bilingual classes.	Peabody Picture Vocabulary Test, verbal and spatial administers, speech samples, reading in English and Spanish, then at the end of the year the testing was given again with out speech samples	Cognitively there is no negative debilitation for young, bilingual children. The level of bilingualism also plays a large role for the second-language development. The socio-economic status also effects second-language proficiency. Due to the amount of vocabulary that the parents or guardian know.
Hansen, Morales, Macizo, Dunabeitia, Saldana, Carreiras,	Mixed-Method	144 children, ages 7-14, are all native Spanish speakers. 72 were enrolled in	Questionnaire was used for background knowledge, academics, and psychological	Language one (Spanish) and student enrolled in an immersion program have different

Fuentes &, Bajo, 2017		an English immersion program. 72 attended a monolingual school.	conditions. Kaufman Brief Intelligence test, phoneme deletion task, rapid automatic naming, lexical decision task, orthographic skill, morphological awareness, adapted Prolec-R test, Long term/working memory, and reading comprehension.	developmental states. Emerging bilinguals didn't differ from monolingual peers in reading comprehension, no matter the pacing. Even with similar scores on the reading tasks monolinguals scored higher with linguistic processing and memory and reasoning component. In the Language 2 immersion program and monolinguals show similar reading comprehension scores.
Hardy, Kempert &, Saalbach 2011	Quantitative	78 third graders from 5 different schools in Berlin and Frankfurt. 44 were bilingual students. 34 were German monolinguals.	Two individual testing sessions for bilingual and monolingual students.	Proficiency in a language impacts how the student can solve mathematical word problems correctly. The way that the student understands the vocabulary is important. For example students who are strong in German were more likely to solve a mathematical problem in German than students who were low in German.

				The routines of using two languages help promote executive control skills.
Hart & Risley, 1995	Qualitative	7 month old till they were 3 years old children from 44 families	Observations one hour per week from 7-month-old to 3 years old.	Children learn from their parents and mimic what they hear their parents say and do. If the parent uses a high vocabulary then the child will use a high vocabulary. The parents impact the life of their children language.
Ianco-Worrall, 1972	Mixed Method	30 Afrikaans-English bilinguals, ages 4-9, taken place in Pretoria, South Africa	Interviews of parents, Questionnaires, Tested	Bilinguals brought up in a one-language home reach a systematic development a couple years earlier then their monolingual peers. Many bilinguals see vocabulary words as symbols and not as the acoustic properties they are. Bilinguals are able to put a symbol or item with what the vocabulary word is much better then their monolingual peers.
Molyneux, Scull &, Aliani, 2015	Qualitative	Australian Bilingual education program	Classroom observations, records of students' English and Karen progress, AusVELs, student	There is four core elements, which they must have to help in a classroom context: pedagogy (relevant purpose put on

			self assessment, staff interviews, parent questionnaires	reading, writing, speaking and listening), transfer (specific times of when to use either language to help students), identity (positive construction within the classroom), and Capital (affirmation of language and cultural knowledge working with the community). When these 4 things are together then the child was likely to grown in both English and Karen proficiency.
Niehaus & Adelson, 2014	Mixed Method	Participants were drawn from Early Childhood Longitudinal study- Kindergarten Cohort of 1998. 21,000 children ages Kindergarten to 8th grade.	Language status, Parent interviews, Teacher surveys, School admin surveys, Reading/Math surveys, Modified SDQ-1	There were more social emotional problems for ELLs when from a lower SES. When ELLs had more school support services they had lower academic achievement and more social emotional problems. ELLs had a higher-level academic achievement had less social emotional problems when parents were involved with their children. Schools have to be the ones

				to implement the program.
Ortiz, Robertson, Wilkinson, Liu, McGhee, & Kushner, 2011	Mixed Method	**Study 1:** 21 with reading related LD; **Study 2:** 5 with SLI and 5 with LD in other areas; **Study 3:** students with SLI before they were classified with a LD.	Archival data on each student, health and social histories, Full and Individual Evaluations, Records, Study of initial referral and MDT eligibility	In all studies, bilingual education teachers are crucial in helping students to succeed academically, and support students who struggle with a learning disability.
Pelham & Abrams, 2013	Quantitative	30 monolingual English speakers, 30 late bilingual fluent (Spanish/English) speakers, 30 early bilingual (Spanish/English) undergraduate and graduate students	Lexical access: Picture naming, Executive function: Attention network task	Late bilinguals perform similar to early bilinguals with lexical access and executive function. Cognitive effects are not affected by age of learning learned language.
Some-Guiebre, 2015	Qualitative	2 5th graders fluent in French, One of them just moved to the U.S five months ago. The other one was beginning the third year of schooling in the U.S.	Observations, interviews, informal conversations	Students fall behind when they are not fluent in English, they loose the content that is being taught. It is a struggle when the mainstream teachers and the ELL teachers do not communicate. They felt empowered because they could speak their language at school.
Stephan, 2012	Quantitative	155 elementary students, 72 graduating class of 2022, 39 in the dual	District records, WIDA testing, Dynamic Indicators of Basic Early Literacy	The dual language program is working for that school. There is no big significance

		immersion class, and 33 in mainstream classrooms, 15 moved away.	Skills,	difference between Dual immersion and the mainstream students.
Sunasiku, Kasanda, Smit, 2015	Qualitative	10th grade ESL teachers	Questionnaire, Observation checklist	Code switching has positives and negatives. If teachers know when to use code switching and when it is appropriate they can increase the academic achievement of their students.
Umansky, Reardon, 2014	Quantitative	9 Cohorts of kindergarten students who were in EL programs	District data for 12 years, instructional programs, reclassification of students.	It takes EL students many years (8) to be reclassified in the mainstream classroom. Reclassification happens at the end of a schooling cycle and it isn't really based off of eligibility.

3.2.1. Research design

Five of the 18 studies (27.7%) included in this meta-synthesis employed a qualitative

research design (Ahler, 2007; Hart & Risley, 1995; Molyneux, Scull & Aliani, 2015; Some-

Guiebre, 2015; Sunasiku, Kasanda, Smit, 2015). Seven of the 18 (38.8%) studies use quantitative

research design (Al-Shujariri, Buba &, Ya'u 2015; Cromdal, 1999; Diaz, 1985; Hardy, Kempert

&, Saalbach 2011; Pelham & Abrams, 2013; Stephan, 2012; Umansky, Reardon, 2014). Five of

the 18 (27.7%) studies use mixed method research design. (Bloch, Kaiser, Kuenzli, Zappatore,

Haller, Franceschini, Luedi, Radue, & Nitsch, 2008; Carlson & Meltzoff, 2008; Hansen,

Morales, Macizo, Dunabeitia, Saldana, Carreiras, Fuentes &, Bajo, 2017; Ianco-Worrall, 1972;

Ortiz, Robertson, Wilkinson, Liu, McGhee, & Kushner, 2011).

3.2.2. Participants and data sources

The 18 studies included in this meta-synthesis analyzed data collected from

undergraduate/postgraduate bilingual students, bilingual/multilingual and monolingual students,

bilingual immersion/dual language programs, teachers of ESL/ELL and families of young

children. Two of the studies (11.1%) analyzed data collected from undergraduate/postgraduate

students (Al-Shujariri, Buba &, Ya'u 2015; Pelham & Abrams, 2013). Five of the studies

(27.7%) analyzed data from bilingual/multilingual and monolingual students (Bloch, Kaiser,

Kuenzli, Zappatore, Haller, Franceschini, Luedi, Radue, & Nitsch, 2008; Carlson & Meltzoff,

2008; Cromdal, 1999; Hardy, Kempert &, Saalbach 2011; Ianco-Worrall, 1972) Seven of the

studies (38.8%) were bilingual immersion/dual language programs (Ahler, 2007; Diaz, 1985;

Hansen, Morales, Macizo, Dunabeitia, Saldana, Carreiras, Fuentes &, Bajo, 2017; Molyneux,

Scull &, Aliani, 2015; Some-Guiebre, 2015; Stephan, 2012; Umansky, Reardon, 2014). Two of

the studies (11.1%) analyzed data collected from teachers of ESL/ELLs (Ortiz, Robertson,

Wilkinson, Liu, McGhee, & Kushner, 2011; Sunasiku, Kasanda, Smit, 2015). Two of the studies

(11.1%) analyzed data collected from families of young children (Hart & Risley, 1995; Niehaus

& Adelson, 2014).

Most of the studies used observation/interviews/questionnaires, various tasks, various

test/ previous test data, and brain scanning. Seven of the 18 studies (38.8%) used

observation/interviews/questionnaires to gather their data (Ahler, 2007; Hart & Risley, 1995;

Ianco-Worrall, 1972; Molyneux, Scull &, Aliani, 2015; Niehaus & Adelson, 2014; Some-

Guiebre, 2015; Sunasiku, Kasanda, Smit, 2015). Two of the studies (11.1%) used various tasks

to gather their data (Al-Shujariri, Buba &, Ya'u 2015; Pelham & Abrams, 2013). Eight of the

studies (44.4%) used various test and previous test data to gather their data (Carlson & Meltzoff,

2008; Cromdal, 1999; Diaz, 1985; Hansen, Morales, Macizo, Dunabeitia, Saldana, Carreiras,

Fuentes &, Bajo, 2017; Hardy, Kempert &, Saalbach 2011; Ortiz, Robertson, Wilkinson, Liu,

McGhee, & Kushner, 2011; Stephan, 2012; Umansky, Reardon, 2014). One of the studies (.55%)

used brain scanning to gather their data (Bloch, Kaiser, Kuenzli, Zappatore, Haller, Franceschini,

Luedi, Radue, & Nitsch, 2008).

3.2.3. Findings of the studies

The findings of the 18 research studies included in this meta-synthesis can be

summarized as follows:

1. Dual/multi-language programs are working in some communities. In others, it doesn't

   have enough funding to be successful. In order for dual/multi-language programs to be

   successful, general education teachers, ELL teachers and parents of the ELL have to

   work together. One of the most important aspects of dual/multi-language programs is the

   structured time when to use either language. To be successful, educators have to have

   support and knowledge of children speaking two languages to support them.

2. The longer the child has spoken their first language the higher the cognitive control they

   have. Bilingual children are able to control substitution task and have higher linguistic

   information and executive functioning. Monolinguals scored higher with linguistic

   processing and memory reasoning.

3. The socio-economic status of the family impacts language proficiency. It also affects the

   social-emotional concerns of the child and the academic achievement of the child. When

   parents are involved, the children will have fewer social-emotional concerns and higher

academic achievement. Parents have a huge impact on their children's linguistic abilities and how it affects them throughout their life.

4. Proficiency in a language impacts how well the student will perform in that language both academically and socially. Proficiency in a language will impact how well they do learning a second language.

3.3. Emergent themes

Six themes emerged from my analysis of 44 articles in this meta-synthesis. These emergent themes, or theme clusters include: (a) brain development and language; (b) young children and home language; (c) bilingualism and its impact on cognitive development; (d) Native American language; (e) English language learners (ELL) in the mainstream classroom; (f) dual/multi-language program. These six theme clusters and formulated meanings are represented in Table 3.

Table 3

Theme Clusters	Formulated Meanings
Brain Development and Language	• From birth, infant brains are comparable to sponges. • Infants can hear certain sounds in different languages that adults can't hear. • Between six to eight months infant brains develop connections in language acquisition. • Wernicke's , area of the brain, aids speech comprehension. • Broca's , area of the brain, aids speech pronunciation. • The Broca's and Wernicke's area create neuron connections when exposed to a language. • Between 18-20 months children develop language fluency skills. • Speech organization is crucial for children as it impacts speech patterns the rest of their life. • Human interaction is important for young children.

Young Children and Home Language	- Children, in the first three years, acquire a language similar to their parents and guardians. - When parents and guardians not fluent in the second language desire their children to be fluent in the second language, complex ideas can't be expressed. - Parents and guardians not fluent in a second language often do not speak to their children using the second language. - Parents and guardians fluent in a second language often will have children fluent in a second language as well. - Conversational interactions with children are important to language acquisition. - Singing, story telling, reading and solving problem aid cognitive development. - Children need linguistic support and nurturing in a bilingual environment. - Language and literacy are learned alongside each other. - To avoid word gaps, early exposure is critical for language acquisition. - When children have a higher level of language proficiency it helps their ability to monitor and regulate processing information. - Acquiring other languages improves when fully exposed to their first language. - Every interaction children have is an opportunity to learn. - One on one conversation is important as it teaches children to organize language. - By age 6, children are competent language users.
Bilingualism and its Impact on Cognitive Development	- With previous research they used to think that students who are bilinguals were harmed cognitively. - Teaching a second language is difficult if the first language hasn't been mastered. - Depending on child, younger children master a second language quicker than they would as adults. - Executive functioning and memory is higher in students who are bilingual. - Linguistic competence must be attained to help children grow cognitively. - Proficiency in a language is helpful for cognitive skills. - Cognitive skills can be harmed if not proficient in a language. - There are advantages and disadvantages being bilingual. - Bilinguals have a larger productivity and receptive vocabulary in one language over the second language. - When students don't have a high level of proficiency in the second language it can cause more challenges because of that.

Native American Language	- A common language is important to any community in maintaining traditional values. - Native Americans (NA) were put into boarding schools and not permitted to use their language and scared students into learning English. - NA students have specific learning needs and a different learning style due to their language input. - NAs enter school with various speaking patterns of English due to their NA language influence. - Teachers need to understand the speaking patterns of the NA language as a basis to teach English. - Many NA are not fluent in the NA language and don't have fluency in English either. - Many NA's speak a non-standard English due to their community's lack of second language input, thus creating poor code-switching between both languages. - Due to poor code-switching a blended form of communication is created to help them communicate with others. - The whole school has to be in agreement teaching students both the NA language and English for them to become fluent in both languages. - Communities, parents and the school ought to work together to help NA students to gain language fluency. - It was hard to bring in the NA language into the schools because of funding. - Teachers have to be intentional with the way that they teach, they have to teach language and content objectives. - Three models of teaching NA: A Klawock community is involved in the evenings, teaching students about the culture along side teaching the language. In the Lower Kuskokwim School District, students have half-days focused on Yup'ik culture and its language and the other half in English. In a Hawaiian community, formal English instruction is given and the NA language is offered as a class.

| English Language Learners (ELL) in the Mainstream Classroom | ELL are challenged communicating fluently or learning productively in English. When students are academic literate in the first language they use those skills to aid them in becoming literate in another language. ELL apply what they know of the first language to help them learn the second language. When children learn things at school they must also have the opportunity to practice them outside of school. This can be challenging when the parents don't speak English fluently. Focus on learning language and not just content vocabulary. ELL have to learn a new language alongside new content. ELL need an extended period of time on the content. ELL have fewer social and emotional problems when they receive support from school and home. Schools need support for parents and guardians of ELL. In order for ELL to be successful schools and the community need to work together. Bilingual education teachers play a role in preventing student academic failures. Literacy in their first language promotes literacy in English, and how much they grow in English literacy. ELL learn best through comprehensible input and background of content knowledge. A focus on grammar slows the language acquisition. ELL must learn the first language well in order to help them acquire the second language easier. The classification process of ELL is challenging because it is hard differentiate between learning disabilities and ELL. It is important for teachers to provide high quality instruction with a rigorous curriculum to support ELL. Teachers need to adapt instruction to a holistic emphasis. Students need to learn to rely on each other and learn interpersonal skills and group skills. Teachers need to have multi-sensory instruction. Teachers must be aware of the first language and the culture background. Children have to go through different stages to achieve language development in two languages. There isn't always a direct translation between the two languages. |

Dual/Multi-Language Programs	• Everyone benefits from a good dual/multi-language program.
	• Many students use their first language to help solve complex math problems instead of their second language.
	• The first language is used for more abstract math problems than the second language.
	• Code-switching is used in complex, linguistic situations.
	• It is important that dual/multi-language programs know when to allow students to use the first language and second language.
	• As the second language improves, allowing students to collaborate on complex ideas aids in language acquisition.
	• There are not always high expectations for students in dual/multi-language program.
	• Second language teachers haven't always been able to teach things in the students' first language.
	• When children with disabilities are struggling with learning English it may benefit them to be removed from the mainstream classroom.
	• Teachers need to have high structure for they're to be success in dual/multi-language program.

4. Discussion

4.1. Brain Development and Language

Language acquisition happens subconsciously for infants and young children. Infants are creating many neuron connections from birth by what they see, hear and feel. There are two main parts of the brain that help infants acquire language. The Broca's area that aids with speech pronunciation allows infants to hear tonal differences in languages that adults can't hear. The Wernicke's area that aids with speech comprehension of what is being said. As infants grow older they start to develop language skills and begin to organize speech that is heard and speech that is spoken. Therefore, it is crucial for children to have human interactions, and conversations with those around them to learn how the language is patterned.

As a teacher, it is important to know the difference between acquiring a language and learning a language. I have noticed in my classroom that many students speak the way they were spoken to since birth. I know this from the interactions that I have had with parents and

guardians. This is noted because often parents and guardians are not fluent in one language and use a mixture of two languages (Yup'ik and English). The child acquires a mixture of two languages and struggles with a standard of either of the languages. Due to the mixture of both languages, I believe teachers in rural Alaska are English Language teachers even without an ELL certification. They have to use many different learning styles to help students understand the content.

Dr. Kuhl states that if a child is to become bilingual they have a very narrow window in which to do that, from 6 months to 8 months, a child has the opportunity to hear the distinct sounds in the different languages. This is because of the neurons connections that have yet to be established. As long as the parents continue to talk to the child in both languages the child will be able to learn two languages at once, and will eventually be come fluent in both languages. Which differs from learning one language fluently then learning a second language.

For myself, understanding how the brain develops and how it pertains to language acquisition has helped me teach better. For example, many students benefit from sentence starters for their speaking and writing. When students are given a model of how things are supposed to be written and spoken, they eventually learn to do it on their own and implement what they have seen in the model. This is a gradual process and scaffolding is involved. Otherwise, students will learn to depend upon the modeling and never implement it in their own way. I can't go back and speak to the student in either language, they walk into my classroom and I do my best with what I know to help them learn.

4.2. Young Children and Home Language

Children need interaction with others in order to acquire and learn how language works from those interactions. It helps them organize the language. Children acquire language and its

patterns similar to their parents and guardians within the first three years of their life. Parents and guardians can help their children acquire language by talking, singing, story telling, reading, and solving problems with their kids. Parents interacting with their child by reading are crucial as their children continue to acquire a language. As children grow in their language proficiency in the second language their cognitive level will also grow. It affects children when they do not speak their first language fluently because they struggle with learning a second language.

By school age, children may be required to learn a second language that parents don't know due to their entry in a classroom. The introduction to a second language at school can be challenging for parents and guardians, as they can't express complex ideas to their children in the second language. Parents and guardians may also feel like they can't communicate to their child in that language so will limit the communication to what they know of the new language.

As a teacher, understanding how the home language affects young children is important. By the time children enter school they should be competent language users in their home language. When a child comes into school not speaking their home language they have to learn a new language alongside its academic content. This helps me understand that I need to allow more processing time for students when I teach content and to put academic content in context that is easier for them to understand. My awareness increases in how I teach academic content and how to scaffold it in such a way for students to master a concept.

Understanding the impact of how parents and guardians interact socially with their children helped me understand the importance of meeting students at their level, and not to expect them to make advanced academic movements without missing key steps. Meeting students where they are at gives students the opportunity to process and understand how a concept works while with challenging them. It is a balancing act that teachers have to take into

account for every student that is in their classroom. This is challenging to do in a general education classroom; however, where teachers have to utilize their best resources in making accommodations. In a special education classroom teachers have an opportunity to work more closely with students to help them on an individual basis. I am able to work on the language concerns that I have with them throughout the day. This helps them advance at a much faster pace then they could in the general education classroom.

4.3. Bilingualism and its Impact on Cognitive Development

When researchers first investigated bilingualism and its impact on children's cognitive development they thought it would hinder their cognitive level. Children would be missing key components in mastering their first language if they became bilingual. However, as researchers continue to investigate the impact of bilingualism on cognitive development, they have found there are advantages and disadvantages to the cognitive development with some variables. One such variable depends on mastery of their first language. If a child hasn't mastered their first language they will struggle mastering a second language. Often, the first language is a base to teach the second language. Another variable is that the mastery of their first language depends on their upbringing. A third is the proficiency of the first language depends on the cognitive skills that are acquired. A child not proficient in their first language, cognitively, is more likely to be at a disadvantage. Overall, it depends on the child and how they were brought up along with how fluent they are in their first language. Dr. Pat Kuhl suggested that 6 months to 8 months is the age where infants can hear different dialect tones. They recognize the tones of the two languages spoken to them and grow up learning two different languages. When students have a high proficiency in a language they have a higher level of executive functioning and their memory is higher than those who are monolingual.

As a teacher, one thing that I have had to look for in the classroom is how well students know their first language. The vocabulary base of their first language is what I use for their second language as I teach them content. By me understanding how their first language works is helpful for scaffolding the work that is given to them. If a child missed a key step in their cognitive development because they were not proficient in their first language, I figure out where the student is at and adjust the content accordingly. Due to various proficiency levels of Yup'ik in my classroom, I have to find the correct vocabulary that I want them to know and teach the content as needed.

4.4. Native American Language

Having a common language is key to helping any culture thrive in a world that continues to change. Many Native Americans/Native Alaskans (NA) were put into boarding schools, not permitted to speak their native tongue and forced to learn English. This was a challenge for many NA due to the fact that they have different learning styles and needs than those who were enforcing English upon them. They were asked to learn things in a style that didn't attain to their traditional way of life. Teachers didn't care to learn about NA tradition or cultural values. It was hard for many NA to speak English due to speaking pattern differences in English with their in the native tongue. The teachers didn't understand the speaking patterns of the NA languages, and therefore, were not able to transfer that into how they taught English and academic content to their students.

Boarding schools were removed in the 1970s, but their impact still affects the NA culture today. Now, many schools are trying to incorporate the NA languages into the school system through dual/multi-language programs. They have found with the dual/multi-language programs that NA students are neither fluent in their native tongue nor in English. Students use a

combination of what they know of the two language patterns to code-switch to be able to communicate with others. Schools can't be the only entity involved in the dual/multi-language programs. The community, parents and schools all have to work together to help students reach proficiency in both languages. The dual/multi-language programs system has to be intentional with what they teach students and how they teach the students. They have to have a rigorous program alongside a strong curriculum to be successful.

Since I started teaching, I've worked at schools that have dual/multi-language programs. I have found dual/multi-language programs to have advantages and disadvantages. I have noted the disregard boarding schools gave the NA culture - most notably in the lack of traditional values. I have found that many students enter school speaking a combination of English and Yup'ik to communicate. This combination of languages can be challenging for students to express complex ideas verbally and write well. For example, students would say, "I go bathroom." Meaning, "Can I go to the bathroom?" The Yup'ik language is spoken in terms of concepts and excludes prepositions that are common to the English language. Through this research and understanding the Yup'ik language pattern, I was able to identify where my students were coming from and how to enhance their learning.

As a teacher, I have had to modify how I teach students and how I approach teaching. I have found that bringing the culture into the classroom is one of the most successful ways to do to incorporate complex ideas and writing. To be involved in the community and to have the students teach you about the culture shows pride for their culture. The students are willing to teach people about their community and traditional values.

4.5. *English Language Learners (ELL) in the Mainstream Classroom*

Most ELL struggle academically in school because they apply what they know of their first language to English. They have to learn another language, English, along side the academic content that is being taught. To use content vocabulary through definitions isn't as helpful as using contextualized vocabulary. ELL need opportunities to practice what they learn in school outside of a school setting. This is challenging for them because ELL parents may not be fluent in either language themselves. When schools support ELL inside the classrooms and outside the school environment, along with parent and guardian involvement there are fewer social and emotional problems. I believe that there are fewer social and emotional problems because there is collaboration between the school and the home environment. When schools and the home work together it shows the student that there is communication there and that they are on the same page, working together. This will give parents the support that they need to support their ELL.

Strong literacy skills are important to have in the first language, as it will help with literacy skills in English. ELL also need longer processing time with the content along with talking with their peers. One of the challenges teaching ELL depends on the first language of the student. There isn't always a direct translation between English and the other language. Sometimes, there isn't a written form of the first language, which is equally challenging. When schools and home work together it shows students there is communication and both parties are working together. This will give parents the support that they need to support their ELL.

Strong literacy skills are important to have in the first language, as it will help with literacy skills in English. ELL also need longer processing time with the content and talking with their peers. One of the challenges teaching ELL depends on the first language of the student. There

isn't always a direct translation between English and the other language. Sometimes, there isn't a written form of the first language, which is equally challenging.

As a special education teacher who works with Yup'ik students, I can see how limited fluency in Yup'ik affects how my students speak in English. I have had to adapt the way I teach my students. I include more visuals with academic, content vocabulary and repeat them through out the content unit. I utilize more sentence starters for students when they are speaking and writing. I engage students more often with hands on learning experiences, and ask complex questions in vocabulary that they understand to help them process the content. One of the greatest challenges has been adjusting the processing time that I give students. I have had to pace my lessons more often to allow students to process taught information. I make more eye contact and check their body language on how much processing time students actually need. I have noted great success when I allow students time to talk to each other about what is being taught. They have to learn to communicate with each other and teach each other what they know. Learning to do these things isn't easy; however, the students benefit from each other and continue to grow in academic content areas.

4.6. Dual/Multi-Language Program

Dual/multi-language programs have become more and more popular as the schools have seen an increase in languages spoken. Many students benefit from a good, dual/multi-language program. For it to be successful utilization of school resources, high structure in classroom conduct, support from all school staff members, community members and parents/guardians are necessary. A few aspects of dual/multi-language programs are noted. One, it is found in many dual/multi-language programs that students tend to use their first language to help them solve more complex and abstract questions in the second language. Providing time for students to

process allows them to see growth in their second language. Two, as students continue to grow in the second language, they begin to code-switch. Three, it is also important that the dual/multi-language program have high expectations for the students and a rigorous curriculum. Lastly, if a child has a learning disability they tend to struggle in the dual/multi-language program.

For 6 years I have been teaching in dual/multi-language schools. Due to the dual/multi-language program, I have had to alter the way that I teach. I have had to learn how the dual/multi-language program works and teach within its parameters. In many of the schools, I was required to have a content and language objective that was in conjunction to the dual/multi-language curriculum. This allowed students to be exposed to the content vocabulary in a contextualized manner alongside the content. By doing this, I am able to adapt my lessons and pacing to help students understand the content more. In one particular school, I worked with a co-teacher who would have the students half the day while I would have them the second half of the day. By doing so, we covered different academic content in Yup'ik and English.

In my current school district, the Lower Kuskokwim School District (LKSD), all schools use a particular model of dual/multi-language program. Grades K-5 learn social studies, science, reading and culture in Yup'ik. Reading, math and language arts are in English. By sharing content in both languages this has shown the most success for students who arrive fluent in one language. However, it is a challenge for students who are not fluent in any language as their upbringing and limited neuron connections make it challenging to learn another language and its content. Due to my teaching experiences in dual/multi-language schools, I have had to adapt and approach teaching in a more holistic way that enhances student learning through academic content and language acquisition.

5. Conclusion

This meta-synthesis showed how language acquisition and learning impacts the learning process. When I first started this research I didn't realize how much language impacts a child's brain, and how they make neuron connections. This has caused me to use what I learned to help other teachers understand where students are coming from and the impact language has on a child.

Language learning is a process that every human being has to go through in order for them to communicate their thoughts, feelings and emotions to others. It is something that can be easy for some and challenging for others. Despite the challenges, we are social human beings that need to know how to communicate to help us survive. Nonetheless, we each learn to communicate in different ways.

Understanding how a child acquires a language helps me to understand how to help the child grow in their communication skills. I can use what I have learned and help parents understand how important it is for them to communicate with their children when they are very young. I can also help other teachers understand why the students speak the way they do by presenting it to the school. As children get older, parents can start to teach them differences in the languages and how they are spoken. I can also help students by informing them of this natural process that bilingual children go through. In this process it's okay to have challenges in school, and show them that I can help them learn through their challenges.

The findings of this study explore various reasons in how language affects learning. There isn't one particular article that has all the answers for each child as they acquire languages and learn in school. No matter the language that students speak when they come through the

classroom door, it is our responsibility, as teachers, to help the students through the learning

process, to communicate effectively and to understand how language impacts their learning.

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